Comprehensive Long-term Environmental Action Navy

CONTRACT NUMBER N62467-94-D-0888

N00164.AR.001072
NSWC CRANE
5090.3a

Rev. 0
11/17/06

Resource Conservation and Recovery Act Facility Investigation Report
for
Roads and Grounds Area (SWMU 15)

VOLUME II OF II - APPENDICES A - J

Naval Surface Warfare Center Crane
Crane, Indiana

Contract Task Order 0331

November 2006

NAVFAC
Naval Facilities Engineering Command
Southeast
2155 Eagle Drive
North Charleston, South Carolina 29406

TETRA TECH NUS, Inc.

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ACRONYMS

°F	Degrees Fahrenheit
°C	Degrees Celsius
amsl	Above mean sea level
AOC	Area of concern
AST	Aboveground storage tank
ASTM	American Society for Testing and Materials
ATSDR	Agency for Toxic Substances and Disease Registry
AWQC	Ambient Water Quality Criterion
BAF	Bioaccumulation Factor
BERA	Baseline Ecological Risk Assessment
bgs	Below ground surface
BSAF	Biota Sediment Accumulation Factor
BTOR	Below top of riser
Cal EPA	California Environmental Protection Agency
CCME	Canadian Council of Ministers of the Environment
CDI	Chronic daily intake
CEC	Cation exchange capacity
CSF	Cancer slope factor
CLEAN	Comprehensive Long-term Environmental Action Navy
CMS	Corrective Measures Study
cm	Centimeter
cm^2	Square centimeters
COC	Chemical of concern
COPC	Chemical of potential concern
cPAH	Carcinogenic polycyclic aromatic hydrocarbon
CSF	Cancer slope factor
CSM	Conceptual site model
CTE	Central tendency exposure
CTO	Contract Task Order
DA_{event}	Absorbed dose per event
DDT	Dichloro diphenyl-trichloroethane
DI	Deionized
DO	Dissolved oxygen

DPT	Direct Push Technology
DRMO	Defense Reutilization and Marketing Office
EC	Environment Canada
EC_{10}	Effects Concentration for 10% of the test population
EC_{20}	Effects Concentration for 20% of the test population
EC_{25}	Effects Concentration for 25% of the test population
EC_{50}	Effects concentration for 50% of the test population
Eco-SSL	U.S. EPA Ecological Soil Screening Level
EDQL	Environmental Data Quality Levels
EEQ	Ecological Effects Quotient
EMR	Environmental Monitoring Reports
EP	Extraction Procedure
EPC	Exposure point concentration
EPD	Environmental Protection Department
ERA	Ecological Risk Assessment
ESL	Ecological screening level
EU	Exposure unit
FOL	Field Operations Leader
gpm	Gallons per minute
HA	Hand augering
HASP	Health and Safety Plan
HEAST	Health Effects Assessment Summary Tables
HHRA	Human health risk assessment
HI	Hazard Index
HQ	Hazard Quotient
IA	Installation Assessment
IAS	Initial Assessment Study
ILCR	Incremental lifetime cancer risk
IDEM	Indiana Department of Environmental Management
IDNR	Indiana Department of Natural Resources
IRIS	Integrated Risk Information System
K_d	Soil-water partition coefficient
K_g	Kilogram
K_{oc}	Organic matter-water partition coefficient
LC_{50}	Lethal Concentration (for 50% of the test population)

LCS	Laboratory control sample
LOAEL	Lowest observable adverse effects level
LOEC	Lowest observed effect concentration
MATC	Maximum Acceptable Toxicant Concentration
MCL	Maximum Contaminant Level
mg	milligrams
mg/kg	milligrams per kilogram
mg/L	milligram per liter
MI/HR	miles per hour
MRL	Minimal Risk Level
MS	Matrix Spike
MSCM	milliSiemens per centimeter
MSD	Matrix spike duplicate
MV	millivolts
NAD27	1927 North American Datum
NAVD88	1988 North American Vertical Datum
NAVFAC EFD SOUTH	Naval Facilities Engineering Field Division South
NCEA	National Center for Environmental Assessment
NECC	Nutrient and energy cycling check
NEESA	Naval Energy and Environmental Support Activity
NOAA	National Oceanic and Atmospheric Administration
NOAEL	No Observable Adverse Effects Level
NOEC	No Observed Effect Concentration
NSWC	Naval Surface Warfare Center
NTU	Nephelometric turbidity unit
OECD	Organization of Economic Cooperation and Development
OMOE	Ontario Ministry of the Environment
OPPTS	Office of Prevention, Pesticides, and Toxic Substances
ORNL	Oak Ridge National Laboratory
ORP	Oxidation-reduction potential
OSWER	Office of Solid Waste and Emergency Response
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated Biphenyl
PEC	Probable effects concentration
PEF	Particulate emission factor
PID	Photo ionization detector

PPE	Personal protective equipment
ppm	Parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
PRG	Primary Remediation Goal
PVC	Polyvinyl chloride
QA	Quality assurance
QAPP	Quality assurance project plan
QC	Quality control
RAGS	Risk Assessment Guidance for Superfund
RBTL	Risk-based target level
RCRA	Resource Conservation and Recovery Act
RDA	recommended daily allowance
RfD	Reference dose
RFI	RCRA Facility investigation
RISC	Risk Integrated System of Closure
RME	Reasonable maximum exposure
RPD	Relative percent difference
RQD	Rock quality designation
SERA	Screening Level Ecological Risk Assessment
SDWA	Safe Drinking Water Act
SOP	Standard operating procedure
SQG	Soil Quality Guideline
SSL	Soil Screening Level
ST	Storm Sewer and Outfall System
SUF	Site Use Factor
SV	Screening value
SVOC	Semivolatile Organic Compound
SWMU	Solid Waste Management Unit
TEC	Threshold Effects Concentration
TOC	Total organic carbon
TOM	Task Order Manager
TRV	Toxicity Reference Value
TtNUS	Tetra Tech NUS, Inc.
µg/kg	microgram per kilogram
UCL	Upper confidence limit
U.S. EPA	United States Environmental Protection Agency

U.S. FWS	United States Fish and Wildlife Service
USACE	United States Army Corps of Engineers
UTL	Upper tolerance limit
VOC	Volatile Organic Compound
WQC	Water Quality Criteria
WQS	Water Quality Standard

APPENDIX A
PHOTOGRAPHS AND PHOTOGRAPH DIRECTION FIGURE

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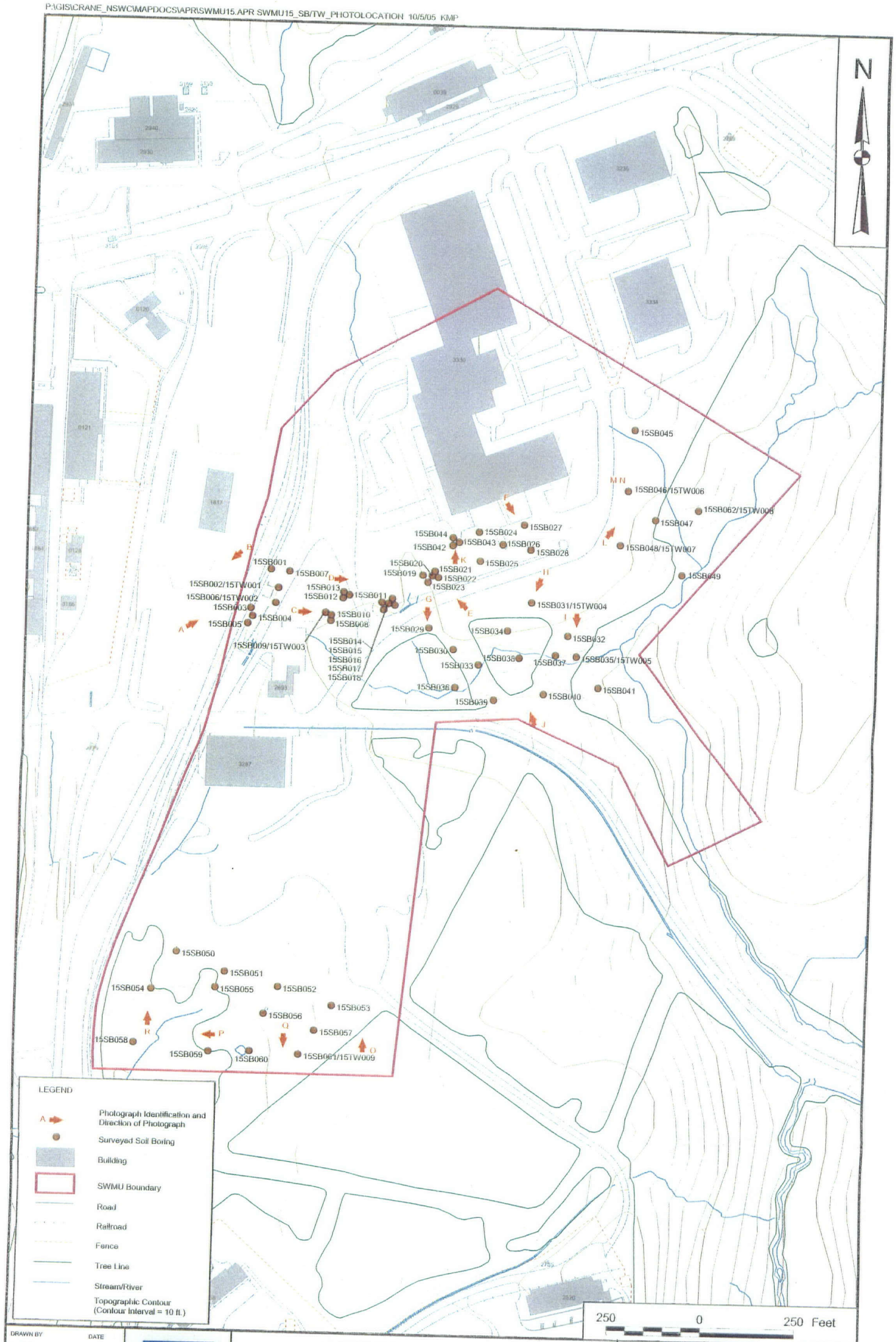

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PHOTOGRAPH DIRECTION MARKERS
SURVEYED SOIL BORING/TEMPORARY GROUNDWATER WELL LOCATIONS
SWMU 15 - ROADS AND GROUNDS AREA
NSWC CRANE
CRANE, INDIANA

CONTRACT NUMBER	
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FIGURE A-1
SWMU 15 PHOTOGRAPHS

Figure A-1A 15SB001/003/004/005 (27 NE) Open gravel area parallel with railroad tracks which slope down to gravel lot. (12/9/04)

Figure A-1B 15SB02/06/07 (219 SW) Slope at base of railroad tracks along the open gravel lot (12/8/04)

Figure A-1C 15SB08/09/10 (68 E) Open gravel lot. Location of former USTs. (12/8/04)

Figure A-1D 15SB11/12/13 (111 E) Open gravel lot. (12/8/04)

FIGURE A-1
SWMU 15 PHOTOGRAPHS

Figure A-1E 15SB19/20/21/22/23 (305 NW) Open grass power line with woods on each side. (12/10/04)

Figure A-1F 15SB027 (126 SE) 4" Thick concrete pad between building 3330 and asphalt parking lot. (12/11/04)

Figure A-1G 15SB029 (199 S) Open grassy area next to tree line on upper slope. (12/9/04)

Figure A-1H 15SB031 (218 SW) Open grassy area next to tree line on upper slope. (12/9/04)

FIGURE A-1
SWMU 15 PHOTOGRAPHS

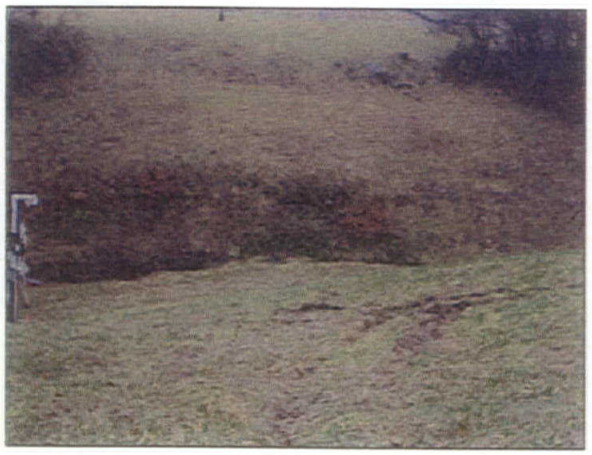

Figure A-1I 15SB032/035 (167 S) Open Grassy Slope on Power Line Down to Stream. Tree lined on both sides. (12/9/04)

Figure A-1J 15SB39/40 (347 N) Open grass power lines with woods on each side. (12/10/04)

Figure A-1K 15SB042/043/044 (17 N) Asphalt Parking Lot at Building 3330.

Figure A-1L 15SB045/046/047/048 (46 NE) Open grassy area with power line between road and tree line. (12/10/04)

FIGURE A-1
SWMU 15 PHOTOGRAPHS

Figure A-1M 15SB046 Peat Material.
(12/10/04)

Figure A-1N 15SB046 Peat Type Material.

Figure A-1O 15SB53/57/61 (18 N) Open grassy power line bordered by woods on both sides. (12/04)

Figure A-1B 15SB59 284 W
Just inside woods near wet depression (12/04)

FIGURE A-1
SWMU 15 PHOTOGRAPHS

Figure A-1C 15SB61 (193 S) Just inside woods. Medium tree canopy. (12/04)

Figure A-1D AOC W (10 N)
Typical setting at the SWMU 15 landfill.
Medium canopy with grassy understory.

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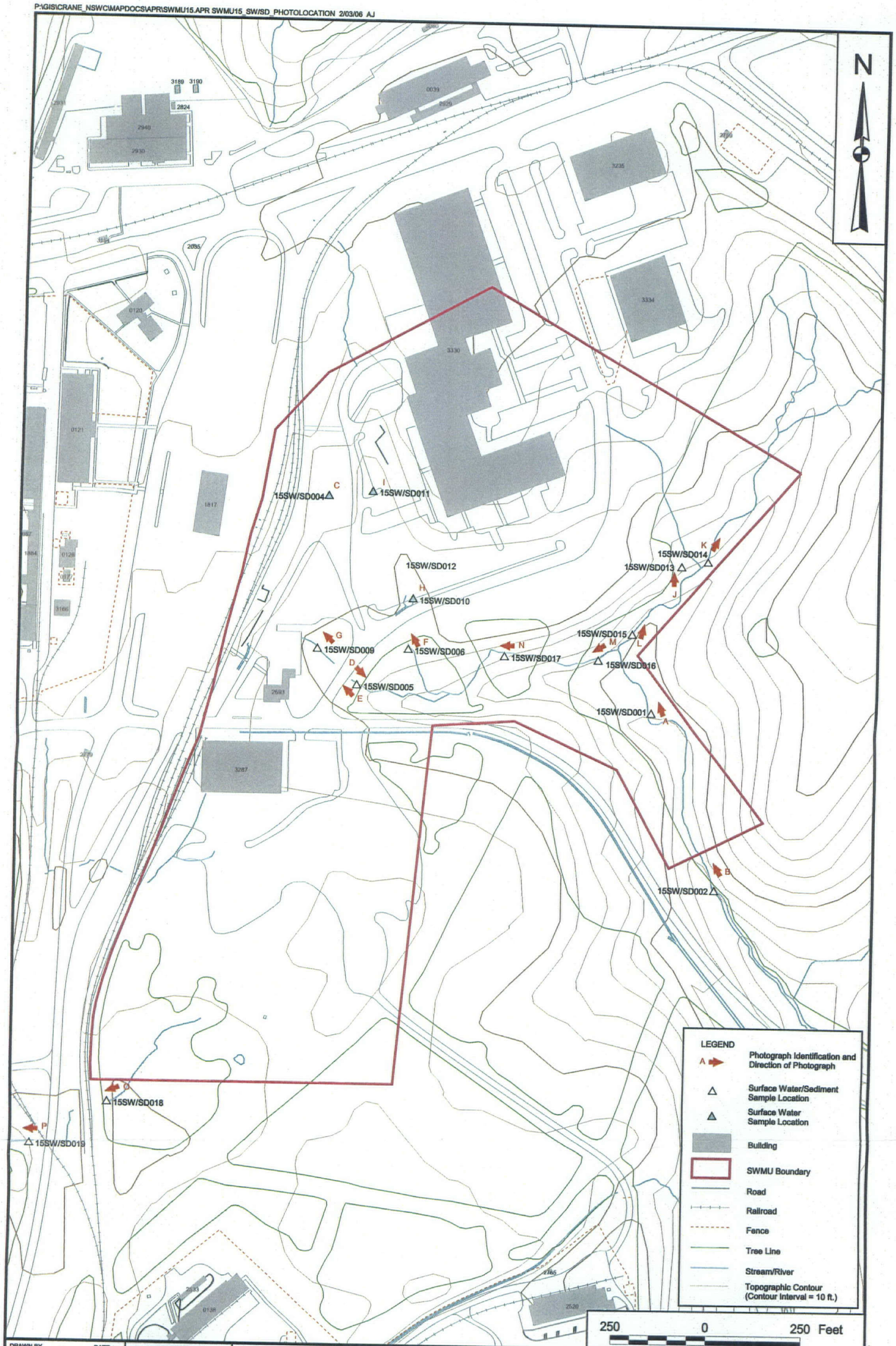

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PHOTOGRAPH DIRECTION MARKERS
SURFACE WATER/SEDIMENT LOCATIONS
SWMU 15 - ROADS AND GROUNDS AREA
NSWC CRANE
CRANE, INDIANA

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FIGURE A-2
SWMU 15 PHOTOGRAPHS

Figure A-2A: Upstream 15SWSD001

Figure A-2B: Upstream 15SWSD002

Figure A-2C: Storm sewer 15ST004 at location 15SWSD004

Figure A2D: Downstream 15SWSD005

FIGURE A-2
SWMU 15 PHOTOGRAPHS

Figure A-2E: Upstream 15SWSD005

Figure A-2F: Upstream 15SWSD006

Figure A-2G: Upstream 15SWSD009

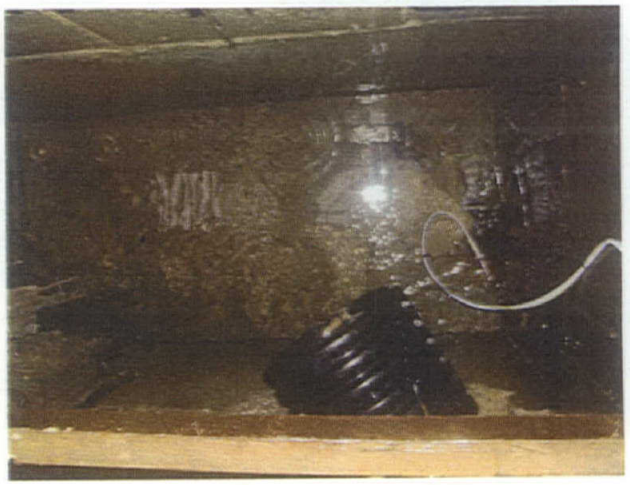


Figure A-2H: Storm sewer 15ST010 at location 15SWSD010

FIGURE A-2
SWMU 15 PHOTOGRAPHS

Figure A-2I: Storm sewer 15ST011 at location 15SWSD011

Figure A-2J: Upstream 15SWSD013

Figure A-2K: Upstream 15SWSD014

Figure A-2L: Upstream 15SWSD015

FIGURE A-2
SWMU 15 PHOTOGRAPHS

Figure A-2M: Upstream 15SWSD016

Figure A-2N: Upstream 15SWSD017

Figure A-2O: Upstream 15SWSD018

Figure A-2P: Upstream 15SWSD019

FIGURE A-2

SWMU 15 PHOTOGRAPHS

(Not Used Directory)

IMG_1082: Close-up of 15TW005 at location 15SB035

Figure A-2A: Showing sampling of 15TW005 at 15SB035

APPENDIX B
BORING LOGS, TEMPORARY WELL CONSTRUCTION DIAGRAMS, AND RELATED MATERIALS

APPENDIX B.1
BORING LOGS AND TEMPORARY WELL CONSTRUCTION DIAGRAMS

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB001
DATE: 12-9-04
GEOLOGIST: CONTI
DRILLER: McFALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification*	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @	0		2/2		LOOSE	BRN GRAY	CLAY, SAND AND ROAD GRAVEL	CL/SC	(FILL) TOOK MOIST	.5			
0 to	2								[15SS0010002] SLIGHT ODOR	3			
				3									
S-2 @			4/4		M DENSE	ORANG BRN	CLAYEY SAND-TR ROCK FRAGS TR NEWSPAPER	SC	MOIST TOOK				
0 to 15									[15SB0010206]				
	6								(FILL)				
				BOTM @ 6'									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB002
DATE: 12/8/04
GEOLOGIST: CONTI
DRILLER: Mc FAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 1400	0		2/2	1	M DENSE	GRAY	CLAYEY SAND - TR ROCK FR AND ROOTS	SC	MOIST → WET	0			
	2			2.5					(FILL) TOOK [15SS0020002]	0			
										0			
S-2 @ 1405			1/4		SOFT	GRAY	CLAYEY SILT	SC/ML	POOR REC TRIED TWICE SLIGHT A ODOR	4			
				6					TOOK PETROLEUM [15SB0020206]	0			
	6			BOTM @ 6'						0			
									SCREEN 1-6'				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ✓ No ____ Well I.D. #: 15TW002

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB003
DATE: 12-9-04
GEOLOGIST: CONTI
DRILLER: McFALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sample BZ	Borehole**	Driller BZ**
S-1 @ 0935	0		2/2		LOOSE	BRN	CLAY, SAND AND ROAD GRAVEL	SC	MOIST (FILL)	0			
	2			2'		GRAY			TOOK [15SS0030002]	0			
					M DENSE	GRAY BRN	CLAYEY SAND TO			0			
S-2 @ 0940			4/4		M STIFF TO SOFT		SANDY CLAY-TR ROCK FRAGS		(FILL) MOIST	0			
									TOOK [15SB0030206]	0			
	6			6'						0			
				BOT @ 6'									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB004
DATE: 12-9-04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1	0		2/2		LOOSE	BRN TAN	SAND AND ROAD	SM	MOIST (FILL)	0			
e 0955	2			2'			GRAVEL ~TR CLAY		TOOK [15SB0040002]	0			
					M DENSE	YELLOW BRN	CLAYEY SAND TO	SC	MOIST	0			
S-2 e			3.8/4		TO	GRAY				0			
1000					SOFT		SANDY/SILTY CLAY TR ROCK FRAGS		TOOK [15SB0040206]	0			
	6			6'					(FILL)	0			
				BOTM									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB005
DATE: 12/8/04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @	0		2/2		LOOSE	TAN BRN	SAND AND ROAD		MOIST (FILL)	0			
1520	2						GRAVEL		TOOK [15SS0050002]	0			
				3'±						0			
S-2 @					SOFT	GRAY TO	SILTY CLAY-TR		MOIST (FILL)?	0			
1525						YELLOW BRN	GRAVEL		TOOK	0			
	6								[15SB0050206]	0			
				BOTM @ 6'									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB06
DATE: 12/8/04
GEOLOGIST: CONTI
DRILLER: McFAUL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 e	0		2/2		LOOSE	BRN	TOPSOIL (2")						
1430	2			1		GRAY	SILTY SAND - SOME ROCK FRAGS - TR ROOTS FINE GRAVEL	SM	MOIST → WET	0			
									TOOK FILL (15SS0060002)	0			
				3'			(F) : 3'			0			
S-2 e			4/4	4'±	M. STIFF	BRN	CLAYEY SAND	SC	MOIST → WET	0			
1435					DENSE	BRN GRAY	CLAYEY SAND - SOME WEATHERED ROCK FRAG AND SANDSTONE	SC	MOIST	0			
	6			6'					TOOK [15SB0060206]	0			
				BOTM @ 6'									
									TOOK DUP 15FD12080401 AT 0206 AND MS/MSD 0206 ALSO				
									SET 15TW006 SCREEN 1 → 6'				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ✓ No ____ Well I.D. #: 15TW006

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB007
DATE: 12/8/04
GEOLOGIST: CONTI
DRILLER: MCFALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole*	Driller BZ**
S-1 @	0		2/2	1'±	SOFT	GRAY	CLAY, SAND ROOTS	SM	WET	0			
1335	2				M STIFF	YELLOW BRN	CLAYEY SAND-TR	SC	TOOK [15SS0070002] MOIST	0			
							SUB ROUND GRAVEL		TOOK [15SB0070206]	0			
S-2 @			4/4				TO CLAYEY SAND-TR	SC	MOIST	0			
1340							WEATHERED ROCK FRAGS			0			
	6			6'						0			
				BOTM @ 6'									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm):

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB008
DATE: 12/8/04
GEOLOGIST: CONTI
DRILLER: MC FAN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 1255	0		2/2		M DENSE	BRN	TOP SOIL CLAYEY SAND-SOME ROAD GRAVEL TR ROOTS	SC	MOIST TOOK [15SS0080002]	0			
	2									0			
				3'±	STIFF/				FILL TO 3'±	0			
S-2 @ 1300			4/4	4'	M DENSE	GRAY	CLAYEY SILT	ML	MOIST	0			
					SOFT	BRN GRAY	SILTY CLAY	CL	TOOK [15SB0080206] MOIST → WET	0			
	6									0			
										0			
S-3 @ 1305			3/4	7.5	DENSE	ORANG BRN	CLAYEY SAND-SOME SANDSTONE FRAGS.		TOOK [15SB0080610]	0			
	9			9'						0			
				REF & BOTM									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB009
DATE: 12/8/04
GEOLOGIST: CONTI
DRILLER: Mc FAUL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sample BZ	Borehole**	Driller BZ**
S-1	0		2/2		M DENSE	GRAY BRN	SANDY CLAY SOME	SC	MOIST FILL	0			
@ 1120	2						ROAD GRAVE FRAGS		TOOK [15SS0090002]	0			
					STIFF	GRAY	SANDY SILT - TR	ML	MOIST	0			
S-2 e			3.5/4		TO		ROOTS			0			
1125				4.5	SOFT		5.5?		WET 4.5 - 5.5 TOOK [15SB0090206]	0			
	6			5.5			↓FILL						
					SOFT	MOTTLED BRN GRAY	SILTY CLAY	CL	MOIST	0			
									TO WET	0			
S-3 e			3.2/4						TOOK [15SB0090610]	0			
1130				8.5									
	9.5			9.5	M DENSE	ORANGE BRN	SILTY SAND - TR						
				REF & BOTM			ROCK FRAG			0			
									SET TEMP WELL				
									SCREEN 4.5-9.5				
									5' SCR				
									5' RISER				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ✓ No _____ Well I.D. #: 15TW009

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15 SB010
DATE: 12-8-04
GEOLOGIST: CONTI
DRILLER: MC FAUL

Sample No. and Type or RQD	Depth (Ft) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sample BZ	Borehole**	Drillr BZ**
S-1 @ 1240	0		2/2		M DENSE	BRN GRAY	CLAYEY TO SILTY SAND SOME ROAD GRAVEL TR ROOTS		MOIST (FILL) TOOK [15SS0100002]	0			
	2									0			
				3						0			
S-2 @ 1245			3.3/4		SOFT	GRAY	SANDY CLAY/CLAYEY SAND (FILL ?)	SC	MOIST → WET TOOK [15SB0100206]	0			
				5.5									
	6				M STIFF	MOTTLED GRAY BRN	SILTY CLAY	CL	MOIST → WET NATC 5.5 ?	0			
S-3 @ 1250			3.6/4	8.0					TOOK [15SB0100610]	0			
	9.5			9.5 REF & BOTM	DENSE	ORANGE BRN	CLAYEY SAND AND SANDSTONE FRAG.	SC	MOIST → WET	0			
										0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB011
DATE: 12/8/04
GEOLOGIST: CONTI
DRILLER: Mc. FALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 1035	0		2/2		M STIFF	ORANGE BRN	SILTY CLAY-TR ROOTS TO GRAVEL-SOME SILTY CLAY	CL	MOIST [15SS0110002] FILL	0			
	2									0			
S-2 @ 1040			3.5/4	4±	M STIFF TO SOFT		TO SANDY SILT	ML	? FILL	0			
						BRN GRAY	SILTY CLAY	CL	[15SB0110206]	0			
	6			6'						0			
				BOTM @ 6'									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB012
DATE: 12-8-04
GEOLOGIST: CONTI
DRILLER: Mc FALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @	0		2/2		M DENSE	GRAY	ROAD GRAVEL SANDY SILT/SILTY	SM	MOIST (FILL)?	0			
1000	2			2'±			F. SAND		TOOK [15SS012000 2]	0			
				3'±	SOFT	GRAY TO	CLAYEY SAND TO	SC	MOIST → WET	0			
S-2 @			3.7/4			GRAY BRN	CLAYEY SILTY TR SAND	ML	MOIST	0			
1010					M STIFF			CL	TOOK [15SB012020 6]	0			
	6			BOTM @ 6'						0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB013
DATE: 12-8-04
GEOLOGIST: CONTI
DRILLER: MCFALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample**	Sampler BZ**	Borehole**	Driller BZ**
S-1 e	0		2/2		M DENSE	GRAY	ROAD GRAVEL TO SANDY SILT	ML	MOIST TOOK	0			
1020	2						(FILL?)		[15SS0130002]	0			
				3'±		MOTTLED			WET ZONE ≈ 3'	0			
S-2 e						GRAY BRN	SILTY CLAY - CLAYEY SILT	ML CL	MOIST TOOK	0			
1030									[15SB0130206]	0			
	6									0			
				BOTM @ 6'									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB014
DATE: 12-11-04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ*	Borehole**	Driller BZ**
S-1	0		2/2		SOFT	BRN TO	3" TOPSOIL TO		[15SS0140002]	0			
@ 0935	2					YELLOW BRN	SILTY CLAY - TR ROCK FRAG	CL	MOIST TO WET	0			
										0			
S-2 @ 0940			3/4							0			
				5'±			? (FILL)		[15SB0140206]	0			
	6			6 BOTM	M DENSE	ORANG TAN BRN	SILTY SAND - SOME ROCK FRAGS	SM	MOIST	0			
									TOOK FD12110401 @ 2-6' ALSO MS/MSD HERE				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB015
DATE: 12-11-04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 e	0		1.2/2		LOOSE	GRAY	3" ASPHALT/GRAVEL TO		MOIST	0			
0915	2				SOFT	YELLOW BRN	SILTY CLAY-TR ROOTS TR ROCK FR	CL	↓ [15SS0150002] WET (FILL)	0			
					M	GRAY	CLAYEY SAND-SOME	SC	MOIST → WET	0			
S-2 e			2/4		STIFF	ORANG BRN	GRAVEL AND ROCK FRAGS		[15SB0150206]	0			
0920										0			
	6			6' BOTM			? (FILL)		LOOKS LIKE FILL TO 6'	0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB016
DATE: 12-11-04
GEOLOGIST: CONTI
DRILLER: McFAUL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ**	Borehole**	Driller BZ**
S-1 @	0		2/2				4" TOPSOIL						
					SOFT	YELLOW	SILTY CLAY-TR	CL	[15SS0160002]	0			
8/05	2				TO	BRN	ROOTS AND ROCK FRAGS		MOIST → WET (FILL)	0			
					M STIFF		CLAYEY SAND/SANDY	SC	MOIST				
S-2 @			4/4		TO	TR GRAY	CLAY - TR ROCK FRAGS						
9/10					STIFF				[15SB0160206]				
	6			6' BOTM									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB017
DATE: 12-11-04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @	0		2/2	1.'	M STIFF	YELLOW	2" ASPHALT & GRAVEL SILTY CLAY	CL	MOIST [15SS017 0002]	0			
0855	2			2'	TO	BRN	TR ROOTS TO		FILL TO 2'± ?	0			
					STIFF		CLAYEY SAND	SC	MOIST – TR	0			
S-2 @			4/4	•					GRAY STAINS @ 4'±	0			
0900				BTM					[15SB017 0206]	0			
	6			@ 6'						0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: • Sample Loc. ≈ 4'

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB018
DATE: 12-11-04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sample BZ	Borehole**	Driller BZ**
S-1 e	0		15/2	1	LOOSE	GRAY	ASPHALT AND SANDY GRAVEL		MOIST [15SS018000C]	0			
0925	2				SOFT	GRAY BRN	SANDY CLAY - TR ROCK FRAGS AND ROOTS	SC	MOIST → WET	0			
S-2 e			2.6/4							0			
0930									[15SB018C206] FILL TO 5'± ?	0			
				5									
	6			6	M DENSE	ORANG BRN	SILTY SAND - TR WEATH ROCK FRAG	SM	MOIST (SANDSTONE)	0			
				BOTM									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB019
DATE: 12-10-04
GEOLOGIST: CONTI
DRILLER: MCFALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1	0		2/2	1.0	LOOSE	GRAY	~ 3" ASPHALT SAND/ROAD GRAVEL		[15SS0190002]	0			
@ 1235	2			3.0	STIFF	BLK TO YELLOW BRN	ASH TO SILTY CLAY	CL	MOIST (FILL)	0			
					M STIFF	YELLOW BRN	SANDY CLAY - TR GRAVEL AND ROCK FRAGS	SC	? FILL.	0			
S-2 @			4/4		TO					0			
1240					STIFF				MOIST [15SB0190206]	0			
	6			6' BOTTM						0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB020
DATE: 12-10-04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 1315	0		2/2	1	LOOSE		3" ASPHALT CLAY GRAVEL, SAND		MOIST (FILL)	0			
	2			3	STIFF	GRAY ORANG BRN	SANDY CLAY - TR ROOTS	SC CL	[15SS020 0002]	0			
					M STIFF	YELLOW BRN	CLAYEY SAND - TR ROOTS	SC	MOIST	0			
S-2 @ 1320			4/4			TR. GRAY			LOOKS NAT @ 2' ?	0			
									[15SB020 0206]	0			
	6			6' BTM						0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB021
DATE: 12-10-04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 e	0		2/2	1	LOOSE	GRAY	ASPHALT SILTY CLAY, SOME ROAD GRAVEL	CL	MOIST (FILL)	0			
1346	2				M STIFF	GRAY YELLOW BRN GRAY	CLAYEY SAND TR ROOTS	SC	[15S0210002]	0			
									FILL? NOT SURE	0			
S-2 e			4/4						MOIST	0			
1345				5					[15SB0210206]	0			
	6			6'	V DENSE	RED BRN	CLAYEY SAND TO REDDISH SANDSTONE FRAGS	SC	MOIST	0			
				BOTM									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB022
DATE: 10-12-04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 1330	0		2/2	1'±	LOOSE	TAN GRAY	ASPHALT GRAVEL SAND & CLAY - TR ROCK FRAG		MOIST	0			
	2				SOFT	GRAY	SILTY CLAY (FILL)	CL	[15SS022000 2]	0			
					TO		TR ROCK FRAG TO 3 or 4'			0			
S-2 @ 1335			4/4	4	M STIFF					0			
					M STIFF	BRN	TO SANDY CLAY	SC	MOIST	0			
	6			6' BOTM	STIFF	YELLOW BRN	SANDY CLAY CLAYEY SAND - TR ROCK FRAG	SC	[15SB022020]	0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB023
DATE: 12-10-04
GEOLOGIST: CONTI
DRILLER: MCFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 e	0		2/2		STIFF	BRN GRAY	3" ASPHALT SILTY CLAY-TR SAND	CL/ML	MOIST (FILL)	0			
1250	2						AND ROCK FRAGS		[15SS0230002]	0			
										0			
S-2 e			4/4	4					MOIST SL ODOR @ 4'	1.5			
1255					M STIFF	YELLOW BRN	SANDY CLAY/CLAYEY		[15SB0230206]	0			
	6			6' BOTM		TR GRAY	SAND			0			
									FD12100401 @ 0206 ALSO MS/MSD				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB024
DATE: 12-11-04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 e	0		2/2	1	LOOSE	GRAY	ASPHALT AND SANDY GRAVEL		MOIST → WET [15SS0240002]	0			
1020	2				SOFT	YELLOW BRN	SILTY CLAY-TR ROCK FRAGS	CL	(FILL) TO 3'±	0			
				3						0			
S-2 e			3/3		M SOFT	GRAY BRN	WEATH SANDSTONE	VBR	MOIST	0			
1025	5'			5'			(LAMINATED)		[15SB0240206]	0			
				BOTM & REF									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 1SSB025
DATE: 12-11-04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 10 10	0		2/2	1	LOOSE	GRAY	3" ASPHALT/GRAVEL		MOIST [1SSS0250002]	0			
					M STIFF	GRAY ORANGE BRN	CLAYEY SAND TR ROOTS	SC		0			
	2					YELLOW BRN				0			
S-2 @ 10 15			3/3	3.5			? (FILL)		MOIST				
					M DENSE	YELLOW BRN TR RED	CLAYEY SAND - SOME REDDISH SANDSTONE FRAGS		[1SSB0250206]	0			
				5' REF @ BOTM									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB026
DATE: 12/11/04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 e	0		2/2	1	50 FT	BRN	3" TOPSOIL AND CLAYEY SILT	ML	MOIST [15SS0260002]	0			
1030	2				M SOFT	BRN TAN	WEATHERED			0			
						GRAY	SANDSTONE						
S-2 e			15/1.5	3.5					MOIST	0			
1035				REF & BOTM					[15SB0260206]	0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB027
DATE: 12-11-04
GEOLOGIST: CONTI
DRILLER: McFALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 C	0		2/2	1'	LOOSE		CONCRETE PAD (4") SUB GRAVEL		MOIST	0			
1100	2				M STIFF	ORANG BRN	CLAYEY SAND-WEATH		[15SS0270002]	0			
S-2 C	3'			3'			SHALY SANDSTONE		MOIST	0			
1105				REF & BOTM					[15SB0270206]				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB028
DATE: 12/11/04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1	0		2/2	1.0	LOOSE	GRAY	ASPHALT - SANDY GRAVEL		MOIST [15SS0280002]	0			
1040	2					TAN BRN GRAY	WEATHERED SANDSTONE	VBR		0			
			2/2							0			
S-2 C	4			4.0					MOIST [15SB0280206]	0			
1045				REF & BOTM									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB029
DATE: 12-9-04
GEOLOGIST: CONTI
DRILLER: McFALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 e	0		2/2		M STIFF	BRN	2" TOPSOIL SILTY CLAY - TR ROOTS AND LIMESTONE GRAVEL FRAGS	CL	MOIST (FILL)	0			
1025	2			2					TOOK ? [15SS029 0002]	0			
					M STIFF	YELLOW BRN	CLAYEY SAND/	SC		0			
S-2 e			2-3/3			GRAY	SANDY CLAY - SOME ROCK FRAGS		MOIST	0			
1030				5'					[15SB029D2D6]	0			
				REF. & BOTM									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB030
DATE: 12/14/04
GEOLOGIST: CONTI
DRILLER: JG

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sample BZ	Borehole**	Driller BZ**
S-1 @ 0915	0				SOFT	BRN	3" TOPSOIL TO CLAYEY SILT - TR	ML	MOIST	0			
	2				TO M STIFF	YELLOW BRN	ROOTS	CL	[15SB030-0002]	0			
S-2 0920	3			3'			SILTY CLAY - TR ROOTS	CL	MOIST	0			
				BOTM					[15SB030-0206]				
									HAND AUGER TO 3'				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB031
DATE: 12-9-04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ*
S-1 e	0		2/2		M DENSE	YELLOW BRN	3" TOPSOIL CLAYEY SAND-SOME ROCK FRAGS	SC	MOIST TOOK (FILL?) [15SS0310002]	0			
1050	2									0			
							TO			0			
S-2 e			4/4		SOFT		SANDY CLAY-TR ROCK FRAGS	SC	TOOK	0			
1055				5.0'±			SOIL IS WET ≈ 4.5 (4" ZONE)		[15SB0310206] (FILL)	0			
	6				M STIFF TO SOFT	BRN GRAY	SILTY CLAY	CL	MOIST	0			
							TO SOME ROCK FRAGS			0			
S-3 e 1100			3.8/4						SLIGHT ODOR ≈8'	0			
				9					TOOK [15SB0310610]	0			
	10			10					NAT AT 10'±	0			
					SOFT	GRAY	CLAYEY SILT-TR ROOTS	ML/CL	MOIST → WET	0			
S-4 e										0			
1105										0			
	14			14'			LAST 2" STIFF SILTY CLAY		TOOK [15SB0311014]	0			
				REF & BOTTM			BRN SANDSTONE IS IN DRIVE SHOE						
							5' SCREEN 14-9						
							10' RISER						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ✓ No _____ Well I.D. #: 15TW031

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB032
DATE: 12-9-04
GEOLOGIST: CONTI
DRILLER: MC FAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sample BZ	Borehole**	Driller BZ
S-1 @ 1130	0		2/2	1.0	M STIFF	BRN	SILTY CLAY-TR ROOTS	CL	TOOK MOIST	0			
	2				SOFT	YELLOW BRN	SANDY CLAY-TR SILT	SC	[15SS0320002]	0			
	3		1/1	2.5 3.0	DENSE	ORANG BRN	SILTY SAND AND SANDSTONE FRAGS	SM	MOIST TOOK [15SB0320206]	0			
S-2 @ 1135				REF & BOTM @ 3'									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15 SB033
DATE: 12/14/04
GEOLOGIST: CONTI
DRILLER: JG

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1	0				SOFT TO	BRN RED	0-3" TOPSOIL		MOIST				
8/50	2			2'	M STIFF	BRN	SILTY CLAY TR- ROOTS AND REDDISH SANDSTONE FRAGS		[15SS0330002] MOIST	0			
				REF W/ HAND AUGER						0			
									HAND AUGER MOVED CLOSER TO STREAM THAN ORIG. LOCATION.				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB034
DATE: 12-14-04
GEOLOGIST: CONTI
DRILLER: JG

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @	0				M STIFF	ORANG BRN	CLAYEY SAND-TR ROOTS	SC	MOIST [15SS034000]	0			
10/15	2			2' REF			AND SANDSTONE FRAGS			0			
									HAND AUGER REF @ 2'				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB035
DATE: 12-9-04
GEOLOGIST: CONTI
DRILLER: McFALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 1150	0		1-5/2	1	SOFT	BRN	2" TOPSOIL SILTY CLAY - TR ROOTS	CL	MOIST	0			
	2			2					TOOK [15SS0350002]	0			
S-2 @ 1155			3.5/4		M DENSE	YELLOW BRN	CLAYEY SAND AND ROCK FRAGS	SC	MOIST	0			
									TOOK [15SB0350206]	0			
	6			5.5 6 BOTM @ 6'	SOFT	GRAY BRN	WEATHERED ROCK (SANDSTONE)			0			
									SCREEN 1-6 THIS LOCATION				
									CLOSE TO NEARBY STREAM				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole.. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ✓ No ____ Well I.D. #: 15TW035

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB036
DATE: 12-14-04
GEOLOGIST: CONTI
DRILLER: JG

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 1000	0				M STIFF	BRN	CLAYEY SAND-TR		MOIST	0			
	2			2 REF W/H. AUGER			ROOTS-TR ROOT FRAGS		[15SS036 0002]	0			
									HAND AUGER				
									REF @ 2'				
									MOVED CLOSER TO STREAM THAN ORIG LOG.				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB037
DATE: 12-9-04
GEOLOGIST: CONTI
DRILLER: MCFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ**	Borehole**	Driller BZ**
S-1	0		2/2		M STIFF	BRN	2" TOPSOIL±		MOIST				
@ 1205	2			2			CLAYEY SILT-TR ROOTS	ML	TOOK [15SS0370002]	0			
S-2 @			2/2		SOFT	BRN GRAY	SILTY CLAY-SOME	CL	TOOK	0			
1210	4			4'			ROCK FRAGS SANDSTONE IN SHOE		[15SB0370206]	0			
				REF @ 4'									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 1558038
DATE: 12-14-04
GEOLOGIST: CONTI
DRILLER: JG.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @	0				M	BRN	TOPSOIL TO ORANG SANDY CLAY		MOIST	0			
1145	2			2' REF	STIFF	BRN	TR ROOTS TR ROCK FRAGS		[15S50380002]	0			
									HAND AUGER REF @ 2' LOCATED CLOSER TO STREAM THAN ORIG LOC.				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB039
DATE: 12-10-04
GEOLOGIST: CONTI
DRILLER: McFALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 1510	0		2.5/3		SOFT	BRN	TOP 3" TOPSOIL TO SILTY CLAY TR ROOTS	CL	MOIST [15SS039 0002] ↓ WET	0			
	3			2.5 3'	M DENSE	TAN BRN	CLAYEY AND SILTY SAND-TR CLAY AND REDDISH SANDSTONE FRAG	SM	↓ MOIST	0			
				REF @ BOTM									
									TOOK DPT 0-3 - REF @ 3' - DECIDE TO TAKE JUST 1 SAMPLE 0-5 → 2				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB040
DATE: 12-10-04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 1445	0		2/2		SOFT	BRN	2" TOPSOIL CLAYEY SAND - TR ROCK FRAGS TR ROOTS		MOIST → WET [15SB040000 2]	0			
	2									0			
				3						0			
S-2 @ 1450			2/4		M DENSE	ORANG BRN	SILTY SAND - TR TO SOME TR CLAY ROCK FRAGS		MOIST [15SB040000 06]	0			
	6			6' BOTM						0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB041
DATE:
GEOLOGIST: CONTI
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 0	0				M STIFF	YELLOW BRN	SANDY CLAY - TR ROOTS AND ROCK FRAGS.		MOIST	0			
10 5	2			2' REF					[15SS041D002]	0			
									AUGER REF @ 2'				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #:

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB042
DATE: 12-10-04
GEOLOGIST: CONTI
DRILLER: McFALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 1100	0		2/2		M STIFF	BRN	2" ASPHALT SILTY CLAY -TR SAND-ROCK FR. AND ROOTS		(FILL) MOIST [15SS0420002]	0			
	2					TO GRAY				0			
										0			
S-2 @ 1105			4/4	3.5		RED TAN			FILL				
					M DENSE	BRN	SANDY CLAY GRADES TO WEATHERED SANDSTONE		MOIST [15SB042020006]	0			
				6' BOTM						0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB043
DATE: 12-10-04
GEOLOGIST: CONTI
DRILLER: MCFALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1	0		1/2		M STIFF	YELLOW BRN	ASPHALT ≈ 2" SILTY CLAY - TR		MOIST (FILL)	0			
@ 1045	2						ROCK FRAGS		[15SS0430002]	0			
				3.0					FILL TO AT LEAST 3'	0			
S-3 @			3/3	4.0±	SOFT	GRAY	SILTY CLAY - TR		MOIST → WET	0			
1050	5			5'	M STIFF	GRAY BRN	ROOTS WEATH SANDSTONE		[15SB0430206]	0			
				BOTM REF @ 5'									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB044
DATE: 12-10-04
GEOLOGIST: CONTI
DRILLER: MC FAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 1115	0		2/2		M STIFF	YELLOW BRN	2" ASPHALT± SILTY CLAY-TR ROCK FRAGS	CL	FILL (MOIST) [15SS0440002]	0			
	2				TO STIFF		TR SAND			0			
										0			
S-2 @ 1120	4.5		2.5/2.5	3.5	M STIFF	GRAY	YELLOW SANDY CLAY TO		FILL ? 3.5	0			
				4.5 REF & BOTM	SOFT	BRN	WEATHERED SANDSTONE		MOIST [15SB0440206]	0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB045
DATE: 12-10-04
GEOLOGIST: CONTI
DRILLER: McFALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 e 1000	0		2/2		M DENSE	BRN	SILTY CLAY - ROCK FRAGS ROOTS	CL	FILL (MOIST)	0			
	2								TOOK [15SS0450002]	0			
					M STIFF		CLAYEY SAND - SOME ROCK FRAGS	SC	MOIST	0			
S-2 e 1005			4/4	4					(FILL)	0			
					SOFT	GRAY	SILTY CLAY - TR ROCK FRAGS		TOOK [15SB0450206]	0			
	6									0			
										0			
S-3 e 1010			4/4	8'						0			
					STIFF	YELLOW BRN	SANDY CLAY - SOME ROCK FRAGS (WEATHERED)	SC	MOIST - NAT ?	0			
	10								[15SB0450610	0			
				16'					[15SB0451012]	0			
					M SOFT	BRN GRAY	WEATHERED SHALE	VBR	MOIST	0			
S-4 e 1015			4/4							0			
	14			14						0			
				REF & BOTM						0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm):

Converted to Well: Yes ____ No ✓ Well I.D. #:

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB046
DATE: 12-10-04
GEOLOGIST: CONTI
DRILLER: McFALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 e	0		2/2		M STIFF	YELLOW BRN	SILTY CLAY - TR ROOTS	CL	MOIST	0			
0850	2						TR ROCK FR		TOOK [15SS046 0002]	0			
						TO			(FILL?)	0			
S-2 e			4/4			BRN GRAY				0			
0855				5						0			
	6				SOFT	GRAY	SILTY CLAY - TR ROOTS	CL	LOOKS NAT, MOIST BUT FILL	0			
							TR ORG MATL		TOOK [15SB046 0206]	5			
S-3 e			4/4		TO		TR ROCK FRAGS		WITH ODOR (CHEMICAL)	0			
0900					M STIFF		CLAY, ROCK FRAG MIX.		FILL	0			
	10			10					TOOK [15SB046 0610]	0			
						BRN	SILTY CLAY - TR ROCK FRAG	CL	MOIST	0			
S-4 e									(FILL)	0			
0905			4/5	13						0			
				14	SOFT	DK BRN	PEAT MATERIAL		BUT FILL	0			
	15				SOFT	OLIVE BRN	SANDY CLAY TR ROOTS	SC CL	MOIST → WET	0			
					M STIFF		SILTY CLAY - TR ROOTS AND ROCK FRAGS	CL	MOIST	0			
S-5									STILL LOOKS LIKE FILL.	0			
0915			4/5	Sample Depth ± 19.0					TOOK [15SB046 1020]	0			
										0			
	20		REFC 20.5	20	SOFT	GRAY	CLAYEY SILT TR ROOTS SILTY CLAY	CL/ML	WET - LOOKS NAT	0			

* When rock coring, enter rock brokeness.

SHOE HAD SOME REDDISH SANDSTONE FRAGS

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: SET TW 10-20 SCREEN

Drilling Area Background (ppm): 0

Converted to Well: Yes ✓ No _____ Well I.D. #: 15TW046

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB047
DATE: 12-9-04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1	0		2/2	.5	SOFT TO	BRN	0-6" SILTY CLAY-TR ROOTS	CL	MOIST → WET	0			
@ 1610	2			2'	STIFF	YELLOW BRN	SILTY CLAY - SOME ROCK FRAGS	CL	MOIST	0			
				BOTM					TOOK [15SS047 0002]				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB048
DATE: 12-9-04
GEOLOGIST: CONTI
DRILLER: MC FAUL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 15 20	0		2/2		LOOSE	GRAY TO	SILTY CLAY - SOME	CL	MOIST - TOOK [15SS04800002]	0			
	2				SOFT	YELLOW BRN	ROCK FRAGS - TR ROOTS		(FILL)	0			
					M STIFF		SILTY CLAY - SOME ROCK FRAGS		MOIST (FILL)	0			
S-2 @ 15 25			4/4			TO GRAY			TOOK [15SB0480206] ALSO [FD12090401]	0			
	6								AND DO MS/MSD	0			
										0			
S-3 @ 15 30			4/4	7.5									
				8.5	LOOSE	TAN	CLAYEY SAND	SC	MOIST	0			
					SOFT	GRAY BRN	SILTY CLAY - TR OIL STAINS OR TAR		TOOK SAMPLE HERE [15SB0480610]	0			
	10			10						0			
				11'					FILL TO 10 ± ?	0			
S-4 @ 15 50			4.5/5		SOFT	GRAY	CLAYEY SILT / SILTY CLAY TR ROOTS/ORANICS	CL / ML	LOOKS WATE 11' MOIST → WET	0			
				14'					TOOK [15SB0481015]	0			
	15			15	M STIFF	YELLOW BRN	SILTY CLAY TO SANDSTONE FRAGS			0			
				REF @ 15									
							SCREEN 10-15		NOT MAKING MUCH WATER DECIDE TO SET TW				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ✓ No _____ Well I.D. #: 15TW048

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB049
DATE: 12-14-04
GEOLOGIST: CONTI
DRILLER: JG

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sample BZ	Borehole**	Driller BZ**
S-1 @	0			1.0	M STIFF	BRN	SILTY/CLAYEY SAND	SC	MOIST	0			
1430	2			REF			TR- ROCK & ROOTS		[15SS049000Z]	0			
							HAND AUGER						
							REF ≈ 1'						
									MOVED CLOSER TO STREAM CHANNEL THAN ORIGINAL LOC.				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB050
DATE: 12-13-04
GEOLOGIST: CONTI
DRILLER: MCFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 1355	0		2/2		STIFF	YELLOW GRAY BRN	CLAYEY SAND - TR ROOTS (MOTTLD)	SC	MOIST	0			
	2								CLEAN	0			
										0			
S-2 @ 1400			4/4	3.5									
					DENSE	BRN YELLOW	WEATH SANDSTONE AND CLAYEY SAND		MOIST → DAMP	0			
									CLEAN	0			
	6			BOTM @ 6'						0			
							NOT REF						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB51
DATE: 12-13-04
GEOLOGIST: CONTI
DRILLER: McFALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1	0		2/2	1.0	LOOSE	BRN TO GRAY	3' TOPSOIL TO SILTY CLAY TO SILTY SAND &	SM	MOIST CLEAN	0			
@ 1410	2				STIFF	GRAY YELLOW	ROAD GRAVEL CLAYEY SAND	SC	MOIST	0			
						BRN	TR ROOTS (MOTTLD)		↓	0			
S-2 @ 1415			4/4				TO		DAMP (CLEAN)	0			
										0			
	6			BOTM 6'			TR SANDSTONE FRAG LAST 6" NOT REF		DRY	0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB052
DATE: 12-13-04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1	0		2/2	1	SOFT TO		TOP 3" TOPSOIL						
@ 1430	2			2	M STIFF	YELLOW BRN	SANDY CLAY -TR	SC	MOIST-CLEAN	0			
					STIFF	YELLOW GRAY	ROOTS CLAYEY SAND/			0			
S-2 @			4/4			BRN	SANDY CLAY - TR ROOTS		MOIST-CLEAN	0			
1435							(MOTTLD)			0			
	6			6' BOTM			TR ROCK FRAGS			0			
							NOT REF		DRY				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB053
DATE: 12-13-04
GEOLOGIST: CONTI
DRILLER: MCFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1	0		2/2		SOFT TO	BRN	2" TOPSOIL CLAYEY SILT - TR	ML	MOIST	0			
e 0915	2			2	M STIFF	GRAY	ROOTS		LOOKS NAT. AND (CLEAN)	0			
					STIFF	ORANG BRN	CLAYEY SAND - TR	SC	MOIST	0			
S-2 e			2.8/4			GRAY	ROOTS		(CLEAN)	0			
0920										0			
	6			6'		BRN	SANSTONE IN SHOE			0			
				REF									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB054
DATE: 12/13/04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 C	0		2/2		SOFT	YELLOW BRN	SANDY CLAY - TR ROOTS	SC	MOIST → WET	0			
1340	2				TO				CLEAN	0			
					M	YELLOW BRN	CLAYEY SAND	SC	MOIST	0			
S-2 C			4/4		STIFF	GRAY	(MOTTLD)		CLEAN	0			
1345				5			CLAYEY SAND AND	SC		0			
	6			6' BOTTM	DENSE		WEATHERED SANDSTONE	VBR	NOT REF	0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB055
DATE: 12-13-04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 C	0		2/2		SOFT TO	YEL BRN	3" TOPSOIL TO SANDY CLAY-TR	SC	MOIST-CLEAN	0			
1550	2			2	M STIFF		ROOTS-TR ROCK FRAGS			0			
					TO	YELLOW GRAY	CLAYEY SAND-	SC	MOIST	0			
S-2 C			3.5/4		STIFF	BRN	TR ROOTS TR ROCK FRAGS		"CLEAN"	0			
1600							(MOTTLD)			0			
	6			6' BOTM						0			
							NOT REF.		HOLE DRY.				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15 SB056
DATE: 12-13-04
GEOLOGIST: CONTI
DRILLER: McFAUL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1	0		2/2		SOFT	BRN	3" TOPSOIL						
e							SANDY CLAY-TR ROOTS	SC	MOIST	0			
1540	2			2					CLEAN	0			
					SOFT	BRN GRAY	CLAYEY SILT-TR ROOTS	ML	MOIST → WET	0			
S-2			3.8/4			TO GRAY			(CLEAN)				
e										0			
1545										0			
	6			6'						0			
				BOTM			NOT REF						
									HOLE IS DRY				
									POSSIBLE CHANNEL HERE				
									GRAY MATL IS DIFFERENT THAN				
									OTHER BORINGS BUT LOOKS NAT AND "CLEAN"				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB057
DATE: 12-13-04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ
S-1 e	0		2/2		SOFT TO	BRN	TOP 3" TOPSOIL		MOIST - CLEAN	0			
0925	2			2'±	M STIFF		CLAYEY SILT - TR ROOTS TO			0			
					TO STIFF	ORANG BRN	CLAYEY SAND - TR		MOIST - CLEAN	0			
S-2 e			4/4			GRAY	ROOTS (MOTTLD)			0			
0930										0			
6										0			
				7'±						0			
S-3 e			4/4		LOOSE	ORANG BRN	WEATHERED SANDSTONE		MOIST - CLEAN	0			
0935					DENSE		AND SOME CLAYEY SAND SEAMS		HOLE IS DRY	0			
9.5	9.5			9.5 REF @ BOTM						0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB058
DATE: 12/13/04
GEOLOGIST: CONTI
DRILLER: MCFALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 1300	0		2/2		M STIFF	BRN	CLAYEY SAND TR ROOTS	SC	MOIST - (CLEAN)	0			
	2									0			
					STIFF	YELLOW BRN GRAY	CLAYEY SAND/ SANDY CLAY TR REDDISH (MOTLD)	SC	MOIST (CLEAN)	0			
S-2 @ 1325			4/4							0			
							SANDSTONE IN SHOE			0			
	6			6' BOTM						0			
									NOT REFUSAL				
									DRY HOLE				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 10° N PHOTO

Drilling Area Background (ppm): 0

Converted to Well: Yes _____ No _____ Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 1558059
DATE: 12/13/04
GEOLOGIST: CONTI
DRILLER: McFAU

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 e	0		2/2		STIFF	GRAY	YELLOW CLAYEY SAND-	SC	MOIST CLEAN	0			
10 45	2					BRN	TR ROOTS						
							TR ROCK FRAGS			0			
					TO		(MOTTLED)						
										0			
S-2 e			3.8/4		M STIFF		CLAYEY SAND/						
							SANDY CLAY MIX	SC	MOIST CLEAN	0			
10 50							TR ROOTS						
							TR ROCK			0			
	6			6			FRAG.			0			
				BOTM					NOT REF				
									STOP AT 6'				
									PER QAP				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ____ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB060
DATE: 12-13-04
GEOLOGIST: CONTI
DRILLER: MCFALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 e	0		2/2		M STIFF	YELLOW BRN	SANDY CLAY - TR	SC	MOIST	0			
10/5	2						ROOTS TR ROCK FRAGS		"CLEAN"	0			
					M STIFF	GRAY YELLOW	SANDY CLAY	SC	MOIST	0			
S-2 e			4/4			BRN	TR ROOTS - TR ROCK FRAG		"CLEAN"	0			
10/20							(MOTTLD)			0			
	6			6' BOTM					DRY HOLE	0			
									NOT REFUSAL				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #:

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15 SB061
DATE: 12-13-04
GEOLOGIST: CONTI
DRILLER: MCFALL

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 C	0		2/2	5			3" TOPSOIL						
9 4 0	2			1	STIFF	YELLOW BRN GRAY	CLAYEY SAND TR ROOTS	SC	MOIST (CLEAN)	0			
							TR ROCK FR TO			0			
S-2 C			4/4	4'½			SILTY SAND - TR CLAY AND ROCK FRAGS		MOIST (CLEAN)	0			
0 9 4 5				5'	M DENSE		(MOTLD)	SM	WET ZONE @ 5'	0			
	6			6	DENSE	ORANG BRN	CLAYEY SAND SOME SANDSTONE FRAG.			0			
				BGM & REF									
									HOLE DRY BUT DECIDE TO				
									SET WELL SCREEN 1-6				
									BASED ON				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ✓ No ____ Well I.D. #: 15TW061

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N1245
DRILLING COMPANY: EFS, INC.
DRILLING RIG: DPT RIG

BORING No.: 15SB062
DATE: 12-14-04
GEOLOGIST: CONTI
DRILLER: JG

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sample BZ	Borehole**	Driller BZ**
S-1	0				M STIFF	YELLOW BRN	SILTY/SANDY CLAY	SC	MOIST [15SS0620002]	0			
1330	2						TR ROOTS						
S-2					SOFT		SILTY CLAY	CL	WET	0			
1340	3.5			3.5					[15SB0620206]	0			
				REF									
							HAND AUGER REF @ 3.5						
									MOVED 062 TO STREAM CHANNEL - WAS INSTALLED AS ALT TO SB047				
									MS/MSD ON 0002				
									FD12140201 ALSO 0002				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

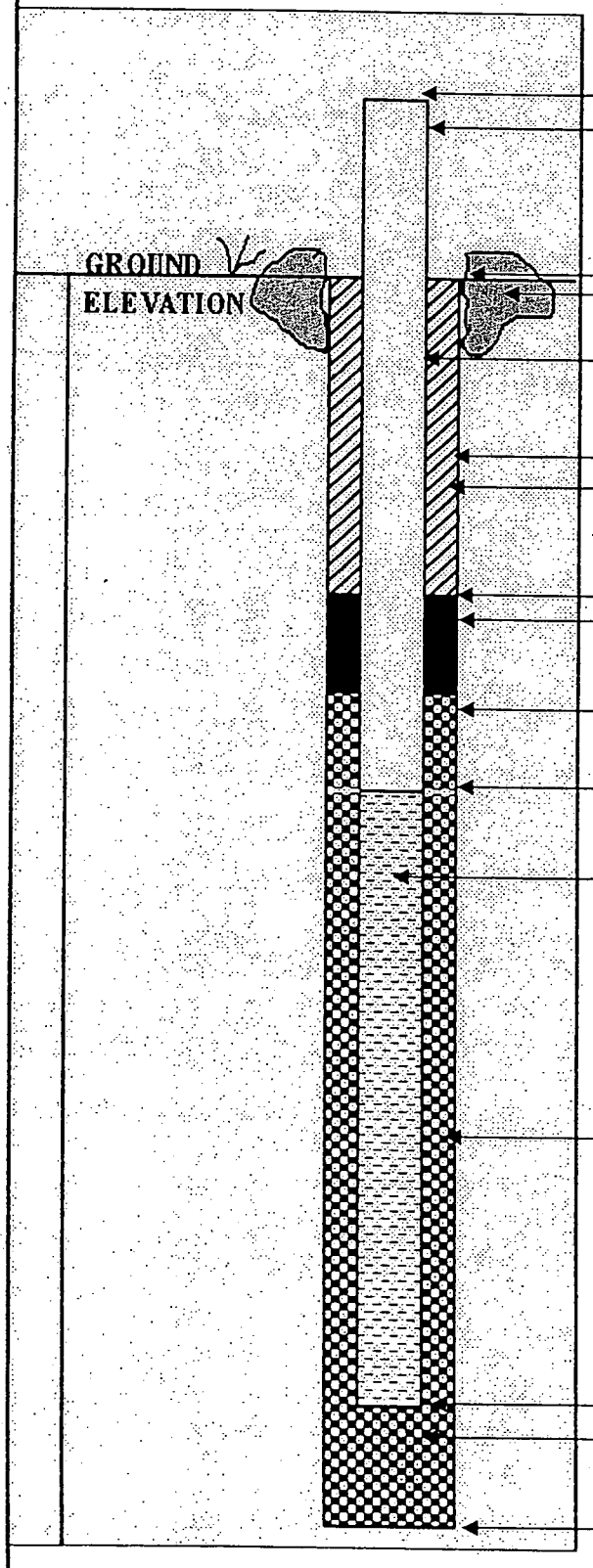
Drilling Area Background (ppm): 0

Converted to Well: Yes ✓ No _____ Well I.D. #: 15TW062

BORING NO.: ~~15TW002~~ 15TW001 JHF

Tetra Tech NUS, Inc. **TEMPORARY MONITORING WELL SHEET**

PROJECT:	NSWC Crane	DRILLING Co.:	EFS	BORING No.:	~~15TW002~~ 15SB002 JHF
PROJECT No.:	N1245	DRILLER:	McFAU	DATE COMPLETED:	12/8/04
SITE:	15	DRILLING METHOD:	DPT	NORTHING:	1317491.74
GEOLOGIST:	Conti	DEV. METHOD:	NA	EASTING:	3027519.72



ELEVATION OF TOP OF RISER PIPE: NA

RISER STICK-UP ABOVE GROUND SURFACE: NA

GROUND ELEVATION: 758.07

TYPE OF SURFACE SEAL: NA

RISER PIPE I.D.: 3/4"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 3"

TYPE OF SEAL: NA

ELEVATION / DEPTH OF SEAL: / NA

TYPE OF SEAL: NA

ELEVATION / DEPTH TOP OF FILTER PACK: / NA

ELEVATION / DEPTH TOP OF SCREEN: 757.07 / 1

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: 10 SL x 5'

I.D. OF SCREEN: 3/4"

TYPE OF FILTER PACK: NA

ELEVATION / DEPTH BOTTOM OF SCREEN: 752.07 / 6

ELEVATION / DEPTH BOTTOM OF FILTER PACK: / NA

TYPE OF BACKFILL BELOW WELL: NA

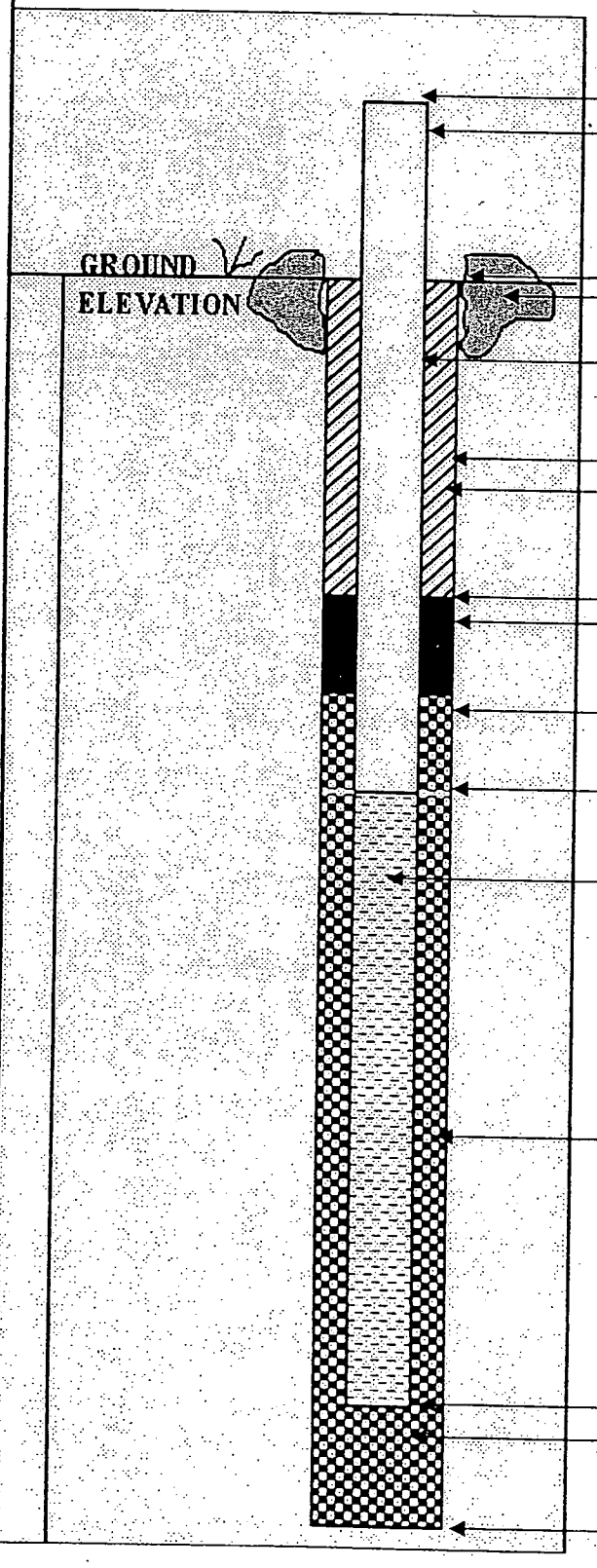
ELEVATION / DEPTH OF BOREHOLE: 752.07 / 6

15TW002

BORING NO.: ~~15TW006~~

Tetra Tech NUS, Inc. **TEMPORARY MONITORING WELL SHEET**

PROJECT:	NSWC Crane	DRILLING Co.:	EFS	BORING No.:	15TW006 SB
PROJECT No.:	N1245	DRILLER:	Mc FALL	DATE COMPLETED:	12/8/04
SITE:	15	DRILLING METHOD:	DPT	NORTHING:	1317451.19
GEOLOGIST:	Conti	DEV. METHOD:	NA	EASTING:	302751.32



ELEVATION OF TOP OF RISER PIPE: NA

RISER STICK-UP ABOVE GROUND SURFACE:

755.64

GROUND ELEVATION: NA

TYPE OF SURFACE SEAL: NA

RISER PIPE I.D.: 3/4"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 3"

TYPE OF SEAL: NA

ELEVATION / DEPTH OF SEAL: / NA

TYPE OF SEAL: NA

ELEVATION / DEPTH TOP OF FILTER PACK: / NA

ELEVATION / DEPTH TOP OF SCREEN: 754.64 / 1

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: 10 SL x 5'

I.D. OF SCREEN: 3/4"

TYPE OF FILTER PACK: NA

ELEVATION / DEPTH BOTTOM OF SCREEN: 749.64 / 6

ELEVATION / DEPTH BOTTOM OF FILTER PACK: / NA

TYPE OF BACKFILL BELOW WELL: NA

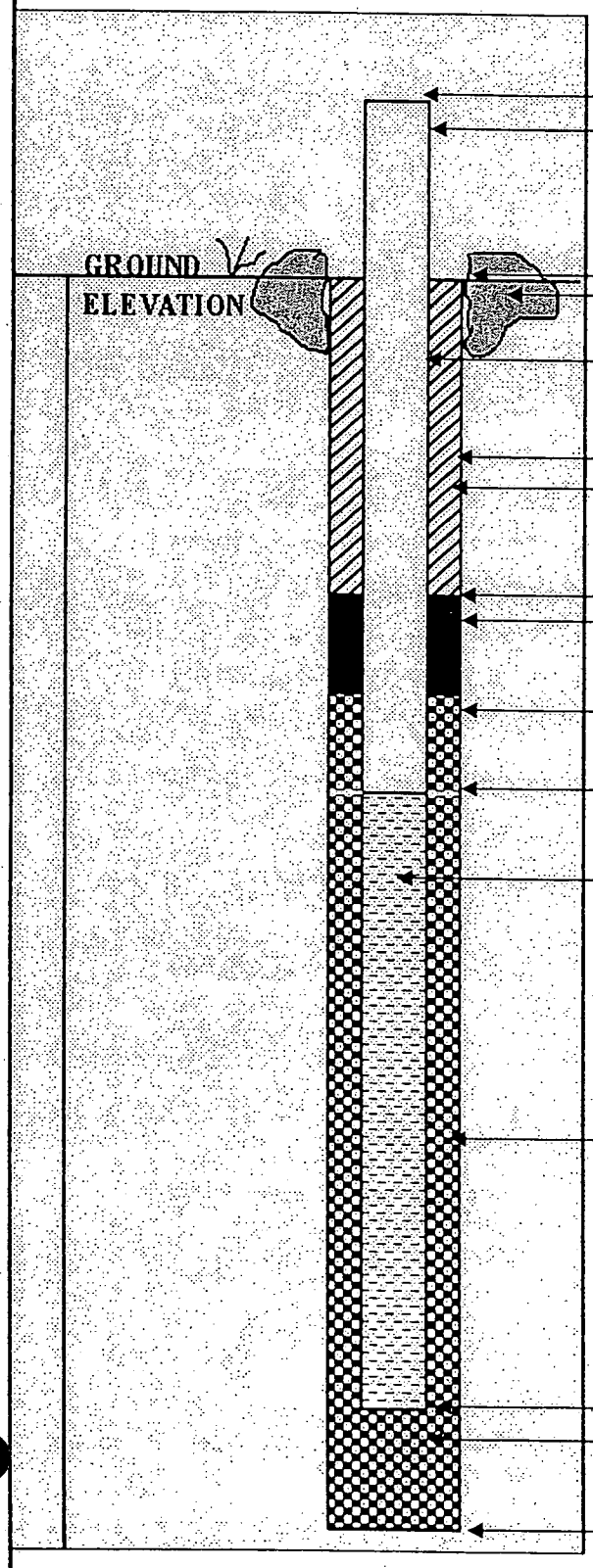
ELEVATION / DEPTH OF BOREHOLE: 749.64 / 6

15TW003

BORING NO.: ~~15TW009~~

Tetra Tech NUS, Inc. **TEMPORARY MONITORING WELL SHEET**

PROJECT:	NSWC Crane	DRILLING Co.:	EFS	BORING No.:	15SB009
PROJECT No.:	N1245	DRILLER:	McFALL	DATE COMPLETED:	12/8/04
SITE:	15	DRILLING METHOD:	DPT	NORTHING:	1317429.64
GEOLOGIST:	Conti	DEV. METHOD:	NA	EASTING:	3027643.80



ELEVATION OF TOP OF RISER PIPE: NA

RISER STICK-UP ABOVE GROUND SURFACE:

752.08

GROUND ELEVATION: NA

TYPE OF SURFACE SEAL: NA

RISER PIPE I.D.: 3/4"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 3"

TYPE OF SEAL: NA

ELEVATION / DEPTH OF SEAL: / NA

TYPE OF SEAL: NA

ELEVATION / DEPTH TOP OF FILTER PACK: / NA

ELEVATION / DEPTH TOP OF SCREEN: 747.58 / 4.5

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: 10 SL x 5'

I.D. OF SCREEN: 3/4"

TYPE OF FILTER PACK: NA

ELEVATION / DEPTH BOTTOM OF SCREEN: 742.58 / 9.5

ELEVATION / DEPTH BOTTOM OF FILTER PACK: / NA

TYPE OF BACKFILL BELOW WELL: NA

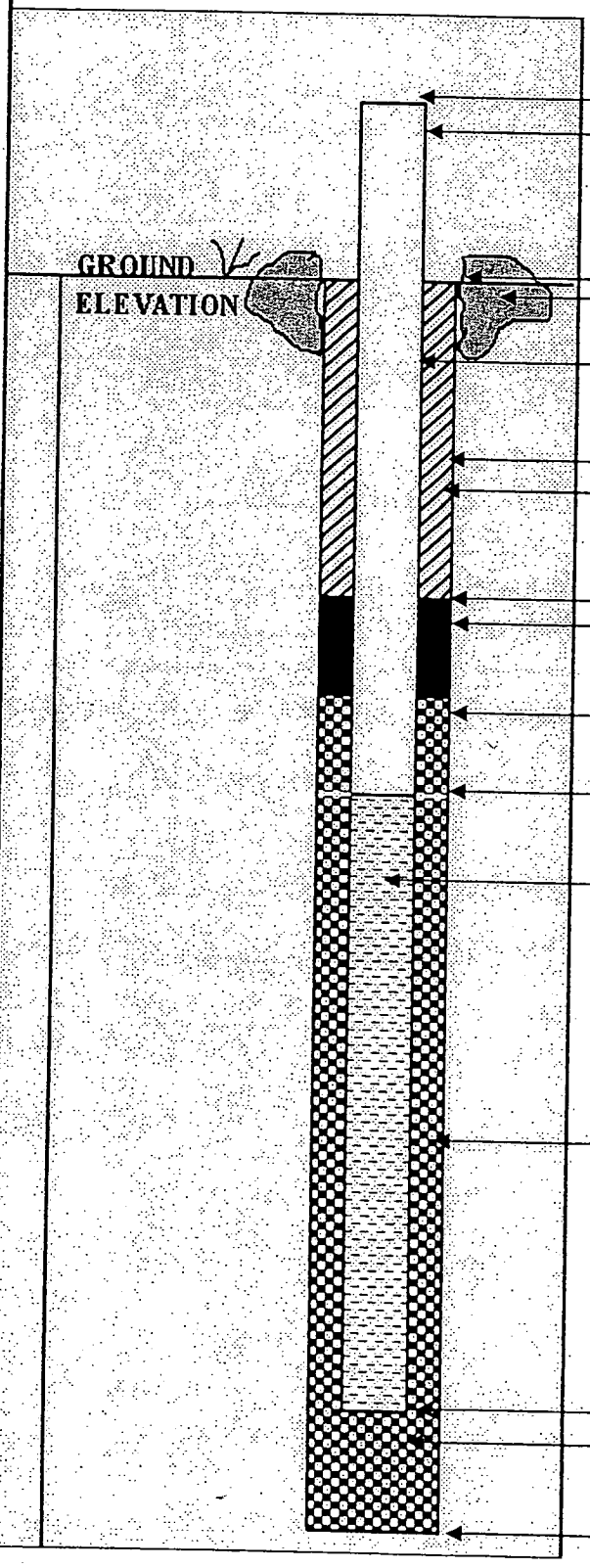
ELEVATION / DEPTH OF BOREHOLE: 742.58 / 9.5

15TW004

BORING NO. ~~15TW031~~

Tetra Tech NUS, Inc. **TEMPORARY MONITORING WELL SHEET**

PROJECT:	NSWC Crane	DRILLING Co.:	EFS	BORING No.:	15SB~~TW~~031
PROJECT No.:	N1245	DRILLER:	McFAU	DATE COMPLETED:	12/9/04
SITE:	15	DRILLING METHOD:	DPT	NORTHING:	1317470.44
GEOLOGIST:	Conti	DEV. METHOD:	NA	EASTING:	3028187.10



ELEVATION OF TOP OF RISER PIPE: NA

RISER STICK-UP ABOVE GROUND SURFACE:

GROUND ELEVATION: 756.32

TYPE OF SURFACE SEAL: NA NA

RISER PIPE I.D.: 3/4"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 3"

TYPE OF SEAL: NA

ELEVATION / DEPTH OF SEAL: / NA

TYPE OF SEAL: NA

ELEVATION / DEPTH TOP OF FILTER PACK: / NA

ELEVATION / DEPTH TOP OF SCREEN: 747.32 / 9

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: 10SL X 5'

I.D. OF SCREEN: 3/4"

TYPE OF FILTER PACK: NA

ELEVATION / DEPTH BOTTOM OF SCREEN: 742.32 / 14

ELEVATION / DEPTH BOTTOM OF FILTER PACK: / NA

TYPE OF BACKFILL BELOW WELL: NA

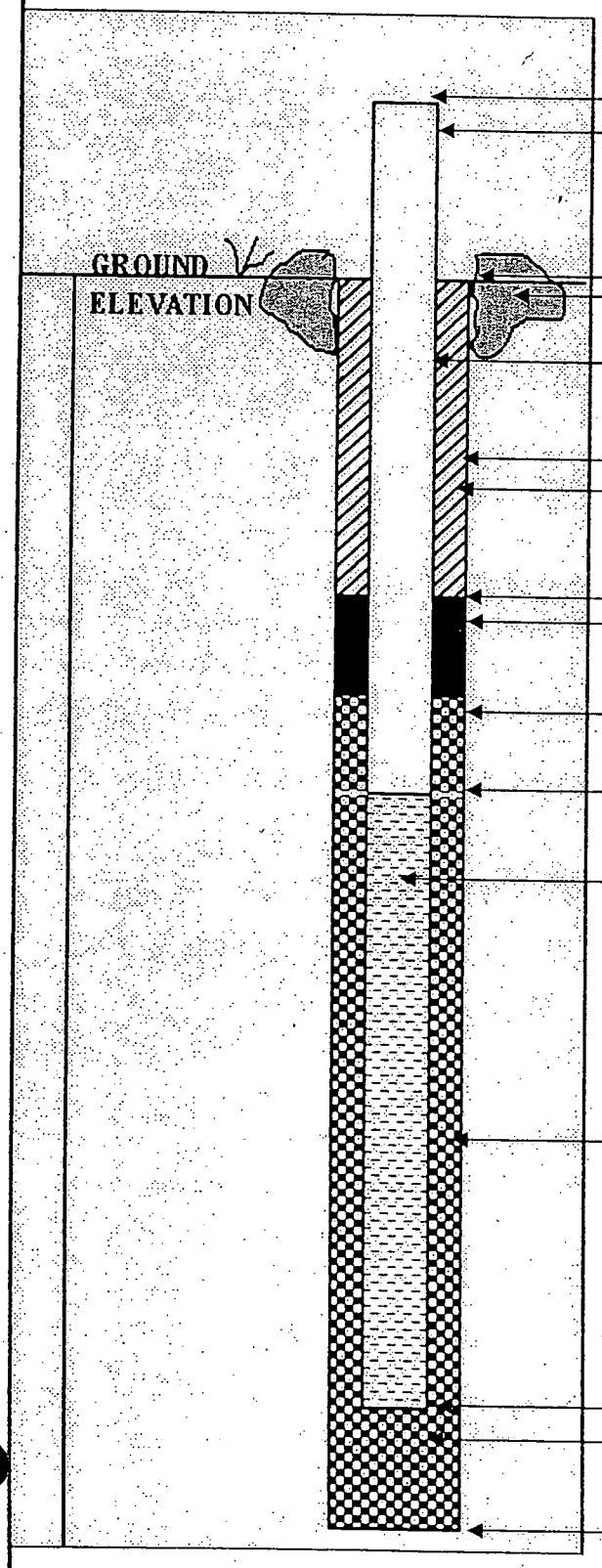
ELEVATION / DEPTH OF BOREHOLE: 742.32 / 14'

15TW005

BORING NO.: ~~15TW035~~

Tetra Tech NUS, Inc. **TEMPORARY MONITORING WELL SHEET**

PROJECT:	NSWC Crane	DRILLING Co.:	EFS	BORING No.:	15TW035
PROJECT No.:	N1245	DRILLER:	McFALL	DATE COMPLETED:	12-9-04
SITE:	15	DRILLING METHOD:	DPT	NORTHING:	1317331.38
GEOLOGIST:	Conti	DEV. METHOD:	NA	EASTING:	3028308.96



ELEVATION OF TOP OF RISER PIPE: NA

RISER STICK-UP ABOVE GROUND SURFACE:

GROUND ELEVATION: 708.40

TYPE OF SURFACE SEAL: NA

RISER PIPE I.D.: 3/4"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 3"

TYPE OF SEAL: NA

ELEVATION / DEPTH OF SEAL: / NA

TYPE OF SEAL: NA

ELEVATION / DEPTH TOP OF FILTER PACK: / NA

ELEVATION / DEPTH TOP OF SCREEN: 707.40 / 1

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: 10SL x 5'

I.D. OF SCREEN: 3/4"

TYPE OF FILTER PACK: NA

ELEVATION / DEPTH BOTTOM OF SCREEN: 702.40 / 6

ELEVATION / DEPTH BOTTOM OF FILTER PACK: / NA

TYPE OF BACKFILL BELOW WELL: NA

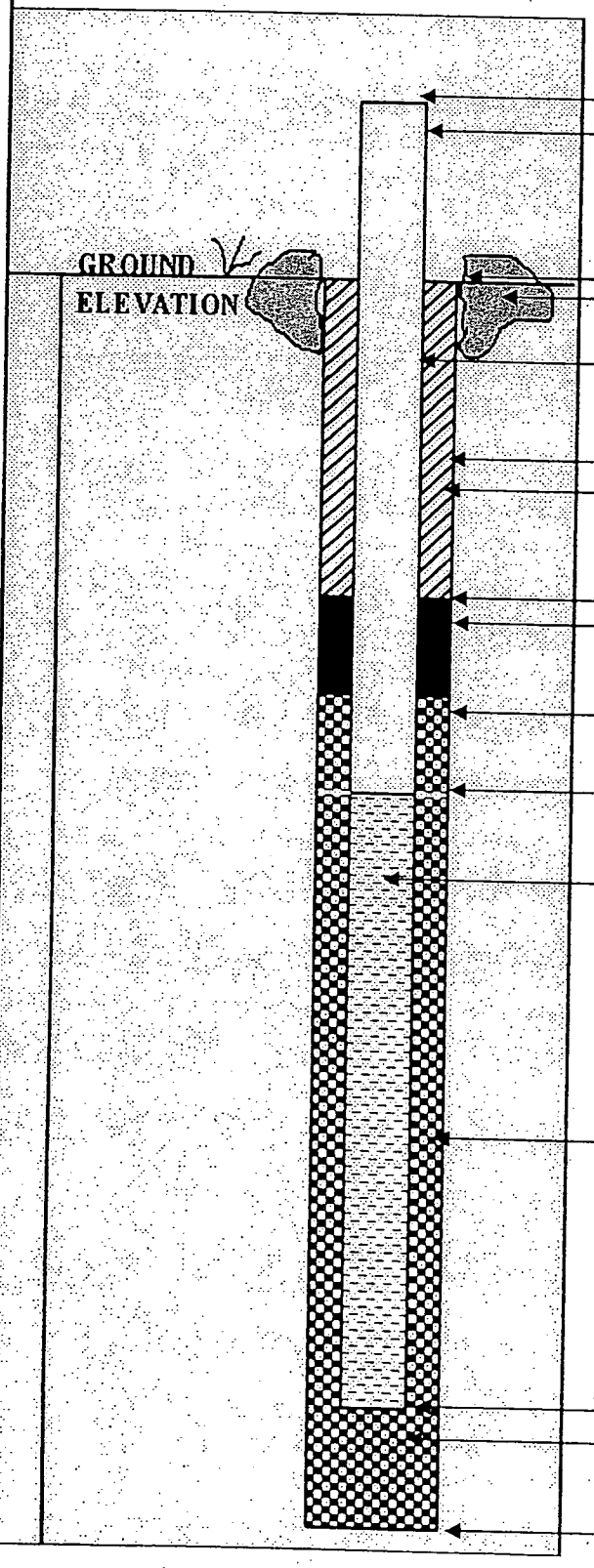
ELEVATION / DEPTH OF BOREHOLE: 702.40 / 6

15TW006

BORING NO.: ~~15TW046~~

Tetra Tech NUS, Inc. **TEMPORARY MONITORING WELL SHEET**

PROJECT:	NSWC Crane	DRILLING Co.:	EFS	BORING No.:	15TW046
PROJECT No.:	N1245	DRILLER:	McFAU	DATE COMPLETED:	12-10-04
SITE:	15	DRILLING METHOD:	DPT	NORTHING:	1317772.54
GEOLOGIST:	Conti	DEV. METHOD:	NA	EASTING:	3028437.38



ELEVATION OF TOP OF RISER PIPE: NA

RISER STICK-UP ABOVE GROUND SURFACE:

GROUND ELEVATION: 763.18

TYPE OF SURFACE SEAL: NA

RISER PIPE I.D.: 3/4"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 3"

TYPE OF SEAL: NA

ELEVATION / DEPTH OF SEAL: / NA

TYPE OF SEAL: NA

ELEVATION / DEPTH TOP OF FILTER PACK: / NA

ELEVATION / DEPTH TOP OF SCREEN: 753.18 / 10

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: 10SLx10'

I.D. OF SCREEN: 3/4"

TYPE OF FILTER PACK: NA

ELEVATION / DEPTH BOTTOM OF SCREEN: 743.18 / 20

ELEVATION / DEPTH BOTTOM OF FILTER PACK: / NA

TYPE OF BACKFILL BELOW WELL: NA

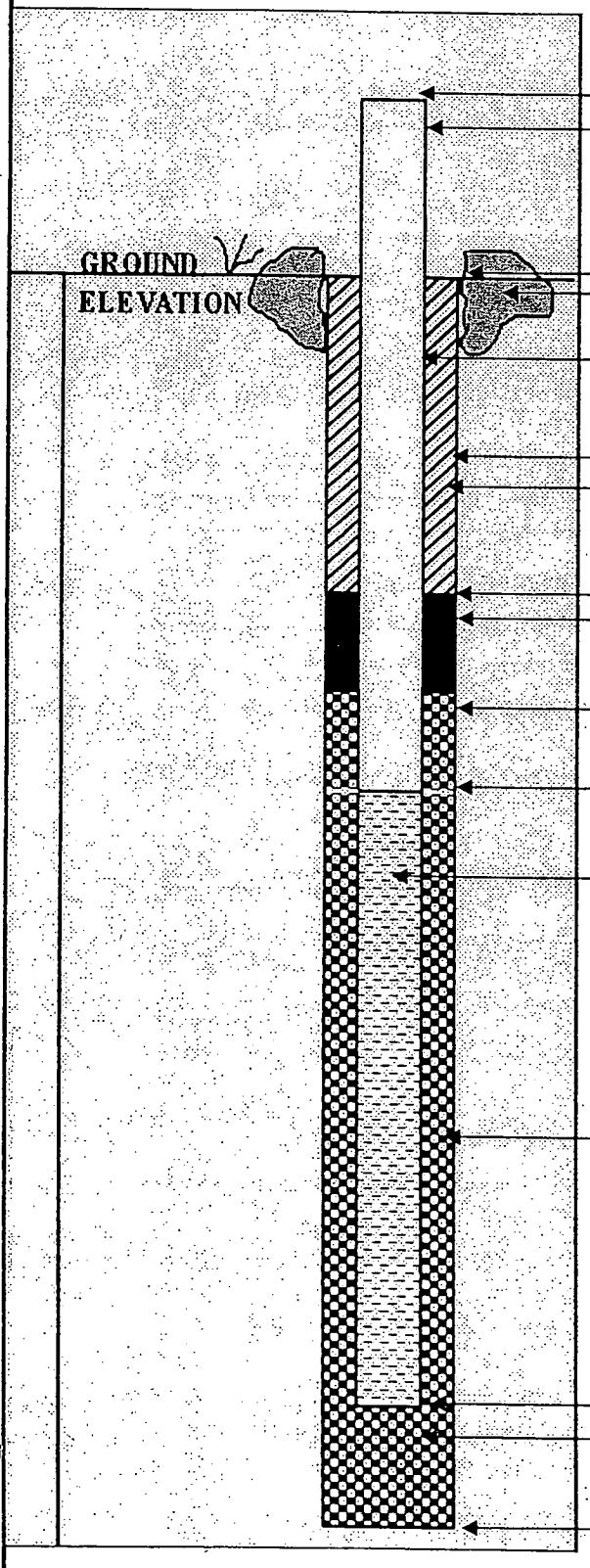
ELEVATION / DEPTH OF BOREHOLE: 743.18 / 20

15TW007

BORING NO.: ~~15TW0058~~

Tetra Tech NUS, Inc. **TEMPORARY MONITORING WELL SHEET**

PROJECT:	NSWC Crane	DRILLING Co.:	EFS	BORING No.:	15TW0048 SB
PROJECT No.:	N1245	DRILLER:	McFALL	DATE COMPLETED:	12-9-04
SITE:	15	DRILLING METHOD:	DPT	NORTHING:	1317628.25
GEOLOGIST:	Conti	DEV. METHOD:	NA	EASTING:	3028920.25



ELEVATION OF TOP OF RISER PIPE: NA

RISER STICK-UP ABOVE GROUND SURFACE:

GROUND ELEVATION: 755.69 NA

TYPE OF SURFACE SEAL: NA

RISER PIPE I.D.: 3/4"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 3"

TYPE OF SEAL: NA

ELEVATION / DEPTH OF SEAL: / NA

TYPE OF SEAL: NA

ELEVATION / DEPTH TOP OF FILTER PACK: / NA

ELEVATION / DEPTH TOP OF SCREEN: 745.69 / 10

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: 10SL x 5'

I.D. OF SCREEN: 3/4"

TYPE OF FILTER PACK: NA.

ELEVATION / DEPTH BOTTOM OF SCREEN: 740.69 / 15

ELEVATION / DEPTH BOTTOM OF FILTER PACK: / NA

TYPE OF BACKFILL BELOW WELL: NA

ELEVATION / DEPTH OF BOREHOLE: 740.69 / 15

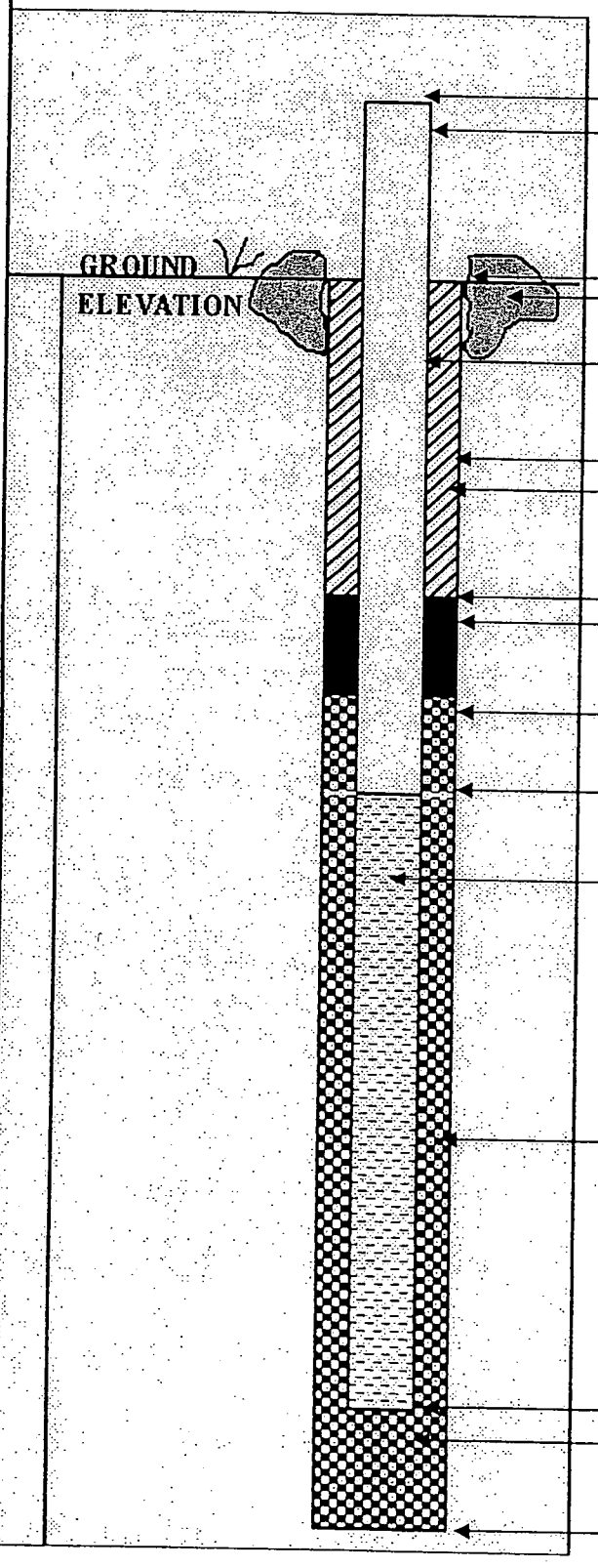
15TW009

BORING NO.: ~~15TW006~~

Tetra Tech NUS, Inc. **TEMPORARY MONITORING WELL SHEET**

PROJECT:	NSWC Crane	DRILLING Co.:	EFS	BORING No.:	15TW006
PROJECT No.:	N1245	DRILLER:	McFAU	DATE COMPLETED:	12-13-04
SITE:	15	DRILLING METHOD:	DPT	NORTHING:	1316269.81
GEOLOGIST:	Conti	DEV. METHOD:	NA	EASTING:	3027606.24

NOT SAMPLED!



ELEVATION OF TOP OF RISER PIPE: NA

RISER STICK-UP ABOVE GROUND SURFACE:

765.62

GROUND ELEVATION: NA

TYPE OF SURFACE SEAL: NA

RISER PIPE I.D.: 3/4"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 3"

TYPE OF SEAL: NA

ELEVATION / DEPTH OF SEAL: / NA

TYPE OF SEAL: NA

ELEVATION / DEPTH TOP OF FILTER PACK: / NA

ELEVATION / DEPTH TOP OF SCREEN: 764.62 / 1

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: 10 SL x 5'

I.D. OF SCREEN: 3/4"

TYPE OF FILTER PACK: NA

ELEVATION / DEPTH BOTTOM OF SCREEN: 759.62 / 6

ELEVATION / DEPTH BOTTOM OF FILTER PACK: / NA

TYPE OF BACKFILL BELOW WELL: NA

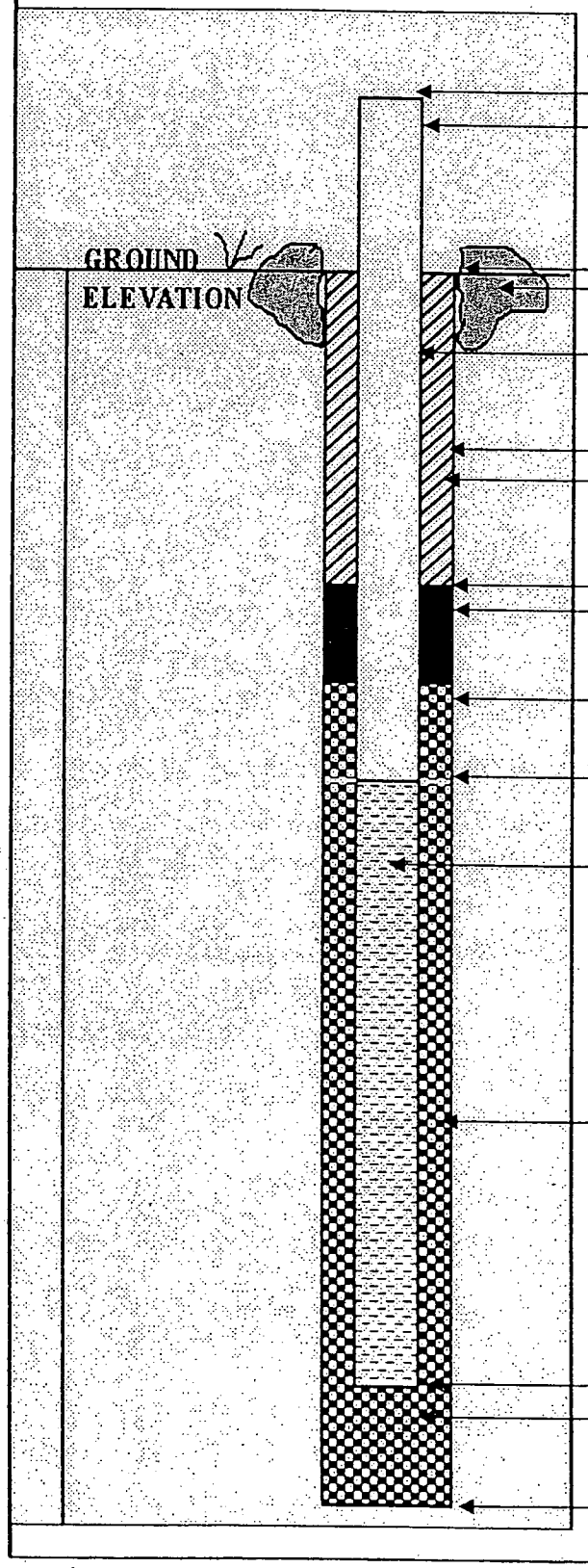
ELEVATION / DEPTH OF BOREHOLE: 759.62 / 6

15TW008

BORING NO.: ~~15TW062~~

Tetra Tech NUS, Inc. **TEMPORARY MONITORING WELL SHEET**

PROJECT:	NSWC Crane	DRILLING Co.:	EFS	BORING No.:	15TW0062
PROJECT No.:	N1245	DRILLER:	SJC	DATE COMPLETED:	12-14-02
SITE:	IS	DRILLING METHOD:	HAND AUG	NORTHING:	1317725.72
GEOLOGIST:	Conti	DEV. METHOD:	N/A	EASTING:	3028627.22



ELEVATION OF TOP OF RISER PIPE: NA

RISER STICK-UP ABOVE GROUND SURFACE:

GROUND ELEVATION: NA

TYPE OF SURFACE SEAL: NA

RISER PIPE I.D.: 3/4"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 3"

TYPE OF SEAL: NA

ELEVATION / DEPTH OF SEAL: / NA

TYPE OF SEAL: NA

ELEVATION / DEPTH TOP OF FILTER PACK: / NA

ELEVATION / DEPTH TOP OF SCREEN: / 1

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: 10 SL X 2.5'

I.D. OF SCREEN: 3/4"

TYPE OF FILTER PACK: NA

ELEVATION / DEPTH BOTTOM OF SCREEN: / 3.5

ELEVATION / DEPTH BOTTOM OF FILTER PACK: / NA

TYPE OF BACKFILL BELOW WELL:

ELEVATION / DEPTH OF BOREHOLE: / 3.5

APPENDIX B.2
DIGGING PERMITS

DIGGING PERMIT
NSWC CRANE 11000/3 (REV. 8/02)

4669

REQUESTED BY: Tetra Tech / Terry Rojak 412-921-8857
DATE: 11/18/04

WORK REQUEST ON E/S NO.: Bldg 106 Area

WORK WILL BE PERFORMED BY: TetraTech NUS, Inc.
DATE (Start - on or about): 12/3/04

WORK DESCRIPTION: Soil borings to obtain surface & subsurface samples. Locations are: North, East, & South of Building 106. Locations are marked with stakes with pink ribbon or white paint, & are solid circles on attached drawing.

EQUIPMENT TYPE
☐ HAND TOOLS ☐ CORE DRILL ☐ TRENCHER ☐ BACKHOE ☐ HEAVY EQUIPMENT

Faxed CROP 2 11/18/04 **UNDERGROUND UTILITIES LOCATED IN WORK SITE**

UTILITY	PRESENT	MARKED	NOT LOCATED	REMARKS
COMPRESSED AIR CROP 2	N/A			RI 11-23-04
HIGH VOLTAGE ELECTRICAL	NA			S.P. 11-23-04
FIRE ALARM CROP 2	Yes	Yes		MA 11-22-04
GROUNDING CROP 2	N/A			11-22-04 BR
~~Exp 12/19~~ NATURAL GAS 0411190560	YES	YES		11-22-04 DEH
SECURITY ALARM CROP 2	NA			11-20 MA
SEWER	yes	yes		12-1-04 M.Wagoner
STEAM	Yes	Hot Pink Lines & Flags		11-19-04 JED
TELEPHONE Faxed 11/18/04	N/A			11-29-04
WATER	Yes	yes		12-1-04 M.Wagoner
SECOND ELECTRICAL CROP 2	N/A			11-22-04 BR
Faxed 11/19/04 GENERAL DYNAMICS/NMCI	N/A	NO	Not in Area	11-29-04 JLJ

In addition to the general precautions for excavating where underground utilites are present, comply with the following:

* Exp 12/27 0412071315

PERMIT HOLDER SIGNATURE: Terry Rojak
DATE: 12/07/04

DIGGING PERMIT APPROVED BY: Norma L. Pollman
DATE: 12/7/04

DISTRIBUTION:
ORIGINAL - Code 09Z5 File
YELLOW - Supv. At work site
PINK - Permit requestor

DIGGING PERMIT
NSWC CRANE 11000/3 (REV. 8/02)

4667

REQUESTED BY: Tetra Tech / Terry Rojahn 412-921-8857

DATE: 11/17/04

WORK REQUEST ON/E/S NO.: E side H-45, S of B-3287 & N of B-3[illegible]

WORK WILL BE PERFORMED BY: Tetra Tech NUS, INC.

DATE (Start - on or about): 12/3/04

WORK DESCRIPTION: Soil borings to obtain surface & subsurface soil samples: Locations are marked with wooden staked with pink ribbon. Location are annotated by solid circles on attached drawing.

EQUIPMENT TYPE

- [ ] HAND TOOLS
- [x] CORE DRILL
- [ ] TRENCHER
- [ ] BACKHOE
- [ ] HEAVY EQUIPMENT

Faxed CROP2 11/17/04

UNDERGROUND UTILITIES LOCATED IN WORK SITE

UTILITY	PRESENT	MARKED	NOT LOCATED	REMARKS
COMPRESSED AIR CROP2	N/A			RN 11-18-04
HIGH VOLTAGE ELECTRICAL	NA			SP 11-23-04
FIRE ALARM CROP2	NA			MH 11-20
GROUNDING CROP2	N/A			11-18-04 BL
NATURAL GAS	N/A			11/17/04 dm
SECURITY ALARM CROP2	NA			MH 11-20
SEWER	N/A			12-1-04 M Wagoner
STEAM	N/A			11-19-04 JCD
TELEPHONE Faxed 11/17/04	N/A			LP 12-6-04
WATER	N/A			12-1-04 M Wagoner
SECOND ELECTRICAL CROP2	N/A			11-18-04 BL
GENERAL DYNAMICS/NMCI Faxed 11/17/04	NA			11-18-04 JL

In addition to the general precautions for excavating where underground utilites are present, comply with the following:

PERMIT HOLDER SIGNATURE: Terry Rojahn

DATE: 12/07/04

DIGGING PERMIT APPROVED BY: Donna L. Zollman

DATE: 12/7/08

DISTRIBUTION:

ORIGINAL - Code 09Z5 File
YELLOW - Supv. At work site
PINK - Permit requestor

DIGGING PERMIT
NSWC CRANE 11000/3 (REV. 8/02)

4668

REQUESTED BY: Tetra Tech / Terry Rojahn 412-921-8857

DATE: 11/17/04

WORK REQUEST ON E/S NO.

Hwy 555, B-3330, B-2693 Areas

WORK WILL BE PERFORMED BY: Tetra Tech NUS, Inc.

DATE (Start - on or about): 12/3/04

WORK DESCRIPTION

Soil borings to obtain surface & subsurface samples. Location are: South & east off Highway 555; south & west of Building 3330; North, east & west of Building 2693. Marked with stakes with pink ribbon, or white paint. Locations are solid circles on attached drawing.

EQUIPMENT TYPE

☐ HAND TOOLS ☐ CORE DRILL ☐ TRENCHER ☐ BACKHOE ☐ HEAVY EQUIPMENT

Faxed CROP1+2 11/17/04

UNDERGROUND UTILITIES LOCATED IN WORK SITE

UTILITY	PRESENT	MARKED	NOT LOCATED	REMARKS
COMPRESSED AIR CROP1	N/A			KG 12-2-04
HIGH VOLTAGE ELECTRICAL	yes	yes	see note *	S.D. 11-23-04
FIRE ALARM CROP1	N/A	N/A		SEG 11-18-04
GROUNDING CROP1	N/A			KG 12-2-04
NATURAL GAS See Below	YES	YES		DFH 11-22-04
SECURITY ALARM CROP2	NA			MH 11-20
SEWER	yes	yes		12-1-04 M.W. Agner
STEAM 3330	N/A			11-18-04 GCD
TELEPHONE Faxed 11/17/04	N/A			LP 11-29-04
WATER	yes	yes		12-1-04 M.W. Agner
SECOND ELECTRICAL CROP1	yes	yes		11-30-04 KG
GENERAL DYNAMICS/NMCI Faxed 11/17/04	NA			11-18-04

In addition to the general precautions for excavating where underground utilites are present, comply with the following:

0412071308, 0412071310, 0412071312
0411190569, 0411190572, 0411190582 Exp 12/9 12/27

* Marked at 12-13-04

PERMIT HOLDER SIGNATURE: Terry Rojahn

DATE: 12/07/04

DIGGING PERMIT APPROVED BY: Donna L. Zollman

DATE: 12/7/04

DISTRIBUTION:

ORIGINAL - Code 09Z5 File
YELLOW - Supv. At work site
PINK - Permit requestor

APPENDIX B.3
HEALTH AND SAFETY DOCUMENTATION

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, PA 15220
Tel 412.921.7090 • Fax 412.921.4040 • www.tetratech.com

PITT-2-5-050

February 25, 2005

Project Numbers N1245, N6878, and 00042

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: William Gates (Code ES31)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers 0331, 0357, and 0376

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. employees under the CLEAN contract, and to attest that the individuals identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; surface water, seep and sediment sampling; and soil sampling using DPT and hand augering techniques at the NSWC Crane site in Indiana. This is scheduled to be conducted from February 28 through March 16, 2005. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow these listed health and safety plans.

- Health and Safety Plan for RCRA Facility Investigation at Building 106 Pond (SWMU 8) and Roads and Grounds Area (SWMU 15), dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Environmental Indicator Investigation for SWMUs 18, 19, 20, and the Old Gun Tub Storage Lot, dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Cast High Explosives Fill and B-146 Incinerator, dated August 2004, prepared under CTO 0343.
- Health and Safety Plan for Mine Fill A (SWMU 12), Revision 1, dated August 2004, prepared under CTO 0357.
- Health and Safety Plan for Risk Assessment and CMS at Solid Waste Management Unit (SWMU) 9, dated February 2005, prepared under CTO 0376.

These individuals are as follows:

Jim Goerdt
Terry Rojahn

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, PA 15220
Tel 412.921.7090 • Fax 412.921.4040 • www.tetratech.com

PITT-12-4-053

December 30, 2004

Project Numbers 3961, 1245, 7448, and 6878

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: William Gates (Code ES31)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers 0160, 0331, 0343, an[redacted]

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. employees under the CLEAN contract, and to attest that the individuals identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; surface water, seep and sediment sampling; and soil sampling using DPT and hand augering techniques at the NSWC Crane site in Indiana. This is scheduled to be conducted from January 4-28, 2005. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow these listed health and safety plans.

- Health and Safety Plan for Solid Waste Management Unit 7, dated December 2004, prepared under CTO 0160.
- Health and Safety Plan for RCRA Facility Investigation at Building 106 Pond (SWMU 8) and Roads and Grounds Area (SWMU 15), dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Environmental Indicator Investigation for SWMUs 18, 19, 20, and the Old Gun Tub Storage Lot, dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Cast High Explosives Fill and B-146 Incinerator, dated August 2004, prepared under CTO 0343.
- Health and Safety Plan for Mine Fill A (SWMU 12), Revision 1, dated August 2004, prepared under CTO 0357.

These individuals are as follows:

Stan Conti
Colin Doolan
Jim Goerdt
Terry Rojahn

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, PA 15220
Tel 412.921.7090 • Fax 412.921.4040 • www.tetratech.com

PITT-12-4-003

December 3, 2004

Project Number N6878

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: William Gates (Code ES31)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers 0160, 0331, 0343, and 0357

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. employees under the CLEAN contract, and to attest that the individuals identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; surface water, seep and sediment sampling; and soil sampling using DPT and hand augering techniques at the NSWC Crane site in Indiana. This is scheduled to be conducted from December 6, 2004 through December 17, 2004. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow these listed health and safety plans.

- Health and Safety Plan for Solid Waste Management Unit 7, dated December 2004, prepared under CTO 0160.
- Health and Safety Plan for RCRA Facility Investigation at Building 106 Pond (SWMU 8) and Roads and Grounds Area (SWMU 15), dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Environmental Indicator Investigation for SWMUs 18, 19, 20, and the Old Gun Tub Storage Lot, dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Cast High Explosives Fill and B-146 Incinerator, dated August 2004, prepared under CTO 0343.
- Health and Safety Plan for Mine Fill A (SWMU 12), Revision 1, dated August 2004, prepared under CTO 0357.

These individuals are as follows:

Stan Conti
Jim Goerdt
Terry Rojahn
Donald Westerhoff

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Colin A. Doolan

has successfully completed an 8-hour course of instruction in
OSHA 29 CFR 1910.120

GENERAL SITE WORKER
REFRESHER TRAINING

prepared and instructed by Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

December 23, 2004
Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Baseline Examination

UPDATE

EMPLOYEE:	Doolan, Colin	**COMPANY:**	TT/NUS
SSN:	XXX-XX-8351	**POSITION:**	Earth Scientist
DATE OF EXAM:	12/02/2004	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	12/02/2006	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS: ***Status changed to Biennial.***

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 12/07/04

Signature: Peter P. Greaney MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

APPLIED EDUCATIONAL SERIES

James D. Goerdt

APPLIED ASSOCIATES INTERNATIONAL INC.

CERTIFICATE

OSHA, 1910.120
Hazardous Waste Operations and Emergency Response 40 Hour Course

ISSUE DATE: December 13, 1991

EXPIRATION: December 13, 1992

CERTIFICATE: HAZ9112001058

STEVEN L. WILLIAMS
President

THOMAS O. MURRAY
Certified Industrial Hygenist

P. O. Box 300068
Fern Park, Florida 32730-0068

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Jim Goerdt

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

October 22, 2004

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Goerdt, James	COMPANY:	TT/NUS
SSN:	481-86-2691	POSITION:	Environmental Scientist
DATE OF EXAM:	11/07/2003	LOCATION:	TT/NUS-Pittsburgh
EXPIRATION DATE:	11/07/2005	SITE:	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.
2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:
3. ☐ **NOT QUALIFIED**
4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Scott Hardy, M.D. Date: 11/11/03

Signature: Scott Hardy MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, Pennsylvania 15220-2745
(412) 921-7090 • FAX (412) 921-4040 • www.tetratech.com

March 11, 2003

Mr. Stanley Conti
Tetra Tech NUS, Inc.
Foster Plaza 7
661 Andersen Drive
Pittsburgh, PA 15220

Whom It May Concern:

This letter is to certify that Mr. Stanley Conti successfully completed a course of instruction in Hazardous Materials Handling for Hazardous Waste Site Workers which meets the criteria established in 29 CFR 1910.120(e)(3)(i). This course was prepared and conducted by Tetra Tech NUS (formerly Brown and Root Environmental, a division of HALLIBURTON NUS Corporation) in September 1983. If you have any questions, please feel free to contact me.

Very truly yours,

James K. Lafley
Manager, Training Resources

JKL:lld

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Stan Contl

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER
AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

May 14, 2004
Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

WORKCARE™

A Trademark of WorkCare, Inc.

RELEASE TO DUTY

CLINIC INSTRUCTIONS: Complete and give to employee before they leave the facility. This is a requirement of Tetra-Tech.

Employee Name: Stanley J. Conti

Office Location: PIT

Yes	No	
☑	☐	To work with hazardous materials in accordance with 29 CFR 1910.120.
☑	☐	To use respiratory protective equipment in accordance with 29 CFR 1910.134.

Based on the limited information available to me at this time, I find no necessity for immediate restrictions and I release this employee for duty. It is understood and agreed upon by the employer or potential employer of this examinee that subsequent comprehensive review of all laboratory and other test data by WorkCare may detect health conditions not apparent to me. It is further agreed and understood that such health conditions may necessitate the need for workplace restrictions. Examination has been performed in compliance with 1910.120 and 1910.134.

Signed: [illegible] M.D.

Date: 12-6-04

Employee

Bring this form back to the office and fax it to:
Matt Soltis, Corporate Health & Safety (412) 921-4040

333 S. Anita Drive, Suite 630, Orange, CA 92868 • (714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154
E-mail: info@workcare.com • Website: www.workcare.com

NUS CORPORATION

Certificate of Training

THIS CERTIFIES THAT

TERRY ROJAHN

has successfully completed a course of instruction on

SUPERFUND TRAINING CLASS

prepared and conducted by the
NUS Corporation, Pittsburgh, Pennsylvania

SEPT. 30 - OCT. 4, 1985
Date of Award

Gary F. Smith, C.S.P.
Director; Health, Safety Training

E. Dennis Escher, P.E.
Vice President

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Terry R. Rojahn

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

February 25, 2005

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Terry Rojahn

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

January 30, 2004

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Rojahn, Terry	COMPANY:	TT/NUS
SSN:	XXX-XX-8670	POSITION:	Environmental Sampling
DATE OF EXAM:	11/05/2004	LOCATION:	TT/NUS-Pittsburgh
EXPIRATION DATE:	11/05/2006	SITE:	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 11/10/04

Signature: Peter P Greaney MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

Compliance Environmental Resources, Inc.
7002 Graham Road
Suite 202
Indianapolis, IN 46220
317-863-0008

Jay McFall

Has completed the 40 Hour Hazardous Waste Operations and Emergency Response (HAZWOPER) course in compliance with 29 CFR 1910.120 (e). He will have met the criteria for certification upon completion of 24 hours of supervised training.

Christopher A. Kinsey, CHMM, CET
Instructor
Completion Date: 02/19/04

MEDICAL APPROVAL FORM
For Employees of Environmental Field Services, Inc.

Participant Name: Jay McFall Date & Time of Examination: July 30, 2004

The above-named individual has:

1. Undergone a physical examination in accordance with OSHA 29 CFR 1910.120, and found to be medically
   (✓) qualified to perform work at hazardous work sites.
   ( ) not qualified to perform work at hazardous work sites.

- and -

2. Undergone a physical examination as per OSHA 29 CFR 1910.134, and found to be medically
   (✓) qualified to wear respiratory protection.
   ( ) not qualified to wear respirator protection.

My evaluation has been based on the following, as provided to me by the employer.

( ) A Copy of OSHA Standards 29 CFR 1910.120 and appendices.
( ) A description of the employee's duties as they relate to the employee's exposure.
( ) A list of known/suspected contaminants and their concentrations (if known)
( ) A description of any personal protective equipment used or to be used.
( ) Information from previous medical examinations of the employee which is used not readily available to the examining physician.

I, T Perri, have examined Jay McFall

Physician's Name (Print) Participant's Name (Print)

and have determined the following information:

1. Results of medical examination and test (excluding finding or diagnoses unrelated to occupational exposure):

   (N)

2. Any detected medical conditions which place the employee at increase risk of material impairment of the employee's health :

   none

3. Recommended limitations upon the employee's assigned work :

   none

I have informed this participant of the results of this medical examination and any medical conditions which require further examination of treatment.

Based on this information provided to me, and in view of the activities and hazardous potentials involved at hazardous work sites, ~~his~~ participant
(✓) may
( ) may not
perform his/her assigned tasks.

Physician's Signature : TP
Address: 5604 W. 74th
Indpls
Phone Number: 317 290 1551

FIGURE 8-2

SITE-SPECIFIC TRAINING DOCUMENTATION

My signature below indicates that I am aware of the potential hazardous nature of performing investigation activities at NSWC Crane, and that I have received site-specific training that included the elements presented below:

- Names of personnel and alternates responsible for site safety and health
- Safety, health and other hazards present on site
- Use of personal protective equipment
- Work practices to minimize risks from hazards
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- The contents of the health and safety plan including Table 5-1 and 6-1
- Emergency response procedures (evacuation and assembly points)
- Review contents of relevant Material Safety Data Sheets
- Review of Safe Work Permits

I have been given the opportunity to ask questions and that my questions have been answered to my satisfaction. The dates of my training and my medical surveillance requirements are accurate and correct to the best of my knowledge.

	Name (Printed and Signature)	Site-Specific Training Date	40-Hour Training (Date)	8-Hour Refresher Training (Date)	8-Hour Supervisory Training (Date)	Medical Exam	
1245	Jay McFall Jay McFall	12/7/04	2/19/04	N/A	N/A	7/30/04	
SWMU 9	DON WOOSTOFHOFF [illegible]	"	1/93	8/04	8/04	2/12/03	
	TERRY ROVAHN [illegible]	"	10/85	1/04	1/04	11/10/04	ALSO SWMU 9
1245 6870 7448	[illegible] [illegible]	12/8/04	12/91	10/04	NA	11/7/04	
	Stan Conti SJ Conti	12/8/04	8/83	5/04	8/84	12/6/04	
	Colin Doolan Colin Doolan	1/6/05	5/99	12/04	NA	12/04	

APPENDIX C
SAMPLE LOG SHEETS AND OTHER FIELD FORMS

APPENDIX C.1
SOIL SAMPLE LOG SHEETS

MULTIPLE SAMPLE LOG SHEET

Tetra Tech NUS, Inc.

[X] SURFACE SOIL [] SEDIMENT
[X] SUBSURFACE SOIL [] LAGOON / POND
[] OTHER _____

SIGNATURE(S): SJCoon
SAMPLER (S): SJC / JG

PROJECT NAME: NSWC CRANE
PROTECT NUMBER: N1245

LOCATION: SWMU 15 - Area of Concern A

SAMPLE No.	SAMPLE METHOD	DEPTH (Ft.)	DATE 2004	TIME	CONCENTRATION (L)LOW (H)HIGH	(G) GRAB (C) COMPOSITE	TOTAL No. OF CONTAINERS	ANALYSES: Volitiles 8260B	SVOCs w/PAHs & Herbicides	TAL Metals plus Sn				SOIL GROUP #	PID READING	SOIL DESCRIPTION
15SS0010002	DPT	0-2	12/9	0910	L	G	5	3	1	1				FILL	3	ROAD GRAVEL CLAY SAND - MOIST
15SB0010206	"	2-6	"	0915	"	"	5	3	1	1				FILL	0	CLAYEY SAND - TR ROCK
15SS0030002	"	0-2	"	0935	"	"	5	3	1	1				FILL	0	CLAY SAND ROAD GRAVEL
15SB0030206	"	2-6	"	0940	"	"	5	3	1	1				FILL	0	CLAYEY SAND / SANDY CLAY
15SS0040002	"	0-2	"	0955	"	"	5	3	1	1				FILL	0	SAND - TR CLAY ROAD GRAVEL
15SB0040206	"	2-6	"	1000	"	"	5	3	1	1				FILL	0	SANDY SILTY CLAY - TR ROCK FR

REMARKS: See Figure 3-2

LABORATORY: Laucks Testing Laboratories

COC No.: 0144

MULTIPLE SAMPLE LOG SHEET

Tetra Tech NUS, Inc.

[X] SURFACE SOIL [] SEDIMENT
[X] SUBSURFACE SOIL [] LAGOON / POND
[] OTHER _____

SIGNATURE(S): SJ Conti

SAMPLER (S): SJC/JG

PROJECT NAME: NSWC CRANE
PROTECT NUMBER: N1245

LOCATION: SWMU 15 - Area of Concern A

SAMPLE No.	SAMPLE METHOD	DEPTH (Ft.)	DATE 2004	TIME	CONCENTRATION (L)LOW (H)HIGH	(G) GRAB (C) COMPOSITE	TOTAL No. OF CONTAINERS	ANALYSES: Volitiles 8260B	SVOCs w/PAHs & Herbicides	TAL Metals plus Sn				SOIL GROUP #	PID READING	SOIL DESCRIPTION
15SS007 0002	DPT	0-2	12/8	1335	L	G	5	3	1	1				3	0	SAND, CLAYEY
15SB007 0206	"	2-6	"	1340	"	"	5	3	1	1				9	0	SAND, CLAYEY
15SS0020002	"	0-2	"	1400	"	"	5	3	1	1				Fill	0	SAND (FILL)?
15SB0020206	"	2-6	"	1405	"	"	5	3	1	1				8	0	SILT
15SB006 0002	"	0-2	"	1430	"	"	5	3	1	1				Fill	0	SAND
15SB0060206	"	2-6	"	1435	"	"	13	9	2	2				9	0	DO MS/MSD - SAND
FD12080401	"	2-6	"	0000	"	"	5	3	1	1				—	0	DUP OF [15SB0060206]
15SS0050002	"	0-2	"	1520	"	"	5	3	1	1				Fill	0	SAND/ROAD GRAVEL
15SB0050206	"	2-6	"	1525	"	"	5	3	1	1				Fill	0	CLAY/GRAVEL

REMARKS: See Figure 3-2

(O) DO MS/MSD

LABORATORY: Laucks Testing Laboratories

COC No.: 0141

MULTIPLE SAMPLE LOG SHEET

Tetra Tech NUS, Inc.

[X] SURFACE SOIL
[X] SUBSURFACE SOIL
[] OTHER _____

[] SEDIMENT
[] LAGOON / POND

SIGNATURE(S): SJ Jonte

SAMPLER (S): SJC/JG

PROJECT NAME: NSWC CRANE
PROTECT NUMBER: N1245

LOCATION: SWMU 15 - Area of Concern B & O

	SAMPLE No.	SAMPLE METHOD	DEPTH (Ft.)	DATE 2004	TIME	CONCENTRATION (L)LOW (H)HIGH	(G) GRAB (C) COMPOSITE	TOTAL No. OF CONTAINERS	ANALYSES: Volitiles 8260B	SVOCs w/PAHs	TAL Metals plus Sn				SOIL GROUP #	PID READING	SOIL DESCRIPTION
TW	15SS0090002	DPT	0-2	12/8	1120	L	G	5	3	1	1				FILL	0	SANDY CLAY - ROAD GRAVEL
TW	15SB0090206	"	2-6	"	1125	"	"	5	3	1	1				FILL	0	SILT
TW	15SB0090610	"	6-9.5	"	1130	"	"	5	3	1	1				8	0	CLAY
	15SS0100002	"	0-2	"	1240	"	"	5	3	1	1				FILL	0	SAND
	15SB0100206	"	2-6	"	1245	"	"	5	3	1	1				"	0	CLAY
	15SB0100610	"	6-9.5	"	1250	"	"	5	3	1	1				8	0	CLAY, SAND, ROCK
	15SS0080002	"	0-2	"	1255	"	"	5	3	1	1				FILL	0	SAND
	15SB0080206	"	2-6	"	1300	"	"	5	3	1	1				8	0	SILT/CLAY
	15SB0080610	"	6-9	"	1305	"	"	5	3	1	1				8	0	CLAY, ROCK FRAGS

REMARKS: See Figure 3-2

LABORATORY: Laucks Testing Laboratories

COC No.: 0138 & 0140 (TR)

MULTIPLE SAMPLE LOG SHEET

Tetra Tech NUS, Inc.

[X] SURFACE SOIL [X] SEDIMENT
[] SUBSURFACE SOIL [] LAGOON / POND
[] OTHER _____

SIGNATURE(S): SJConti

SAMPLER (S): SJC / JG

PROJECT NAME: NSWC CRANE
PROTECT NUMBER: N1245

LOCATION: SWMU 15 - Area of Concern C

SAMPLE No.	SAMPLE METHOD	DEPTH (Ft.)	DATE	TIME	CONCENTRATION (L)LOW (H)HIGH	(G) GRAB (C) COMPOSITE	TOTAL No. OF CONTAINERS	ANALYSES: Volitiles 8260B	ANALYSES: SVOCs w/PAHs & PCBs					SOIL GROUP #	PID READING	SOIL DESCRIPTION
15SS0120002	DPT	0-2	12/8	1000	L	G	4	3	1					FILL	0	SANDY SILT - SILTY SAND
15SB0120206	"	2-6	"	1010	"	"	4	3	1					9	0	CLAYEY SAND " SILT MOIST
15SS0130002	"	0-2	"	1020	"	"	4	3	1					FILL	0	SILT - MOIST
15SB0130206	"	2-6	"	1030	"	"	4	3	1					8	0	CLAY - "
15SS0110002	"	0-2	"	1035	"	"	4	3	1					FILL	0	CLAY - GRAVEL MOIST
15SB0110206	"	2-6	"	1040	"	"	4	3	1					8	0	CLAY (POSSIBLY FILL) "

REMARKS: See Figure 3-2

LABORATORY: Laucks Testing Laboratories

COC No.: 0138

MULTIPLE SAMPLE LOG SHEET

Tetra Tech NUS, Inc.

[x] SURFACE SOIL [] SEDIMENT
[x] SUBSURFACE SOIL [] LAGOON / POND
[] OTHER _____

SIGNATURE(S): SJ Conte

SAMPLER (S): SJC/JG

PROJECT NAME: NSWC CRANE
PROTECT NUMBER: N1245

LOCATION: SWMU 15 - Area of Concern G & H

SAMPLE No.	SAMPLE METHOD	DEPTH (Ft.)	DATE 2004	TIME	CONCENTRATION (L)LOW (H)HIGH	(G) GRAB (C) COMPOSITE	TOTAL No. OF CONTAINERS	ANALYSES: Volitiles 8260B	SVOCs w/PAHs, PCBs, Pesticides & Herbicides	TAL Metals plus Sn				SOIL GROUP #	PID READING	SOIL DESCRIPTION
15SS0290002	DPT	0-2	12/9	1025	L	G	5	3	1	1				FILL	0	SILTY CLAY - L.S FRAGS
15SB0290206	"	2-5	"	1030	"	"	5	3	1	1				9	0	CLAYEY SAND - ROCK FRAGS
15SS0310002	"	0-2	"	1050	"	"	5	3	1	1				FILL	0	CLAYEY SAND
15SB0310206	"	2-6	"	1055	"	"	5	3	1	1				FILL	0	CLAY - ROCK FR
15SB0310610	"	6-10	"	1100	"	"	5	3	1	1				FILL	0	CLAY
15SB0311014	"	10-14	"	1105	"	"	5	3	1	1				8	0	SILT
15SS0320002	"	0-2	"	1130	"	"	5	3	1	1				3	0	CLAY
15SB0320206	"	2-3	"	1135	"	"	5	3	1	1				9	0	SAND
15SS0350002	"	0-2	"	1150	"	"	5	3	1	1				3	0	CLAY
15SB0350206	"	2-6	"	1155	"	"	5	3	1	1				9	0	SAND
15SS0370002	"	0-2	"	1205	"	"	5	3	1	1				3	0	SILT
15SB0370206	"	0-4	"	1210	"	"	5	3	1	1				9	0	CLAY/ROCK FRAGS

REMARKS: See Figure 3-2

LABORATORY: Laucks Testing Laboratories

COC No.: 0143

Tetra Tech NUS, Inc.

MULTIPLE SAMPLE LOG SHEET

[X] SURFACE SOIL [] SEDIMENT
[X] SUBSURFACE SOIL [] LAGOON / POND
[] OTHER _____

SIGNATURE(S): SJ Conti

SAMPLER (S): STC / JG

PROJECT NAME: NSWC CRANE
PROTECT NUMBER: N1245

LOCATION: SWMU 15 - Area of Concern E, U & W

SAMPLE No.	SAMPLE METHOD	DEPTH (Ft.)	DATE 2004	TIME	CONCENTRATION (L)LOW (H)HIGH	(G) GRAB (C) COMPOSITE	TOTAL No. OF CONTAINERS	ANALYSES: Volatiles 8260B	SVOCs w/PAHs, PCBs, Pesticides & Herbicides	TAL Metals plus Sn				SOIL GROUP #	PID READING	SOIL DESCRIPTION
15SS0480002	DPT	0-2	12-9	1520	L	G	5	3	1	1				FILL	0	CLAY/ROCK FRAGS
15SB0480206	"	2-6	"	1525	"	"	13	9	2	2				FILL	0	CLAY/ROCK FRAGS
FD12090401	"	2-6	"	0000	"	"	5	3	1	1				—	0	DUP OF 15SB0480206
15SB0480610	"	6-10	"	1530	"	"	5	3	1	1				FILL	0	CLAY
15SB0481015	"	10-15	"	1550	"	"	5	3	1	1				8	0	CLAY / ROCK FRAGS (SANDSTONE)
15SB0470002	"	0-2	"	1610	"	"	5	3	1	1				3	0	SILTY CLAY

REMARKS: See Figure 3-2

○ - MS/MSD
□ - DUP

LABORATORY: Laucks Testing Laboratories

COC No.: 0144

MULTIPLE SAMPLE LOG SHEET

Tetra Tech NUS, Inc.

[x] SURFACE SOIL [] SEDIMENT
[x] SUBSURFACE SOIL [] LAGOON / POND
[] OTHER _____

SIGNATURE(S): SJ Coyne

SAMPLER (S): JG / SJC

PROJECT NAME: NSWC CRANE
PROTECT NUMBER: N1245

LOCATION: SWMU 15 - Area of Concern E, U & W

	SAMPLE No.	SAMPLE METHOD	DEPTH (Ft.)	DATE 2004	TIME	CONCENTRATION (L)LOW (H)HIGH	(G) GRAB (C) COMPOSITE	TOTAL No. OF CONTAINERS	ANALYSES: Volatiles 8260B	SVOCs w/PAHs, PCBs, Pesticides & Herbicides	TAL Metals plus Sn				SOIL GROUP #	PID READING	SOIL DESCRIPTION
	15SS0460002	DPT	0-2	12-10	0850	L	G	5	3	1	1				Fill	0	CLAY
46	15SB0460206	"	2-6	"	0855	"	"	5	3	1	1				"	5	CLAY
	15SB0460610	"	6-10	"	0900	"	"	5	3	1	1				"	0	CLAY
	15SB0461020	"	10-20	"	0915	"	"	5	3	1	1				"	0	CLAY
	15SS0450002	"	0-2	"	1000	"	"	5	3	1	1				Fill	0	CLAY
45	15SB0450206	"	2-6	"	1005	"	"	5	3	1	1				Fill	0	CLAY
	15SB0450610	"	6-10	"	1010	"	"	5	3	1	1				8	0	CLAY
	15SB0451012	"	10-12	"	1015	"	"	5	3	1	1				—	0	WEATH SHALE
	15SS0190002	"	0-2	"	1235	"	"	5	3	1	1				Fill	0	CLAY
	15SB0190206	"	2-6	"	1240	"	"	5	3	1	1				Fill	0	SANDY CLAY
	15SS0230002	"	0-2	"	1250	"	"	5	3	1	1				Fill	0	CLAY/ROCK FRAGS
	15SB0230206	"	2-6	"	1255	"	"	13	9	2	2				8	1.5	? (Poss. Fill) ODOR SANDY SILTY CLAY
	FD12100401	"	2-6	"	0800	"	"	5	3	1	1						DUP OF [15SB0230206]

REMARKS: See Figure 3-2
O - MS/MSD
[ ] - DUP

LABORATORY: Laucks Testing Laboratories

COC No.: 0145
0147

MULTIPLE SAMPLE LOG SHEET

Tetra Tech NUS, Inc.

[] SURFACE SOIL [] SEDIMENT
[] SUBSURFACE SOIL [] LAGOON / POND
[] OTHER _____

SIGNATURE(S): SJ Conta

SAMPLER (S): JG/SJC

PROJECT NAME: NSWC CRANE
PROTECT NUMBER: N1245

LOCATION: SWMU 15 - Area of Concern B & O

SAMPLE No.	SAMPLE METHOD	DEPTH (Ft.)	DATE 2004	TIME	CONCENTRATION (L)LOW (H)HIGH	(G) GRAB (C) COMPOSITE	TOTAL No. OF CONTAINERS	ANALYSES: Volitiles 8260B	SVOCs w/PAHs	TAL Metals plus Sn				SOIL GROUP #	PID READING	SOIL DESCRIPTION
15SS043000 2	DPT	0-2	12-10	1045	L	G	5	3	1	1				Fill	0	CLAY
15SB043020 6	"	2-5	"	1050	"	"	5	3	1	1				8	0	WEATH SANDSTONE
15SS042000 2	"	0-2	"	1100	"	"	5	3	1	1				Fill	0	CLAY, TR SAND, ROOTS
15SB042020 6	"	2-6	"	1105	"	"	5	3	1	1				8	0	SANDY CLAY/WEATH S.ST.
15SS044000 2	"	0-2	"	1115	"	"	5	3	1	1				Fill	0	CLAY
15SB044020 6	"	2-6	"	1120	"	"	5	3	1	1				Fill	0	SANDY CLAY/WEATH S.ST.

REMARKS: See Figure 3-2

LABORATORY: Laucks Testing Laboratories

COC No.: 0146

MULTIPLE SAMPLE LOG SHEET

Tetra Tech NUS, Inc.

[X] SURFACE SOIL [] SEDIMENT
[X] SUBSURFACE SOIL [] LAGOON / POND
[] OTHER _____

SIGNATURE(S): S Conte

SAMPLER (S): JG.

PROJECT NAME: NSWC CRANE
PROTECT NUMBER: N1245

LOCATION: SWMU 15 - Area of Concern G & H

SAMPLE No.	SAMPLE METHOD	DEPTH (Ft.)	DATE 2004	TIME	CONCENTRATION (L)LOW (H)HIGH	(G) GRAB (C) COMPOSITE	TOTAL No. OF CONTAINERS	ANALYSES: Volitiles 8260B	SVOCs w/PAHs, PCBs, Pesticides & Herbicides	TAL Metals plus Sn				SOIL GROUP #	PID READING	SOIL DESCRIPTION
15SS0300002	HA	0-2	12-14	0915	L	G	5	3	1	1				3	0	CLAYEY SILT
15SB0300206	"	2-3	"	0920	"	"	5	3	1	1				8	0	SILTY CLAY
15SS0330002	"	0-2	"	0950	"	"	5	3	1	1				3	0	SILTY CLAY (ROCK FRAGS
15SS0360002	"	0-2	"	1000	"	"	5	3	1	1				3	0	CLAYEY SAND
15SS0340002	"	0-2	"	1015	"	"	5	3	1	1				3	0	" "
15SS0410002	"	0-2	"	1050	"	"	5	3	1	1				3	0	SANDY CLAY.
15SS0380002	"	0-2	"	1145	"	"	5	3	1	1				3	0	" "

REMARKS: See Figure 3-2

LABORATORY: Laucks Testing Laboratories

COC No.: 3651

MULTIPLE SAMPLE LOG SHEET

Tetra Tech NUS, Inc.

[X] SURFACE SOIL [] SEDIMENT
[X] SUBSURFACE SOIL [] LAGOON / POND
[] OTHER _____

SIGNATURE(S): SJ Conti

SAMPLER (S): SJC/JG

PROJECT NAME: NSWC CRANE
PROTECT NUMBER: N1245

LOCATION: SWMU 15 - Area of Concern F

SAMPLE No.	SAMPLE METHOD	DEPTH (Ft.)	DATE 2004	TIME	CONCENTRATION (L)LOW (H)HIGH	(G) GRAB (C) COMPOSITE	TOTAL No. OF CONTAINERS	ANALYSES: SVOCs w/PAHs						SOIL GROUP #	PID READING	SOIL DESCRIPTION
15SS0250002	DPT	0-2	12-11	1010	L	G	1	1						FILL	0	CLAYEY SAND
15SB0250206	"	2-5	"	1015	"	"	1	1						FILL/9	0	CLAYEY SAND - S.S FRAG.
15SS0240002	"	0-2	"	1020	"	"	1	1						FILL	0	CLAY
15SB0240206	"	2-5	"	1025	"	"	1	1						—	0	WEATH SANDSTONE
15SS0260002	"	0-2	"	1030	"	"	1	1						3	0	SILT
15SB0260206	"	2-3.5	"	1035	"	"	1	1						—	0	WEATH SANDSTONE
15SS0280002	"	0-2	"	1040	"	"	1	1						—	0	ASPHALT/WEATH SANDSTONE
15SB0280206	"	2-4	"	1045	"	"	2	2						—	0	WEATHERED SANDSTONE
FD12110402	"	2-4	"	0000	"	"	1	1						—	0	DUP OF 15SB0280206
15SS0270002	"	0-2	"	1100	"	"	1	1						—	0	WEATH SHALY SANDSTONE
15SB0270206	"	2-3	"	1105	"	"	1	1						9	0	" " "

REMARKS: See Figure 3-2
○ - MS/MSD
△ DUP 02

LABORATORY: Laucks Testing Laboratories

COC No.: 3646 & 3647

MULTIPLE SAMPLE LOG SHEET

Tetra Tech NUS, Inc.

[X] SURFACE SOIL [] SEDIMENT
[X] SUBSURFACE SOIL [] LAGOON / POND
[] OTHER _____

SIGNATURE(S): SJ Conti
SAMPLER (S): SJC/JG

PROJECT NAME: NSWC CRANE
PROTECT NUMBER: N1245

LOCATION: SWMU 15 - Area of Concern D

	SAMPLE No.	SAMPLE METHOD	DEPTH (Ft.)	DATE 2004	TIME	CONCENTRATION (L)LOW (H)HIGH	(G) GRAB (C) COMPOSITE	TOTAL No. OF CONTAINERS	ANALYSES: Pesticides & Herbicides	ANALYSES: TAL Metals plus Sn					SOIL GROUP #	PID READING	SOIL DESCRIPTION
17	15SS0170002	DPT	0-2	12-11	0855	L	G	2	1	1					FILL	0	CLAY
	15SB0170206	"	2-6	"	0900	"	"	2	1	1					9	0	CLAYEY SAND
16	15SS0160002	"	0-2	"	0905	"	"	2	1	1					FILL	0	CLAY
	15SB0160206	"	2-6	"	0910	"	"	2	1	1					8/9	0	CLAYEY SAND
15	15SS0150002	"	0-2	"	0915	"	"	2	1	1					FILL	0	CLAY
	15SB0150206	"	2-6	"	0920	"	"	2	1	1					"	0	CLAYEY SAND/ROCK FRAG
18	15SS0180002	"	0-2	"	0925	"	"	2	1	1					FILL	0	CLAY
	15SB0180206	"	2-6	"	0930	"	"	2	1	1					"	0	SILTY SAND - ROCK FRAGS
14	15SS0140002	"	0-2	"	0935	"	"	2	1	1					FILL	0	CLAY
	15SB0140206	"	2-6	"	0940	"	"	4	2	2					"	0	SILTY SAND - ROCK FRAGS
	FD12110401	"	2-6	"	0000	"	"	2	1	1					—	—	DUP OF 15SB0140206

REMARKS: See Figure 3-2
○ MS/MSD
□ DUP

LABORATORY: Laucks Testing Laboratories

COC No.: 3646

MULTIPLE SAMPLE LOG SHEET

Tetra Tech NUS, Inc.

[] SURFACE SOIL [] SEDIMENT
[] SUBSURFACE SOIL [] LAGOON / POND
[] OTHER _____

PAGE 1 OF 1

SIGNATURE(S): SJConti

SAMPLER (S): SJC/JG

PROJECT NAME: NSWC CRANE
PROTECT NUMBER: N1245

LOCATION: SWMU 15 - Area of Concern E, U & W

	SAMPLE No.	SAMPLE METHOD	DEPTH (Ft.)	DATE 2004	TIME	CONCENTRATION (L)LOW (H)HIGH	(G) GRAB (C) COMPOSITE	TOTAL No. OF CONTAINERS	ANALYSES: Volatiles 8260B	SVOCs w/PAHs, PCBs, Pesticides & Herbicides	TAL Metals plus Sn				SOIL GROUP #	PID READING	SOIL DESCRIPTION
20	15SS0200002	DPT	0-2	12-10	1315	L	G	5	3	1	1				FILL	0	SANDY CLAY
	15SB0200206	"	2-6	"	1320	"	"	5	3	1	1				9	0	CLAYEY SAND
22	15SS0220002	"	0-2	"	1330	"	"	5	3	1	1				FILL	0	CLAY
	15SB0220206	"	2-6	"	1335	"	"	5	3	1	1				8	0	CLAYEY SAND / SANDY CLAY
21	15SS0210002	"	0-2	"	1340	"	"	5	3	1	1				FILL	0	CLAY, SAND
	15SB0210206	"	2-6	"	1345	"	"	5	3	1	1				FILL	0	CLAYEY SAND (? FILL)
40	15SS0400002	"	0-2	"	1445	"	"	5	3	1	1				3	0	CLAYEY SAND
	15SB0400206	"	2-6	"	1450	"	"	5	3	1	1				9	0	SILTY SAND - TR ROCK
	15SS0390002	"	0-2	"	1510	"	"	5	3	1	1				3	0	CLAYEY SAND

AOC H

REMARKS: See Figure 3-2

LABORATORY: Laucks Testing Laboratories

COC No.: 0147

MULTIPLE SAMPLE LOG SHEET

Tetra Tech NUS, Inc.

[X] SURFACE SOIL
[X] SUBSURFACE SOIL
[] OTHER _____

[] SEDIMENT
[] LAGOON / POND

SIGNATURE(S): S. Conti

SAMPLER (S): JG.

PROJECT NAME: NSWC CRANE
PROTECT NUMBER: N1245

LOCATION: SWMU 15 - Area of Concern E, U & W

SAMPLE No.	SAMPLE METHOD	DEPTH (Ft.)	DATE 2001	TIME	CONCENTRATION (L)LOW (H)HIGH	(G) GRAB (C) COMPOSITE	TOTAL No. OF CONTAINERS	ANALYSES: Volatiles 8260B	SVOCs w/PAHs, PCBs, Pesticides & Herbicides	TAL Metals plus Sn				SOIL GROUP #	PID READING	SOIL DESCRIPTION
15SS0620002	HA	0-2	12-14	1330	L	G	13	9	2	2				3	0	SILTY SANDY CLAY
15SB0620206	"	2-3.5	"	1340	"	"	5	3	1	1				8	0	SILTY CLAY
FD12140201	"	0-2	"	0000	"	"	5	3	1	1				—	—	DUP OF 15SS0620002
15SS0490002	"	0-2	"	1430	"	"	5	3	1	1				3	0	CLAYEY SAND

REMARKS: See Figure 3-2 ○ MS/MSD □ DUP

LABORATORY: Laucks Testing Laboratories

COC No.: 3651

APPENDIX C.2
SEDIMENT SAMPLE LOG SHEETS

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD 001 0006
Sample Location: 15SW/SD 001
Sampled By: CD / TR
C.O.C. No.: 3665

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/11/05 Time: 1040 Method: Dis Trowel Monitor Reading (ppm):	0-6"	BRN	MED SAND WELL sorted tr. CLAY SAT

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes	
SVOCs w/ PAHs, PCBs, Pesticides & Herbicides	(1) 4oz Jar	Yes	
TAL Metals plus Tin	(1) 4oz Jar	Yes/No	
TAL Metals plus Sn & Cyanide	(1) 4oz Jar	Yes/No	

OBSERVATIONS / NOTES:

SEE SUPPLEMENTAL SHEET

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

SUPPLEMENTAL SURFACE WATER/SEDIMENT SAMPLE DOCUMENTATION SHEET
NSWC CRANE, INDIANA

Sample Number: 1550001 0006 Date: 1/11/05 Time: 1040 Sampler: CD / TK

Photograph Number/Direction: 1095 X Upstream ____ Downstream ____ East ____ West NNW North ____ South

Predominant Surrounding Land Use: (Wooded) Open Field Other

Canopy Cover: Open Partly Open (Shaded)

Dicharge Pipe Present: Yes (No)

Aquatic Vegetation Present: Yes (No) | Stream channelized: (Yes) No

Water flowing: (Yes) No Not present

Organisms Present: Fish (in) Possibly Other (Insects, frogs, etc.): likely

Water Width (ft): 5'-12' | Water Depth (ft): 0.2 | Estimated Flow/Velocity: ft/sec .22 x 5'

Channel Width (ft): 15'-21' | Channel Depth (ft): 2.5-10' ~~4"~~

Signs of flooding (circle all that apply) (Yes) No Water marks on trees (Water-borne debris piles) Other: under cut trees

Deep Pools Present (>2 feet): Yes No If yes (approximate size)

Sediment Substrate: (Circle all that apply)	(Bedrock)	Boulder (>10 in)	(Cobble (2.5-10 in))	(Gravel (0.10-2.5 in))
	(Sand)	(Silt)	(Clay)	Muck
	(Debris)	Detritus	Concrete	Iron deposits
Sediment Odors:	(Normal)	Sewage	Petroleum	Chemical Anaerobic
Sediment Oils:	(Absent)	Slight	Moderate	Profuse
Water Odors:	(Normal)	Sewage	Petroleum	Chemical Anaerobic
Water Surface Oils:	(None)	Droplets	Sheen	
Turbidity:	(Clear)	Slightly Turbid	Turbid	Opaque

Other Comments/Observations: Debris - Plastic, Transite, scrap metal etc Asphalt, wood

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD002 0006
Sample Location: 15SW/SD 002
Sampled By: CD / TK
C.O.C. No.: 3665

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/11/05 Time: 1000 Method: Distrowel Monitor Reading (ppm): –	0-6"	BRN	MED. Sand & Silt & Clay rich mat. 54+

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes	
SVOCs w/ PAHs, PCBs, Pesticides & Herbicides	(1) 4oz Jar	Yes	
TAL Metals plus Tin	(1) 4oz Jar	Yes/No	
TAL Metals plus Sn & Cyanide	(1) 4oz Jar	Yes/No	

OBSERVATIONS / NOTES:

SEE SUPPLEMENTAL SHEET

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD ✓ Duplicate ID No.: ✓

Signature(s):

SUPPLEMENTAL SURFACE WATER/SEDIMENT SAMPLE DOCUMENTATION SHEET
NSWC CRANE, INDIANA

Sample Number: 15SD002 0006 Date: 1/11/05 Time: 1000 Sampler: CD/TR

Photograph Number/Direction: 1094 X Upstream ____ Downstream ____ East ____ West NARK/ North ____ South

Predominant Surrounding Land Use: (Wooded) Open Field Other

Canopy Cover: Open Partly Open (Shaded)

Dicharge Pipe Present: Yes (No)

Aquatic Vegetation Present: Yes (No) | Stream channelized: Yes No

Water flowing: (Yes) No Not present

Organisms Present: Fish (in) Poss: bly Other (Insects, frogs, etc.): likely

Water Width (ft): 6-10' | Water Depth (ft): .2-.4 | Estimated Flow/Velocity: 1 sec/ft .25'x6'

Channel Width (ft): 8-14' | Channel Depth (ft): 4' + |

Signs of flooding (circle all that apply) (Yes) No Water marks on trees (Water-borne debris piles) Other: Debri

Deep Pools Present (>2 feet): Yes (No) If yes (approximate size)

Sediment Substrate:	~~Bedrock~~	(Boulder (>10 in))	(Cobble (2.5-10 in))	(Gravel (0.10-2.5 in))	
(Circle all that apply)	(Sand)	Silt	Clay	Muck	
	(Debris)	Detritus	Concrete	Iron deposits	
Sediment Odors:	(Normal)	Sewage	Petroleum	Chemical	Anaerobic
Sediment Oils:	(Absent)	Slight	Moderate	Profuse	
Water Odors:	(Normal)	Sewage	Petroleum	Chemical	Anaerobic
Water Surface Oils:	(None)	Droplets	Sheen		
Turbidity:	Clear	(Slightly Turbid)	Turbid	Opaque	

Other Comments/Observations: Asphalt, Some metal

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD D05 0006
Sample Location: 15SW/SD 005
Sampled By: CD / TR
C.O.C. No.: 3665

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/11/05 Time: 1525 Method: Dis Trowel Monitor Reading (ppm): –	0-6"	Orange Brn	Fine - Coarse Sand Tr. Some Silt & Some Clay Sat

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes	
SVOCs w/ PAHs, PCBs, Pesticides & Herbicides	(1) 4oz Jar	Yes	
TAL Metals plus Tin	(1) 4oz Jar	Yes/No	
TAL Metals plus Sn & Cyanide	(1) 4oz Jar	Yes/No	

OBSERVATIONS / NOTES:

SEE SUPPLEMENTAL SHEET

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD	Duplicate ID No.:
YES	15FD 011105 02

Signature(s): [signature]

SUPPLEMENTAL SURFACE WATER/SEDIMENT SAMPLE DOCUMENTATION SHEET
NSWC CRANE, INDIANA

Sample Number: 155D005 0005 **Date:** 1/11/05 **Time:** 1525 **Sampler:** CD/TR

Photograph Number/Direction: X Upstream & X Downstream ~~North East~~ TR Upstream flow North West ____ North Downstream flow ~~X~~ South ~~East~~ TR START

Predominant Surrounding Land Use: Wooded Open Field Other

Canopy Cover: Open Partly Open Shaded

Dicharge Pipe Present: Yes No

Aquatic Vegetation Present: Yes No **Stream channelized:** Yes No

Water flowing: Yes No Not present

Organisms Present: Fish (in) No Other (Insects, frogs, etc.): Likely

Water Width (ft): 4 **Water Depth (ft):** 3" **Estimated Flow/Velocity:** 12 gpm

Channel Width (ft): 6 **Channel Depth (ft):** 4-5

Signs of flooding (circle all that apply) Yes No Water marks on trees Water-borne debris piles Other: Stream washed out to BEDROCK

Deep Pools Present (>2 feet): Yes No If yes (approximate size)

Sediment Substrate: Bedrock Boulder (>10 in) Cobble (2.5-10 in) Gravel (0.10-2.5 in)

(Circle all that apply) Sand Silt Clay Muck

Debris plastic Detritus Concrete Iron deposits

Sediment Odors: Normal Sewage Petroleum Chemical Anaerobic

Sediment Oils: Absent Slight Moderate Profuse

Water Odors: Normal Sewage Petroleum Chemical Anaerobic

Water Surface Oils: None Droplets Sheen

Turbidity: Clear Slightly Turbid Turbid Opaque

Other Comments/Observations: Asphalt/Tar

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD 006 0006
Sample Location: 15SW/SD 006
Sampled By: CD/TR
C.O.C. No.: 3665

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/11/0 Time: 1555 Method: Dis Trowel Monitor Reading (ppm):	0-6"	BRN	FINE - MED SAND Some Silt & Clay Tr. Coarse Sand Sat

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes	
SVOCs w/ PAHs, PCBs, Pesticides & Herbicides	(1) 4oz Jar	Yes	
TAL Metals plus Tin	(1) 4oz Jar	Yes ~~No~~ TR	
TAL Metals plus Sn & Cyanide	(1) 4oz Jar	~~Yes~~ No TR	

OBSERVATIONS / NOTES:

SEE SUPPLEMENTAL SHEET

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

SUPPLEMENTAL SURFACE WATER/SEDIMENT SAMPLE DOCUMENTATION SHEET
NSWC CRANE, INDIANA

Sample Number:	1550006 0006	Date:	1/11/05	Time:	1555	Sampler: CD/TK
Photograph Number/Direction:	1103 X Upstream	___ Downstream	___ East	___ West	X North	___ South
Predominant Surrounding Land Use:	Wooded	Open Field	Other			
Canopy Cover:	Open	Partly Open	Shaded			
Dicharge Pipe Present:	Yes	No				
Aquatic Vegetation Present:	Yes	No TRACE		Stream channelized:	Yes	No
Water flowing:	Yes	No	Not present			
Organisms Present:	Fish (in)	Possible	Other (insects, frogs, etc.):	Likely		
Water Width (ft): 3-5'	Water Depth (ft): 6-2"	Estimated Flow/Velocity:				
Channel Width (ft): 5-8'	Channel Depth (ft): 1-2'	→ Exist @ SPILLWAY/culvert				
Signs of flooding (circle all that apply)	Yes	No	Water marks on trees	Water-borne debris piles	Other:	
Deep Pools Present (>2 feet):	Yes	No	If yes (approximate size)	@ culvert		
Sediment Substrate:	Bedrock	Boulder (>10 in)	Cobble (2.5-10 in)	Gravel (0.10-2.5 in)		
(Circle all that apply)	Sand	Silt	Clay	Muck		
	Debris Plastic	Detritus	Concrete	Iron deposits		
Sediment Odors:	Normal	Sewage	Petroleum	Chemical	Anaerobic	
Sediment Oils:	Absent	Slight	Moderate	Profuse		
Water Odors:	Normal	Sewage	Petroleum	Chemical	Anaerobic	
Water Surface Oils:	None	Droplets	Sheen			
Turbidity:	Clear	Slightly Turbid	Turbid	Opaque		

Other Comments/Observations: _____

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD 009 0006
Sample Location: 15SW/SD 009
Sampled By: CD/TR
C.O.C. No.: 3665

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/12/0	0-6"	DARK BRN - DARK GREY	FINE - COARSE SAND ABUNDANT ORGANICS
Time: 0910			
Method: Dig Trowel			
Monitor Reading (ppm): –			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes	
SVOCs w/ PAHs, PCBs, Pesticides & Herbicides	(1) 4oz Jar	Yes	
TAL Metals plus Tin	(1) 4oz Jar	Yes/No	
TAL Metals plus Sn & Cyanide	(1) 4oz Jar	Yes/No	

OBSERVATIONS / NOTES:

SEE SUPPLEMENTAL SHEET

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Tey Rogal

SUPPLEMENTAL SURFACE WATER/SEDIMENT SAMPLE DOCUMENTATION SHEET
NSWC CRANE, INDIANA

Sample Number: 1550 009 0006 **Date:** 1/12/04 **Time:** 0910 **Sampler:** CD/TK

Photograph Number/Direction: 1104 X Upstream ____ Downstream ____ East North West ____ North ____ South

Predominant Surrounding Land Use: Wooded Open Field (Other)

Canopy Cover: (Open) Partly Open Shaded

Dicharge Pipe Present: (Yes) No

Aquatic Vegetation Present: Yes (No) | **Stream channelized:** (Yes) No

Water flowing: (Yes) No Not present

Organisms Present: Fish (in) NO Other (insects, frogs, etc.): possibly

Water Width (ft): 1-3 **Water Depth (ft):** 0.05-0.25 **Estimated Flow/Velocity:** 8-12 gpm (meas)

Channel Width (ft): 1-12' **Channel Depth (ft):** 0.5-2

Signs of flooding (circle all that apply) (Yes) No Water marks on trees Water-borne debris piles Other: matted Grass

Deep Pools Present (>2 feet): Yes (No) If yes (approximate size)

Sediment Substrate: Bedrock Boulder (>10 in) Cobble (2.5-10 in) (Gravel) (0.10-2.5 in)

(Circle all that apply) (Sand) (Silt) (Clay) Muck

Debris Detritus Concrete Iron deposits

Sediment Odors: (Normal) Sewage Petroleum Chemical Anaerobic

Sediment Oils: (Absent) Slight Moderate Profuse

Water Odors: (Normal) Sewage Petroleum Chemical Anaerobic

Water Surface Oils: (None) Droplets Sheen

Turbidity: (Clear) Slightly Turbid Turbid Opaque

Other Comments/Observations: _____

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD 013 0006
Sample Location: 15SW/SD 013
Sampled By: CD/TK
C.O.C. No.: 3665

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/11/05	0-6"	BRN	MED - FINE SAND & CLAY
Time: 1415			Abundant org. mat.
Method: Dis Trowel			WET - SAT
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes	
SVOCs w/ PAHs, PCBs, Pesticides & Herbicides	(1) 4oz Jar	Yes	
TAL Metals plus Tin	(1) 4oz Jar	Yes/No	
TAL Metals plus Sn & Cyanide	(1) 4oz Jar	Yes/No	

OBSERVATIONS / NOTES:

SEE SUPPLEMENTAL SHEET

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Ty Mark

SUPPLEMENTAL SURFACE WATER/SEDIMENT SAMPLE DOCUMENTATION SHEET
NSWC CRANE, INDIANA

Sample Number: 15SW013 0006 Date: 6/11/05 Time: 1415 Sampler: CD/TK

Photograph Number/Direction: 1099 X Upstream ____ Downstream ____ East NN West ____ North ____ South

Predominant Surrounding Land Use: Wooded Open Field Other

Canopy Cover: Open Partly Open Shaded

Dicharge Pipe Present: Yes No UP stream

Aquatic Vegetation Present: Yes No | Stream channelized: Yes No

Water flowing: Yes No Not present

Organisms Present: Fish (in) NO Other (insects, frogs, etc.):

Water Width (ft): 0.5 | Water Depth (ft): 0.05 | Estimated Flow/Velocity: 0.3 ppm

Channel Width (ft): 2'-7' | Channel Depth (ft): 0-3'

Signs of flooding (circle all that apply) Yes No Water marks on trees Water-borne debris piles Other: matted grass

Deep Pools Present (>2 feet): Yes No If yes (approximate size)

Sediment Substrate:	Bedrock	Boulder (>10 in)	Cobble (2.5-10 in)	Gravel (0.10-2.5 in)	
(Circle all that apply)	Sand	Silt	Clay	Muck	
	Debris	Detritus	Concrete	Iron deposits	
Sediment Odors:	Normal	Sewage	Petroleum	Chemical	Anaerobic
Sediment Oils:	Absent	Slight	Moderate	Profuse	
Water Odors:	Normal	Sewage	Petroleum	Chemical	Anaerobic
Water Surface Oils:	None	Droplets	Sheen		
Turbidity:	Clear	Slightly Turbid	Turbid	Opaque	

Other Comments/Observations: Debris - bricks, concrete, Asphalt, paper etc
concrete block

VERY steep grade

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD 014 0006
Sample Location: 15SW/SD 014
Sampled By: CD/TK
C.O.C. No.: 3665

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/11/05 Time: 1425 Method: Dis. Trowel Monitor Reading (ppm):	0-6"	Orangish Brn	MED SAND - Gravel Tr. Clay SAT

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes	
SVOCs w/ PAHs, PCBs, Pesticides & Herbicides	(1) 4oz Jar	Yes	
TAL Metals plus Tin	(1) 4oz Jar	Yes/No	
TAL Metals plus Sn & Cyanide	(1) 4oz Jar	Yes/No	

OBSERVATIONS / NOTES:

SEE SUPPLEMENTAL SHEET

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD ✓

Duplicate ID No.: —

Signature(s): [signature]

SUPPLEMENTAL SURFACE WATER/SEDIMENT SAMPLE DOCUMENTATION SHEET
NSWC CRANE, INDIANA

Sample Number: 1550014 0006 Date: 1/11/05 Time: 1425 Sampler: CO/TK

Photograph Number/Direction: 1100 X Upstream ____ Downstream ____ East ____ West NNE North ____ South

Predominant Surrounding Land Use: (Wooded) Open Field Other

Canopy Cover: Open Partly Open (Shaded)

Dicharge Pipe Present: Yes (No)

Aquatic Vegetation Present: Yes (No) | Stream channelized: Yes No

Water flowing: (Yes) No Not present

Organisms Present: Fish (in) Poss: b/y Other (Insects, frogs, etc.): Likely

Water Width (ft): 2-4 | Water Depth (ft): 0.05-0.3 | Estimated Flow/Velocity: 0.1 x 2 ft/sec

Channel Width (ft): 4-8' | Channel Depth (ft): 1-8'

Signs of flooding (circle all that apply) (Yes) No Water marks on trees (Water-borne debris piles) Other:

Deep Pools Present (>2 feet): Yes (No) If yes (approximate size)

Sediment Substrate: (Circle all that apply) (Bedrock) (Boulder (>10 in)) (Cobble (2.5-10 in)) (Gravel (0.10-2.5 in)) (Sand) (Silt) (Clay) Muck (Debris) Detritus (Concrete) Iron deposits

Sediment Odors: (Normal) Sewage Petroleum Chemical Anaerobic

Sediment Oils: (Absent) Slight Moderate Profuse

Water Odors: (Normal) Sewage Petroleum Chemical Anaerobic

Water Surface Oils: (None) Droplets Sheen

Turbidity: (Clear) Slightly Turbid Turbid Opaque

Other Comments/Observations: ~~Concrete~~ (TA) Above

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD 015 0006
Sample Location: 15SW/SD 015
Sampled By: CD / TR
C.O.C. No.: 3665

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/11/05 Time: 1320 Method: Dig Trowel Monitor Reading (ppm):	0-6"	BRN	FINE - MED SAND & SILT TRACE CLAY & COARSE SAND SAT

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes	
SVOCs w/ PAHs, PCBs, Pesticides & Herbicides	(1) 4oz Jar	Yes	
TAL Metals plus Tin	(1) 4oz Jar	Yes/No	
TAL Metals plus Sn & Cyanide	(1) 4oz Jar	Yes/No	

OBSERVATIONS / NOTES:

SEE SUPPLEMENTAL SHEET

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

SUPPLEMENTAL SURFACE WATER/SEDIMENT SAMPLE DOCUMENTATION SHEET
NSWC CRANE, INDIANA

Sample Number: 15SW015-0006 Date: 6/11/05 Time: 1320 Sampler: CD/TK

Photograph Number/Direction: X Upstream ___ Downstream X East ___ West ___ North ___ South

Predominant Surrounding Land Use: (Wooded) Open Field Other

Canopy Cover: Open Partly Open (Shaded)

Dicharge Pipe Present: Yes (No)

Aquatic Vegetation Present: Yes (No) | Stream channelized: (Yes) No

Water flowing: (Yes) No Not present

Organisms Present: Fish (in) Possibly Other (Insects, frogs, etc.): Likely

Water Width (ft): 1½ - 9' | Water Depth (ft): ~~0.55~~ 0-0.5 | Estimated Flow/Velocity: Mean - 30 gpl

Channel Width (ft): 12 - 18' | Channel Depth (ft): 2-10'

Signs of flooding (circle all that apply) (Yes) No Water marks on trees Water-borne debris piles Other:

Deep Pools Present (>2 feet): Yes No If yes (approximate size):

Sediment Substrate (Circle all that apply): (Bedrock) Boulder (>10 in) (Cobble (2.5-10 in)) (Gravel (0.10-2.5 in)) (Sand) (Silt) (Clay) Muck (Debris) Detritus (Concrete) Iron deposits

Sediment Odors: (Normal) Sewage Petroleum Chemical Anaerobic

Sediment Oils: (Absent) Slight Moderate Profuse

Water Odors: (Normal) Sewage Petroleum Chemical Anaerobic

Water Surface Oils: (None) Droplets Sheen

Turbidity: (Clear) Slightly Turbid Turbid Opaque

Other Comments/Observations: Debris - transite, glass, scrap metal, plastic etc.

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD 016 0006
Sample Location: 15SW/SD 016
Sampled By: CD/TR
C.O.C. No.: 3665

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/11/05	0-6"	Yellow Brn	Coarse Sand Sat
Time: 1115			
Method: Dig Trowel			
Monitor Reading (ppm): –			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes	
SVOCs w/ PAHs, PCBs, Pesticides & Herbicides	(1) 4oz Jar	Yes	
TAL Metals plus Tin	(1) 4oz Jar	Yes/No	
TAL Metals plus Sn & Cyanide	(1) 4oz Jar	~~Yes/No~~ (TR)	

OBSERVATIONS / NOTES:

SEE SUPPLEMENTAL SHEET

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): [signature]

SUPPLEMENTAL SURFACE WATER/SEDIMENT SAMPLE DOCUMENTATION SHEET
NSWC CRANE, INDIANA

Sample Number: 153D016 0006 Date: 1/11/05 Time: 1115 Sampler: CD/TK

Photograph Number/Direction: 1096 X Upstream ____ Downstream ____ East W5 West ____ North ____ South

Predominant Surrounding Land Use: (Wooded) Open Field Other

Canopy Cover: Open Partly Open (Shaded)

Dicharge Pipe Present: Yes (No)

Aquatic Vegetation Present: Yes (No) | Stream channelized: (Yes) No

Water flowing: (Yes) No Not present

Organisms Present: Fish (in) Possible Other (Insects, frogs, etc.): Likely

Water Width (ft): 3-5 | Water Depth (ft): 0.0-0.5 | Estimated Flow/Velocity: 2 SEC/ft 0.2' x 3

Channel Width (ft): 10-15' | Channel Depth (ft): 3-5

Signs of flooding (circle all that apply) (Yes) No Water marks on trees (Water-borne debris piles) Other: Debris

Deep Pools Present (>2 feet): Yes (No) If yes (approximate size)

Sediment Substrate:	Bedrock	Boulder (>10 in)	Cobble (2.5-10 in)	(Gravel) (0.10-2.5 in)	
(Circle all that apply)	(Sand)	(Silt)	(Clay)	Muck	
	(Debris)	Detritus	Concrete	Iron deposits	
Sediment Odors:	(Normal)	Sewage	Petroleum	Chemical	Anaerobic
Sediment Oils:	(Absent)	Slight	Moderate	Profuse	
Water Odors:	(Normal)	Sewage	Petroleum	Chemical	Anaerobic
Water Surface Oils:	(None)	Droplets	Sheen		
Turbidity:	~~Clear~~ TN	(Slightly Turbid)	Turbid	Opaque	

Other Comments/Observations: Debris - Plastic tire/ Asphalt

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD017 0006
Sample Location: 15SW/SD 017
Sampled By: CD/TR
C.O.C. No.: 3665

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 2/11/05 Time: 1225 Method: D:S TROWEL Monitor Reading (ppm): –	0-6"	ORANGISH BRN	MED-COARSE SAND tr. CLAY SAT

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	(3) Encore sampler	Yes	
SVOCs w/ PAHs, PCBs, Pesticides & Herbicides	(1) 4oz Jar	Yes	
TAL Metals plus Tin	(1) 4oz Jar	Yes/No	
TAL Metals plus Sn & Cyanide	(1) 4oz Jar	Yes/No	

OBSERVATIONS / NOTES:

SEE SUPPLEMENTAL SHEET

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

SUPPLEMENTAL SURFACE WATER/SEDIMENT SAMPLE DOCUMENTATION SHEET
NSWC CRANE, INDIANA

Sample Number: 155D017 0006 **Date:** 1/11/05 **Time:** 1225 **Sampler:** CD / TK

Photograph Number/Direction: (74) ~~1047~~ 1097 X Upstream ____ Downstream ____ East X West ____ North ____ South

Predominant Surrounding Land Use: (Wooded) Open Field Other

Canopy Cover: Open Partly Open (Shaded)

Dicharge Pipe Present: Yes (No)

Aquatic Vegetation Present: Yes (No) | **Stream channelized:** Yes No

Water flowing: (Yes) No Not present

Organisms Present: Fish (in) Other (Insects, frogs, etc.):

Water Width (ft): 2' - 4' **Water Depth (ft):** 0.1-0.3 **Estimated Flow/Velocity:** ft/sec .1 x 2'

Channel Width (ft): 6'-14' **Channel Depth (ft):** 3'-6'

Signs of flooding (circle all that apply) (Yes) No Water marks on trees (Water-borne debris piles) Other: undercut trees

Deep Pools Present (>2 feet): Yes (No) If yes (approximate size)

Sediment Substrate: (Bedrock) (Boulder (>10 in)) (Cobble (2.5-10 in)) (Gravel (0.10-2.5 in))
(Circle all that apply) (Sand) (Silt) (Clay) Muck
Debris Detritus Concrete Iron deposits

Sediment Odors: (Normal) Sewage Petroleum Chemical Anaerobic

Sediment Oils: (Absent) Slight Moderate Profuse

Water Odors: (Normal) Sewage Petroleum Chemical Anaerobic

Water Surface Oils: (None) Droplets Sheen

Turbidity: (Clear) Slightly Turbid Turbid Opaque

Other Comments/Observations: _____

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD018 0006
Sample Location: 15SW/SD 018
Sampled By: CD / TR
C.O.C. No.: 3662

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/9/05 Time: 1605 Method: Dig Trowel Monitor Reading (ppm):	0-6"	Brn	Silty clay sat some organic mat.

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	4oz ~~(3) Encore sampler~~ Jar	Yes	
SVOCs w/ PAHs, PCBs, Pesticides & Herbicides	(1) 4oz Jar	Yes	
TAL Metals plus Tin	(1) 4oz Jar	Yes/No	
TAL Metals plus Sn & Cyanide	(1) 4oz Jar	Yes/No	

OBSERVATIONS / NOTES:

SEE PHOTO FOR SKI & SUPPLEMENTAL SHEET

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): [signature]

SUPPLEMENTAL SURFACE WATER/SEDIMENT SAMPLE DOCUMENTATION SHEET
NSWC CRANE, INDIANA

Sample Number: 1093 155W/SD018 Date: 1/9/05 Time: 1605 Sampler: CD/TM

Photograph Number/Direction: X Upstream ____ Downstream North East ____ West ____ North ____ South

Predominant Surrounding Land Use: (Wooded) Open Field Other

Canopy Cover: Open Partly Open (Shaded)

Dicharge Pipe Present: Yes (No)

Aquatic Vegetation Present: Yes (No) | Stream channelized: (Yes) No

Water flowing: (Yes) No Not present

Organisms Present: Fish (in) No Other (Insects, frogs, etc.): Likely

Water Width (ft): 1-2' | Water Depth (ft): 1-4" | Estimated Flow/Velocity:

Channel Width (ft): 3-5 | Channel Depth (ft): 1-3

Signs of flooding (circle all that apply) (Yes) No Water marks on trees (Water-borne debris piles) Other:

Deep Pools Present (>2 feet): Yes (No) If yes (approximate size)

Sediment Substrate: Bedrock Boulder (>10 in) Cobble (2.5-10 in) (Gravel (0.10-2.5 in)) Trace

(Circle all that apply) (Sand) (Silt) (Clay) Muck

Debris Detritus Concrete Iron deposits

Sediment Odors: (Normal) Sewage Petroleum Chemical Anaerobic

Sediment Oils: (Absent) Slight Moderate Profuse

Water Odors: (Normal) Sewage Petroleum Chemical Anaerobic

Water Surface Oils: (None) Droplets Sheen

Turbidity: (Clear) Slightly Turbid Turbid Opaque

Other Comments/Observations: _____

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD019 0006
Sample Location: 15SW/SD
Sampled By: CD/TK
C.O.C. No.: 3662

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/9/05 Time: 1545 Method: DIS TROWEL Monitor Reading (ppm): –	0-6"	BRN	Organic Rich Clay Abundant Roots Tr. Sand & Gravel WET

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles 8260B	4oz ~~(3) Encore sampler~~ Jar	Yes	
SVOCs w/ PAHs, PCBs, Pesticides & Herbicides	(1) 4oz Jar	Yes	
TAL Metals plus Tin	(1) 4oz Jar	Yes/No	
TAL Metals plus Sn & Cyanide	(1) 4oz Jar	Yes/No	

OBSERVATIONS / NOTES:

PHOTO # 1092

~~Flow 1ft/sec 0.13 x 2'~~ (TA)

SEE SUPPLEMENTAL SHEET

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Ty Rozal

SUPPLEMENTAL SURFACE WATER/SEDIMENT SAMPLE DOCUMENTATION SHEET
NSWC CRANE, INDIANA

Sample Number: 155W/SD 019 Date: 1/9/05 Time: 1545 Sampler: JG/CD/TK

Photograph Number/Direction: 1092 X Upstream ____ Downstream X East ____ West ____ North ____ South

Predominant Surrounding Land Use: Wooded (Open Field) Other

Canopy Cover: Open Partly Open Shaded

Dicharge Pipe Present: Yes No @ culvert

Aquatic Vegetation Present: (Yes) No Rush | Stream channelized: (Yes) No

Water flowing: (Yes) No Not present

Organisms Present: Fish (in) Likely Other (Insects, frogs, etc.): Likely

Water Width (ft): 1-4' | Water Depth (ft): 1"-4" | Estimated Flow/Velocity: 1 ft/sec 0.13' x 2'

Channel Width (ft): | Channel Depth (ft):

Signs of flooding (circle all that apply) (Yes) No Water marks on trees Water-borne debris piles Other: MATTED GRASS

Deep Pools Present (>2 feet): Yes (No) If yes (approximate size)

Sediment Substrate: Bedrock Rip Rap Boulder (>10 in) Cobble (2.5-10 in) (Gravel (0.10-2.5 in)

(Circle all that apply) (Sand) (Silt) (Clay) Muck

Debris Detritus Concrete Iron deposits

Sediment Odors: (Normal) Sewage Petroleum Chemical Anaerobic

Sediment Oils: (Absent) Slight Moderate Profuse

Water Odors: (Normal) Sewage Petroleum Chemical Anaerobic

Water Surface Oils: (None) Droplets Sheen

Turbidity: (Clear) Slightly Turbid Turbid Opaque

Other Comments/Observations: Grassy AREA & lush; Downstream of 2' dia Culvert.

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD 020 0006
Sample Location: 15SW/SD 020
Sampled By: T. ROJAHN
C.O.C. No.: 3257 E
3258

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/07/05 Time: 1215 Method: S.S. BOWL Monitor Reading (ppm): —	0-6"	BRN	MED-COURSE SAND & gravel trace silt, some pebbles (SAT.)

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
10-Day Hyalella azteca sediment toxicity	(1) Gallon HDPE Bucket	Yes	ESI
PAHs	(1) 4oz Jar	Yes	LAUCKS
TAL Metals plus TOC	(1) 4oz Jar	Yes	↓
Grain Size	(1) 8oz Jar	Yes	↓

OBSERVATIONS / NOTES:

FORMER 15SW/SD 002
PHOTO #. 1660 UPSTREAM

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Tony Rojahn

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD 021 0006
Sample Location: 15SW/SD 021
Sampled By: T. ROJAHN
C.O.C. No.: 3257 & 3258

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/7/05 Time: 1305 Method: SS BOWL Monitor Reading (ppm): —	0-6"	MED. BRN	COARSE SAND & GRAVEL TRACE SILT, SOME PEBBLES (SAT.)

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
10-Day Hyalella azteca sediment toxicity	(1) Gallon HDPE Bucket	Yes	ESI
PAHs	(1) 4oz Jar	Yes	LAUCKS
TAL Metals plus TOC	(1) 4oz Jar	Yes	↓
Grain Size	(1) 8oz Jar	Yes	

OBSERVATIONS / NOTES:

PHOTO # 1661 upstream

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Tony Rojahn

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD 022 0006
Sample Location: 15SW/SD 022
Sampled By: T. ROJAHN
C.O.C. No.: 3257 & 3256

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/7/05 Time: 1340 Method: SS BOWL Monitor Reading (ppm): —	0-6"	MED. BRN	FINE SAND & SILT, TRACE COARSE SAND (SAT.)

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
10-Day Hyalella azteca sediment toxicity	(1) Gallon HDPE Bucket	Yes	ESI
PAHs	(1) 4oz Jar	Yes	LAUCKS
TAL Metals plus TOC	(1) 4oz Jar	Yes	
Grain Size	(1) 8oz Jar	Yes	↓

OBSERVATIONS / NOTES:

FORMER 15SW/SD 001
PHOTO #1662 UPSTREAM

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD 023 0006
Sample Location: 15SW/SD 023
Sampled By: C. Doolan
C.O.C. No.: 3257 & 3258

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/07/05 Time: 1430 Method: SS Bowl Monitor Reading (ppm): —	0-6"	MED. to DARK BRN	Coarse sand, gravel & pebbles, some mid-fine sand, trace silt (SAT.)

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
10-Day Hyalella azteca sediment toxicity	(1) Gallon HDPE Bucket	Yes	ESI
PAHs	(1) 4oz Jar	Yes	Laucks
TAL Metals plus TOC	(1) 4oz Jar	Yes	↓
Grain Size	(1) 8oz Jar	Yes	

OBSERVATIONS / NOTES:

FORMER 15SW/SD016
PHOTO # 1658

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): [signature]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD 026 0006
Sample Location: 15SW/SD 026
Sampled By: T. ROJAHN
C.O.C. No.: 3257 & 3258

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/07/05 Time: 1435 Method: S.S. Bowl Monitor Reading (ppm): –	0-6"	MED-DARK BRN	MED-COARSE SAND, t. gravel, t. silt, SOME ORGANIC MAT. (SAT.)

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
10-Day Hyalella azteca sediment toxicity	(1) Gallon HDPE Bucket	Yes	ESI
PAHs	(1) 4oz Jar	Yes	LAUCKS
TAL Metals plus TOC	(1) 4oz Jar	Yes	↓
Grain Size	(1) 8oz Jar	Yes	

OBSERVATIONS / NOTES:

FORMER 15 SW/SD 014
PHOTO # 1656

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Terry Rojahn

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD 025 0006
Sample Location: 15SW/SD 025
Sampled By: C. Doolan
C.O.C. No.: 3257 & 3258

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/07/05 Time: 1500 Method: S.S. Bowl Monitor Reading (ppm): –	0-6"	BRN	COARSE SAND, GRAVEL & pebbles, SOME F-MED. SAND, + Silt (SAT.)

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
10-Day Hyalella azteca sediment toxicity	(1) Gallon HDPE Bucket	Yes	ESI
PAHs	(1) 4oz Jar	Yes	LAUCKS
TAL Metals plus TOC	(1) 4oz Jar	Yes	
Grain Size	(1) 8oz Jar	Yes	↓

OBSERVATIONS / NOTES:

FORMER 15 SW/SD 015
PHOTO # 165T upstream

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD: –

Duplicate ID No.: –

Signature(s): [signature]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245, CTO 0331

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 15SD 024 0006
Sample Location: 15SW/SD 024
Sampled By: T. ROSAHN
C.O.C. No.: 3257 & 3258

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/07/05 Time: 1510 Method: S.S. Bowl Monitor Reading (ppm): —	0-6"	MED BRN - Grey BRN	Fine sand & silt, t. med & coarse sand, (sat.)

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
NA	NA	NA	NA	NA
Method: NA				
Monitor Readings (Range in ppm): NA				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
10-Day Hyalella azteca sediment toxicity	(1) Gallon HDPE Bucket	Yes	ESI
PAHs	(1) 4oz Jar	Yes	LAUCKS
TAL Metals plus TOC	(1) 4oz Jar	Yes	
Grain Size	(1) 8oz Jar	Yes	↓

OBSERVATIONS / NOTES:

Directly Below Soil Boring location 15SB033.
PHOTO # 1659

MAP:

See Figures 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Ty Rosahn

APPENDIX C.3
SURFACE WATER SAMPLE LOG SHEETS

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245 CTO 0331

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 15SW001 01
Sample Location: 15SW/SD 001
Sampled By: JG/TK
C.O.C. No.: 3660

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 1/11/05								
Time: 1035								
Depth: SURFACE								
Method: DIRECT	CLEAR	7.86	0.579	9.76	45	11.50	78.7	—

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	(2) L Glass Amber	Yes
PCBs	4°C	(2) L Glass Amber	Yes
Pesticides	4°C	(2) L Glass Amber	Yes
Herbicides	4°C	(2) L Glass Amber	Yes/No
Total Metals	4°C/HNO_3	(1) L HDPE	Yes/No
Dissolved Metals	4°C/HNO_3	(1) L HDPE	Yes

OBSERVATIONS / NOTES

Filtered Sample Collected Yes[ ] No[ ] 15SW 001 01 -F

PHOTO II 1095
1 ft/sec
.22' x 5' x 1 x 449 =
FLOW = 494 gpm

MAP

See Figure 3-2

Circle if Applicable:

MS/MSD ✓

Duplicate ID No.: —

Signature(s): [signature]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245 CTO 0331

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 15SW00201
Sample Location: 15SW/SD 002
Sampled By: JG/TK
C.O.C. No.: 3660

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 11/11/05								
Time: 0945								
Depth: SURFACE								
Method: Direct	Sl. Cloudy	7.25	0.484	9.36	90	7.33	+81	—

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	(2) L Glass Amber	Yes
PCBs	4°C	(2) L Glass Amber	Yes
Pesticides	4°C	(2) L Glass Amber	Yes
Herbicides	4°C	(2) L Glass Amber	Yes/No
Total Metals	4°C/HNO_3	(2) L Glass Amber	Yes/No
Dissolved Metals	4°C/HNO_3	(1) L HDPE	Yes
		(1) L HDPE	Yes

OBSERVATIONS/NOTES:

Filtered Sample Collected Yes[ ] No[ ] 15SW 00201 -F

1 SEC/FT 0.25' x 6'

PHOTO # 1098 NAU

FLOW = 674 gpm

MAP

See Figure 3-2

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245 CTO 0331

Sample ID No.: 15ST00401
Sample Location: 15SW/SD004
Sampled By: CD
C.O.C. No.: 3666

[] Stream
[] Spring
[] Pond
[] Lake
[X] Other: catch basin/storm drain
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 1/12/05
Time: 1120
Depth: surface
Method: transfer container 4oz jar

Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
clear	7.76	0.720	12.21	5.3	10.76	53.1	—

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	(2) L Glass Amber	Yes
PCBs	4°C	(2) L Glass Amber	Yes
Pesticides	4°C	(2) L Glass Amber	Yes
Herbicides	4°C	(2) L Glass Amber	Yes/No
Total Metals	4°C/HNO_3	(2) L Glass Amber	Yes/No
Dissolved Metals	4°C/HNO_3	(1) L HDPE	Yes
		(1) L HDPE	Yes

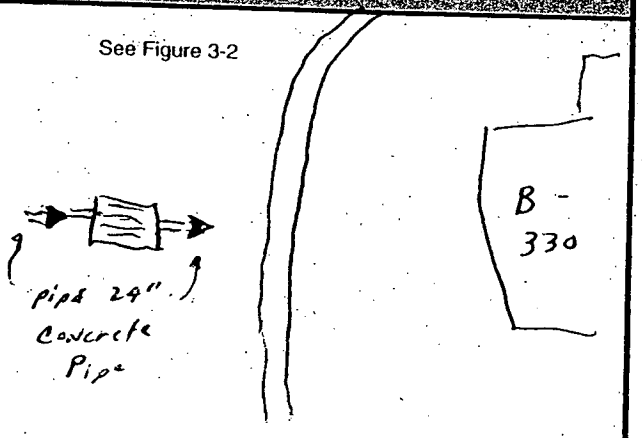
OBSERVATIONS/NOTES:

Filtered Sample Collected Yes[ ] No[ ] 15ST 00401 -F

photo # 1106
Standing North of catch basin
0.5" of water

MAP:

See Figure 3-2



Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245 CTO 0331

[] Stream
[] Spring
[] Pond
[] Lake
[X] Other: culvert
[] QA Sample Type:

Sample ID No.: 15S W 00501
Sample Location: 15SW/SD 005
Sampled By: JG / TK
C.O.C. No.: 3664

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 1/11/05								
Time: 1520								
Depth: SURFACE								
Method: Direct	Clear	7.64	1.082	11.41	9.1	9.53	+24.3	—

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	(2) L Glass Amber	Yes
PCBs	4°C	(2) L Glass Amber	Yes
Pesticides	4°C	(2) L Glass Amber	Yes
Herbicides	4°C	(2) L Glass Amber	Yes/No
Total Metals	4°C/HNO_3	(1) L HDPE	Yes/No
Dissolved Metals	4°C/HNO_3	(1) L HDPE	Yes
			Yes

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[ ] No[ ] 15SW 00501 -F

PHOTO 1101 NW
UPSTREAM

PHOTO 1102
DOWNSTREAM ~~NE~~ SE

MEAS. FLOW = 12 gal / min

MAP

See Figure 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Tey Lynn

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245 CTO 0331

[] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 15SW 00601
Sample Location: 15SW/SD 006
Sampled By: JG / TR
C.O.C. No.: 3664

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 1/11/04								
Time: 1550								
Depth: SURFACE								
Method: DIRECT	Clear	7.75	1.028	10.97	13	10.47	70.4	—

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	(2) L Glass Amber	Yes
PCBs	4°C	(2) L Glass Amber	Yes
Pesticides	4°C	(2) L Glass Amber	Yes
Herbicides	4°C	(2) L Glass Amber	Yes/No
Total Metals	4°C/HNO_3	(1) L HDPE	Yes/No
Dissolved Metals	4°C/HNO_3	(1) L HDPE	Yes

OBSERVATIONS/NOTES:

Filtered Sample Collected Yes[ ] No[ ] 15SW 00601 -F

PHOTO 1103 N

20 - 30 ppm

MAP

See Figure 3-2

Circle if Applicable:

MS/MSD	Duplicate ID No.:
YES	15FD01110501

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245 CTO 0331

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 15SW00901
Sample Location: 15SW/SD 009
Sampled By: JG / TK
C.O.C. No.: 3664

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 1/12/10								
Time: 0905								
Depth: SURFACE								
Method: Direct	CLEAR	7.03	0.522	10.48	~~7.3~~ 8.3	10.14	-6.8	—

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	(2) L Glass Amber	Yes
PCBs	4°C	~~(2)~~ (1) L Glass Amber	Yes
Pesticides	4°C	~~(2)~~ (1) L Glass Amber	Yes/No
Herbicides	4°C	~~(2)~~ (1) L Glass Amber	Yes/No
Total Metals	4°C/HNO_3	(1) L HDPE	Yes
Dissolved Metals	4°C/HNO_3	(1) L HDPE	Yes

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[X] No[ ] 15SW 00901 -F

FLOW: 8-12 gpm (MEAS.)

PHOTO # 1104 NW

MAP

See Figure 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Tey [illegible]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245 CTO 0331

Sample ID No.: 15S T010 01
Sample Location: 15SW/SD 010
Sampled By: CD
C.O.C. No.: 3664

[] Stream
[] Spring
[] Pond
[] Lake
[✓] Other: catch basin/stormdrain
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 1/12/05								
Time: 0955								
Depth: Surface								
Method: peristaltic	clear	7.84	0.237	12.94	35	10.38	32.7	—

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	1 ~~(2)~~ L Glass Amber	Yes
PCBs	4°C	1 ~~(2)~~ L Glass Amber	Yes
Pesticides	4°C	1 ~~(2)~~ L Glass Amber	Yes/No
Herbicides	4°C	1 ~~(2)~~ L Glass Amber	Yes/No
Total Metals	4°C/HNO_3	(1) L HDPE	Yes
Dissolved Metals	4°C/HNO_3	(1) L HDPE	Yes

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[X] No[ ] 15SW T01001 -F

PHOTO 1105

1" to 1.5" water depth

MAP

See Figure 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245 CTO 0331

[] Stream
[] Spring
[] Pond
[] Lake
[X] Other:
[] QA Sample Type: Storm drain

Sample ID No.: 15ST01101
Sample Location: 15SW/SD011
Sampled By: Goerdt
C.O.C. No.: 3666

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 1-12-05								
Time: 1035								
Depth: SURFACE								
Method: Peristaltic	clear	7.61	.946	13.33	12	9.66	115.5	—

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	1 (2) L Glass Amber	Yes
PCBs	4°C	1 (2) L Glass Amber	Yes
Pesticides	4°C	1 (2) L Glass Amber	Yes/No
Herbicides	4°C	1 (2) L Glass Amber	Yes/No
Total Metals	4°C/HNO_3	(1) L HDPE	Yes
Dissolved Metals	4°C/HNO_3	(1) L HDPE	Yes

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[X] No[ ] 15SW01101-F

Storm drain depth ~ 6'
Water depth ~ 4"

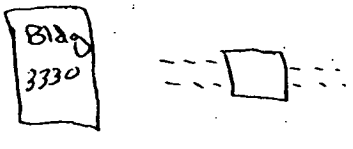


PHOTO II
1107
Standing
West
side

Stagnant Water.
No inflow or outflow
@ time of sampling.

MAP

See Figure 3-2

Circle if Applicable:

MS/MSD: —

Duplicate ID No.: —

Signature(s): [signature]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245 CTO 0331

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 15SW01301
Sample Location: 15SW/SD 0130 (TK)
Sampled By: JG/TK
C.O.C. No.: 3660

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 1/11/05								
Time: 1410								
Depth: SURFACE	LT							
Method: Direct	TAN	7.70	0.783	9.64	370	10.39	-0.1	—

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	(2) L Glass Amber	Yes
PCBs	4°C	(2) L Glass Amber	Yes
Pesticides	4°C	(2) L Glass Amber	Yes
Herbicides	4°C	(2) L Glass Amber	Yes/No
Total Metals	4°C/HNO_3	(1) L HDPE	Yes/No
Dissolved Metals	4°C/HNO_3	(1) L HDPE	Yes

OBSERVATIONS / NOTES

Filtered Sample Collected Yes[X] No[ ] 15SW 01301 -F

PHOTO 1099 NNW

MEAS = 0.3 gal/min

MAP

See Figure 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): TK Rogers

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245 CTO 0331

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 15S W01401
Sample Location: 15SW/SD 014
Sampled By: JG / TK
C.O.C. No.: 3664

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 1/11/04								
Time: 1420								
Depth: SURFACE								
Method: Direct	CLEAR	7.77	.478	9.88	30	11.00	←	55.3

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	(2) L Glass Amber	Yes
PCBs	4°C	(2) L Glass Amber	Yes
Pesticides	4°C	(2) L Glass Amber	Yes/No
Herbicides	4°C	(2) L Glass Amber	Yes/No
Total Metals	4°C/HNO_3	(1) L HDPE	Yes
Dissolved Metals	4°C/HNO_3	(1) L HDPE	Yes

OBSERVATIONS / NOTES

Filtered Sample Collected Yes[X] No[ ] 15SW 01401 -F

PHOTO # 1106 NNE
ft/sec 0.1' x 2'
FLOW = 90 gpm

MAP

See Figure 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245 CTO 0331

Sample ID No.: 15S W 01501
Sample Location: 15SW/SD 015
Sampled By: JG / TK
C.O.C. No.: 3660

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 1/11/05								
Time: 1315								
Depth: SURFACE								
Method: DIRECT	clear	7.93	.518	9.89	19	11.33	3.4	–

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	(2) L Glass Amber	Yes
PCBs	4°C	(2) L Glass Amber	Yes
Pesticides	4°C	(2) L Glass Amber	Yes
Herbicides	4°C	(2) L Glass Amber	Yes/No
Total Metals	4°C/HNO_3	(1) L HDPE	Yes/No
Dissolved Metals	4°C/HNO_3	(1) L HDPE	Yes

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[X] No[ ] 15SW 01501 -F

PHOTO # 1098

MEAS. 30 gal

MAP

See Figure 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): [signature]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245 CTO 0331

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 15SW01601
Sample Location: 15SW/SD 016
Sampled By: JG/TK
C.O.C. No.: 3660

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 7/11/05								
Time: 1110								
Depth: SURFACE	LT TAN	7.86	.771	10.27	140	11.08	72.3	—
Method: DIRECT								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	(2) L Glass Amber	Yes
PCBs	4°C	(2) L Glass Amber	Yes
Pesticides	4°C	(2) L Glass Amber	Yes/No
Herbicides	4°C	(2) L Glass Amber	Yes/No
Total Metals	4°C/HNO_3	(1) L HDPE	Yes
Dissolved Metals	4°C/HNO_3	(1) L HDPE	Yes

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[X] No[ ] 15SW 01601 -F

PHOTO 1096 WSW

25 sec/ft 0.2' x 3'

Flow = 135 gpm

MAP

See Figure 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): [signature]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245 CTO 0331

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 15SW01701
Sample Location: 15SW/SD 017
Sampled By: JG / TR
C.O.C. No.: 3660

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	~~pH~~ TEMP (S. U.)	S.C. (mS/cm)	~~Temp.~~ (°C) P.H	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 1/11/05								
Time: 1220								
Depth: Surface								
Method: Direct	Clear	10.87	0.947	7.74	60	10.57	4.4	–

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	(2) L Glass Amber	Yes
PCBs	4°C	(2) L Glass Amber	Yes
Pesticides	4°C	(2) L Glass Amber	Yes
Herbicides	4°C	(2) L Glass Amber	Yes/No
Total Metals	4°C/HNO_3	(1) L HDPE	Yes/No
Dissolved Metals	4°C/HNO_3	(1) L HDPE	Yes

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[X] No[ ] 15SW01701-F

PHOTO 1097 W/

1ft/sec 0.1' x 2'

MAP

See Figure 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): [signature]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245 CTO 0331

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 15SW01801
Sample Location: 15SW/SD
Sampled By: JG / TL
C.O.C. No.: 3657 & 3658

Type of Sample:
[X] Low Concentration
[] High Concentration

* MALFUNCTION

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 1/9/05								
Time: 1600								
Depth: SURFACE								
Method: Direct	SL Cloudy	7.57 6.73	0.512	6.73	70	*	27	—

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	1 (2) L Glass Amber	Yes
PCBs	4°C	1 (2) L Glass Amber	Yes
Pesticides	4°C	1 (2) L Glass Amber	Yes
Herbicides	4°C	1 (2) L Glass Amber	Yes No
Total Metals + TIN	4°C/HNO_3	(1) L HDPE	Yes No
Dissolved Metals + TIN	4°C/HNO_3	(1) L HDPE	Yes

OBSERVATIONS/NOTES

Filtered Sample Collected Yes [X] No[ ] 15SW01901-F

PHOTO # 1093

1 ft/sec 0.02' x 1'

Culvert downstream

FLOW:

9gpm

MAP

See Figure 3-2

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 15
Project No.: N1245 CTO 0331

[] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 15SW01901
Sample Location: 15SW/SD 019
Sampled By: JG / TR
C.O.C. No.: 3657

Type of Sample:
[X] Low Concentration
[] High Concentration

* Malfunction

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 1-9-05								
Time: 1540								
Depth: SURFACE								
Method: Direct	CLEAR	7.92	0.375	7.37	25	*	-15.7	—

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	1 ~~(2)~~ L Glass Amber	Yes
PCBs	4°C	1 ~~(2)~~ L Glass Amber	Yes
Pesticides	4°C	1 ~~(2)~~ L Glass Amber	Yes No
Herbicides	4°C	1 ~~(2)~~ L Glass Amber	Yes No
Total Metals + TIN	4°C/HNO_3	(1) L HDPE	Yes
Dissolved Metals + TIN	4°C/HNO_3	(1) L HDPE	Yes

OBSERVATIONS / NOTES

Filtered Sample Collected Yes[X] No[ ] 15SW 01901 -F

Photo # 1092
Flow 1 ft/sec 0.13x2'
117 gpm

MAP

See Figure 3-2

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Tr Rgal

APPENDIX C.4
GROUNDWATER SAMPLE LOG SHEETS

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC Crane, SWMU 15
Project No.: N1245

[] Domestic Well Data
[] Monitoring Well Data
[X] Other Well Type: Temporary Well
[] QA Sample Type:

Sample ID No.: 15GWTW 001
Sample Location: 15TW 001 / SB002
Sampled By: T. Rojahn
C.O.C. No.: 3656
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	NA	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV
Date: 1/08/05								
Time: 1300								
Method: SAME	CLEAR	—	7.45	0.413	6.53	9.8	11.51	-79.4

PURGE DATA:

	Volume	Time	pH	S.C.	Temp. (C)	Turbidity	DO	ORP
Date: 1/08/05								
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 1" Ø PVC		SEE	LOW	FLOW	PURGE	DATA	SHEET	
Total Well Depth (TD): 7.04								
Static Water Level (WL): 2.9								
One Casing Volume(gal/L): 2.6								
Start Purge (hrs): 1200								
End Purge (hrs): 1300								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 4.3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
Total Metals plus Tin	4°C/HNO_3	(1) L HDPE	Yes
Dissolved Metals plus Tin	4°C/HNO_3	(1) L HDPE	Yes/No
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	(2) L Glass Amber	Yes
PCBs	4°C	1 (2) L Glass Amber	Yes
Pesticides	4°C	(2) L Glass Amber	Yes/No
Herbicides	4°C	(2) L Glass Amber	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[ ] No[X] 15GWTW_____-F

Converted Boring 15SB 002

4.14' x 0.163 = 0.7 gal OR 2.6 L

Stick up = 1.44

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	Terry Rojahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE

PROJECT NUMBER: ~~7448~~ 1245

WELL ID.: 15TW001

DATE: 1/08/05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color. etc)
1200	2.90	0	–	–	–	–	–	–	–	Start Purge
1210	4.74	1300	130	7.50	0.427	200	6.32	7.38	-10.3	Sl. Cloudy
1220	6.20	1900	60	7.40	0.454	190	8.94	7.02	-78.9	" "
1230	6.20	2500	60	7.40	0.429	50	10.50	6.75	-76.6	CLEAR
1240	6.20	3100	60	7.41	0.422	20	10.96	6.94	-78.4	"
1250	6.20	3700	60	7.45	0.417	14	11.26	6.96	-79.7	"
1300	6.20	4300	60	7.45	0.413	9.8	11.51	6.53	-79.4	" Start Sampling

Water Quality Meter (SN) 01D0956 AA

Control Box type (SN) 419

Turbidity Meter (SN) 4536-3303

Pump Intake 6.9'

SIGNATURE(S): Ty Lopez

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC Crane, SWMU 15
Project No.: N1245

[] Domestic Well Data
[] Monitoring Well Data
[X] Other Well Type: Temporary Well
[] QA Sample Type:

Sample ID No.: 15GWTW 002
Sample Location: 15TW 002/SB006
Sampled By: T. ROJAHN
C.O.C. No.: 3656
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	NA	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV
Date: 1/08/05								
Time: 0950								
Method: SAME	CLEAR	–	7.56	0.438	7.35	13	8.52	46.0

PURGE DATA:

	Volume	Time	pH	S.C.	Temp. (C)	Turbidity	DO	ORP
Date: 1/08/05								
Method: Peristaltic								
Monitor Reading (ppm): –								
Well Casing Diameter & Material								
Type: 1" Ø PVC			SEE	LOW	FLOW	PURGE	SHEET	
Total Well Depth (TD): 7.85								
Static Water Level (WL): 3.95								
One Casing Volume(gal/L): 2.4								
Start Purge (hrs): 0840								
End Purge (hrs): 0950								
Total Purge Time (min): 70								
Total Vol. Purged (gal/L): 7.4								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
Total Metals plus Tin	4°C/HNO_3	(1) L HDPE	Yes
Dissolved Metals plus Tin	4°C/HNO_3	(1) L HDPE	Yes No
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	(2) L Glass Amber	Yes
PCBs	4°C	1 (2) L Glass Amber	Yes
Pesticides	4°C	(2) L Glass Amber	Yes No
Herbicides	4°C	(2) L Glass Amber	Yes No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes [X] No[ ] 15GWTW 002 -F

3.9' x .163 = 0.6341 or 2.4L

Converted Boring 15SB 006

stick up = 1.52'

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	Tony Rojahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE

PROJECT NUMBER: (TT) ~~7448~~ 1245

WELL ID.: 15TW002

DATE: 1/08/05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color, etc)
0840	3.95	0	–	–	–	–	–	–	–	START PURGE
0850	4.30	2000	200	7.26	0.445	1000	3.99	8.65	+68.6	LT. BRN
0900	4.20	2900	90	7.38	0.438	85	7.68	8.12	66.1	V. SL. Cloudy
0910	4.20	3800	90	7.47	0.434	32	9.95	7.60	61.1	CLEAR
0920	4.20	4700	90	7.54	0.434	20	9.21	7.41	57.6	CLEAR
0930	4.20	5600	90	7.56	0.435	12	9.13	7.19	52.0	CLEAR
0940	4.24	6500	90	7.58	0.439	20	8.45	7.70	49.3	CLEAR
0950	4.26	7400	90	7.56	0.438	13	8.52	7.55	46.0	CLEAR
0950	—	—	–	–	–	–	–	–	–	START SAMPLING

Water Quality Meter (SN) 01D0956AA

Control Box type (SN) 419

Turbidity Meter (SN) 4536-3303

Pump Intake 7.7'

SIGNATURE(S): Terry Rogers

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC Crane, SWMU 15
Project No.: N1245

[] Domestic Well Data
[] Monitoring Well Data
[X] Other Well Type: Temporary Well
[] QA Sample Type:

Sample ID No.: 15GWTW 003
Sample Location: 15TW 003/5800 9
Sampled By: Gorrat
C.O.C. No.: 3656
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	NA	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV
Date: 1-8-05								
Time: 1525								
Method: Peristaltic	Clear	–	6.13	1.258	9.51	33	0.31	-65.3

PURGE DATA:

	Volume	Time	pH	S.C.	Temp. (C)	Turbidity	DO	ORP
Date: 1-8-05								
Method: Peristaltic								
Monitor Reading (ppm): –								
Well Casing Diameter & Material								
Type: 1" pvc								
Total Well Depth (TD): 9.83								
Static Water Level (WL): 2.22								
One Casing Volume(gal/L) 4.6								
Start Purge (hrs): 1415								
End Purge (hrs): 1520								
Total Purge Time (min): 65								
Total Vol. Purged (gal/L): 14.6								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
Total Metals plus Tin	4°C/HNO_3	(1) L HDPE	Yes
Dissolved Metals plus Tin	4°C/HNO_3	(1) L HDPE	Yes No
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	(2) L Glass Amber	Yes
PCBs	4°C	(2) L Glass Amber	Yes
Pesticides	4°C	(2) L Glass Amber	Yes No
Herbicides	4°C	(2) L Glass Amber	Yes No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes [X] No[ ] 15GWTW 003 F

Converted Boring 15SB 009

9.83
2.22
7.61 (.163) = 1.24 gal
= 4.6 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 1245

WELL ID.: 15TW503
DATE: 1-8-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color, etc)
1415	2.22	-	-	-	-	-	-	-	-	Start purge
1425	2.63	2.25	225	6.17	1.247	-	0.41	9.36	-57.5	-
1435	3.02	4.50	225	6.16	1.248	385	0.48	9.29	-58.6	cloudy
1445	3.03	6.75	225	6.14	1.252	180	0.37	9.38	-61.0	sl. cloudy
1455	3.09	9.00	225	6.13	1.253	97	0.35	9.41	-62.4	"
1505	3.17	11.25	225	6.13	1.256	60	0.32	9.45	-63.7	"
1515	3.19	13.5	225	6.12	1.257	41	0.34	9.47	-65.0	"
1520	3.20	14.6	225	6.13	1.258	33	0.31	9.51	-65.3	Stop purge

Water Quality Meter (SN) 99K1014 A/C
Control Box type (SN) NA
Turbidity Meter (SN) 4175 1503

Pump Intake 9.5'

3 wv = 13.8 L

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC Crane, SWMU 15
Project No.: N1245

[] Domestic Well Data
[] Monitoring Well Data
[X] Other Well Type: Temporary Well
[] QA Sample Type:

Sample ID No.: 15GWTW 004
Sample Location: 15TW 004 / SB031
Sampled By: Goerdt
C.O.C. No.: 3656
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	NA	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV
Date: 1-8-05								
Time: See below 0904*								
Method: Peristaltic	light tan	—	6.92	.167	10.76	650	6.62	118.7

taken just prior to metal collec

PURGE DATA:

Date: 1-8-05	Volume	Time	pH	S.C.	Temp. (C)	Turbidity	DO	ORP
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 1" PVC								
Total Well Depth (TD): 14.9								
Static Water Level (WL): 9.73								
One Casing Volume(gal/L) 3.12								
Start Purge (hrs): 0825								
End Purge (hrs): 0835								
Total Purge Time (min): 10								
Total Vol. Purged (gal/L) 2.0								

SAMPLE COLLECTION INFORMATION:

Analysis		Collection order	Preservative	* Container Requirements	Collected
Volatiles 8260B	F-11	5	4°C/HCl	1250 (3) 40ml Vials	Yes
Total Metals plus Tin	F-11	1	4°C/HNO_3	0904 (1) L HDPE	Yes
Dissolved Metals plus Tin	F-11	2	4°C/HNO_3	1005 (1) L HDPE	Yes/No
SVOCs	F-11	3	4°C	1047 1 (2) L Glass Amber	Yes
PAHs	F-11	4	4°C	1130 1 (2) L Glass Amber	Yes
PCBs	500 ml	6	4°C	1220 1 (2) L Glass Amber	Yes
Pesticides	500 ml	7	4°C	1320 1 (2) L Glass Amber	Yes No
Herbicides	500 ml	8	4°C	1355 1 (2) L Glass Amber	Yes No

Minimal sample collected.

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[X] No[ ] 15GWTW 004 -F

Converted Boring 15SB 031

14.90
9.73
5.17 (.163) = .84 gal
= 3.12 L

Well dried out continually while sampling. Allowed time for recharge between samples.

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	Rich Goerdt

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 1245

WELL ID.: 15TW004
DATE: 1-8-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color, etc)
0825	9.73	~~2.0~~ gal	~~200~~ gal	—	—	—	—	—	—	Start Purge
0835	Dry	2.0	200	6.92	.167	>1000	6.62	10.76	118.7	Brn - Oxy

Water Quality Meter (SN) 99K1014AG
Control Box type (SN) NA
Turbidity Meter (SN) 4175 1503

Pump Intake 14' 5"

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC Crane, SWMU 15
Project No.: N1245

[] Domestic Well Data
[] Monitoring Well Data
[X] Other Well Type: Temporary Well
[] QA Sample Type:

Sample ID No.: 15GWTW005
Sample Location: 15TW005/SB035
Sampled By: JG CD
C.O.C. No.: 3652
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	NA	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV
Date: 1-5-05								
Time: 1320								
Method: Peristaltic	Brn		8.21	1.181	7.86	>1000	10.59	32.2

PURGE DATA:

	Volume	Time	pH	S.C.	Temp. (C)	Turbidity	DO	ORP
Date: 1-5-05								
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 1" PVC								
Total Well Depth (TD): 9.02								
Static Water Level (WL): 4.15								
One Casing Volume(gal/L) 2.9								
Start Purge (hrs): 1215								
End Purge (hrs): 1315								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L) 8.8								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
Total Metals plus Tin	4°C/HNO_3	(1) L HDPE	Yes
Dissolved Metals plus Tin	4°C/HNO_3	(1) L HDPE	Yes/No
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	(2) L Glass Amber	Yes
PCBs	4°C	(2) L Glass Amber	Yes
Pesticides	4°C	(2) L Glass Amber	Yes/No
Herbicides	4°C	(2) L Glass Amber	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[X] No[ ] 15GWTW005-F

PVC riser = 4.2' above ground surface

Converted Boring 15SB035

Heavy rains w/ standing water around hole. Diverted runoff by channeling water away.

9.02
4.15
4.87(.163) = 0.79 gal
= 2.9 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 1245

WELL ID.: 15TW005
DATE: 1-5-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color, etc)
1215	4.15	–	–	–	–	–	–	–	–	Start to purge
1225	4.19	1.6	160	8.13	1.213	755	10.63	8.73	35.6	Brown
1235	4.19	3.2	160	8.15	1.202	>1000	10.48	8.76	32.6	"
1245	4.15	5.1	190	8.20	1.210	410	10.64	8.76	34.4	"
1255	4.18	6.6	150	8.14	1.210	974	10.56	8.78	34.8	"
1305	4.17	7.8	120	8.23	1.196	848	10.58	8.24	36.9	"
1315	4.17	8.8	100	8.21	1.181	>1000	10.59	7.86	32.2	end purge

Water Quality Meter (SN) 01D0956AA
Control Box type (SN) NA
Turbidity Meter (SN) 4175-1503

Pump Intake 1" off bottom ≈8.9'

SIGNATURE(S): [illegible]
Chi Dooley

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC Crane, SWMU 15
Project No.: N1245

[] Domestic Well Data
[] Monitoring Well Data
[X] Other Well Type: Temporary Well
[] QA Sample Type:

Sample ID No.: 15GWTW 006
Sample Location: 15TW 006 / SB 046
Sampled By: Goardt
C.O.C. No.: 3655
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	NA	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV
Date: 1-7-05								
Time: 1115								
Method: peristaltic	clear		6.55	.844	13.21	2.0	0.38	-120.3

PURGE DATA:

	Volume	Time	pH	S.C.	Temp. (C)	Turbidity	DO	ORP
Date: 1-7-05								
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 1" PVC								
Total Well Depth (TD): 21.45								
Static Water Level (WL): 13.88								
One Casing Volume(gal/L): 4.6								
Start Purge (hrs): 0950								
End Purge (hrs): 1110								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L): 14.9								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	~~(2)~~ (3) 40ml Vials	Yes
Total Metals plus Tin	4°C/HNO_3	(1) L HDPE	Yes
Dissolved Metals plus Tin	4°C/HNO_3	(1) L HDPE	Yes/No
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	(2) L Glass Amber	Yes
PCBs	4°C	(2) L Glass Amber	Yes
Pesticides	4°C	(2) L Glass Amber	Yes/No
Herbicides	4°C	(2) L Glass Amber	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[ ] No[X] 15GWTW_____-F

Converted Boring 15SB 046

21.45
13.88
7.57 (.163) = 1.23 gal
= 4.57 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
Yes	15FD01070501

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 1245

WELL ID.: 15TW006
DATE: 1-7-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color, etc)
0950	13.88	–	–	–	–	–	–	–	–	Start purge.
1000	14.48	2.2	220	6.51	.812	–	1.82	12.93	-106.4	Initial color was
1010	14.61	3.1	190	6.56	.846	650	0.59	13.56	-122.9	muddy blue gray.
1020	14.55	5.9	180	6.58	.845	65	0.51	13.55	-122.8	cloudy
1030	14.61	7.7	180	6.57	.846	200	0.42	13.41	-124.2	"
1040	14.62	9.5	180	6.57	.842	70	0.41	13.23	-124.2	sl. cloudy
1050	14.64	11.3	180	6.56	.843	58	0.38	13.24	-123.4	"
1100	14.66	13.1	180	6.56	.845	45	0.39	13.28	-123.2	"
1110	14.65	14.9	180	6.55	.844	2.0	0.38	13.21	-120.3	Stop purge

Water Quality Meter (SN): 99K 1014 A/C
Control Box type (SN): NA
Turbidity Meter (SN): 4536 3303

Pump Intake: 21'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC Crane, SWMU 15
Project No.: N1245

[] Domestic Well Data
[] Monitoring Well Data
[X] Other Well Type: Temporary Well
[] QA Sample Type:

Sample ID No.: 15GWTW007
Sample Location: 15TW007 / SB048
Sampled By: Dodian
C.O.C. No.: 3655
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	NA	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV
Date: 1/7/05								
Time: 1500								
Method: Peristaltic	tan		6.81	0.695	11.09	550	0.61	-103.2

PURGE DATA:

	Volume	Time	pH	S.C.	Temp. (C)	Turbidity	DO	ORP
Date: 1/7/05								
Method: Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type: 1" PVC								
Total Well Depth (TD): 14.53								
Static Water Level (WL): 10.28								
One Casing Volume(gal/L): 2.7								
Start Purge (hrs): 1340								
End Purge (hrs): 1450								
Total Purge Time (min): 70								
Total Vol. Purged (gal/L): 10.300								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
Total Metals plus Tin	4°C/HNO_3	(1) L HDPE	Yes
Dissolved Metals plus Tin	4°C/HNO_3	(1) L HDPE	Yes No
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	(2) L Glass Amber	Yes
PCBs	4°C	(2) L Glass Amber	Yes
Pesticides	4°C	(2) L Glass Amber	Yes No
Herbicides	4°C	(2) L Glass Amber	Yes No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[X] No[ ] 15GWTW 007 -F

Converted Boring 15SB 048

14.53
- 10.28
4.25 (.163) = 0.69 gal
= 2.7 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 1245

WELL ID.: 15TW007
DATE: 1/7/05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color, etc)
1340	10.28	0	—	—	—	—	—	—	—	Start Purge
1350	11.06	1300	120	6.93	0.515	>1000	0.57	10.73	-86.6	
1400	10.73	2.700	140	6.83	0.643	>1000	0.95	10.57	-99.2	
1410	10.53	4.100	140	6.79	0.705	900	0.86	10.84	-106.0	
1420	10.70	5.500	140	6.81	0.691	>1000	0.68	11.02	-110.5	
1430	10.71	7.100	160	6.80	0.733	>1000	0.50	11.02	-113.5	
1440	10.28	8.700	160	6.80	0.678	>1000	0.72	11.06	-98.2	
1450	10.41	10.300	160	6.81	0.695	550	0.61	11.09	-103.2	

Water Quality Meter (SN) 01D0956 AA
Control Box type (SN) 419
Turbidity Meter (SN) 475-1503

Pump Intake 14.35

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC Crane, SWMU 15
Project No.: N1245

[] Domestic Well Data
[] Monitoring Well Data
[X] Other Well Type: Temporary Well
[] QA Sample Type:

Sample ID No.: 15GWTW 008
Sample Location: 15TW008/SB062
Sampled By: Doolan
C.O.C. No.: 3655
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	NA	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV
Date: 1/7/05								
Time: 1006								
Method: Peristaltic	tan	—	6.50	0.618	5.75	290	1.42	72.1

PURGE DATA:

	Volume	Time	pH	S.C.	Temp. (C)	Turbidity	DO	ORP
Date: 1/7/05								
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 1" PVC								
Total Well Depth (TD): 5.32								
Static Water Level (WL): 3.19								
One Casing Volume(gal): ~~0.35~~ 4L	1.3							
Start Purge (hrs): 940								
End Purge (hrs): 1000								
Total Purge Time (min): 20								
Total Vol. Purged (gal): ~~1.390~~								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles 8260B	4°C/HCl	(3) 40ml Vials	Yes
Total Metals plus Tin	4°C/HNO_3	(1) L HDPE	Yes
Dissolved Metals plus Tin	4°C/HNO_3	(1) L HDPE	Yes/No
SVOCs	4°C	(2) L Glass Amber	Yes
PAHs	4°C	(2) L Glass Amber	Yes
PCBs	4°C	(2) L Glass Amber	Yes
Pesticides	4°C	(2) L Glass Amber	Yes No
Herbicides	4°C	(2) L Glass Amber	Yes No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[✓] No[ ] 15GWTW 008 -F

Converted Boring 15SB 062

5.32
- 3.19 ~~(.163)~~
2.13 X (.163) = 0.35 gal
= 1.3 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 1245

WELL ID.: 15TW008
DATE: 1/7/05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color, etc)
740	3.19	0	—	—	—	—	—	—	—	Start purge
950	3.37	1.250	100	6.53	0.608	700	0.88	5.62	109.3	
1000	3.40	2.350	140	6.50	0.618	290	1.42	5.75	72.1	stop purge

Water Quality Meter (SN) 01D0956 AA
Control Box type (SN) ~~419~~ NA
Turbidity Meter (SN) 475-1503

Pump Intake 5'

SIGNATURE(S): [illegible]

APPENDIX C.5
CHAIN OF CUSTODY RECORDS

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER 0138

PROJECT NO: CTO N1245 0331	FACILITY: NSWC CRANE	PROJECT MANAGER: RALPH BASINSKI	PHONE NUMBER: (412) 921-8308
SAMPLERS (SIGNATURE): [signature]		FIELD OPERATIONS LEADER: T. ROJAHN	PHONE NUMBER: (412) 921-8857
		CARRIER/WAYBILL NUMBER: FED. EX. AB # 8447 8135 6336	

LABORATORY NAME AND CONTACT: LAUCKS / ANN MO

ADDRESS: SOUTH 940 HARNEY STREET

CITY, STATE: SEATTLE WA 98108

STANDARD TAT ☒ EXCEPT FOR COMMENTS

RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2004	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES SW 846 8260B	SVOCS, PAHS & PCBS	SVOCS W/ PAHS	TAL METALS & SN					COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									P	G	G						
PRESERVATIVE USED									4°C	4°C	4°C						
12/08	0800	TB12080401	QC	-	-	QC	G	2	2								GLASS TRIP BLANK W/HCL
12/08	1000	1555120002	155B 012	0	2	SO	G	4	3	1							
12/08	1010	155B120206	↓	2	6	SO	G	4	3	*1							
12/08	1020	1555013 0002	155B 013	0	2	SO	G	4	3	1							
12/08	1030	155B0130206	↓	2	6	SO	G	4	3	*1							
12/08	1035	155B0110002 (TR)	155B 011	0	2	SO	G	4	3	1							
12/08	1040	155B0110206	↓	2	6	SO	G	4	3	*1							
12/08	1120	1555090002	155B 009	0	2	SO	G	5	3		1	1					
12/08	1125	155B0090206	↓	2	6	SO	G	5	3		1	1					
12/08	1130	155B009 0610	↓	6	10	SO	G	5	3		1	1					
12/08	1240	1555010 0002	155B 010	0	2	SO	G	5	3		1	1					
12/08	1245	155B0100206	↓	2	6	SO	G	5	3		1	1					
12/08	1250	155B0100610	↓	6	10	SO	G	5	3		1	1					

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature]	12/08/04	1800	1. RECEIVED BY FED EX.	12/08/04	1800
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS * = EXTRACT & HOLD

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R

FORM NO. TINUS-001

TETRA TECH NUS, INC. CHAIN OF CUSTODY NUMBER 0141 PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO N1245 0331	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / ANH HO
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		T. ROJAHN	(412) 921-8857	940 SOUTH HARNEY ST
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB# 8447 8135 6336		SEATTLE, WA 98108

STANDARD TAT ☒ EXCEPT SEE COMMENTS
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2004	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES 8260B	SVOCS W/PAHS	TAL METALS & SN	SVOCS, PAHS & HERBICIDES					COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									P	G	G	G					
PRESERVATIVE USED									4°C	4°C	4°C	4°C					
12/08	1255	1SSB008 0002	1SSB 008	0	2	SO	G	5	3	1	1						
12/08	1300	1SSB008 0206	↓	2	6	SO	G	5	3	1	1						
12/08	1305	1SSB008 0610	↓	6	10	SO	G	5	3	1	1						
12/08	1335	1SSB007 0002	1SSB 007	0	2	SO	G	5	3		1	1					
12/08	1340	1SSB007 0206	↓	2	6	SO	G	5	3		** 1	* 1					
12/08	1400	1SSB002 0002	1SSB 002	0	2	SO	G	5	3		1	1					
12/08	1405	1SSB002 0206	↓	2	6	SO	G	5	3		** 1	* 1					
12/08	1430	1SSB006 0002	1SSB 006	0	2	SO	G	5	3		1	1					
12/08	1435	1SSB006 0206	↓	2	6	SO	G	13	9	-	** 2	* 2					DO MS/MSD
12/08	1520	1SSB005 0002	1SSB 005	0	2	SO	G	5	3		1	1					
12/08	1525	1SSB005 0206	↓	2	6	SO	G	5	3		** 1	* 1					
12/08	0000	FD12080401	QC	–	–	SO	G	5	3		** 1	* 1					FROM 1SSB006 0206

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Taylor	12/8/04	1800	1. RECEIVED BY FEDERAL EXPRESS	12/8/04	1800
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS * EXTRACT & HOLD ** HOLD

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (COPY) PINK (FILE COPY)

4/02R
FORM TINUS-001

TETRA TECH NUS, INC. CHAIN OF CUSTODY NUMBER 0143 PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO N1245 0331	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / ANN HO
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		T. ROJAHN	(412) 921-8857	940 SOUTH HARNEY STREET
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB # 8447 8135 6325		SEATTLE WA 98108

STANDARD TAT ☒ EXCEPT FOR COMMENTS
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2004	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES SW846 8260B	SVOCS W/PAHS, PCBS	HERBICIDE & PESTICIDE	TAL METALS & SN					COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									P	G	G						
PRESERVATIVE USED									4°C	4°C	4°C						
12/09	0730	15TB12090401	QC	-	-	QC	G	2	2		1	1					TRIP BLANK GLASS W/HCl
12/09	1025	15SS0290002	15SB 029	0	2	SO	G	5	3		1	1					
12/09	1030	15SB0290206	↓	2	6	SO	G	5	3	*	1	**	1				
12/09	1050	15SS0310002	15SB 031	0	2	SO	G	5	3		1	1					
12/09	1055	15SB0310206		2	6	SO	G	5	3	*	1	**	1				
12/09	1100	15SB0310610		6	10	SO	G	5	3	*	1	**	1				
12/09	1105	15SB0311014	↓	10	14	SO	G	5	3	*	1	**	1				
12/09	1130	15SS0320002	15SB 032	0	2	SO	G	5	3		1	1					
12/09	1135	15SB0320206	↓	2	6	SO	G	5	3	*	1	**	1				
12/09	1150	15SS0350002	15SB 035	0	2	SO	G	5	3		1	1					
12/09	1155	15SB0350206	↓	2	6	SO	G	5	3	*	1	**	1				
12/09	1205	15SS0370002	15SB 037	0	2	SO	G	5	3		1	1					
12/09	1210	15SB0370206	↓	2	6	SO	G	5	3	*	1	**	1				

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Tony Igal	12/09/04	1830	1. RECEIVED BY FEDERAL EXPRESS	12/09/04	1830
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS * EXTRACT & HOLD ** HOLD

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER 0144

PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO N1245 0331	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / ANH HO
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		T. ROJAHN	(412) 921-8857	940 SOUTH HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB # 8447 8135 6325		SEATTLE, WA 98108

STANDARD TAT ☒ EXCEPT FOR COMMENTS
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): P, G

PRESERVATIVE USED: 4°C, 4°C

DATE YEAR 2004	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: VOLATILES SW 846 8260B	SVOCS W/ PAHS SW 846 8270B	& HERBICIDE	TAL METALS & SW					COMMENTS
12/09	0910	1555001 0002	155B 001	0	2	SO	G	5	3		1		1				
12/09	0915	1558001 0206	↓	2	6	SO	G	5	3	*	1	**	1				
12/09	0935	1555003 0002	155B 003	0	2	SO	G	5	3		1		1				
12/09	0940	1558003 0206	↓	2	6	SO	G	5	3	*	1	**	1				
12/09	0955	1558004 0002	155B 004	0	2	SO	G	5	3		1		1				
12/09	1000	1558004 0206	↓	2	6	SO	G	5	3	*	1	**	1				
12/09	1520	1555048 0002	155B 048	0	2	SO	G	5	3		1		1				
12/09	1525	1558048 0206		2	6	SO	G	13	9		2		2				PO MS/MSD
12/09	1530	1558048 0610		6	10	SO	G	5	3	*	1	**	1				
12/09	1550	1558048 1015	↓	10	15	SO	G	5	3	*	1	**	1				
12/09	1610	1555047 0002	155B 047	0	2	SO	G	5	3		1		1				
12/09	0000	FD12090401	QC	–	–	SO	G	5	3		1		1				DUP FROM 1558048 0206

1. RELINQUISHED BY: Terry Rogal	DATE 12/9/04	TIME 1830	1. RECEIVED BY: FEDERAL EXPRESS	DATE 12/9/04	TIME 1830
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: * EXTRACT & HOLD ** HOLD

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (COPY) PINK (FILE COPY)

FORM TINUS-001 4/02R

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 0145 | PAGE 1 OF 1

PROJECT NO: CTO N1245 0331	FACILITY: NSWC CRANE	PROJECT MANAGER: RALPH BASINSKI	PHONE NUMBER: (412) 921-8308
LABORATORY NAME AND CONTACT: LAUCKS / ANN HO	SAMPLERS (SIGNATURE): [signature]	FIELD OPERATIONS LEADER: T ROJAHN	PHONE NUMBER: (412) 921-8857
ADDRESS: 940 SOUTH HARNEY ST.	CARRIER/WAYBILL NUMBER: FED. EX. AB # 8447 8135 6439	CITY, STATE: SEATTLE, WA 98108	

STANDARD TAT ☒ EXCEPT FOR COMMENTS
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): P G G
PRESERVATIVE USED: 4°C 4°C 4°C

DATE YEAR 2004	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: Volatiles SW 846 8260B	SVOCS w/PAHs, PCBs	Pesticides & Herbicides	TAL Metals + SN					COMMENTS
12/10	0800	15TB12100401	QC	-	-	QC	G	2	2								TRIP BLANK GLASS W/HCL
12/10	0850	15SS0460002	15SB 046	0	2	SO	G	5	3	1	1						
12/10	0855	15SB0460206		2	6	SO	G	5	3	1	1						
12/10	0900	15SB0460610		6	10	SO	G	5	3	* 1	** 1						
12/10	0915	15SB0461020		10	20	SO	G	5	3	* 1	** 1						
12/10	1000	15SS0450002	15SB 045	0	2	SO	G	5	3	1	1						
12/10	1005	15SB0450206		2	6	SO	G	5	3	1	1						
12/10	1010	15SB0450610		6	10	SO	G	5	3	* 1	** 1						
12/10	1015	15SB0451012		10	12	SO	G	5	3	* 1	** 1						
12/10	1235	15SS0190002	15SB 019	0	2	SO	G	5	3	1	1						
12/10	1240	15SB0190206		2	6	SO	G	5	3	* 1	** 1						
12/10	1250	15SS0230002 (TE)	15SB 023	0	2	SO	G	5	3	1	1						
12/10	1255	15SB0230206		2	6	SO	G	13	9	*2	**2						

1. RELINQUISHED BY: [signature]	DATE: 12/10/04	TIME: 1830	1. RECEIVED BY: FEDERAL EXPRESS	DATE: 12/10/04	TIME: 1830
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: * EXTRACT & HOLD ** HOLD

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TINUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER 0146 | PAGE 1 OF 1

PROJECT NO: CTO N1245 0331	FACILITY: NSWC CRANE	PROJECT MANAGER: RALPH BASINSKI	PHONE NUMBER: (412) 921-8308
SAMPLERS (SIGNATURE): [signature]		FIELD OPERATIONS LEADER: T. ROJAHN	PHONE NUMBER: (412) 921-8857
		CARRIER/WAYBILL NUMBER: FED. EX. AB# 8447 8135 6439	

LABORATORY NAME AND CONTACT: LAUCKS / ANH HO

ADDRESS: 940 SOUTH HARNEY STREET

CITY, STATE: SEATTLE, WA 98108

STANDARD TAT ☒ EXCEPT FOR COMMENTS

RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2004	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES SW 8260B	SVOCS W/PAHS	TAL METALS + SN						COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									P	G	G						
PRESERVATIVE USED									4°C	4°C	4°C						
12/10	1045	15SS0430002	15SB 043	0	2	SO	G	5	3	1	1						
12/10	1050	15SB0430206	↓	2	6	SO	G	5	3	* 1	** 1						
12/10	1100	15SS042 0002	15SB 042	0	2	SO	G	5	3	1	1						
12/10	1105	15SB042 0206	↓	2	6	SO	G	5	3	* 1	** 1						
12/10	1115	15SS044 0002	15SB 044	0	2	SO	G	5	3	1	1						
12/10	1120	15SB044 0206	↓	2	6	SO	G	5	3	* 1	** 1						

1. RELINQUISHED BY: [signature]	DATE: 12/10/04	TIME: 1830	1. RECEIVED BY: FEDERAL EXPRESS	DATE: 12/10/04	TIME: 1830
2. RELINQUISHED BY:	DATE:	TIME:	2. RECEIVED BY:	DATE:	TIME:
3. RELINQUISHED BY:	DATE:	TIME:	3. RECEIVED BY:	DATE:	TIME:

COMMENTS: * EXTRACT & HOLD ** HOLD

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (COPY) PINK (FILE COPY)

FORM TINUS-001 4/02R

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER 0147 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO N1245 0331	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / ANH HO
SAMPLERS (SIGNATURE):		FIELD OPERATIONS LEADER: T. ROJAHN	PHONE NUMBER: (412) 921-8857	ADDRESS: 940 SOUTH HARNEY ST.
		CARRIER/WAYBILL NUMBER: FED EX AB# 8447 8135 6439		CITY, STATE: SEATTLE, WA 98108

STANDARD TAT ☒ EXCEPT FOR COMMENTS
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): P G G
PRESERVATIVE USED: 4°C 4°C 4°C

DATE YEAR 2004	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: VOLATILES SW 846 8260B	SVOC W/ PAHS PCBS PESTICIDE & HERBICIDE SW	TAL METALS & SW	COMMENTS
12/10	1315	1SSS020 0002	1SSB 020	0	2	SO	G	5	3	1	1	
12/10	1320	1SSB020 0206	↓	2	6	SO	G	5	3	*1	**1	
12/10	1330	1SSS022 0002	1SSB 022	0	2	SO	G	5	3	1	1	
12/10	1335	1SSB022 0206	↓	2	6	SO	G	5	3	*1	**1	
12/10	1340	1SSS021 0002 ~~1SSB021~~	1SSB 021	0	2	SO	G	5	3	1	1	
12/10	1345	1SSB21 0206	↓	2	6	SO	G	5	3	*1	**1	
12/10	1445	1SSS040 0002	1SSB 040	0	2	SO	G	5	3	1	1	
12/10	1450	1SSB040 0206	↓	2	6	SO	G	5	3	*1	**1	
12/10	1510	1SSS039 0002	1SSB 039	0	2	SO	G	5	3	1	1	
12/10	0000	FD12100401	QC	–	–	SO	G	5	3	*1	**1	

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY: [signature]	12/10/04	1830	1. RECEIVED BY: FEDERAL EXPRESS	12/10/04	1830
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS: * EXTRACT & HOLD ** HOLD

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER 3645 | PAGE 1 OF 1

PROJECT NO: N1245 CTO 331	FACILITY: NSWC CRANE	PROJECT MANAGER: RALPH BASINSKI	PHONE NUMBER: (412) 921-8308
SAMPLERS (SIGNATURE): Terry Rogal, D. Conta		FIELD OPERATIONS LEADER: T. ROJAHN	PHONE NUMBER: (412) 921-8857
		CARRIER/WAYBILL NUMBER: FED. EX. AB # 8447 8135 6450	

LABORATORY NAME AND CONTACT: LAUCKS / ANH HO

ADDRESS: 940 SOUTH HARNEY ST

CITY, STATE: SEATTLE WA 98108

STANDARD TAT ☐
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2004	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES SW 846 8260B	SVOCS, PAHS, PCBS	HERBICIDE & PESTICIDE	TAL METALS + SN	NITROAROMATICS & NITRAMINES	PERCHLORATES	TOC			COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G	G	P	G	P	G				
PRESERVATIVE USED									4°C/HCl	4°C	4°C/HNO3	4°C	4°C	4°C/H3PO4				
12/11	0800	TB12110401	QC	-	-	QC	G	2	2									
12/11	0740	~~TS~~ RB12110401	QC	-	-	QC	G	9	3	5	1	-	-	-				DRIVE SHOE
12/12	0830	RB12120401	QC	-	-	QC	G	13	3	5	1	1	1	2				DISPOSABLE SLEEVE
12/12	0930	RB12120402	QC	-	-	QC	G	11	3	5	1	1	1	-				DISPOSABLE TROWEL
12/12	1030	~~SB~~ RB12120403	QC	-	-	QC	G	2	-	-	-	1	1	-				DRIVE SHOE
12/12	1230	SB12120401	QC	-	-	QC	G	11	3	5	1	1	1	-				DI H_2O
12/12	1650	SB12120402	QC	-	-	QC	G	11	3	5	1	1	1	-				DPT Rig TANK

1. RELINQUISHED BY: Terry Rogal	DATE 12/13/04	TIME 1830	1. RECEIVED BY: FEDERAL EXPRESS	DATE 12/13/04	TIME 1830
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

FOF 4/02R TtNUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER 3646 | PAGE 1 OF 1

PROJECT NO: CTO N1245 0331	FACILITY: NSWC CRANE	PROJECT MANAGER: RALPH BASINSKI	PHONE NUMBER: (412) 921-8308
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: T. ROJAHN	PHONE NUMBER: (412) 921-8857
		CARRIER/WAYBILL NUMBER: FED. EX. AB # 8447 8135 6450	

LABORATORY NAME AND CONTACT: LAUCKS / ANH HO

ADDRESS: 940 SOUTH HARNEY ST.

CITY, STATE: SEATTLE, WA 98108

STANDARD TAT ☒ EXCEPT FOR COMMENTS

RUSH TAT ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G G

PRESERVATIVE USED: 4°C 4°C 4°C

DATE YEAR 2004	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: PESTICIDES & HERBICIDES	TAL METALS & SW	SVOCS w/PAHS						COMMENTS
12/11	0855	15SS0170002	15SB 017	0	2	SO	G	2	1	1							
12/11	0900	15SB0170206	↓	2	6	SO	G	2	*1	**1							
12/11	0905	15SS0160002	15SB 016	0	2	SO	G	2	1	1							
12/11	0910	15SB0160206	↓	2	6	SO	G	2	*1	**1							
12/11	0915	15SS0150002 (TR)	15SB 015	0	2	SO	G	2	1	1							
12/11	0920	15SB0150206	↓	2	6	SO	G	2	*1	**1							
12/11	0925	15SS0180002	15SB 018	0	2	SO	G	2	1	1							
12/11	0930	15SB0180206	↓	2	6	SO	G	2	*1	**1							
12/11	0935	15SS0140002	15SB 014	0	2	SO	G	2	1	1							
12/11	0940	15SB0140206	↓	2	6	SO	G	4	*2	**2							NO MS/MSD
12/11	0000	FD12110401	QC	–	–	SO	G	2	*1	**1							DUP OF 15SB0140206
12/11	1010	15SS0250002	15SB 025	0	2	SO	G	1	–	–	1						
12/11	1015	15SB0250206	↓	2	6	SO	G	1	–	–	*1						

1. RELINQUISHED BY: Tony Rojahn	DATE: 12-13-04	TIME: 1830	1. RECEIVED BY: FEDERAL EXPRESS	DATE: 12-13-04	TIME: 1830
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: * EXTRACT & HOLD ** HOLD

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R

FORM NO. TINUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER 3647 | PAGE 1 OF 1

PROJECT NO: CTO N1245 0331	FACILITY: NSWC CRANE	PROJECT MANAGER: RALPH BASINSKI	PHONE NUMBER: (412) 921-8308
SAMPLERS (SIGNATURE): [signature]		FIELD OPERATIONS LEADER: T. ROJAHN	PHONE NUMBER: (412) 921-8857
		CARRIER/WAYBILL NUMBER: FED. EX. AB# 8447 8135 6450	

LABORATORY NAME AND CONTACT: LAUCKS / ANH HO

ADDRESS: 940 SOUTH HARNEY ST

CITY, STATE: SEATTLE, WA 98108

STANDARD TAT ☒ EXCEPT FOR COMMENTS

RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2004	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: SVOCS w/ PAHS								COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G								
PRESERVATIVE USED									4°C								
12/11	1020	15SS0240002	15SB 024	0	2	SO	G	1	1								
12/11	1025	15SB0240206 (TR)	↓	2	6	SO	G	1	* 1								
12/11	1030	15SS0260002	15SB 026	0	2	SO	G	1	1								
12/11	1035	15SB0260206	↓	2	6	SO	G	1	* 1								
12/11	1040	15SS0280002	15SB 028	0	2	SO	G	1	1								
12/11	1045	15SB0280206	↓	2	6	SO	G	2	* 2								DO MS/MSD
12/11	1100	15SS0270002	15SB 027	0	2	SO	G	1	1								
12/11	1105	15SB0270206	↓	2	6	SO	G	1	* 1								
12/11	0000	FD12110402	QC	-	-	SO	G	1	* 1								DUP OF 15SB0280206

1. RELINQUISHED BY: Terry Rogal	DATE: 12-13-04	TIME: 1830	1. RECEIVED BY: FEDERAL EXPRESS	DATE: 12-13-04	TIME: 1830
2. RELINQUISHED BY:	DATE:	TIME:	2. RECEIVED BY:	DATE:	TIME:
3. RELINQUISHED BY:	DATE:	TIME:	3. RECEIVED BY:	DATE:	TIME:

COMMENTS: * EXTRACT & HOLD

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

FORM TINUS-001 4/02R

TETRA TECH NUS, INC. CHAIN OF CUSTODY NUMBER 3648 PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
N1245 CTO 0331	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / ANN HO
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		TERRY ROJAHN	(412) 921-8857	940 SOUTH HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB# 8447 8135 6450		SEATTLE, WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2004	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES SW 846 8260B	SVOCS W/PAHS	Explosives - Nitroaromatics Nitramines & Perchlorates	TAL METALS + SN	SVOCS W/PAHS & PCBS				COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G	G	G	G	G				
PRESERVATIVE USED									4°C	4°C	4°C	4°C	4°C				
12/11	1305	0855001 0002	085B 001	0	2	SO	G	6	3	1	1	1					
12/11	1330	085S002 0002 (FR)	085B 002	0	2	SO	G	6	3	1	1	1					
12/11	1350	0855003 0002	085B 003	0	2	SO	G	5	3	–	–	1	1				
12/11	1405	0855005 0002	085B 005	0	2	SO	G	6	3	1	1	1					
12/11	1410	085B005 0206	↓	2	6	SO	G	6	3	1	1	1					
12/11	1430	0855004 0002	085B 004	0	2	SO	G	6	3	1	1	1					
12/11	1435	085B004 0206	↓	2	6	SO	G	6	3	1	1	1					
12/12	0905	0855006 0002	085B 006	0	2	SO	G	6	3	–	1	1	1				
12/12	0910	085B006 0206	↓	2	6	SO	G	6	3	–	1	1	1				
12/12	0915	085B006 0610	↓	6	10	SO	G	6	3	–	1	1	1				
12/12	0925	085S009 0002 (FR)	085B 009	0	2	SO	G	6	3	–	1	1	1				
12/12	0930	085B009 0206	↓	2	6	SO	G	6	3	–	1	1	1				
12/12	0935	085B009 0610	↓	6	10	SO	G	15	9	–	2	2	2				DO MS/MSD

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Terry Rojahn	12/13/04	1830	1. RECEIVED BY FEDERAL EXPRESS	12-13-04	1830
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TINUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER 3649

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
N1245 0331	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / ANH HO
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		TERRY ROJAHN	(412) 921-8857	940 SOUTH HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB # 8447 8135 6450		SEATTLE, WA 98108

STANDARD TAT ☒ EXCEPT FOR COMMENTS
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2004	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES SW 846 8260B	SVOCS w/PAHs & PCBs	Energetics-Nitroaromatics, Nitramines, & Perchlorates	TAL METALS & SN	SVOCs w/PAHs, PCBs, Pesticides & Herbicides				COMMENTS
								CONTAINER TYPE PLASTIC (P) or GLASS (G)	P	G	G	G	G				
								PRESERVATIVE USED	4°C	4°C	4°C	4°C	4°C				
12/12	1020	08SS008 0002	08SB 008	0	2	SO	G	6	3	1	1	1					
12/12	1025	08SB008 0206	↓	2	6	SO	G	6	3	1	1	1					
12/12	1030	08SB008 0610	↓	6	10	SO	G	6	3	1	1	1					
12/12	1045	08SS007 0002	08SB 007	0	2	SO	G	6	3	1	1	1					
12/12	1050	08SB007 0206	↓	2	6	SO	G	6	3	1	1	1					
12/12	1055	08SB007 0610	↓	6	10	SO	G	6	3	1	1	1					
12/12	1100	08SB007 1013	↓	10	13	SO	G	6	3	1	1	1					
12/12	1135	08SS010 0002 (TK)	08SB 010	0	2	SO	G	5	3	–	–	1	1				
12/12	1140	08SB010 0206	↓	2	6	SO	G	5	3	–	–	1	1				
12/12	1145	08SB010 0610	↓	6	10	SO	G	5	3	–	–	** 1	* 1				
12/12	1200	08SB010 1013	↓	10	13	SO	G	5	3	–	–	** 1	* 1				
12/12	1355	08SS011 0002	08SB 011	0	2	SO	G	5	3	–	–	1	1				
12/12	1400	08SB011 0206	↓	2	6	SO	G	5	3	–	–	1	1				

1. RELINQUISHED BY Terry Rojahn	DATE 12-13-04	TIME 1830	1. RECEIVED BY FEDERAL EXPRESS	DATE 12-13-04	TIME 1830
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS * HOLD & EXTRACT ** HOLD

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (COPY) PINK (FILE COPY)

4/02R
FOR TtNUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 3650 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
N1245 CTO 0331	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / ANH HO
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		T. ROJAHN	(412) 921-8857	940 SOUTH HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB# 8447813564 50		SEATTLE, WA 98108

STANDARD TAT ☒ EXCEPT FOR COMMENTS
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): P G G G G G
PRESERVATIVE USED: 4°C 4°C 4°C 4°C 4°C 4°C

DATE YEAR 2004	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES SW 8260B	SVOCs w/PAHs, PCBs SW 8260B	PESTICIDES & HERBICIDES	TAL METALS & SN	CEC, PH & TOC	SVOCs w/PAHs & PCBs	Energetics, Nitroaromatics Nitramines & Perchlorates			COMMENTS
12/12	1410	0855012 0002	0858 012	0	2	SO	G	5	3	1	1							
12/12	1415	0858012 0206		2	6	SO	G	13	9	2	2							DO MS/MSD
12/12	1420	0858012 0610		6	10	SO	G	5	3	* 1	** 1							
12/12	1430	0858012 1018		10	18	SO	G	5	3	* 1	** 1							
12/12	1450	0855013 0002	0858 013	0	2	SO	G	5	3	1	1							
12/12	1455	0858013 0206		2	6	SO	G	5	3	1	1							
12/12	1500	0858013 0610		6	10	SO	G	5	3	* 1	** 1							
12/12	1505	0858013 1013		10	13	SO	G	5	3	* 1	** 1							
12/12	1525	0855014 0002	0858 014	0	2	SO	G	1	-	-	-	1						DO MS/MSD ON CEC ONLY
12/12	0000	FD12120401	QC	-	-	SO	G	6	3	-	1	-	1	1				DUP FROM 0858009 0610
12/12	0000	FD12120402	QC	-	-	SO	G	5	3	1	1							DUP FROM 0858012 0206

1. RELINQUISHED BY Tony Rojahn	DATE 12-13-04	TIME 1830	1. RECEIVED BY FEDERAL EXPRESS	DATE 12-13-04	TIME 1830
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS * EXTRACT & HOLD ** HOLD

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER 3651 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
N1245 CTO 331	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / ANH HO
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
S Conte		TERRY ROJAHN	(412) 921-8857	940 SOUTH HARVEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB# 8447 8135 5682		SEATTLE, WA 98108

STANDARD TAT ☒ EXCEPT FOR COMMENTS
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): P / G / G
PRESERVATIVE USED: 4°C / 4°C / 4°C

DATE YEAR 2004	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: VOLATILES SW 846 8260B	SVOCS W/PAHS, PCBS	PESTICIDES & HERBICIDES	TAL METALS & SN					COMMENTS
12/14	0800	TB12140401	QC	–	–	QC	G	2	2								TRIP BLANK, ~~Aqu~~ TA GLASS W/HCL
12/14	0915	1555030 0002	1558 030	0	2	SO	G	5	3	1	1						
12/14	0920	1558030 0206	1558 030	2	6	SO	G	5	3	*1	**1						
12/14	0950	1555033 0002	1558 033	0	2	SO	G	5	3	1	1						
12/14	1000	1555036 0002	1558 036	0	2	SO	G	5	3	1	1						
12/14	1015	1555034 0002	1558 034	0	2	SO	G	5	3	1	1						
12/14	1050	1555041 0002	1558 041	0	2	SO	G	5	3	1	1						
12/14	1145	1555038 0002	1558 038	0	2	SO	G	5	3	1	1						
12/14	1330	1555062 0002	1558 062	0	2	SO	G	13	9	2	2						DO MS/MSD
12/14	1340	1555062 0206	↓	2	6	SO	G	5	3	*1	**1						
12/14	1430	1555049 0002	1558 049	0	2	SO	G	5	3	1	1						
12/14	0000	FD12140201	QC	–	–	SO	G	5	3	1	1						DUP OF 1555062 0002
						~~SO~~ TC											

1. RELINQUISHED BY	DATE	TIME	1. RECEIVED BY	DATE	TIME
Terry Rojahn	12-14-04	1830	FEDERAL EXPRESS	12-14-04	1830
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: * EXTRACT & HOLD ** HOLD

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER 3652 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
N1245 CTO 331	NSWC CRANE	RALPH BASINKI	412 921-8308	LAUCKS / HUGH PRENTICE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		TERRY ROJAHN	412 921-8857	940 SOUTH HARNEY STREET
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB# 8447 8135 5627		SEATTLE WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES SW 846 8260B	TOTAL METALS PLUS TIN	DIS. METALS PLUS TIN	SVOCS & PAHS	PCBS	HERBICIDES & PESTICIDES	NITROAROMATICS & NITRAMINES	PERCHLORATES	COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G	P	P	G	G	G	G	P	
PRESERVATIVE USED									4°C/HCl	4°C/HNO3	4°C/HNO3	4°C	4°C	4°C	4°C	4°C	
01/05	0800	TB01050501	QC	-	-	QC	G	2	2								TRIP BLANK
01/05	1320	15GWTW005	15TW 005	-	-	GW	G	14	3	1	-	4	2	4			
01/05	1320	15GWTW005-F	↓	-	-	GW	G	1	-	-	1	-	-	-			
01/06	1025	08GWTW003	08TW 003	-	-	GW	G	17	3	1	-	4	-	-	6	3	MS/MSD ON ENERGENTICS
~~01/06~~	~~1025~~	~~08GWTW003-F~~	~~↓~~	~~-~~	~~-~~	~~GW~~	~~G~~	~~1~~	~~-~~	~~-~~	~~1~~	~~-~~					TR
01/06	1315	08GWTW002	08TW 002	-	-	GW	G	8	3	1	-	2	-	-	1	1	MIN. VOL
01/06	1315	08GWTW002-F	↓	-	-	GW	G	1	-	-	1	-	-	-	-	-	
TR ~~01/06~~	~~0000~~ 0000	08FD01060501	QC	-	-	GW	G	3	-	-	-	-	-	-	2	1	
~~000~~ TR																	

1. RELINQUISHED BY	DATE	TIME	1. RECEIVED BY	DATE	TIME
	1/06/05	1830	FEDERAL EXPRESS	1/06/05	1830
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TINUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER 3653 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO 331 N1245	NSWC CRANE	RALPH BASINSKI	412 921-8308	EC LABS / JAC PADGETT
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
Terry Rojahn		TERRY ROJAHN	412 921-8857	11422 N. US HIGHWAY 41
		CARRIER/WAYBILL NUMBER		CITY, STATE
		PICK UP BY EC LABS		FARMERSBURG, IN

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)								COMMENTS
									PRESERVATIVE USED								
									TYPE OF ANALYSIS	FECAL COLIFORM Method 9222D							
1/07	0705	08GWTW004	STW 004	—	—	GW	G	1	1								
1/07	0715	08GWTW003	STW 003	—	—	GW	G	1	1								
1/07	0735	08GWTW002	STW 002	—	—	GW	G	1	1								
1/07	0745	08GWTW001	STW 001	—	—	GW	G	1	1								
1/07	0000	08FD0107050 1	QC	—	—	GW	G	1	1								FROM 08GWTW002

1. RELINQUISHED BY Terry Rojahn	DATE 1-07-05	TIME 0922	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY Clara Copland (MR. COPLAND)	DATE 1/7	TIME 0.9.1

COMMENTS
* Sodium thiosulfate

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

FORM 4/02R TINUS-001

TETRA TECH NUS, INC. CHAIN OF CUSTODY NUMBER 3655 PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO N1245 331	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LANCKS / HUGH PRENTICE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		TERRY ROJAHN	(412) 921-8857	940 SOUTH HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB # 8447 8135 5638		SEATTLE, WA 98108

FOR J. GOERDT

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES SW 846 8260B	NITROAROMATICS & NITRAMINES	PERCHLORATES	TOTAL METALS + TIN	DIS. METALS + TIN	SVOCs + PAHS	PCBS	HERBICIDES & PESTICIDES	COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G	G	P	P	P	G	G	G	
PRESERVATIVE USED									4°C/HCl	4°C	4°C	4°C/HNO3	4°C/HNO3	4°C	4°C	4°C	
1/06	1230	TB0106050 1	QC	-	-	QC	G	2	2	-	-	-	-	-	-	-	
1/06	1440	08GWTW001	8TW 001	-	-	GW	G	8	3	1	1	1	-	2	-	-	MIN. VOL.
1/06	1440	08GWTW001-F	↓	-	-	GW	G	1	-	-	-	-	1	MS/MSD ONLY	-	-	
1/06	1612	08GWTW004	8TW 004	-	-	GW	G	8	3	1	1	1	-	2	-	-	MIN. VOL.
1/06	1612	08GWTW004-F	↓	-	-	GW	G	1	-	-	-	-	1	-	-	-	
1/07	1006	15GWTW008	15TW 008	-	-	GW	G	14	3	-	-	1	-	4	2	4	
1/07	1006	15GWTW008-F	↓	-	-	GW	G	1	-	-	-	-	1	-	-	-	
1/07	1115	15GWTW006	15TW 006	-	-	GW	G	32	9	-	-	3	-	8	4	8	DO MSIMSD
TR ~~1/07~~		~~15GWTW006-F~~															
1/07	1500	15GWTW007	15TW 007	-	-	GW	G	14	3	-	-	1	-	4	2	4	
1/07	1500	15GWTW007-F	↓	-	-	GW	G	1	-	-	-	-	1	-	-	-	
1/07	0000	15FD0107050 1	QC	-	-	GW	G	14	3	-	-	1	-	4	2	4	FROM 15GWTW006

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	1/07/05	1900	1. RECEIVED BY FEDERAL EXPRESS	1/07/05	1900
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER 3656 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO N1245 331	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / HUGH PRENTICE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
Terry Rojahn		TERRY ROJAHN	(412) 921-8857	940 SOUTH HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB# 8447 8135 6358		SEATTLE, WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G, P, P, G, G, G, G, P

PRESERVATIVE USED: 4°C, 4°C HCl, 4°C HNO3, HNO3, 4°C, 4°C, 4°C, 4°C, 4°C

TYPE OF ANALYSIS: Volatiles SW 846 8260B; Total Metals + Tin; Dis. Metals + Tin; SVOCs + PAHs; PCBs; Herbicides & Pesticides; Nitroaromatics & Nitramines; Perchlorates

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	Volatiles SW 846 8260B	Total Metals + Tin	Dis. Metals + Tin	SVOCs + PAHs	PCBs	Herbicides & Pesticides	Nitroaromatics & Nitramines	Perchlorates	COMMENTS
1/08	0730	TB01080501	QC	-	-	QC	G	2	2								TRIP BLANK
1/08	0904	15GWTW004	15TW 004	-	-	GW	G	9	3	1	-	2	1	2			MIN. VOL
1/08	0904	15GWTW004-F	↓	-	-	GW	G	1	-	-	1	-	-	-			
1/08	0950	15GWTW002	15TW 002	-	-	GW	G	9	3	1	-	4	1	-			
1/08	0950	15GWTW002-F	↓	-	-	GW	G	1	-	-	1	-	-	-			
1/08	1300	15GWTW001	15TW 001	-	-	GW	G	9	3	1	-	4	1	-			
1/08	1525	15GWTW003	15TW 003	-	-	GW	G	10	3	1	-	4	2	-			
1/08	1525	15GWTW003-F	↓	-	-	GW	G	1	-	-	1	-	-	-			
1/08	1630	RB01080501	QC	-	-	QC	G	11	3	1	-	2	1	2	1	1	TUBING RINSATE
1/09	0855	08SW00901	8SW 009	-	-	SW	G	10	3	*1	-	3	1	-	1	1	
1/09	0855	08SW00901-F	↓	-	-	SW	G	1	-	-	*1	-	-	-	-	-	
1/09	0955	08SW00701	8SW 007	-	-	SW	G	30	9	*3	-	9	3	-	3	3	DO MS/MSD
1/09	0955	08SW00701-F	↓	-	-	SW	G	3	-	-	*3	-	-	-	-	-	DO MS/MSD

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Terry Rojahn	1/10/05	1900	1. RECEIVED BY FEDERAL EXPRESS	1/10/05	1900
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS: * TAL METALS ONLY

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R FOR TINUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER 3657 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO N1245 331	NSWIC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / HUGH PRENTICE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
Terry Rojahn		TERRY ROJAHN	(412) 921-8857	940 SOUTH HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB# 8447 8135 6358		SEATTLE WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES SW 846 8260B	TAL METALS (TOTAL)	TAL METALS (DISSOLVED)	SVOCS & PAHS	PCBS	NITROAROMATICS & NITRAMINES	PERCHLORATES	PESTICIDES & HERBICIDES	COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G	P	P	G	G	G	G		
PRESERVATIVE USED									4°C/HCl	4°C/HNO3	4°C/HNO3	4°C	4°C	4°C	4°C		
1/09	1138	08SW00801	8SW 008	–	–	SW	G	10	3	1	–	3	1	1	1		
1/09	1138	08SW00801-F	↓	–	–	SW	G	1	–	–	1	–	–	–	–		
1/09	1340	08SW00601	8SW 006	–	–	SW	G	10	3	1	–	3	1	1	1		
1/09	1340	08SW00601-F	8SW 006	–	–	SW	G	1	–	–	1	–	–	–	–		
1/09	1415	08SW00301	8SW 003	–	–	SW	G	9	3	1	–	3	–	1	1		
1/09	1415	08SW00301-F	↓	–	–	SW	G	1	–	–	1	–	–	–	–		
1/09	1450	08SW00101	8SW 001	–	–	SW	G	9	3	1	–	3	–	1	1		
1/09	1450	08SW00101-F	↓	–	–	SW	G	1	–	–	1	–	–	–	–		
1/09	0000	08FD01090501	QC	–	–	SW	G	10	3	1	–	3	1	1	1		FROM 08SW00701 ↓
1/09	0000	08FD01090501-F	QC	–	–	SW	G	1	–	–	1	–	–	–	–		
1/09	1540	15SW01901	15SW 019	–	–	SW	G	10	3	*1	–	3	1	~~X~~	X (TA)	2	
1/09	1540	15SW01901-F	15SW 019	–	–	SW	G	1	–	–	*1	–	–	–	–	–	
1/09	1600	15SW01801	15SW 018	–	–	SW	G	10	3	*1	–	3	1	–	–	2	

1. RELINQUISHED BY Terry Rojahn	DATE 1/10/05	TIME 1900	1. RECEIVED BY FEDERAL EXPRESS	DATE 1/10/05	TIME 1900
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS * = PLUS TAN

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER 3658 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
N1245 CTO 331	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / HUGH PRENTICE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		TERRY ROJAHN	(412) 921-8857	940 S. HARNEY ST
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB # 8447 8135 6358		SEATTLE WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G G G P P G P

PRESERVATIVE USED: 4°C/HCl, 4°C, 4°C, 4°C, 4°C/HNO3, 4°C/HNO3, 4°C, 4°C

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES SW 846 8260B	SVOCS & PAHS	PCBS	PESTICIDES & HERBICIDES	TOTAL METALS + TIN	DIS METALS + TIN	NITROAROMATICS & NITRAMINES	PERCHLORATES	COMMENTS
1/09	1600	15SW01801-F	15SW 018	-	-	SW	G	1	-	-	-	-	-	1			
1/10	1000	08SW00502	8SW 005	-	-	SW	G	10	3	4	-	-	*1	-	1	1	DEEP
1/10	1020	08SW00501	↓	-	-	SW	G	10	3	4	-	-	*1	-	1	1	SHALLOW
1/10	1000	08SW00502-F		-	-	SW	G	1	-	-	-	-	-	*1	-	-	DEEP
1/10	1020	08SW00501-F	↓	-	-	SW	G	1	-	-	-	-	-	*1	-	-	SHALLOW
1/10	1045	08SW00402	8SW 004	-	-	SW	G	10	3	4	-	-	*1	-	1	1	DEEP
1/10	1045	08SW00402-F		-	-	SW	G	1	~~3~~	-	-	-	-	*1	-	-	DEEP
1/10	1115	08SW00401		-	-	SW	G	10	3	4	-	-	*1	-	1	1	SHALLOW
1/10	1115	08SW00401-F	↓	-	-	SW	G	1	~~3~~	-	-	-	-	*1	-	-	SHALLOW

1. RELINQUISHED BY	DATE 1/10/05	TIME 1900	1. RECEIVED BY FEDERAL EXPRESS	DATE 1/10/05	TIME 1900
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS * PAL METALS ONLY

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (LAB COPY) PINK (FILE COPY)

4/02R
FORM TINUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER 3660

PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
N1245 CTO 331	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / HUGH PRENTICE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		TERRY ROWAN	(412) 921-8857	940 SOUTH HARNEY ST
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX AB# 8497 8135 6369		SEATTLE, WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G G G P P

PRESERVATIVE USED: 4°C/HCl, 4°C, 4°C, 4°C, 4°C/HNO3, 4°C/HNO3

TYPE OF ANALYSIS

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES SW 8260B	SVOCS & PAHS SW 8260	PCBS	HERBICIDES & PESTICIDES	TOTAL METALS + SW	DIS METALS + SW			COMMENTS
1/11	0700	TB01110501	QC	-	-	QC	G	2	2								
1/11	0945	15SW00201	15SW 002	-	-	SW	G	11	3	4	1	2	1	-			
1/11	0945	15SW00201-F	↓	-	-	SW	G	1	-	-	-	-	-	1			
1/11	1035	15SW00101	15SW 001	-	-	SW	G	11	3	4	1	2	1	-			
1/11	1035	15SW00101-F	↓	-	-	SW	G	1	-	-	-	-	-	1			
1/11	1110	* 15SW01601	15SW 016	-	-	SW	G	11	3	4	1	2	1	-			
1/11	1110	* 15SW01601-F	↓	-	-	SW	G	1	-	-	-	-	-	1			
1/11	1220	15SW01701	15SW 017	-	-	SW	G	11	3	4	1	2	1	-			
1/11	1220	15SW01701-F	↓	-	-	SW	G	1	-	-	-	-	-	1			
1/11	1315	15SW01501	15SW 015	-	-	SW	G	11	3	4	1	2	1	-			
1/11	1315	15SW01501-F	↓	-	-	SW	G	1	-	-	-	-	-	1			
1/11	1410	15SW01301	15SW 013	-	-	SW	G	11	3	4	1	2	1	-			
1/11	1410	15SW01301-F	↓	-	-	SW	G	1	-	-	-	-	-	1			

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY: Terry Rowan	1/12/05	1900	1. RECEIVED BY: FEDERAL EXPRESS	1/12/05	1900
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS: * LABELS SHOULD READ 15SW016 NOT 15ST016 FOR THIS COC

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER 3662 x 5 | 5

PROJECT NO: CTO N1245 331	FACILITY: NSWC CRANE	PROJECT MANAGER: RALPH BASINSKI	PHONE NUMBER: (412) 921-8308
		FIELD OPERATIONS LEADER: TERRY ROJAHN	PHONE NUMBER: (412) 921-8857
		CARRIER/WAYBILL NUMBER: FED. EX AB # 8447 8135 6358	

LABORATORY NAME AND CONTACT: LAUCKS / HUGH PRENTICE

ADDRESS: 940 S. HARNEY ST

CITY, STATE: SEATTLE WA 98108

SAMPLERS (SIGNATURE): Terry Rojahn

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH ~~(FT)~~ INCHES	BOTTOM DEPTH ~~(FT)~~ INCHES	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES SW 846 8260B	SVOCS, PAHS & PCBS	NITROAROMATICS & PERCHLORATE & NITRAMINES	SVOCS & PAHS	SVOC, PAHS, PCBS HERBICIDES & PESTICIDES	TAL METALS PLUS TIN			COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G	G	G	G	G	G			
PRESERVATIVE USED									4°C	4°C	4°C	4°C	4°C	4°C			
1/09	0905	08SD009 0006	8SD 009	0	6	SD	G	3	1	1	1						
1/09	1008	08SD007 0006	8SD 007	0	6	SD	G	6	2	2	2						DO MS/MSD
1/09	1145	08SD008 0006	8SD 008	0	6	SD	G	3	1	1	1						
1/09	1350	08SD006 0006	8SD 006	0	6	SD	G	3	1	1	1						
1/09	1420	08SD003 0006	8SD 003	0	6	SD	G	3	1	-	1	1					
1/09	1450	08SD002 0006	8SD 002	0	6	SD	G	3	1	-	1	1					
1/09	1510	08SD001 0006	8SD 001	0	6	SD	G	3	1	-	1	1					
1/09	0000	08FD010905 02	QC	0	6	SD	G	3	1	1	1						FROM 08SD007 0006
1/09	1540	15SD019 0006	15SD 019	0	6	SD	G	3	1	-	-	-	1	1			
1/09	1605	15SD018 0006	15SD 018	0	6	SD	G	3	1	-	-	-	1	1			
1/10	1145	08SD004 0012	8SD 004	0	12	SD	G	3	1	-	1	1					
1/10	1200	08SD004 1224	↓	12	24	SD	G	3	1	-	1	1					
1/10	1220	08SD005 0012	8SD 005	0	12	SD	G	3	1	-	1	1					
1/10	1235	08SD005 1224		12	24	SD	G	3	1	-	1	1					

1. RELINQUISHED BY: Terry Rojahn	DATE: 1/10/05	TIME: 1900	1. RECEIVED BY: FEDERAL EXPRESS	DATE: 1/10/05	TIME: 1900
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER 3664 PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO N11245 331	RALPH BASINSKI	RALPH BASINSKI	(412) 921-8308	LAUCKS / HUGH PRENTICE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		TERRY ROJAHN	(412) 921-8857	940 SOUTH HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB# 8447 8135 6369		SEATTLE WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES SW 8260 8260B	SVOCS & PAHS	PCBS	HERBICIDES & PESTICIDES	TOTAL METALS + SN	DIS. METALS + SN	NITROAROMATICS & NITRAMINES	PERCHLORATE	COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G	G	G	G	P	P	G	P	
PRESERVATIVE USED									4°C	4°C / HCl	4°C	4°C	4°C / HNO3	4°C / HNO3	4°C	4°C	
1/11	1420	15SW01401	15SW 014	–	–	SW	G	11	3	4	1	2	1	–			
1/11	1420	15SW01401-F	↓	–	–	SW	G	1	–	–	–	–	–	1			
1/11	1520	15SW00501	15SW 005	–	–	SW	G	9	3	4	1	–	1	–			
1/11	1520	15SW00501-F	↓	–	–	SW	G	1	–	–	–	–	–	1			
1/11	1550	15SW00601	15SW 006	–	–	SW	G (7) ~~25~~ 27	9	~~4~~ 6	3	6	3	–				DO MS/MSD
1/11	1550	15SW00601-F	↓	–	–	SW	G	3	–	–	–	–	–	3			DO MS/MSD
1/11	0000	15FD01110501	15SW QC	–	–	SW	G	11	3	4	1	2	1	–			FROM 15SW006
1/11	0000	15FD01110501-F	↓	–	–	SW	G	1	–	–	–	–	–	1			↓
1/11	1700	08RB01110501	QC	–	–	QC	G	7	3	~~1~~ 2 (6)	–	–	–	–	1	1	~~1~~ (12) WILDCO SLEEVE
1/12	0905	15SW00901	15SW 009	–	–	SW	G	11	3	4	1	2	1	–			
1/12	0905	15SW00901-F	↓	–	–	SW	G	1	–	–	–	–	–	1			
1/12	0955	15ST01001	15SW 010	–	–	~~SW~~ ST (10)	G	10	3	3	1	2	1				
1/12	0955	15ST01001-F	↓	–	–	~~SW~~ ST (10)	G	1	–	–	–	–	–	1			

1. RELINQUISHED BY	DATE	TIME	1. RECEIVED BY	DATE	TIME
	1/12/05	1900	FEDERAL EXPRESS	1/12/05	1900
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

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FORM NO. TINUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER 3665

PAGE 1 OF 1

PROJECT NO: N1245 CTO 331	FACILITY: NSWC CRANE	PROJECT MANAGER: RALPH BASINSKI	PHONE NUMBER: (412) 921-8308
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: TERRY ROJAHN	PHONE NUMBER: (412) 921-8857
		CARRIER/WAYBILL NUMBER: FED. EX. AB# 8447 8135 6369	

LABORATORY NAME AND CONTACT: LAUCKS / HUGH PRENTICE

ADDRESS: 940 SOUTH HARNEY ST.

CITY, STATE: SEATTLE WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G G G

PRESERVATIVE USED: 4°C 4°C 4°C 4°C

TYPE OF ANALYSIS

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES SW 8260 8260B	SVOCS, PAHS, PCBS SW 8270	HERBICIDE & PESTICIDE	TAL METALS PLUS TIN & CYANIDE	TAL METALS PLUS TIN					COMMENTS
1/11	1000	15SD002 0006	15SD 002	0	0.5	SD	G	3	1	1	1							
1/11	1040	15SD001 0006	15SD 001	0	0.5	SD	G	3	1	1	1							
1/11	1115	15SD016 0006	15SD 016	0	0.5	SD	G	3	1	1	–	1						
1/11	1225	15SD017 0006	15SD 017	0	0.5	SD	G	3	1	1	–	1						
1/11	1320	15SD015 0006	15SD 015	0	0.5	SD	G	3	1	1	–	1						
1/11	1415	15SD013 0006	15SD 013	0	0.5	SD	G	3	1	1	–	1						
1/11	1425	15SD014 0006	15SD 014	0	0.5	SD	G	3	1	1	–	1						
1/11	1525	15SD005 0006	15SD 005	0	0.5	SD	G	6	2	2	2							DO MS/MSD
1/11	0000	15FD0111050Z	QC	0	0.5	SD	G	3	1	1	1							DUP OF 15SD005 0006
1/11	1555	15SD006 0006	15SD 006	0	0.5	SD	G	3	1	1	–	1						
1/12	0910	15SD009 0006	15SD 009	0	0.5	SD	G	3	1	1	–	1						

1. RELINQUISHED BY: Terry Rojahn	DATE: 1/12/05	TIME: 1900	1. RECEIVED BY: FEDERAL EXPRESS	DATE: 1/12/05	TIME: 1900
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (COPY) PINK (FILE COPY)

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FORM TINUS-001

TETRA TECH NUS, INC. CHAIN OF CUSTODY NUMBER 3666 PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
N1245 CTO 331	NSWC CRANE	RALPH BASWSKI	(412) 921-8308	LAUCKS / HUGH PRENTICE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		TERRY ROJAHN	(412) 921-8857	940 SOUTH HARNEY ST
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX AB# 8447 8135 6369		SEATTLE WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOLATILES SW 846-8260B	SVOCS & PAHS	PCBS	HERBICIDES & PESTICIDES	TOTAL METALS + SP	DIS METALS + SP			COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G	G	G	G	G	G			
PRESERVATIVE USED									4°C	4°C	4°C	4°C	4°C / HCl	4°C / HNO3			
1/12	1035	15ST01101	15SW 011	–	–	ST	G	10	3	3	1	2	1	–			
1/12	1035	15ST01101-F	↓	–	–	ST	G	1	–	–	–	–	–	1			
1/12	1120	15ST00401	15SW 004	–	–	ST	G	10	3	3	1	2	1	–			
1/12	1120	15ST00401-F	↓	–	–	ST	G	1	–	–	–	–	–	1			
~~1/12~~ TR						~~ST~~ TR											
~~1/12~~ TR						~~ST~~ TR											

1. RELINQUISHED BY	DATE	TIME	1. RECEIVED BY	DATE	TIME
Terry Rojahn	1/12/05	1900	FEDERAL EXPRESS	1/12/05	1900
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TINUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER 3694

PAGE 1 OF 1

PROJECT NO: CTO N1245 331	FACILITY: NSWC CRANE	PROJECT MANAGER: RALPH BASINSKI	PHONE NUMBER: (412) 921-8308
SAMPLERS (SIGNATURE): [signature]		FIELD OPERATIONS LEADER: TERRY ROJAHN	PHONE NUMBER: (412) 921-8857
		CARRIER/WAYBILL NUMBER: FED. EXAB# 8447 8135 3695	

LABORATORY NAME AND CONTACT: LAUCKS / HUGH PRENTICE

ADDRESS: 940 SOUTH HARNEY ST.

CITY, STATE: SEATTLE WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G

PRESERVATIVE USED: 4°C

TYPE OF ANALYSIS: PESTICIDE / PCBS

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	PESTICIDE / PCBS	COMMENTS
2/14	1420	1555047000Z	1558 047	0	2	SO	G	1	1	
2/14	1430	1555048000Z	1558 048	0	2	SO	G	1	1	
2/14	1448	1558048 0206	↓	2	6	SO	G	1	1	

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature]	2/16/05	1830	1. RECEIVED BY FEDERAL EXPRESS	2/16/05	1830
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (COPY) PINK (FILE COPY)

4/02R
FORM NO. TINUS-001

APPENDIX C.6
EQUIPMENT CALIBRATION LOGS

FIGURE 7-1

DOCUMENTATION OF FIELD CALIBRATION

SITE NAME: NSWC CRANE

PROJECT NO.: N1245

Date of Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		
12-8-04	PID PHOTOVAC	ED HE 322	SJC	—	—	95.8	100 PPM	00250-03 EXP 2-17-05	
12-9-04	"	"	SJC	—	—	98	100 PPM	"	
12-10-04	"	"	SJC	—	—	95	"	"	
12-11-04	"	"	SJC	—	—	92	"	"	
12-12-04	"	"	SJC	—	—	95	100 PPM	"	
12-13-04	"	"	"	—	—	95	100 "	"	
12-14-04	"	"	"	—	—	94	100 "	"	

FIGURE 7-1

DOCUMENTATION OF FIELD CALIBRATION

SITE NAME: Swmus 08/15 12/13/16

PROJECT NO.: 1245 6878/7448

Date of Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		
1-5-05	LaMotte	4175-1503	JD	0	—	9.96	10.0	NA	ok
1-6-05	"		JD	0	—	9.99	10.0		ok
1-7-05	"		JD	0	—	10.00	10.0		ok
1-8-05	"		JD	0	—	10.0	10.0		ok
1-9-05	"		CO	0.05	0	10.0	10.0		ok
1-10-05	"		CO	0	—	10.0	—		ok
1-11-05	"		CO	0	0	10.0	10.0		ok
1-12-05	"		CO	0	0	9.87	10.0		ok
1-22-05	"		CO	0	—	10.0	—		ok
1-23-05	"		TR	0	0	10.0	—		ok
1-25-05	"		CO	0.0	—	10.0	—		ok

FIGURE 7-1

DOCUMENTATION OF FIELD CALIBRATION

SITE NAME: Swmus 08/15 12/13/16

PROJECT NO.: 1245 6878/7448

Date of Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		
1-5-05	Lamotte	4536-3303	QD	0	–	9.98	10.0		ok
1-6-05	"		QD	0	–	10.0	–		ok
1-7-05	"		QD	0	–	10.0	–		"
1-8-05	"		QD	0	–	10.0	–		ok
1-12-05	"		CD	0	–	10.0	–		OK
1-22-05	"		CD	0	–	10.0	–		OK
1-23-05	"		TK	0	0	10.0	–		OK
1-25-05	"		CD	0.0	–	10.0	–		OK

Turbidity Meter
LaMotte
0355-4197

FIGURE 7-1

DOCUMENTATION OF FIELD CALIBRATION

SITE NAME: NSWC CRANE

PROJECT NO.: 7440/6878

Date of Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		
2-2-05	2020	0355-4197	TR	0.0	0.0	0.0	0.0	Provided by Vendor	ok
2-3-05			QJS	0	0	11	9.9		ok
2-5-05			QJS	0	0	9.2	10		
2-6-05			LD	0	0	10	10		ok
2-7-05			TR	0	0	10	10		ok

FIGURE 7-1

DOCUMENTATION OF FIELD CALIBRATION

SITE NAME: SWMU 13/16 - RAY 12 Rd 2

PROJECT NO.: 7448/6878

Date of Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		
2-1-05	Lamotte	4536-3303	QS	0	0	10	10	NA	
2-2-05			QS	0	0	10	10		
2-3-05			QS	0	0	10	10		
2-4-05			QS	0	0	11	10		
2-5-05			QS	0	0	10	10		
2-6-05			CD	0	0	10	10		OK
2-7-05			TR	0	0	10	10		
2-8-05			QS	0	0	9.8	10		
2-15-05			CD	0	0	9.9	10		OK
2-16-05			CD	0	0	10	10		OK
2-17-05			CD	0	0	9.5	10		ok
2-18-05			CD	0	0	10	10		ok
2-19-05			CD	0	0	10	10		ok
2-20-05			CD	0	0	10	10		ok
2-21-05			CD	0	0	10.31	10		ok
2-22-05			CD	0	0	10.64	10		ok

FIGURE 7-1

DOCUMENTATION OF FIELD CALIBRATION

SITE NAME: SWMU 13/16 RAA 12 Rd 2

PROJECT NO.: 7448 6878

Date of Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		
2-1-05	Lamotte	4175-1503	CD	0	0	10	10	NA	
2-2-05			CD	0	0	10	10		
2-3-05			CD	0	0	9.97	10		
2-4-05			CD	0	0	10.12	10		
2-5-05			CD	0.7	0	9.98	10		
2-6-05			CD	0	0	9.90	10		OK
2-7-05			TR	0	0	10	10		OK
2-15-05			CD	0	0	9.27	10		replaced battery
2-16-05			CD	0	0	10.54	10		ok
2-17-05			CD	0	0	9.41	10		ok
2-18-05			CD	0	0	9.95	10		ok
2-19-05			CD	0	0	10.26	10		OK
2-20-05			CD	0	0	10	10		OK
2-21-05			CD	0	0	10.07	10		OK
2-21-05			CD	0	0	10.56	10		OK

Tetra Tech NUS, Inc.

DOCUMENTATION OF FIELD CALIBRATION

PROJECT NAME : NSWC CRANE

INSTRUMENT NAME/MODEL: YSI

SITE NAME: SWMUs 08 & 15 12/13/16

MANUFACTURER: YSI

PROJECT No.: N1245, CTO 0331 6878/7498

SERIAL NUMBER: 01009 56 AA

Date of Calibration	Person Performing Calibration	INITIAL READINGS PH 7	PH 4	COND	DO	ORP	FINAL READINGS PH 7	PH 4	COND	DO	ORP	Calibration Standard (Lot No.)	Remarks and Comments
1/5/05	JG CD	6.99	4.05	455	9.87	250.5 17.61	7.00	4.00	1000	9.50	237.4 17.33	7.0 4110 8/23/05 4.0 4098 8/18/05	
1/6/05	JG CD	7.06	3.92	1069	9.22	219.3 17.61	6.99	4.00	1001	9.10	237.6 17.69	SPC 4387 1/21/05 ORP 03X0667	10/05
1/7/05	CD	7.01	4.21	1009	10.04	238.1 16.55	7.00	4.00	1000	9.61	238.0 16.68	"	
1/8/05	CD	7.10	3.79	946	9.74	250.2 15.07	7.00	4.00	1000	9.97	234.6 15.30	"	
1/9/05	CD	7.01	3.99	1094	9.54	233.8 15.47	7.00	4.00	1000	9.63	238.5 15.55	"	
1/11/05	CD	7.01	4.00	1005	7.64	237.6 17.28	7.00	4.00	1001	9.11	236.8 17.43	"	
1/12/05	TR	7.06	3.90	990	9.15	246 19.25	7.00	4.00	1000	9.07	237.4 19.32	"	
1/22/05	CD	7.04	3.96	1014	8.40	227.3 14.53	7.00	4.00	1000	8.60	238.2 14.62	"	replaced DO membrane
1/23/05	CD	7.00	4.03	998	10.53	242.2 10.63	7.00	4.00	1000	9.62	236.7 10.57	"	
1/25/05	CD	7.00	3.99	1101	10.96	227.8 15.31	7.00	4.00	1000	8.88	238.2 16.62	"	
							SWMU 13/16 R&4						
2/1/05	CD	6.98	4.01	910	10.40	240.6 17.93	7.00	4.00	1000	8.79	237.5 17.57	SPC 4599 7/27/05	
2/2/05	JG	7.06	3.97	8.65	1136	233.8 18.05	7.00	4.00	1000	9.42	237.5 18.12	"	
2/3/05	JG	6.86	4.00	1100	9.86 ~~1102~~	241.6 18.23	7.00	4.00	1000	9.45	237.6 18.10	"	
2/5/05	CD	7.10	3.99	1109	4.77	235.6 16.24	7.00	4.00	1000	9.12	237.2 16.30	"	replaced DO membrane
2/6/05	CD	7.03	4.00	1036	9.12	238.6 17.10	7.00	4.00	1000	8.77	237.5 17.04	"	
2/7/05	JG	6.98	4.02	952	9.60	241.2 18.70	7.00	4.00	1000	8.92	238.6 18.60		
2/8/05	JG	6.58	4.03	1016	9.61	242.3 19.87	7.00	4.00	1000	9.15	237.5 19.89		

Tetra Tech NUS, Inc.

DOCUMENTATION OF FIELD CALIBRATION

PROJECT NAME : NSWC CRANE

SITE NAME: SWMUs 08 & 15 12/13/16

PROJECT No.: N1245, CTO 0331
6878 & 7498

INSTRUMENT NAME/MODEL: YSI

MANUFACTURER: YSI

SERIAL NUMBER: 99K1014 AG

Date of Calibration	Person Performing Calibration	INITIAL READINGS PH 7	PH 4	COND	DO	ORP	FINAL READINGS PH 7	PH 4	COND	DO	ORP	Calibration Standard (Lot No.)	Remarks and Comments
1/5/05	JG CD	7.09	3.84	994	8.96	238.7 17.48	7.00	4.00	1000	9.40	239.8 17.51	7.00 4110 8/23/05 4.00 4098 8/18/05	
1/6/05	JG CD	7.03	3.89	536	8.63	268.7 18.38	7.00	4.01	1000	9.13	239.6 18.01	SPC 4387 1/21/05 ORP 03K0667 10/05	
1/7/05	JG	6.98	3.88	890	9.49	214.5 15.38	7.00	4.00	1000	9.66	240.0 15.63	"	
1/8/05	JG	6.92	3.90	826	9.24	220.7 14.37	7.00	4.00	1000	9.81	239.9 14.16	"	
1/10/05	CD	7.02	3.87	529	9.59	225.5 16.17	7.00	4.00	1000	9.71	251.6 16.44	"	
1/12/05	CD	7.06	3.89	1039	9.57	214.1 17.94	7.00	4.00	1000	9.26	253.1 17.89	"	
1/22/05	CD	6.99	3.89	1068	7.55	253.1 18.25	7.00	4.00	1000	8.43	235.1 18.34	"	replaced DO membrane
1/23/05	CD	7.04	3.82	1065	9.12	217.3 11.75	7.00	4.00	1000	9.91	252.5 11.75	"	
1/25/05	CD	7.08	3.84	1130	8.90	211.5 17.93	7.00	4.00	1000	8.85	252.9 17.92	"	
				SWMU			13/16		RA	4			
2/1/05	JG	7.02	3.88	978	14.73	210.1 18.40	7.00	4.00	1010	9.27	240.2 18.40	SPC 4599 7/27/05	
2/2/05	JG	7.04	3.95	947	15.62	18.56 208.8	7.00	4.00	1000	9.35	18.48 252.9		
2/3/05	JG	6.96	3.95	1155	12.01	18.14 221.7	7.00	4.00	1000	9.41	18.37 250.7		
2/4/05	JG	7.04	3.94	952	13.65	18.39 209.3	7.00	4.00	1000	9.37	18.32 237.4		
2/5/05	JG	7.00	3.92	945	12.95	18.88 208.6	7.00	4.00	1000	9.04	19.09 252.3		
2/6/05	JG	7.11	3.88	1151	12.52	19.74 208.3	7.00	4.00	1000	8.99	19.66 252.9		
2/7/05	JG	6.98	3.92	1173	10.05	208.2 19.77	7.00	4.00	1000	8.97	19.74 252.8		
2/8/05	JG	6.97	4.07	1154	9.02	211.2 19.70	7.00	4.00	1000	9.12	19.70 252.9		

Tetra Tech NUS, Inc.

DOCUMENTATION OF FIELD CALIBRATION

PROJECT NAME : NSWC CRANE

INSTRUMENT NAME/MODEL: YSI

SITE NAME: SWMUs ~~08 & 15~~ 13/16

MANUFACTURER: YSI

PROJECT No.: N~~1245~~ 7448, CTO ~~0331~~ 357 / 6878 CTO 343

SERIAL NUMBER: 02A 0~~357~~ 527 AF

Date of Calibration	Person Performing Calibration	INITIAL READINGS PH 7	PH 4	COND	DO	ORP	FINAL READINGS PH 7	PH 4	COND	DO	ORP	Calibration Standard (Lot No.)	Remarks and Comments
2/2/05	JG	6.97	3.94	1095	10.26	251.6 17.28	7.00	4.00	1000	9.25	237.5 17.27	7.0 4110 8/23/05 4.0 4098 8/18/05	
2/3/05	JG	6.87	4.05	888	11.11	234.7 ~~20.77~~ 19.06	7.00	4.00	1000	9.52	237.4 18.06	SPC ~~4092~~ 4590 7/27/05 ORP 03K 0667	10/05
2/5/05	JG	3.38	7.54	11.53	9.39	19.11 242.6	7.00	7.00	1000	8.84	237.5 19.17	"	
2/6/05	CO	—	—	1014	6.91	236.5 17.01	—	—	1000	8.87	237.6 17.17	"	broken pH probe, replaced DO membrane
2/7/05	JG	—	—	1007	9.15	20.26 237.5	—	—	1000	9.12	20.29 237.5	"	"
2/8/05	JG	—	—	1005	9.42	18.50 236.5			1000	9.10	18.25 237.4	"	

Tetra Tech NUS, Inc.

DOCUMENTATION OF FIELD CALIBRATION

PROJECT NAME.: NSWC CRANE

SITE NAME: SWMUs 08 &15 & 12

PROJECT No.: N1245, CTO 0331 6878

INSTRUMENT NAME/MODEL: YSI

MANUFACTURER: YSI

SERIAL NUMBER: 01D0956 AA

Date of Calibration	Person Performing Calibration	INITIAL READINGS PH 7	PH 4	COND	DO	ORP	FINAL READINGS PH 7	PH 4	COND	DO	ORP	Calibration Standard (Lot No.)	Remarks and Comments
2/15/05	CD	7.03	3.99	1024	10.32	242.2 16.04	7.00	4.00	1000	9.47	237.7 16.08	4.0 4098 8/18/05 7.0 4594 7/28/06	
2/16/05	CD	6.97	4.03	1007	10.22	238.9 12.97	7.00	4.00	1000	9.75	236.4 13.03	SPC 4599 7/27/05 CRP 03150667	
2/17/05	CD	7.00	3.96	1015	9.38	~~216.1~~ ~~(244.10)~~	7.00	4.00	1000	9.48	~~232.5~~ ~~(13.93)~~	"	
						237.7 14.10					237.2 14.43		
2/18/05	CD	7.00	4.01	997	9.43	234.9 12.36	7.00	4.00	1000	9.77	237.3 12.36	"	
2/19/05	CD	6.99	3.97	1007	9.45	241.3 10.57	7.00	4.00	1000	9.90	237.3 10.57	"	
2/20/05	CD	7.00	4.04	1030	7.69	231.2 14.17	7.00	4.00	1000	9.56	237.5 14.17	"	
2/21/05	CD	7.03	3.99	1002	7.43	236.1 16.67	7.00	4.00	1000	9.41	237.5 16.62	"	
2/22/05	CD	7.03	4.01	1014	14.86	233.2 13.47	7.00	4.00	1000	9.55	237.5 13.74	"	
3/2/05	JG	7.02	4.18	1029	4.24	233.7 14.77	7.00	4.00	1000	9.75	237.5 14.72	"	
3/3/05	JG	6.98	3.99	974	8.80	236.3 14.26	7.00	4.00	1000	9.38	237.5 14.20	"	
3/4/05	JG	7.02	4.24	1065	5.78	237.5 17.62	7.00	4.00	1002	9.74	237.5 17.74	"	
3/5/05	JG	7.25	3.78	974	11.74	234.6 16.31	7.00	4.00	1001	9.23	237.5 16.00	"	
3/6/05	JG	6.97	3.94	995	9.25	235.7 16.72	7.00	4.00	1000	9.54	237.5 16.30	"	
3/7/05	JG	7.03	4.03	948	6.38	237.4 17.4	7.00	4.00	1001	9.15	237.8 17.10		

Tetra Tech NUS, Inc.

DOCUMENTATION OF FIELD CALIBRATION

PROJECT NAME : NSWC CRANE

SITE NAME: SWMUs 08 &15 & 12

PROJECT No.: N1245, CTO 0331 & 6878

INSTRUMENT NAME/MODEL: YSI

MANUFACTURER: YSI

SERIAL NUMBER: 99K1014 AG

Date of Calibration	Person Performing Calibration	INITIAL READINGS					FINAL READINGS					Calibration Standard (Lot No.)	Remarks and Comments
		PH 7	PH 4	COND	DO	ORP	PH 7	PH 4	COND	DO	ORP		
2/15/05	CD	7.10	3.84	1185	5.61	210.5 16.37	7.00	4.00	1000	9.31	252.9 16.37	4.0 4098 8/18/05 7.0 4594 7/28/06	replaced DO membrane
2/16/05	CD	7.07	3.83	1199	8.50	211.4 13.91	7.00	4.00	1000	9.53	252.9 13.73	SPC 4599 7/27/05 ORP 03K0667	
2/17/05	CD	7.00	3.95	1212	7.51	210.1 14.10	7.00	4.00	1000	9.35	252.9 13.93	"	
2/18/05	CD	7.05	3.85	1209	7.92	210.6 13.35	7.00	4.00	1000	9.49	252.9 13.29	"	
2/19/05	CD	7.06	3.90	1196	7.94	210.6 11.94	7.00	4.00	1000	9.63	252.9 11.32	"	
2/20/05	CD	6.98	3.93	1241	7.92	206.3 15.82	7.01	4.00	999	7.89	252.9 15.91	"	
2/21/05	CD	7.01	3.99	1262	8.21	203.2 16.39	7.00	4.00	1000	9.27	252.9 16.40	"	
2/22/05	CD	6.98	3.96	1268	8.88	202.2 14.46	7.00	4.00	1000	9.47	252.9 14.07	"	
3/2/05	JG	6.75	4.06	1305	10.54	201.3 16.95	7.00	4.00	1000	9.70	252.9 16.78	"	
3/3/05	JG	6.92	4.04	926	10.34	195.8 14.26	7.00	4.00	1000	9.33	252.9 14.71		
3/4/05	JG	6.94	4.04	1397	8.83	197.2 16.70	7.00	4.00	1000	9.33	252.9 16.50		

APPENDIX D
MISCELLANEOUS FIELD DOCUMENTATION

APPENDIX D.1
SITE LOGBOOK

1380

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©SCIENTIFIC BINDERY PRODUCTIONS, 60 EAST 13TH STREET, CHICAGO, ILLINOIS 60605

TITLE

PROJECT NO. 1245

BOOK NO. 1380

MON. 12-06-04

Work continued from Page

TRAVEL DAY - D. WESTERHOFF & T. ROJAHN

PURCHASE SUPPLIES @ LOWES & SAM'S CLUB

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE 12-6-04

DATE

B 100 P

DIGGING PERMIT
NSWC CRANE 11000/3 (REV. 8/02)

4668

REQUESTED BY: Tetra Tech / Terry Rosch 812-921 8957	DATE: 11/17/04
WORK REQUEST ON E/S NO.	Hwy 555 B-3330 B-2693 A[illegible]
WORK WILL BE PERFORMED BY: Tetra Tech NUS Inc.	DATE (Start - on or about): 12/13/04

WORK DESCRIPTION
Soil borings to obtain surface or subsurface samples. Locations are: South east of Highway 555; south west of Building 3330; north east & west of Building 2693. Marked with stakes with pink ribbon or white paint. Locations are solid circles on attached drawing.

EQUIPMENT TYPE
☐ HAND TOOLS ☐ CORE DRILL ☐ TRENCHER ☐ BACKHOE ☐ HEAVY EQUIPMENT

Faxed CROP1 11/17/04

UNDERGROUND UTILITIES LOCATED IN WORK SITE

UTILITY	PRESENT	MARKED	NOT LOCATED	REMARKS
COMPRESSED AIR CROP1	N/A			KG 12-2-04
HIGH VOLTAGE ELECTRICAL	yes	yes	see note *	S.D. 11-23-04
FIRE ALARM CROP1	N/A	N/A		SEG 11-18-[illegible]
GROUNDING CROP1	N/A			KG 12-2-[illegible]
16 NATURAL GAS See Below	YES	YES		DFH 11[illegible]
SECURITY ALARM CROP2	NA			MJ 11-20[illegible]
SEWER	yes	yes		12-1-04 MW[illegible]
STEAM 3330	N/A			11-18-04 9CE
TELEPHONE Faxed 11/17/04	N/A			LP 11-29-04
WATER	yes	yes		12-1-04 MW[illegible]
SECOND ELECTRICAL CROP1	yes	yes		11-[illegible]-04 K.C
GENERAL DYNAMICS/NMCI Faxed 11/17/04	N/A			11-14-04 - [illegible]

In addition to the general precautions for excavating where underground utilites are present, comply with the following:

0412071305, 0412071310, 0412071312
~~0411190569~~, ~~0411190572~~, 0411190582 Exp 12/9 12/27

* marked at 11-23-04

PERMIT HOLDER SIGNATURE: Terry Rosch	DATE: 12/07/04
DIGGING PERMIT APPROVED BY: [illegible]	DATE: 12/7/04

DISTRIBUTION:
ORIGINAL - Code 09Z5 File
YELLOW - Supv. At work site
PINK - Permit requestor

TITLE NSWC CRANE

PROJECT NO. 1245

BOOK NO. 1380

TUES 12-07-04

Work continued from Page

OVERCAST & PERIODS OF RAIN 40's

0700 HRS - ARRIVE @ B-3245
WORK ON CTO 160

1230 HRS - ARRIVE @ PUBLIC WORKS
• DONNA Z. EXTENDED GAS TICKETS @
1255 HRS - SINMLI'S 8 & 15; FINISH @ PUBLIC WORKS
SEE DIG PERMITS ON PAGES 2, 4 & 5.

WORK ON CTO 160 REMAINDER OF DAY

1630 HRS - H&S TRAINING
• ORGANIZE EQ.
• PUT PIDS ON CHARGE
• OPEN CONTAINER BOXES & CADDS
1720 HRS → No 402 JARS
CALL LAB to check on container shipment
1745 HRS - LEFT SITE FOR WAL MART

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 12-07-04

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

DIGGING PERMIT
NSWC CRANE 11000/3 (REV. 8/02)

4669

REQUESTED BY: Terry Rash / Terry Rash 812-921-5857

DATE: 11/18/04

WORK REQUEST ON E/S NO.:

Bldg 106 AREA

WORK WILL BE PERFORMED BY: TetraTech NUS, Inc.

DATE (Start - on or about): 12/3/04

WORK DESCRIPTION: Soil borings to obtain surface & subsurface samples. Locations are: North, East, & South of Building 106. Locations are marked with stakes with pink ribbon or white paint, & are solid circles on attached drawing.

EQUIPMENT TYPE

☐ HAND TOOLS ☐ CORE DRILL ☐ TRENCHER ☐ BACKHOE ☐ HEAVY EQUIPMENT

Faxed CROP2 11/18/04

UNDERGROUND UTILITIES LOCATED IN WORK SITE

UTILITY	PRESENT	MARKED	NOT LOCATED	REMARKS
COMPRESSED AIR CROP 2	N/A			RI 11-23-04
HIGH VOLTAGE ELECTRICAL	N/A			S.P. 11-23-04
FIRE ALARM CROP 2	Yes	Yes		MA 11-22-04
GROUNDING CROP 2	N/A			11-22-04
2 NATURAL GAS ~~Exp 12/19~~ 0411190560	YES	YES		11-22-04 DEH
SECURITY ALARM CROP 2	NA			11-20 MA
SEWER	Yes	Yes		12-1-04 M. Wagoner
STEAM	YES	Hot Pink Lines & Flags		11-19-04
TELEPHONE Faxed 11/18/04	N/A			11-29-04
WATER	Yes	Yes		12-1-04 M. Wagoner
SECOND ELECTRICAL CROP 2	N/A			11-22-04
GENERAL DYNAMICS/NMCI Faxed 11/19/04	N/A	NU	Not in Area	11-29-04

In addition to the general precautions for excavating where underground utilites are present, comply with the following:

* Exp 12/27 0412071315

PERMIT HOLDER SIGNATURE: Terry Rash

DATE: 12/07/04

DIGGING PERMIT APPROVED BY: [illegible]

DATE: 12/7/04

DISTRIBUTION:

ORIGINAL - Code 09Z5 File
YELLOW - Supv. At work site

DIGGING PERMIT
NSWC CRANE 11000/3 (REV. 8/02)

4667

REQUESTED BY: Tetra Tech, Terry Rashar 412-921-8857	DATE: 11/17/04
K REQUEST ON E/S NO.	E side A-45, S of B-32 & N of B-13
WORK WILL BE PERFORMED BY: Tetra Tech NUS Inc.	DATE (Start - on or about): 12/3/04

WORK DESCRIPTION: Soil borings to obtain surface + subsurface soil samples. Locations are marked with wooden stake with pink ribbon. Location are annotated by solid circles on attached drawing

EQUIPMENT TYPE

☐ HAND TOOLS ☐ CORE DRILL ☐ TRENCHER ☐ BACKHOE ☐ HEAVY EQUIPMENT

Faxed CROP2 11/17/04

UNDERGROUND UTILITIES LOCATED IN WORK SITE

UTILITY	PRESENT	MARKED	NOT LOCATED	REMARKS
COMPRESSED AIR CROP2	N/A			DN 11-18-04
HIGH VOLTAGE ELECTRICAL	NA			S.P. 11-23-04
FIRE ALARM CROP2	NA			MH 11-20
GROUNDING CROP2	N/A			11-18-04 RL
NATURAL GAS	N/A			11/17/04
SECURITY ALARM CROP2	NA			MH 11-20
SEWER	N/A			12-1-04 M. Wagoner
STEAM	N/A			11-19-04
TELEPHONE Faxed 11/17/04	N/A			YP 12-6-04
WATER	N/A			12-1-04 M Wagoner
SECOND ELECTRICAL CROP2	N/A			11-18-04 RL
GENERAL DYNAMICS/NMCI Faxed 11/17/04	NA			11-18-04

In addition to the general precautions for excavating where underground utilites are present, comply with the following:

PERMIT HOLDER SIGNATURE: Terry Rashar	DATE: 12/07/04
DIGGING PERMIT APPROVED BY: Donna L. Zydman	DATE: 12/7/04

DISTRIBUTION:

ORIGINAL - Code 09Z5 File
YELLOW - Supv. At work site

SAMPLE SUMMARY FOR 12-08-04:

Soil Borings Completed include
15SB 002, 005→013

SAMPLES SHIP VIA AB # 8447 8135 6336
ON COCs 0138 & 0141

FINISHED Layout OF AOC-41

DPT - S. Cont. J. Goerdt & J. McFall
OTHER - T. Kujahn D. Westerhoff

TITLE NSWC CRANE

PROJECT NO. 1245

BOOK NO. 1380

INED 12-08-04

Work continued from Page

WEATHER OVERCAST 40°s Periods of Rain

0700 - Arrive @ B 3245
- Assist DPT Crew to PREP. FOR Soil SAMPLING
- Got H&S PAPERWORK FROM DPT CREW (SC & JG)
- Organize Garage - EQ & SAMPLE Containers
  MAKE Room For delivery 3 PALLETS

0900 Hrs - Arrive @ SWMU 15 AOC-W
- Lay out REMAINING 9 Soil Boring Locations

1118 Hrs - Finish Lay out @ AOC-W

1125 Hrs - CHECK IN W/ DPT CREW

1145 Hrs - LUNCH & PURCHASE ICE

1220 Hrs - Arrive @ B-3245
- Pick up supplies For SWMU 7
- Drop OFF ICE - PURCHASED @ Gas Station

1300 Hrs - Check @ Demo. RANGE - Range ACTIVE NEED to check back @ 6154

1315 Hrs - Stopped & PICKED up Soil Sampling Log Sheets FROM DPT CREW

1328 Hrs - Arrive @ B-3245 - Start COCs For SWMU 15

1410 Hrs - RECEIVE ok to ACCESS OPR (SWMU 7) FROM DEMO RANGE

1545 Hrs - DEMO RANGE WORKS locking up Gates - HAVE to LEAVE OPR

1600 Hrs - Arrive @ B 3245
- PREP. SAMPLES FROM SWMU 15 FOR SHIPMENT
- Complete COCs 0138 & 0141

1705 Hrs - LEFT B-3245 FOR FED. EX

1740 Hrs - DROP OFF SAMPLES @ FED. EX
AB# 8447 8135 6336

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 12-8-04

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

CREWS - DPT
S. Cont
J. Goerdt
Jay McFall (EFS)

VEG CLEARENCE
D. Westerhoff
T. Rojahn

DPT SUMMARY 12/09/04:
Completed Soil Borings = 10
15SB001, 003, 004, 029, 031, 032, 033, 037
047 & 048

TEMP. WELLS Completed to date - 6

CLEAR VEG ACCESS @ SWMU 15 AOC-W FOR DPT Boring locations.

TITLE NSWC CRANE **PROJECT NO.** 1245 **BOOK NO.** 1380

THURS 12-09-04

Work continued from Page

WEATHER - OVERCAST / RAIN @ times 40°s

0700 Hrs - ARRIVE @ B-3245
FAX SAMPLE COCs to OFFICE & LAB

0745 Hrs - PREP. to sample soils @ SWMU 7

0815 Hrs - CHECK IN @ DEMO RANGE to ACCESS OPR
Range active today - cannot work on OPR

0825 Hrs - RETURN to B-3245, to work on N1245
• Check in w / T. Brent - suggest rental companies in Bloomington to rent chain saw to clear access for DPT @ SWMU 15 (AOC W)

0845 Hrs - LEAVE B-3245 FOR Master Rental in Bloomington

0930 Hrs - RENT chainsaw, chaps & brush cutter @ Master Rental

0955 Hrs - ARRIVE @ Lowes - D.H. purchased rain gear & flagging to mark access trail @ AOC W for DPT rig.

1115 Hrs - ARRIVE @ B-3245; drop off all EQ @ OFFICE & Prep to clear veg @ AOC-W

1140 Hrs - LUNCH

1210 Hrs - Check in w/ DPT crew - Rig stuck in valley @ SWMU 15

1230 Hrs - ARRIVE @ AOC-W start veg clearing

1445 Hrs - Finish clearing @ SWMU 15 AOC-W

1600 Hrs - CHECK BACK w/ DPT crew; got sample log sheets - Rig being towed out

1615 Hrs - ARRIVE @ B-3245
• COC PREP., Airbill Prep. etc FOR SHIPMENT to Laucks

1635 Hrs - S.C. & J.G. ARRIVE @ B-3245
• PREP SAMPLES FOR SHIPMENT ON COCs 0143 & 0144 VIA FEDEX. AB# 8447 8135 6325

1800 Hrs - Drop off samples @ FED.EX. (J.G. & T.C.)
(D.H. RETURNED Chain saw & brush cutter to Master Rental EARLIER).

PACIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Tony Rogal DATE 12-9-04

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

CREWS - SEE PAGE 8

SOIL BORINGS COMPLETED ON 12/10/04: 12
15SB019, 020, 021, 022, 023, 039, 040
042 & 046

TITLE NSWC CRANE

PROJECT NO. 1245

BOOK NO. 1380

FRI 12-10-04

Work continued from Page

WEATHER - Overcast w/ Periods of Rain 40°s

0700 Hrs - Arrive @ B 3245

FAX COCs to OFFICE & LAB; discuss DPT Sampling w/ S.C.

0755 Hrs - Start working on SWMU 7

1540 Hrs - PAPERWORK & SHIPMENT PREP

Prepare COCs 0145 - 0147

SHIPMENT PREPARED ON FED EX AB# 844781356439

1700 Hrs - LEFT B 3245 FOR FED EX

1735 Hrs - Drop off samples @ FEDEX

1803 Hrs - FAX LAUCKS copy of COCs @ Hotel

END

NTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 12-10-04

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

CREWS · SEE PAGE 8

Soil Borings Completed 12/11/04:

15SB014 - 018 & 024 - 028

+

08SB001 - 005

TITLE NSWC CRANE

PROJECT NO. 1245

BOOK NO. 1380

SAT 12-11-04

Work continued from Page

WEATHER - Overcast w/ periods of Lt. Rain 40°

0725 Hrs - Show S. Cont. SWMU 8 & boring locations

0805 Hrs - Return to B-3245

Work @ SWMU 7 Remainder of Day

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

12-11-04

DATE

CREWS - SEE PAGE 8

SOIL BORINGS COMPLETED
0858006 - 014
Collect (3) Rinsate blanks & (2) SOURCE WATER blanks.

TITLE NSINC CRANE

PROJECT NO. 1245

BOOK NO. 1330

SUN 12/12/04

Work continued from Page

WEATHER - Partly Cloudy Temp 40's WINDY

0700 HRS - ARRIVE @ B-3245

PAPERWORK - ~~PREPARE~~ Collect SAMPLES ON COC #3645

3 RINSATE BLANKS

PREPARE CoFC & LABELS FOR SOUCE WATER blanks

1200 HRS - LUNCH

1230 HRS - 1600 HRS - WORK ON SUMMIT

1600 HRS - LABEL & PROCESS SB12120401

Collect SB12120402 @

1700 HRS - LEFT B3245 FOR HOTEL

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 12-12-04

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

CREWS SAME AS ON PAGE 8

Soil Borings Completed:

15SB050 - 061 ALL CLEAN / No samples collected or TUBS installed for sampling

SHIPPED SAMPLES ON COCs 3645 - 3650 VIA FED EX AB# 8447 9135 6950

TITLE NSWC CRANE

PROJECT NO. 1245

BOOK NO. 1380

MON 12/13/04

Work continued from Page

WEATHER - Mostly Cloudy Snow Dusting 30°s

0700 Hrs - Arrive @ B 3245

- FAX OFFICE COCs 0145-0147
- PREPARE COCs 3646 - 3650 for this dates shipment
- CHECK IN w/ R. Basinki - discuss project status, bring up problem of Routine Samples for Extract & Hold that were selected as DUPs & MS/MSDs Also, discussed problem w/ E. Sedlmyer
- CHECK IN w/ R. Clark regardin SWMU 7 & start COCs for Tues. SHIPMENT
- FAX COCs to OFFICE 3646-3650 for T Johnston ED. Sedlmyer to address Extract & Hold problem

1200 Hrs - LUNCH

1230 Hrs - Return to B 3245

- Pick up ICE @ BASE Gas Station
- PACKAGE SAMPLES ON COCs - 3645 - 3650 FOR SHIPMENT this date
- CHECK ON drilling crew @ AOC W SWMU 15 AFTER talking to R. Basinski - Follow QAPP Regarding - NO SAMPLES IF CORES are CLEAN, likewise NO TEMP. WELLS will be installed if AREA / borings are clean.
- Cont Log in of SWMU 7 Soil SAMPLES

1700 Hrs - LEAVE B 3245 FOR FED. EX.

1730 Hrs - Drop off Samples on FED. EX. AB# 8497 8135 6450 Also COCs 3645 - 3650.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Terry Rogal

DATE 12-13-04

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

B 100 P ©

CREWS - SAME AS ON PAGE 8
JAY McFALL to DEMOB

SOIL Borings Completed - 8 HAND AUGERED
1558030, 033, 034, 038, 039, 041, 049
& 062

SHIP SAMPLES ON COC 3651 VIA FED. EX.
AB # 8447 8135 5682

TITLE NSWC CRANE

PROJECT NO. 1245

BOOK NO. 1380

TUES 12/14/04

Work continued from Page

0715 Hrs - Arrive @ B-3245
FAX COCs 3645-3650 to office & lab
0800 Hrs - Survey crew arrived
Furnish maps of SWMUs 8 & 15 and show
Boring locations on the ground
0930 Hrs - Return to B-3245
Work on SWMU 7
1530 Hrs - Prep samples ~~on~~ & COC # 3651 for shipping
via Fed.Ex. AB # 8447 8135 5682
1630 Hrs - FAX COC # 3651 to lab & office
1645 Hrs - Leave Bldg 3245 for Fed Ex
1715 Hrs - Drop off samples @ Fed Ex.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Terry Rogers

DATE 12/14/04

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

VOID THIS PAGE

SCIENTIFIC SYSTEM PRODUCTS CHICAGO 60611 MADE IN USA

WED 12/15/04

Work continued from Page

0700 Hrs - Arrive @ B 3245

Meas staff gauges & surface water flow @

SWMUs 16 & 12.

See Notebooks 1374 & 1376

1100 Hrs - travel to Airport (T. Rojahn & D. Westerhoff)

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 12/15/04

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

TRAVEL DAY 01/04/05

TUES 01/04/05

Work continued from Page

0630 Hrs - Arrive @ PITT Airport

1330 Hrs - Arrive @ B-3245

- CHECK IN W. T. BREAT
- CALL ED. SEDLMYER REGARDING FECAL Coliform LAB
  - LAB : EC LABS, FARMERSBURG, IN
    Contact : JAC PADGETT
- Contact LAB set up bottle drop off for WED.
- INVENTORY supplies

1500 Hrs - LEAVE B 3245 for Sam's club

1610 Hrs - CHECK out @ Sam's w/ supplies for sampling.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 1/04/05

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

CREW: S. Conti - slug tests
C. Doolan
J. Goerdt
T. Rosahn
} SAMPLERS

SAMPLE SUMMARY 01/05/05:
TEMP WELL - 15GWTW005 sampled

Soil Boring No.	AOC	Temporary Well No.	Sample No.	Priority of Sample Aliquot Collection					
SWMU 15				High Priority ←					
15SB002	A	15TW001	15GWTW001	VOCs	SVOCs	PAHs	PCBs	metals	diss.
15SB006	A	15TW002	15GWTW002	VOCs	SVOCs	PAHs	PCBs	metals	ss.
15SB009	B	15TW003	15GWTW003	VOCs	SVOCs	PAHs	metals	diss. metals	P
15SB031	G	15TW004	15GWTW004	metals	diss. metals	SVOCs	PAHs	VOCs	P
15SB035	G	15TW005	15GWTW005	metals	diss. metals	SVOCs	PAHs	VOCs	P
15SB046	U	15TW006	15GWTW006	metals	diss. metals	SVOCs	PAHs	VOCs	P
15SB048	U	15TW007	15GWTW007	metals	diss. metals	SVOCs	PAHs	VOCs	P
15SB061	W	**do not collect sample**							
15SB062	U	15TW008	15GWTW008	metals	diss. metals	SVOCs	PAHs	VOCs	P
SWMU 08									
08SB006	✓	08TW001	08GWTW001	Explosives	Perchlorate	metals	diss. metals	VOCs	SV
08SB007	✓	08TW002	08GWTW002	Explosives	Perchlorate	metals	diss. metals	VOCs	SV
08SB010	✓	08TW003	08GWTW003	Explosives	Perchlorate	metals	diss. metals	VOCs	SV
08SB013	✓	08TW004	08GWTW004	Explosives	Perchlorate	metals	diss. metals	VOCs	SV

VOCs = volatile organic compounds (method 8260B) - need full vials (i.e., no headspace)
SVOCs = semivolatile organic compounds (except PAHs) -- need full bottle
PAHs = polycyclic aromatic hydrocarbons -- need full bottle
metals = TAL metals plus tin -- need minimum of 250 mL; fill bottle if possible
diss. metals = dissolved TAL metals plus tin (i.e., filtered) - need minimum of 250 mL; fill bottle if possible
PCBs = polychlorinated byphenyls - need minimum of 500 mL; fill bottle if possible
pest. = pesticides - need minimum of 500 mL; fill bottle if possible
herb. = herbicides - need minimum of 500 mL; fill bottle if possible
fecal colif = fecal coliform - need full bottle

Expl - (2) amb
Perch - (1) clear
metals - (1) pl
VOCs - (3) 40
SVOCs - (2) am
PAHs -
Fecal -
PCBs - (2) A
pest/Herb - (1)

Note: Sample aliquots for VOCs method 8015B are **not** to be collected
Field parameters (pH, ORP, DO, SC, and temperature) should be measured for every temporary well
Follow SOP CTO331-05 for sampling procedures

CREW : S. Conti - slug tests

C. Doolan
J. Goerdt } SAMPLERS
T. Rojahn

SAMPLE SUMMARY 01/05/05 :

TEMP WELL - 15GWTW005 sampled @ 1320 Hrs

ry	Sample No.	Priority of Sample Aliquot Collection							
		High Priority ←					→		Low Priority
1	15GWTW001	VOCs	SVOCs	PAHs	PCBs	metals	diss. metals		
2	15GWTW002	VOCs	SVOCs	PAHs	PCBs	metals	diss. metals		
3	5GWTW003	VOCs	SVOCs	PAHs	metals	diss. metals	PCBs		
4	5GWTW004	metals	diss. metals	SVOCs	PAHs	VOCs	PCBs	pest.	herb.
5	15GWTW005	metals	diss. metals	SVOCs	PAHs	VOCs	PCBs	pest.	herb.
6	15GWTW006	metals	diss. metals	SVOCs	PAHs	VOCs	PCBs	pest.	herb.
7	15GWTW007	metals	diss. metals	SVOCs	PAHs	VOCs	PCBs	pest.	herb.
t collect sample									
8	15GWTW008	metals	diss. metals	SVOCs	PAHs	VOCs	PCBs	pest.	herb.
1	08GWTW001	Explosives	Perchlorate	metals	diss. metals	VOCs	SVOCs	PAHs	fecal colif.
2	08GWTW002	Explosives	Perchlorate	metals	diss. metals	VOCs	SVOCs	PAHs	fecal colif.
3	08GWTW003	Explosives	Perchlorate	metals	diss. metals	VOCs	SVOCs	PAHs	fecal colif.
4	08GWTW004	Explosives	Perchlorate	metals	diss. metals	VOCs	SVOCs	PAHs	fecal colif.

method 8260B) - need full vials (i.e., no headspace)
unds (except PAHs) -- need full bottle
ons -- need full bottle
inimum of 250 mL; fill bottle if possible
lus tin (i.e., filtered) - need minimum of 250 mL; fill bottle if possible
eed minimum of 500 mL; fill bottle if possible
500 mL; fill bottle if possible
500 mL; fill bottle if possible
ottle

od 8015B are not to be collected
and temperature) should be measured for every temporary well
pr ures

Expl - (2) amber 1000 ml
Perch - (1) clean plastic 500 ml
metals - (1) plastic w/ HNO_3 1000 ml
VOCs - (3) 40 ml
SVOCs - (2) amber 1000 ml
PAHs -
Fecal -
PCBs - (2) Amber 1000 ml
pest/herb - (2) Amber 1000 ml

TITLE NSWC CRANE

PROJECT NO. 1245

BOOK NO. 1380

WED 01/05/05

Work continued from Page WEATHER - 30°s & RAIN

0705 Hrs - ARRIVE @ SITE

- ASSIST & TRAIN C. DOOLAN W/ PREP. FOR SAMPLING TEMPORARY WELLS @ SWMU 15
- SELECT WELLS FOR SAMPLING, COLLECT TRIP BLANK
- DISCUSS NEED FOR BOAT FOR SWMU 8 POND W/ T. BRENT ETC.
- BEGIN PAPERWORK; RECEIVED CONTAINER FROM EC LABS

1015 Hrs - ARRIVE @ SWMU 15

J.G. - SET UP @ SAMPLE LOCATION 15TW003

C.D. & T.R. - SETUP @ 15TW005 - SETUP TENT to block RAIN FROM WELL and SAMPLERS

1100 Hrs - CHECK ON J.G. - GEOTECH PUMP NOT WORKING

BREAK FOR LUNCH

1120 Hrs - LUNCH

1150 Hrs - RETURNED to B-3245 to WORK on ~~pump~~ GEOTECH PUMP - J.G. ~~went~~ with C.D. to help TRAIN CD & SAMPLE 15TW005

- CHECK PUMP W/ AC PLUG - STARTED to SMOKE
- CALLED U.S. ENV. FOR PUMP REPLACEMENT FOR TOMORROW'S SAMPLING; ORDER MORE CAL. SOL. FOR YSI
- CHECKED IN W/ OFFICE - DISCUSSED PROBLEM due to WEATHER & MALFUCTIONING GEOTECH PUMP
- CONFERENCE CALL W/ J. SCHUBERT & R. BASINSKI NEED to CHECK OUT WELLS W OF MINE FIN A
- ORDER 4 NITROGEN CYLINDERS

1400 Hrs - CHECK IN ON JG & C.D. @ 15TW005

NEED to OVER PURGE WELLS due to RECENT RAIN FALL

1420 Hrs - CHECK WELLS WEST OF SWMU 12 FOR J. SCHUBERT - WELLS (5) - 7/3, 7/4 & 7/5 ARE MARKED ASSUME 7/1 & 2 ARE UNMARKED WELLS only WELL NEXT to ROAD HAS A PROTECTING CASE & 7/4 is DAMAGED

1500 Hrs - RETURN to B-3245

PAPERWORK & PREP. GEOTECH PUMP FOR SHIPMENT

1615 Hrs - LEAVE B-3245 FOR FED EX

1645 Hrs - DROP OFF SHIPMENT @ FEDEX.

AB # 8447 8135 6347

Work continued to Page

DENNISON PAPERS PRODUCTIONS CHICAGO ADAPS MADE IN USA

SIGNATURE

DATE 1/05/05

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

CREW SAME AS ON P. 24

SLUGE TESTS @ 12MINT 01, 03, 06 & 08

SAMPLING SUMMARY 01/06/05 !

SAMPLED TEMP. WELLS @ SWMU 8 -

08TW001 → 004

THURS. 1/06/05

Work continued from Page

WEATHER - OVERCAST & 30's

0710Hrs - ARRIVE @ BLDG # 3245
- ASSIGN WELLS FOR SAMPLING
- ASSIST IN PREP FOR TEMP. WELL SAMPLING
- OBTAIN VEHICLE PASSES
- ORGANIZE PAPERWORK
- H&S FOR C. DOOLAN

0850Hrs - T. Brent & T.R. PICKED UP JON BOAT @ PWI

0920Hrs - RETURN to B 3245 & SECURE BOAT to FENCE POST
- SET UP PICKUP FOR COLI. SAMPLES @ BLDG 118 @0900 Hrs ON FRI.
- RECEIVE FED. EX. SHIPMENT - SWMU 16 EQ. & PERISTALTIC PUMA REPLACEMENT

1020 Hrs - ARRIVE @ SWMU 8

1047 Hrs - START PURGE 08TW002

1204 Hrs - END PURGE "

1210 Hrs - LUNCH BREAK / Collected T801060501 @ 1230 Hrs

1305 Hrs - RETURN to SWMU 08
- ASSIST & TRAIN C. DOOLAN W/ THE SAMPLING OF 08TW002 & PURGING OF 08TW004

1530 Hrs - LEFT SWMU 8 to locate BLDG #118 - location to MEET EC LABS PICK UP PERSON ~~FOR~~ SCH. FOR tomorrow

1635 Hrs - RETURN to B-3245
- CALL EC LABS - JAC Padgett to confirm meeting place (BLDG seemed unlikely) - JAC checked w/ Pickup PERSON - MEETING PLACE SHOULD be @ B 3260
- PREP. PAPERWORK and PACKAGE SAMPLES ON COC # 3652

1745 Hrs - LEFT B-3245 FOR FED. EX

1815 Hrs - DROP OFF SAMPLES ON FED. EX. AB # 8447 8135 5627

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Terry Rogers DATE 1/06/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

CREW - SAME AS on P. 24

SAMPLE SUMMARY 01/07/05 :

- ALL WELLS @ SWMU 08 SAMPLED this date for FECAL Coliform - ECLAB PICKED up @ BLDG 3260 @ 0922 Hr. Pick up Person was Mr. Copland. Jac Padgett was POC @ ECLABS FARMERSBURG, IN

Environmental Certification Labs, Inc.
P.O. Box 569 • Farmersburg, IN 47850-0569
(812) 696-5076 • 1-800-458-3489
Fax: (812) 696-2596

- Additional TEMP WELLS SAMPLED INCLUDES 15TW006, 007 & 008

SLUGE TEST SUMMARY :

TESTED Monitoring WELLS 16MWT03, 05, 18 & 19
No tests Conducted @ 16MWT16 - Due to small water column.

FRI 1/07/05

Work continued from Page

WEATHER - COLD 30°s & Mostly Cloudy

0630 Hrs - ARRIVE @ B-3245

PREP. to Collect Fecal Coliform samples @ SWMU 8

SAMPLE ID #	SAMPLE TIME
08GWTW004	0705
08GWTW003	0715
08GWTW002	0735
08GWTW001	0745
08FD010705 01	0000 FROM 08TW 002

0810 Hrs - RETURN to B-3245

PREP. Coliform samples FOR EC LAB PICK UP

0922 Hrs - EC LABS (Mr Copland) PICK CO UP SAMPLES @ B-3260

0930 Hrs - RETURNED to B 3245

- FAX COCs 3653 & 3652 to OFFICE & COC 3652 to LAUCKS Testing LAB
- PAPERWORK & const. Storm Sewer Sampler
- PREP to BACKFILL TEMP WELLS
- ORGANIZE OFFICE / CLEAN

1210 Hrs - LUNCH

1245 Hrs - ARRIVE @ SWMU 8 to BACKFILL TEMP. WELLS + will MEAS. stick ups prior to WELL ABANDONMENT

TW 001 - 2.60' 10' WELL TW003 — 20' WELL

TW 002 - 2.98' 20' WELL TW 004 1.12' 20' WELL

1330 Hrs - Finish WELL ABANDONMENT @ SWMU 8

1338 Hrs - ARRIVE @ SWMU 15

ABANDONED TEMP WELL @ 15SB061 &

15TW1005 - 4.18' stick up. 10' WELL

CHECK IN ON Jim & Colin

1457 Hrs - ARRIVE @ B-3245

- PAPERWORK & PACKAGE SAMPLES FOR SHIPMENT ON COC # 3655

1650 Hrs - LEAVE B-3245 FOR FED. EX.

1735 Hrs - Drop OFF SAMPLES @ FED. EX. (AB # 8447 8135 5639)

1806 Hrs - FAX COC # 3655 to LAUCKS

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 1/07/05

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

SAT. 1-08-05

Work continued from Page

WEATHER: Cold 30's & OVERCAST

0705 HRS - ARRIVE @ B-3245

- PREP VEHICLE FOR GW SAMPLING
- COLLECT TB01080501 @ 0730 HRS

0820 HRS - ARRIVE @ 15TW002

START PURGE = 0840 VOL. PURGED = 7.4L

END PURGE = 0850 SAMPLE TIME = 0850 HRS

1145 HRS - ARRIVE @ 15TW001

START PURGE - 1200 VOL. PURGED = 4.3L

END PURGE - 1300 SAMPLE TIME = 1300 HRS

1455 HRS - FINISH CLEAN UP @ 15TW001

1515 HRS - ARRIVE @ B 3245

- PICK UP BACK FILL MATERIAL (Bentonite CHIPS)
- DROP OFF SAMPLES

1527 HRS - RETURN to SWMU 15 to ABANDON TEMP. WELLS

WELL ID	STICK UP	
15TW001	1.44'	
002	1.52	
003	1.00'	10' WELL
004	1.48'	~~20'~~ 15' WELL (TC)
005	4.19'	10' WELL (ABANDONED 1/07)
006	1.35'	~21.5' WELL
007	0.10'	~~20'~~ 15' WELL (TC)
008	2.60'	~~ABANDONED BY C.D.~~ (TC)

1615 HRS - RETURN to B-3245

1630 HRS - COLLECT RINSATE BLANK OF TUBING RB01080501

NERL Lot # 1009064 EX. DATE 10/05

1710 HRS - LEFT B 3245 FOR HOTEL

1745 HRS - DROP OFF J. GOERDT @ HOTEL

- DRIVE to K-MART to PURCHASE life preservers FOR SWMU 8 POND - NO LUCK - J.G. CHECK CHECKED 2 STORES LAST NIGHT WITH NO LUCK (SEASONAL ITEM)

1830 HRS - RETURN to HOTEL

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Tony Rogal DATE 1/08/05

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

CREW SAME AS P. 29

SLUGE Testing @ 16 MWT 20 & 12 MWT 10, 13, & 21
Also FINISHED TEST @ 16 MWT 18

SAMPLING SUMMARY 01/08/05:

- Collected SAMPLES @ 15 TW 001 → 004
- ABANDONED the Following TEMP WELLS
  15 TW 001 - 004 & 006 → 007 (005 Abandoned on
  ALL WELLS (TEMP.) HAVE been ABANDONED

CREW SAME AS P. 24

SLUGE TESTING PERFORMED THIS DATA ON
12MWT 15, 17, 36, 25 & 28

SAMPLE SUMMARY 1/9/05 :

COMPLETED THE FOLLOWING SEDIMENT & SURFACE WATER LOCATIONS :

085W 001, 003, 006 → 009
15SW 018 & 019
085D 001 → 003, 006 → 009, 15SD 018 & 019

SUN 1-09-05

Work continued from Page

WEATHER - Mild 40's, Partly Cloudy

0710 HRS - ARRIVE @ B-3245

- PREP. FOR SURFACE WATER & SEDI. SAMPLING

0830 HRS - ARRIVE @ SINNIU & COMPTON CONFLUENCE OF SITE NO NAME STREAM w/ RTE 45

SW SAMPLE ID	TIME	SD SAMPLE ID	TIME
08SW00901	0855	08SD009 0006	0905
08SW00701 (DUPE MS/MSD)	0955	08SD007 0006	1008
08SW00801	1138	08SD008 0006	1145
08SW00601	1340	08SD006 0006	1350
08SW00301	1415	08SD003 0006	1420
08SW00201 (DRY)	NA	08SD002 0006	1450
08SW00101	1450	08SD001 0006	1510
15SW01901	1540	15SD019 0006	1540
15SW01801	1600	15SD018 0006	1605

1630 Hrs - RETURN to B3245

- SECURE Sample in FRIG OR ICED IN Coolers
- PROCESS 15SW1/SD019 & 018 (LABEL & BAG)

1700 Hrs - LEFT B-3245 FOR ~~PAC~~ EQ. NEED to SAMPLE POND @ SWMU DB

1805 Hrs - CHECK OUT @ MENARDS

1826 Hrs - " " @ LOWE'S

END

SIGNATURE Terry Royal

DATE 1-09-05

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

B 100 P ©

CREW SAME AS P 24

SAMPLE SUMMARY 1/10/05:

SAMPLE 08SW/SD 004 & 005 @ 106 POND

SEE P. 35 & sample log sheets for details

SLUGE TEST MONITORING WELLS 12MW1 38, 45, 46 & 4

TASK MUD - BASED ON FIELD OBSERVATION & CONVERSATION W/ R. BASINSKI INSTEAD OF 3 sample depths (0-6", 6"-12" & 12-18) 2 ~~samples~~ depths (0-12" & 12-24") WERE SAMPLED.

TITLE NSWC CRANE

PROJECT NO. 1245

BOOK NO. 1380

MON 1-10-05

Work continued from Page

WEATHER - Mostly Cloudy Temp ~40°s

0705 Hrs - Arrive @ B 3245

Pick up SAMPLE PONDS @ SITE 8

0905 Hrs - Arrive @ POND SWMU 8

- Unload EQ & Jon Boat (delivered by T. Brent

1000 Hrs - Start sampling SURFACE WATER AFTER Rigging Jon boat w/ stabilization ROPES FROM Front & Back of Jon Boat to SHORE - Also MARK sampling locations w/ 1" Screened PVC - USED AS location MARKER & to Sample SW NEAR the bottom of pond ~4.5'

SAMPLE ID	TIME	Comments
08SW00502	1000	Deep Sample
08SW00501	1020	Shallow "
08SW00402	1045	Deep Sample
08SW00401	1115	SHALLOW "
08SD 004 0012	1145	0-12"
08SD 004 1224	1200	12"-24"
08SD 005 0012	1220	0-12"
08SD 005 1224	1235	12"-24"

1250 Hrs - LUNCH

1330 Hrs - Return to SWMU 8 - DECON BOAT & CLEAN UP

1420 Hrs - TR Return to B-3245

JG STAYED @ SWMU 8 to ASSIST T. Brent w/ Returning Jon Boat

CD - Assisting S. Conti this AFTERNOON w/ SLUGGE testing

1420 Hrs - ~~Start~~ TR SAMPLE Processing (Package Samples & PAPERWORK FOR SHIPMENT OF SAMPLES ON COCs # 3656, 3657, 3658 & 3662 via FEDEX AB# 8447 8135 6358

1722 Hrs - LEAVE B-3245 FOR FED.EX.

1808 Hrs - Drop OFF SAMPLES @ FED.EX.

- unload / SHIP 11 coolers

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 1/10/05

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

CREW SAME AS ON P. 24

SLUGE TEST SUMMARY 01-11-05:

Tested 12MWT 23 33 & 29

SAMPLE SUMMARY 01-11-05:

Collected SURFACE WATER SAMPLES @ and SED SAMPLE

@ 15SW/SD001, 002, 005, 006, AND 013-017

TUES 1-11-05

Work continued from Page

WEATHER - Mostly Cloudy RAIN High in 50°

0655 Hrs - ARRIVE @ B-3245 Collect TB01110501 @ 0700 Hrs

- PREP to SAMPLE SURFACE WATER & SEDIMENT @ 15
- FAX COCs to OFFICE (FROM 1/07 & 1/10) &
- LAB (1/10 only, 1/07 WAS FAXED ON 1/07).
- PURCHASE ICE @ BASE GAS STATION
- ~~PURCHASE of ICE @~~

0930 Hrs - ARRIVE @ SWMU 15

SW SAMPLE ID	TIME	SD SAMPLE ID	TIME
15SW00201	0945	15SD0020006	1000
15SW00101	1035	15SD0010006	1040
15SW01601	1110	15SD0160006	1115
15SW01701	1220	15SD0170006	1225
15SW01501	1315	15SD0150006	1320
15SW01301	1410	15SD0130006	1415
15SW01401	1420	15SD0140006	1425
15SW00501	1520	15SD0050006	1525 DUP & MS/MSD
DUP & MS/MSD 15SW00601	1550	15SD0060006	1555

1610 Hrs - ARRIVE @ B 3245

- PROCESS SAMPLES FROM 15SW/SD 006
- Collect Rinsate Blank on Wilcoxo SIEVE USED to collect SED. SAMPLES @ SWMU 8 POND 08RB01110508 @ 1700 Hrs
- CLEAN UP

1800 Hrs - LEAVE SITE FOR Motel

C.D. to PURCHASE BUBBLE WRAP @ OFFICE DEPOT
T.R. PAPERWORK IN EVENING

END

CREWS SAME AS ON P. 24

SAMPLE SUMMARY 01-12-05:
Collect 4 SW SAMPLES 15SW009 & 15ST010, 011 &
Collect 1 SED. SAMPLE 15SD009
REMAINDER OF DAY PACKAGE SAMPLE & VENDOR EQ. FOR SHIPMENT TO LAB & U.S. ENV. RESPECTIVELY.
S. Cont. demob slug test EQ AS well

Returned on 1-12-05
U.S. ENVIRONMENTAL EQUIPMENT

2	mini troll	
1	PDA	
2	water levels	26043 (~~51672083~~) 26104
1	PID	ED JF 315
2	power pacs	90 122
2	peristaltics	401 419
1	Hammerer	US 02
1	Wildco	105
1	tire meter	0918-4298
1	LAP TOP	

WED 1/12/05
Work continued from Page

WEATHER Mostly Cloudy TEMP in 50°s & 60°s

0650 Hrs - Arrive @ site
- Paperwork
- Prep. to Collect Sediment & Surface Water @ SWMU 15

0905 Hrs - Collect surface water @ 15SW00901
0910 Hrs - " sediment @ 15SD009
0930 Hrs - Catch basin @ location SW/SD007 couldn't be located

0955 Hrs - Sampled a newly constructed Catch basin/storm sewer @ SW/SD010 - 15ST01001
0915 Hr - The only manhole in the area of SW/SD012 was a sanitary sewer
1035 Hrs - Sampled 15ST01101 Also a newly constructed Catch basin/storm sewer
1120 Hrs - Sampled 15ST004

Locations Not Sampled	Comments
15SW/SD 007	missing
15SW/SD 012	impact by New Const. (in the area is a sanitary sewer)
15SW/SD 008	impacted by New Const.
15SW/SD 003	missing (area somewhat flooded)

1215 Hrs - 1245 Hrs - Lunch
1250 Hrs - Return to B 3245
- Paperwork & Packaging samples on CoPCs 3660, 3664, 3665 & 3666
- Check in w/ office Ed. Sedlmyer & R. Basiaski
- Fax COCs to office & LAB (H. Prentice)
- Unload vehicel
- Organize & begin office clean up
- Package EQ to return to US. Eng on AB# 8447 8135 5649 SEE P. 38

1620 Hrs - Leave B-3245 for Fed. Ex
1655 Hrs - Drop off EQ & samples (on AB# 8447 8135 6369)
1720 Hrs - Wash rental SUV
1730 Hrs - Finish washing rental

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE
DATE 1-12-05
DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

VOID THIS PAGE

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

THUR. 1/13/05

Work continued from Page

0700 Hrs - Arrive @ B-3285
- Organize paperwork
- Prep to return to Pittsburgh
- Sweep & mop floors

1000 Hrs - Leave for airport
- Remainder of day - travel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 1/13/05

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

Logbook pages 42 - 53 are associated with SWMUs 18, 19, 20 and OGTSL.

SAMPLE SUMMARY 2-14-05:

Sampled soil @ 1555097 0002,
1555048 0002 & 1553048 0206.

TRAVEL DAY!

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

MON. 2/14/05

Work continued from Page

TRAVEL DAY

1330 Hrs - ARRIVE @ B-3245

- PREP. to collect soil samples @ SWMU 15

1420 Hrs - Collect 15550470002 FOR PEST./PCBs @ SWMU 15

1430 Hrs - Collect 15550480002 " " " " " "

1448 Hrs - Collect 15580480206 " " " " " "

SAMPLES ON COC # 3694

1500 Hrs - RETURN to B-3245

- PROCESS SAMPLES @ TM AND place in FAIG.
- DECON Auger bucket bits

1545 Hrs - LEAVE B-3245 FOR BEAFORD.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 2-14-05

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

VOID THIS PAGE

SCIENTIFIC BINDERY PRODUCTS., CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 1245

BOOK NO. 1380

WED 2-16-05

Work continued from Page

SHIPPED SAMPLES Collected on 2-14-05 (SEE P 55.)
VIA FED.EX. AB # 8447 8135 7490

END

BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 2-16-05

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

APPENDIX D.2
SITE NOTEBOOK

NSWC
CRANE

8 & 15

2586

LOGBOOK

START: 12-7-04

TABLE OF CONTENTS

Subject	Page

TITLE NSWC CRANE
TUES DEC 7 2004

PROJECT NO. N1245
BOOK 2586

Work continued from Page

AT SITE SJC

AM: CLOUDY W/ RAIN
PM: " " "

AM: READ OVER QAP, ETC

PM: TRAVEL DAY TO NSWC SITE
MOB DAY FOR EFS

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE SJ Conte

DATE 12/7/04

WITNESS

DATE

TITLE NSWC CRANE PROJECT NO. N1245
WED DEC 8 2004 BOOK 2586

Work continued from Page AT SITE: SJC/JG

JM- EFS

AM: SUNNY COLD
PM: " COLD HI 40° F

0630 AT SITE - LOAD VAN CALIB PID
H&S BRIEFING, SIGN SHEETS FILL
OUT MED DATA FORM

0800 DISCUSS WORK SCEDULE FOR TODAY

0850 DPT RIG STARTS TO MOB TO SITE 15
CANNOT USE TRAILER, DUE TO BROKEN
WHEEL ON TRAILER

0930 ARRIVES (DPT) AT SITE 15

1020 AOC B SB013 6'
SB012 6'
SB011 6'

AOC C SB008 9'
SB009 TEMP WELL 9.5
SB010 9.5

1315 DONE AT AOC C.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE SJConti DATE 12/8/04
WITNESS DATE

TITLE NSWC CRANE PROJECT NO. N1245
WED (CONT) BOOK 2586

Work continued from Page

1330 MOVE TO AOC A
SB007 6'
SB002 6' TEMP WELL - 6'
DUP MS/MSD ON 0206 SB006 6' TEMP WELL - 6'
SB005 6'

1530 AT SB005 FINISHING UP SAMPLE
COLLECTION.

1600 LEAVE FOR FIELD OFFICE.

1610 ARR FIELD OFF - BEGIN TO PREP
SAMPLES TAKEN TODAY.

1700 LOAD BOTTLES INTO COOLERS ADD
ICE AND STRAP.

1800 LV SITE.

QUANT TODAY EFS

1 DAILY RENTAL DPT

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE SJConti DATE 12/8/04
WITNESS DATE

TITLE NSWC CRANE **PROJECT NO.** N1245

THUR DEC 9 2004 **BOOK** 2586

Work continued from Page

AT SITE: SJC / JG JM

AM: CLOUDY, COLD – LT RAIN ≈ 1115

PM: CLOUDY, COLD – RAIN STOPS ≈ 1400

0630 AT SITE – NOTES, CALIBRATE PID. GO OVER DARS

0730 MAKE UP ENCORE SETS

0800 EFS ARRIVES – WAITS FOR MECHANIC TO FIX TRAILER (WHEEL BROKE OFF)

0900 MOVE TO

AOCA	15SB001	–	6'	
	15SB003	–	6'	
	15SB004	–	6'	
AOCG	15SB029	–	5'	
	15SB031	–	14'	TEMP WELL
	15SB032	–	3'	
	15SB035	–	6'	TEMP WELL
	15SB037	–	4'	
	15SB048	–	15'	TEMP WELL
	15SB047	–	2'	

1215 DPT RIG STUCK – WENT TO LUNCH AFTER LUNCH TALKED TO TOM B HE WAS ABLE TO CALL ROAD MAINT

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE SJConte DATE 12/9/04

WITNESS DATE

TITLE NSWC CRANE **PROJECT NO.** N1245

THURS (CONT) 2004 **BOOK** 2586

Work continued from Page

AND THEY WERE ABLE TO WINCH OUT THE DPT.

1500 DPT RIG WAS WINCHED OUT AND MOVED TO 15SB048.

1630 DONE AT 15SB047 GO TO FIELD OFFICE.

1700 BEGIN TO PREPARE SAMPLES FOR SHIPMENT

1800 LV SITE. [1 DAY FOR DPT]

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE SJConte DATE 12/9/04

WITNESS DATE

TITLE NSWC CRANE PROJECT NO. N1245

DEC 10 2004 BOOK 2586

Work continued from Page AT SITE: SJC/JG

AM: CLOUDY, COOL - RAIN BECOMES PARTLY CLOUDY

PM: PTCDY TO CLOUDY - COOL LT RAIN

0630 AT SITE CALIB PID - FINISH NOTES

0730 PREPARE ENCORE SETS

0830 GO TO SITE 15 - SET UP ON 046

AOC U	15SB046	20.5'	SET TEMP WELL 10-20
	15SB045	14'	
AOC O	15SB043	5'	
	15SB042	6'	
	15SB044	4.5'	
AOC E	15SB019	6'	
	15SB023	6'	DUP AT 0206 + MS/MSD
	15SB020	6'	
	15SB022	6'	
	15SB021	6'	
AOC H	15SB040	6'	
	15SB039	3'	

1630 AT FIELD OFFICE - PREPARE SAMPLES

1800 LV SITE. (1 DAY DPT)

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

SIGNATURE SJ Conta DATE 12/10/04

WITNESS DATE

TITLE NSWC CRANE PROJECT NO. N1245

SAT DEC 11 2004 BOOK 36

Work continued from Page AT SITE: SJC/JG JM

AM: CLOUDY COLD RAIN - RAIN STOPS @ 0900

PM: " "

0630 AT SITE CALIB PID - FINISH NOTES GET ENCORES READY

0730 SJC/TR GO TO SITE 8 TO CHECK OUT SITE.

0800 BACK AT OFFICE. JAY HOOKS UP TO TRAILER. GO TO SITE 15.

0835 MOVES DPT RIG TO 15SB0

	15SB017	6'
	15SB016	6'
	15SB015	6'
	15SB018	6'
0945	15SB014	6''
	15SB025	5'
	15SB024	5'
	15SB026	3.5'
1050	15SB028	4'
	15SB027	

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

SIGNATURE SJ Conta DATE 12/11/04

WITNESS DATE

TITLE NSWC CRANE PROJECT NO. N1245

SAT (CONT) - 2004 BOOK 2586

Work continued from Page

1200 CLEAN UP AT SITE 15 - PATCH BORING WITH COLD PATCH. LOAD DPT ON TRAILER

1250 AT SITE 08 SET UP AT 08SB001

1305 08SB001 2.5'
08SB002 3'
08SB003 3'
08SB005 4'
1500 08SB004 6'

1545 AT SITE OFFICE -- PLACE SAMPLES IN FRIDGE - WRITE UP NOTES, PAPERWORK - CHECK OVER QA SHEET BEGIN COC'S - FILL OUT DARS.

1810 LV SITE - WORK ON LOGS IN ROOM
47 BORINGS DONE SO FAR
9 LEFT AT SITE 8 (12/12)
12 " AT " 15 12/13/12/14/12/15
7 CANT DO W/ DPT
75 TOTAL

[1 DAY DPT]

4 DAY + 1 MOB

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE SJ Conte DATE 12/11/04

WITNESS DATE

TITLE NSWC CRANE PROJECT NO. N1245

SUN DEC 12 2004 BOOK 2586

Work continued from Page

AT SITE: SJC/JG JM - EFS

AM: CLOUDY, COLD, WINDY
PM: PTLY CLDY, COLD, WINDY

0630 AT SITE: CALIB PID - PREPARE ENCORE SAMPLES - LOAD VANS - JARS, COOLERS ICE

0730 FINISH LOADING VANS - PREPARE TO GO TO SITE 8.

0830 AT SITE 8

08SB006 8' TEMP WELL (3'-8')
0910 MS/MSD + DUP → 08SB009 8.5
08SB008 10'
08SB007 17' TEMP WELL (7'-17')
1130 08SB010 17.5 TEMP WELL (7'-17')

1230 TOOK SAMPLE OF EFS'S SOURCE WATER USED FOR DECON - TOOK SAMPLES AND PAPER WORK TO FIELD OFFICE.

1300 ARRIVE FIELD OFFICE - DROP OFF SAMPLES - GET MORE SUPPLIES.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE SJ Conte DATE 12/12/04

WITNESS DATE

TITLE NSWC CRANE
SUN (CONT) 2004

PROJECT NO. N1245
BOOK 2586

Work continued from Page

1330	08SB011	6'	
	08SB012	19'	MS/MSD 0006 DUP 02
1515	08SB013	19	SET TEMP WELL 9-19
	08SB014	2-4	

1545 CLEAN UP LOAD UP DPT - GO TO SITE 15 LOOK OVER LOCATIONS

1630 RETURN TO FIELD OFFICE. PUT SAMPLES IN FRIDGE.

1800 LU SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE S J Conti DATE 12-12-04

WITNESS DATE

TITLE NSWC CRANE
MON DEC 13 2004

PROJECT NO N1245
BOOK 2586

Work continued from Page

AT SITE: SJC/JG (TANUS) JM - EFS

AM: CLOUDY, COLD WINDY.
PM: " " "

0630 AT SITE: CALIB PID, PAPERWORK, DAR'S GET ENCORES READY, JARS, COOLERS, ICE LOAD VAN - PREPARE TO GO TO SITE 15 WOODED AREA

0730 LOOK OVER QUP FOR AOC W.

0800 EFS ARRIVES - PREPARE TO GO TO AOC W.

0900	15SB053	6'	
	15SB057	9.5'	
	15SB061	6'	SET TEMP WELL 1-6
1020	15SB060	6'	
	15SB059	6'	
1320	15SB058	6'	
	15SB54	6'	
	15SB50	6'	
	15SB51	6'	
1430	15SB52	6'	

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE S J Conti DATE 12/13/04

WITNESS DATE

TITLE NSWC CRANE PROJECT NO. N1245

MON (CONT) 2004 BOOK 2586

Work continued from Page

	15SB056	6'
1630	15SB055	6'

1635 JAY HOOKS UP TRAILER AND LOADS DPT ON TRAILER - TAKES IT TO FIELD OFFICE.

1730 AT FIELD OFFICE - PREP SAMPLES AND SHIP.

1810 LV SITE.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE SJ Conte DATE 12/14/04

WITNESS DATE

TITLE NSWC CRANE PROJECT NO. N1245

TUE DEC 14 2004 BOOK 2586

Work continued from Page AT SITE: SJC/JG TENUS

AM: CLEAR V. COLD.
PM: PARTLY CLDY COLD

0630 AT SITE - WRITE UP NOTES AND COMPLETE DARS

0730 PREPARE FOR HAND AUGER AT SITE 15

0800 GO OVER DARS w/ JAY McFALL

0830 LOAD HAND AUGER EQUIP

0915	TAKE	HAND	AUGER		15SB030	(3')
	"	"	"		15SB033	(2')
	"	"	"		15SB036	(2')
	"	"	"		15SB039	(2')
1050	"	"	"		15SB041	(2')
	"	"	"		15SB038	(2')
1330 ±	"	"	(TEMP WELL)		15SB062	(3.5')
1430	"	"			15SB049	(2')

1510 DONE AT SITE 15 GO TO FIELD OFF.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE SJ Conte DATE 12/14/04

WITNESS DATE

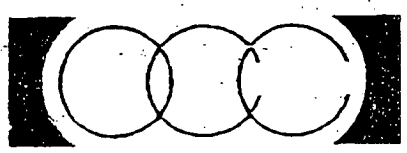
APPENDIX E
SURVEY DATA

SWMU 15 SURVEY LOCATIONS- DECEMBER, 2004 - FEBRUARY, 2005					
DATA COMPILED BY: BLEDSOE, TAPP, & RIGGERT, INC					
Location	Northing (feet)	Easting (feet)	Ground Surface Elevation (feet amsl)	Top of Casing Elevation (feet amsl)	Top of PVC Elevation (feet amsl)
SOIL BORING					
15SB001	1317540.18	3027499.46	774.47	N/A	N/A
15SB002	1317491.74	3027519.72	758.07	N/A	N/A
15SB003	1317436.15	3027448.70	771.96	N/A	N/A
15SB004	1317415.58	3027453.79	771.78	N/A	N/A
15SB005	1317396.14	3027441.39	770.88	N/A	N/A
15SB006	1317451.19	3027512.32	755.64	N/A	N/A
15SB007	1317535.27	3027547.74	756.79	N/A	N/A
15SB008	1317409.14	3027657.93	750.74	N/A	N/A
15SB009	1317429.64	3027643.80	752.08	N/A	N/A
15SB010	1317423.52	3027658.63	751.60	N/A	N/A
15SB011	1317477.26	3027705.27	752.57	N/A	N/A
15SB012	1317469.30	3027688.79	752.06	N/A	N/A
15SB013	1317484.68	3027689.89	752.74	N/A	N/A
15SB014	1317440.49	3027795.65	755.25	N/A	N/A
15SB015	1317457.13	3027808.01	755.43	N/A	N/A
15SB016	1317453.79	3027825.35	754.92	N/A	N/A
15SB017	1317471.80	3027818.88	755.47	N/A	N/A
15SB018	1317461.01	3027790.74	755.90	N/A	N/A
15SB019	1317534.96	3027897.66	756.32	N/A	N/A
15SB020	1317533.94	3027922.43	756.28	N/A	N/A
15SB021	1317546.46	3027929.06	756.89	N/A	N/A
15SB022	1317529.74	3027938.42	756.06	N/A	N/A
15SB023	1317516.66	3027910.61	755.44	N/A	N/A
15SB024	1317653.93	3028044.16	761.65	N/A	N/A
15SB025	1317576.53	3028048.33	758.09	N/A	N/A
15SB026	1317621.98	3028107.74	759.90	N/A	N/A
15SB027	1317675.79	3028163.20	761.69	N/A	N/A
15SB028	1317609.72	3028181.92	759.83	N/A	N/A
15SB029	1317396.04	3027915.59	752.55	N/A	N/A
15SB030	1317342.05	3027981.73	737.67	N/A	N/A
15SB031	1317470.44	3028187.10	756.32	N/A	N/A
15SB032	1317384.55	3028284.73	726.55	N/A	N/A
15SB033	1317304.94	3028049.40	721.38	N/A	N/A
15SB034	1317394.99	3028124.68	735.45	N/A	N/A
15SB035	1317331.38	3028308.96	708.40	N/A	N/A
15SB036	1317244.35	3027989.43	724.71	N/A	N/A
15SB037	1317333.77	3028253.46	711.60	N/A	N/A
15SB038	1317324.93	3028156.82	716.67	N/A	N/A
15SB039	1317214.19	3028092.34	733.47	N/A	N/A
15SB040	1317232.65	3028224.14	735.97	N/A	N/A
15SB041	1317252.25	3028369.99	714.23	N/A	N/A
15SB042	1317616.11	3027975.50	760.37	N/A	N/A
15SB043	1317625.51	3027991.56	760.92	N/A	N/A
15SB044	1317637.58	3027975.38	761.92	N/A	N/A
15SB045	1317930.58	3028450.96	775.92	N/A	N/A
15SB046	1317772.54	3028437.38	763.18	N/A	N/A

15SB047	1317696.97	3028512.29	755.52	N/A	N/A
15SB048	1317628.25	3028420.25	755.69	N/A	N/A
15SB049	1317552.98	3028586.35	716.23	N/A	N/A
15SB050	1316531.97	3027280.90	761.62	N/A	N/A
15SB051	1316483.42	3027408.75	762.92	N/A	N/A
15SB052	1316445.63	3027548.22	765.09	N/A	N/A
15SB053	1316399.95	3027690.50	768.22	N/A	N/A
15SB054	1316432.96	3027216.47	759.20	N/A	N/A
15SB055	1316440.19	3027384.97	761.03	N/A	N/A
15SB056	1316374.35	3027512.69	762.88	N/A	N/A
15SB057	1316333.55	3027646.17	767.19	N/A	N/A
15SB058	1316291.46	3027173.59	753.82	N/A	N/A
15SB059	1316272.27	3027370.65	756.56	N/A	N/A
15SB060	1316275.24	3027478.32	760.88	N/A	N/A
15SB061	1316269.81	3027606.24	765.62	N/A	N/A
15SB062	1317725.72	3028627.22	737.26	N/A	N/A
SURFACE WATER/SEDIMENT					
15SW/SD001	1317194.18	3028517.22	689.77	N/A	N/A
15SW/SD002	1316736.70	3028691.68	674.64	N/A	N/A
15SW/SD003	**NOT SAMPLED**				
15SW/SD004	1317744.65	3027660.25	761.78	N/A	N/A
15SW/SD005	1317254.38	3027741.85	734.36	N/A	N/A
15SW/SD006	1317348.00	3027874.56	737.80	N/A	N/A
15SW/SD007	**NOT SAMPLED**				
15SW/SD008	**NOT SAMPLED**				
15SW/SD009	1317346.42	3027637.35	743.99	N/A	N/A
15SW/SD010	1317479.24	3027885.11	753.85	N/A	N/A
15SW/SD011	1317758.27	3027774.91	778.30	N/A	N/A
15SW/SD012	**NOT SAMPLED**				
15SW/SD013	1317575.09	3028590.17	717.33	N/A	N/A
15SW/SD014	1317588.39	3028659.23	714.00	N/A	N/A
15SW/SD015	1317396.16	3028463.19	698.90	N/A	N/A
15SW/SD016	1317327.69	3028375.19	697.53	N/A	N/A
15SW/SD017	1317335.07	3028127.27	713.56	N/A	N/A
15SW/SD018	1316162.81	3027112.05	744.44	N/A	N/A
15SW/SD019	1316050.96	3026910.36	736.14	N/A	N/A
SB= Soil Boring SW = Surface Water SG = Staff Guage					
MW = Monitoring Well SD = Sediment SP = Seep					

APPENDIX F

HEALTH AND SAFETY FORMS



OCCUPATIONAL CARE CONSULTANTS

OCC - East • 3028 Navarre Ave • Oregon, OH 43616
(419) 697-6850 • Fax (419) 697-6861

TOXIC AND HAZARDOUS SUBSTANCES – HCP WRITTEN OPINION

NAME: Josh Dean **DATE:** 9-17-04

Examiner to select A or B

A. ✓ **I have detected no medical conditions** that would place this individual at an increased risk of material health impairment from exposure to asbestos.

B. ____ **I have detected medical conditions** that would place this individual at an increased risk of material health impairment from exposure to asbestos.

Examiner to select all that apply:

C. ____ Restrictions are placed on this individual for respirator use related to a medical condition or to the workplace conditions in which the respirator will be used. Restrictions are as follows:

D. ✓ The above named individual has been provided a copy of this Licensed Health Care Professional's written opinion, and of any medical conditions resulting from asbestos exposure that require further explanation or treatment.

E. ____ This individual has been informed of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos exposure.

B.C. Russell

T.E. Lieser, MD; P.J. Eby, MD; G. J. Jabaly, MD; B.C. Russell, PA-C, G. Myak, RN, CNP

Certificate of Completion

This is to certify that

Joshua Dean

has successfully completed the
OSHA 29 CFR 1910.120 -- Hazardous Waste
Operations and Emergency Response
8 Hour Annual Refresher Training Course
given at
Bowser-Morner, Inc.
4518 Taylorsville Road, Dayton, Ohio

28 Dec 2004

2095-04
Certificate Identification Number

Level B
Personal Protective Equipment Level

Steven L. Curtis PE, CSP, CHMM
Trainer

Certificate

OF

Completion

This is to certify that

Josh Dean

Has successfully completed the

MSHA30 CFR Part 46.8
8-Hour Annual Refresher Training
Given at
Bowser-Morner, Inc.
4518 Taylorsville Road, Dayton, Ohio

December 28, 2004

1228040005
Certificatee Identification Number

Henry M. Butcher, REM, CEA

FINDLAY

THE UNIVERSITY OF FINDLAY

Certificate of Achievement

awarded by

THE NATIONAL CENTER OF EXCELLENCE FOR ENVIRONMENTAL MANAGEMENT

ENVIRONMENTAL RESOURCE TRAINING CENTER

to

JOSHUA DEAN

for Successful Completion of

OSHA 40-HOUR SAFETY TRAINING WORKSHOP
(FULFILLS THE REQUIREMENTS OF 29 CFR 1910.120 COVERING HAZARDOUS WASTE OPERATIONS)
4.0 CEU'S
APRIL 27, 2002

EXECUTIVE DIRECTOR

INSTRUCTOR

ARGONNE NATIONAL LABORATORY

RECOGNIZES

Jeffrey P. Schubert

ON THE COMPLETION OF THE COURSES OF STUDY
PRESCRIBED BY 29 CFR 1910.120 AND DOE ORDER 5480.11

HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE (40 HOURS) AND GENERAL EMPLOYEE RADIATION SAFETY

COMPLETED ON THIS DATE January 12, 1990

ISSUED AND ATTESTED BY

Robert A. Wynn
MANAGER
ENVIRONMENT, SAFETY & HEALTH

Dean R. Larsen
COURSE MANAGER

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Baseline Examination

UPDATE

EMPLOYEE: Doolan, Colin
SSN: XXX-XX-8351
DATE OF EXAM: 12/02/2004
EXPIRATION DATE: 12/02/2006

COMPANY: TT/NUS
POSITION: Earth Scientist
LOCATION: TT/NUS-Pittsburgh
SITE: Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.
2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:
3. ☐ **NOT QUALIFIED**
4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS: *Status changed to Biennial.*

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 12/07/04

Signature: Peter P. Greaney MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 - (800) 455-6155 - FAX (714) 456-2154

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Colin A. Doolan

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER
REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

December 23, 2004

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Rojahn, Terry	**COMPANY:**	TT/NUS
SSN:	XXX-XX-8670	**POSITION:**	Environmental Sampling
DATE OF EXAM:	11/05/2004	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	11/05/2006	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 11/10/04

Signature: Peter P Greaney MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 - (800) 455-6155 - FAX (714) 456-2154

Basinski, Ralph

From: Soltis, Matthew
Sent: Tuesday, August 31, 2004 3:18 PM
To: Basinski, Ralph
Cc: Rojahn, Terry; Diano, Linda
Subject: Training Certificate

Ralph:

As I mentioned earlier, one of the action items from my recent H&S audit at NSWC Crane was to follow up on the matter of an 8-hour training certificate for Management/Supervisor H&S training for our FOL on this field effort (Terry Rojahn). This was the only mandatory training element that I could not find documentation for during my audit.

In checking our corporate training database, I have confirmed that Terry did satisfactorily complete this training with us on March 31, 1988. We do not maintain copies of every training certificate that we issue. Please have Terry use this message as interim confirmation of his satisfying this training requirement. The next time that we prepare training certificates, Linda Diano will prepare a replacement certificate for Terry and provide it to him for his records/use.

If there are any questions, let me know.

Matt

Matthew M. Soltis, CIH, CSP.
Corporate Health and Safety Manager
Tetra Tech NUS, Inc.
Foster Plaza 7, 661 Andersen Drive
Pittsburgh, PA 15220-2745
Telephone: (412) 921-8912
FAX: (412) 921-4040
soltism@ttnus.com
http://www.ttnus.com
http://www.tetratech.com

NOTICE OF CONFIDENTIALITY

This e-mail message and its attachments (if any) are intended solely for the use of the addressees hereof. In addition, this message and the attachments (if any) may contain information that is confidential, privileged and exempt from disclosure under applicable law. If you are not the intended recipient of this message, you are prohibited from reading, disclosing, reproducing, distributing, disseminating or otherwise using this transmission. Delivery of this message to any person other than the intended recipient is not intended to waive any right or privilege. If you have received this message in error, please promptly notify the sender by reply e-mail and immediately delete this message from your system.

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Terry R. Rojahn

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

February 25, 2005

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

NUS CORPORATION

Certificate of Training

THIS CERTIFIES THAT

TERRY ROJAHN

has successfully completed a course of instruction on

SUPERFUND TRAINING CLASS

prepared and conducted by the
NUS Corporation, Pittsburgh, Pennsylvania

SEPT. 30 - OCT. 4, 1985
Date of Award

Gary F. Smith, C.S.P.
Director; Health, Safety Training

E. Dennis Escher, P.E.
Vice President

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, PA 15220
Tel 412.921.7090 • Fax 412.921.4040 • www.tetratech.com

PITT-5-5-042

May 27, 2005

Project Numbers N1245, N7448, N6878, and 00042

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: William Gates (Code ES31)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers 0331, 0343, 0357, and 0376

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to add personnel conducting the field activities at the NAS Dallas site from May 31 through June 8, 2005. Mr. Colin Doolan has been added to the field crew performing this work. All other information in our letter dated April 29, 2005 remains the same.

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS:lld

c: B. Gorman (Code ES 42)
D. Humbert
M. Perry
K. Henn
R. Basinski

TETRA TECH NUS, INC.

In addition, Roger Clark will also visit Tetra Tech NUS, Inc. work sites at NWSC Crane during this period. However, he will be not participating in any intrusive activities (e.g., drilling, sampling, etc.) and will be restricted from approaching work areas while any intrusive activities are performed.

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS/mlg

cc: Mr. B. Gorman (Code ES34)
Ms. Debra Humbert, TtNUS, Inc.
Mr. Mark Perry, TtNUS, Inc.
Mr. Keith Henn, TtNUS, Inc.
Mr. Terry Rojahn, TtNUS, Inc.
Mr. Roger Clark, TtNUS, Inc.
File copy CTO 0331, 0343, 0357, 0376

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, PA 15220
Tel 412.921.7090 • Fax 412.921.4040 • www.tetratech.com

PITT-04-5-067

April 29, 2005

Project Nos. 1245, 7448, 6878, 00042

Mr. William Gates (Code ES31)
Commander, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
P.O. Box 190010
North Charleston, South Carolina 29119-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Nos. 0331, 0343, 0357, 0376

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. (TtNUS) employees under the CLEAN contract, and to attest that the individuals identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; surface water, seep and sediment sampling; and soil sampling using DPT and hand augering techniques at the NSWC Crane site in Indiana. This is scheduled to be conducted from May 2, 2005 through June 8, 2005. The individuals that will perform these tasks are employees of TtNUS. In performing these activities, the field team will adhere to the following Health and Safety Plans (HASPs):

- HASP for RCRA Facility Investigation at Building 106 Pond (SWMU 8) and Roads and Grounds Area (SWMU 15), dated November 2004, prepared under CTO 0331.
- HASP for Cast High Explosives Fill and B-146 Incinerator, dated August 2004, prepared under CTO 0343.
- HASP for Mine Fill A (SWMU 12), Revision 1, dated August 2004, prepared under CTO 0357.
- HASP for Risk Assessment and Corrective Measures Study (SWMU 9), dated February 2005, prepared under CTO 0376.

The following individuals will participate in the planned activities described above:

Jim Goerdt
Terry Rojahn
John Wright
Jeff Schubert

FIGURE 8-2

SITE-SPECIFIC TRAINING DOCUMENTATION

My signature below indicates that I am aware of the potential hazardous nature of performing investigation activities at NSWC Crane, and that I have received site-specific training that included the elements presented below:

- Names of personnel and alternates responsible for site safety and health
- Safety, health and other hazards present on site
- Use of personal protective equipment
- Work practices to minimize risks from hazards
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- The contents of the health and safety plan including Table 5-1 and 6-1
- Emergency response procedures (evacuation and assembly points)
- Review contents of relevant Material Safety Data Sheets
- Review of Safe Work Permits

I have been given the opportunity to ask questions and that my questions have been answered to my satisfaction. The dates of my training and my medical surveillance requirements are accurate and correct to the best of my knowledge.

	Name (Printed and Signature)	Site-Specific Training Date	40-Hour Training (Date)	8-Hour Refresher Training (Date)	8-Hour Supervisory Training (Date)	Medical Exam	
1245	Jay McFall Jay McFall	12/7/04	2/19/04	N/A	N/A	7/30/04	
SWMU 9	DON WOOSTOLHOFF [illegible]	"	1/93	8/04	8/04	2/12/03	
	TERRY RONAHAN [illegible]	"	10/85	1/04	1/04	11/10/04	ALSO SWMU 9
1245 6875 1448	[illegible] [illegible]	12/8/04	12/91	10/04	NA	11/7/04	
	Stan Conti S Conti	12/8/04	8/83	5/04	8/84	12/6/04	
	Colin Doolan Colin Doolan	11/6/05	5/99	12/04	NA	12/04	

MEDICAL APPROVAL FORM
For Employees of Environmental Field Services, Inc.

Participant Name: Jay McFall Date & Time of Examination: July 30, 2004

The above-named individual has:

1. Undergone a physical examination in accordance with OSHA 29 CFR 1910.120, and found to be medically
   (✓) qualified to perform work at hazardous work sites.
   ( ) not qualified to perform work at hazardous work sites.

- and -

2. Undergone a physical examination as per OSHA 29 CFR 1910.134, and found to be medically
   (✓) qualified to wear respiratory protection.
   ( ) not qualified to wear respirator protection.

My evaluation has been based on the following, as provided to me by the employer.

( ) A Copy of OSHA Standards 29 CFR 1910.120 and appendices.
( ) A description of the employee's duties as they relate to the employee's exposure.
( ) A list of known/suspected contaminants and their concentrations (if known)
( ) A description of any personal protective equipment used or to be used.
( ) Information from previous medical examinations of the employee which is used not readily available to the examining physician.

I, T Perri, have examined Jay McFall

Physician's Name (Print) Participant's Name (Print)

and have determined the following information:

1. Results of medical examination and test (excluding finding or diagnoses unrelated to occupational exposure):

   (2)

2. Any detected medical conditions which place the employee at increase risk of material impairment of the employee's health :

   none

3. Recommended limitations upon the employee's assigned work :

   none

I have informed this participant of the results of this medical examination and any medical conditions which require further examination of treatment.

Based on this information provided to me, and in view of the activities and hazardous potentials involved at hazardous work sites, his participant

(✓) may
( ) may not

perform his/her assigned tasks.

Physician's Signature : [signature]
Address: 5604 W. 74th
Indpls
Phone Number: 317 290 1551

Compliance Environmental Resources, Inc.
7002 Graham Road
Suite 202
Indianapolis, IN 46220
317-863-0008

Jay McFall

Has completed the 40 Hour Hazardous Waste Operations and Emergency Response (HAZWOPER) course in compliance with 29 CFR 1910.120 (e). He will have met the criteria for certification upon completion of 24 hours of supervised training.

Christopher A. Kinsey, CHMM, CET
Instructor
Completion Date: 02/19/04

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Rojahn, Terry	**COMPANY:**	TT/NUS
SSN:	XXX-XX-8670	**POSITION:**	Environmental Sampling
DATE OF EXAM:	11/05/2004	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	11/05/2006	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 11/10/04

Signature: Peter P Greaney MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 - (800) 455-6155 - FAX (714) 456-2154

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Terry Rojahn

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

January 30, 2004

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Terry R. Rojahn

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

February 25, 2005

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

NUS CORPORATION

Certificate of Training

THIS CERTIFIES THAT

TERRY ROJAHN

has successfully completed a course of instruction on

SUPERFUND TRAINING CLASS

prepared and conducted by the
NUS Corporation, Pittsburgh, Pennsylvania

SEPT. 30 - OCT. 4, 1985
Date of Award

Gary F. Smith, C.S.P.
Director; Health, Safety Training

E. Dennis Escher, P.E.
Vice President

WORKCARE™
A Trademark of WorkCare, Inc.

RELEASE TO DUTY

CLINIC INSTRUCTIONS: Complete and give to employee before they leave the facility. This is a requirement of Tetra-Tech.

Employee Name: Stanley J. Conti

Office Location: PIT

Yes	No	
☑	☐	To work with hazardous materials in accordance with 29 CFR 1910.120.
☑	☐	To use respiratory protective equipment in accordance with 29 CFR 1910.134.

Based on the limited information available to me at this time, I find no necessity for immediate restrictions and I release this employee for duty. It is understood and agreed upon by the employer or potential employer of this examinee that subsequent comprehensive review of all laboratory and other test data by WorkCare may detect health conditions not apparent to me. It is further agreed and understood that such health conditions may necessitate the need for workplace restrictions. Examination has been performed in compliance with 1910.120 and 1910.134.

Signed: _____ M.D.

Date: 12-6-04

Employee

Bring this form back to the office and fax it to:
Matt Soltis, Corporate Health & Safety (412) 921-4040

333 S. Anita Drive, Suite 630, Orange, CA 92868 • (714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154
E-mail: info@workcare.com • Website: www.workcare.com

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Stan Conti

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER
AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

May 14, 2004
Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, Pennsylvania 15220-2745
(412) 921-7090 • FAX (412) 921-4040 • www.tetratech.com

March 11, 2003

Mr. Stanley Conti
Tetra Tech NUS, Inc.
Foster Plaza 7
661 Andersen Drive
Pittsburgh, PA 15220

Whom It May Concern:

This letter is to certify that Mr. Stanley Conti successfully completed a course of instruction in Hazardous Materials Handling for Hazardous Waste Site Workers which meets the criteria established in 29 CFR 1910.120(e)(3)(i). This course was prepared and conducted by Tetra Tech NUS (formerly Brown and Root Environmental, a division of HALLIBURTON NUS Corporation) in September 1983. If you have any questions, please feel free to contact me.

Very truly yours,

James K. Lafley
Manager, Training Resources

JKL:lld

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Goerdt, James	**COMPANY:**	TT/NUS
SSN:	481-86-2691	**POSITION:**	Environmental Scientist
DATE OF EXAM:	11/07/2003	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	11/07/2005	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.
2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:
3. ☐ **NOT QUALIFIED**
4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Scott Hardy, M.D. Date: 11/11/03

Signature: Scott Hardy MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 - (800) 455-6155 - FAX (714) 456-2154

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Jim Goerdt

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER
AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

October 22, 2004

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

APPLIED EDUCATIONAL SERIES

James D. Goerdt

APPLIED ASSOCIATES INTERNATIONAL INC.

CERTIFICATE

OSHA, 1910.120
Hazardous Waste Operations and Emergency Response 40 Hour Course

ISSUE DATE: December 13, 1991

EXPIRATION: December 13, 1992

CERTIFICATE: HAZ9112001058

STEVEN L. WILLIAMS
President

THOMAS O. MURRAY
Certified Industrial Hygenist

P. O. Box 300068
Fern Park, Florida 32730-0068

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Baseline Examination

UPDATE

EMPLOYEE:	Doolan, Colin	**COMPANY:**	TT/NUS
SSN:	XXX-XX-8351	**POSITION:**	Earth Scientist
DATE OF EXAM:	12/02/2004	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	12/02/2006	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.
2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:
3. ☐ **NOT QUALIFIED**
4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS: ***Status changed to Biennial.***

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 12/07/04

Signature: Peter P Greaney MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 · (800) 455-6155 · FAX (714) 456-2154

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Colin A. Doolan

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER

REFRESHER TRAINING

prepared and instructed by Tetra Tech NUS, Inc.

Pittsburgh, Pennsylvania

December 23, 2004

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, PA 15220
Tel 412.921.7090 • Fax 412.921.4040 • www.tetratech.com

PITT-12-4-003

December 3, 2004

Project Number N6878

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: William Gates (Code ES31)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers 0160, 0331, 0343, and 0357

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. employees under the CLEAN contract, and to attest that the individuals identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; surface water, seep and sediment sampling; and soil sampling using DPT and hand augering techniques at the NSWC Crane site in Indiana. This is scheduled to be conducted from December 6, 2004 through December 17, 2004. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow these listed health and safety plans.

- Health and Safety Plan for Solid Waste Management Unit 7, dated December 2004, prepared under CTO 0160.
- Health and Safety Plan for RCRA Facility Investigation at Building 106 Pond (SWMU 8) and Roads and Grounds Area (SWMU 15), dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Environmental Indicator Investigation for SWMUs 18, 19, 20, and the Old Gun Tub Storage Lot, dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Cast High Explosives Fill and B-146 Incinerator, dated August 2004, prepared under CTO 0343.
- Health and Safety Plan for Mine Fill A (SWMU 12), Revision 1, dated August 2004, prepared under CTO 0357.

These individuals are as follows:

Stan Conti
Jim Goerdt
Terry Rojahn
Donald Westerhoff

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, PA 15220
Tel 412.921.7090 • Fax 412.921.4040 • www.tetratech.com

PITT-12-4-053

December 30, 2004

Project Numbers 3961, 1245, 7448, and 6878

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: William Gates (Code ES31)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers 0160, 0331, 0343, an[redacted]

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. employees under the CLEAN contract, and to attest that the individuals identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; surface water, seep and sediment sampling; and soil sampling using DPT and hand augering techniques at the NSWC Crane site in Indiana. This is scheduled to be conducted from January 4-28, 2005. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow these listed health and safety plans.

- Health and Safety Plan for Solid Waste Management Unit 7, dated December 2004, prepared under CTO 0160.
- Health and Safety Plan for RCRA Facility Investigation at Building 106 Pond (SWMU 8) and Roads and Grounds Area (SWMU 15), dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Environmental Indicator Investigation for SWMUs 18, 19, 20, and the Old Gun Tub Storage Lot, dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Cast High Explosives Fill and B-146 Incinerator, dated August 2004, prepared under CTO 0343.
- Health and Safety Plan for Mine Fill A (SWMU 12), Revision 1, dated August 2004, prepared under CTO 0357.

These individuals are as follows:

Stan Conti
Colin Doolan
Jim Goerdt
Terry Rojahn

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, PA 15220
Tel 412.921.7090 • Fax 412.921.4040 • www.tetratech.com

PITT-2-5-050

February 25, 2005

Project Numbers N1245, N6878, and 00042

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: William Gates (Code ES31)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers 0331, 0357, and 0376

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. employees under the CLEAN contract, and to attest that the individuals identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; surface water, seep and sediment sampling; and soil sampling using DPT and hand augering techniques at the NSWC Crane site in Indiana. This is scheduled to be conducted from February 28 through March 16, 2005. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow these listed health and safety plans.

- Health and Safety Plan for RCRA Facility Investigation at Building 106 Pond (SWMU 8) and Roads and Grounds Area (SWMU 15), dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Environmental Indicator Investigation for SWMUs 18, 19, 20, and the Old Gun Tub Storage Lot, dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Cast High Explosives Fill and B-146 Incinerator, dated August 2004, prepared under CTO 0343.
- Health and Safety Plan for Mine Fill A (SWMU 12), Revision 1, dated August 2004, prepared under CTO 0357.
- Health and Safety Plan for Risk Assessment and CMS at Solid Waste Management Unit (SWMU) 9, dated February 2005, prepared under CTO 0376.

These individuals are as follows:

Jim Goerdt
Terry Rojahn

APPENDIX G

ANALYTICAL DATA

APPE[illegible]LE G-1
RESULTS FOR CHEMICALS ANA[illegible]D IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB001 12/9/2004	15SB002 12/8/2004	15SB003 12/9/2004	15SB004 12/9/2004	15SB005 12/8/2004	15SB006 12/8/2004
Volatile Organics (ug/kg)						
1,1,1,2-TETRACHLOROETHANE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
1,1,1-TRICHLOROETHANE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
1,1,2,2-TETRACHLOROETHANE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
1,1,2-TRICHLOROETHANE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
1,1-DICHLOROETHANE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
1,1-DICHLOROETHENE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
1,2,3-TRICHLOROPROPANE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
1,2-DIBROMO-3-CHLOROPROPANE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
1,2-DIBROMOETHANE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
1,2-DICHLOROETHANE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
1,2-DICHLOROPROPANE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
2-BUTANONE	2 J 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 3 J 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 2 J 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 2 J 15SB0060206-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB001 12/9/2004	15SB002 12/8/2004	15SB003 12/9/2004	15SB004 12/9/2004	15SB005 12/8/2004	15SB006 12/8/2004
2-HEXANONE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
3-CHLOROPROPENE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
4-METHYL-2-PENTANONE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
ACETONE	14 U 15SS0010002 4 BU 15SB0010206	14 U 15SS0020002 23 BU 15SB0020206	6 U 15SS0030002 7 BU 15SB0030206	5 U 15SS0040002 22 BU 15SB0040206	13 U 15SS0050002 16 BU 15SB0050206	27 U 15SS0060002 15 BU 15SB0060206-D
ACETONITRILE	33.8 UR 15SS0010002 36.4 UR 15SB0010206	46 UR 15SS0020002 37.5 UR 15SB0020206	45.8 UR 15SS0030002 39.3 UR 15SB0030206	42 UR 15SS0040002 40.5 UR 15SB0040206	59.4 UR 15SS0050002 39.8 UR 15SB0050206	41.8 UR 15SS0060002 45.5 UR 15SB0060206-D
ACROLEIN	0.846 UR 15SS0010002 0.91 UR 15SB0010206	1.15 UR 15SS0020002 0.938 UR 15SB0020206	1.14 UR 15SS0030002 0.982 UR 15SB0030206	1.05 UR 15SS0040002 1.01 UR 15SB0040206	1.48 UR 15SS0050002 0.995 UR 15SB0050206	1.04 UR 15SS0060002 1.14 UR 15SB0060206-D
ACRYLONITRILE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
BENZENE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
BROMODICHLOROMETHANE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
BROMOFORM	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
BROMOMETHANE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
CARBON DISULFIDE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB001 12/9/2004	15SB002 12/8/2004	15SB003 12/9/2004	15SB004 12/9/2004	15SB005 12/8/2004	15SB006 12/8/2004
CARBON TETRACHLORIDE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
CHLOROBENZENE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
CHLORODIBROMOMETHANE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
CHLOROETHANE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
CHLOROFORM	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
CHLOROMETHANE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
CHLOROPRENE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
CIS-1,2-DICHLOROETHENE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
CIS-1,3-DICHLOROPROPENE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
DIBROMOMETHANE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
DICHLORODIFLUOROMETHANE	0.846 UR 15SS0010002 0.91 UR 15SB0010206	1.15 UJ 15SS0020002 0.938 U 15SB0020206	1.14 UR 15SS0030002 0.982 UR 15SB0030206	1.05 UR 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 UJ 15SS0060002 1.14 U 15SB0060206-D
ETHYL METHACRYLATE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB001 12/9/2004	15SB002 12/8/2004	15SB003 12/9/2004	15SB004 12/9/2004	15SB005 12/8/2004	15SB006 12/8/2004
ETHYLBENZENE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
ISOBUTANOL	33.8 UR 15SS0010002 36.4 UR 15SB0010206	46 UR 15SS0020002 37.5 UR 15SB0020206	45.8 UR 15SS0030002 39.3 UR 15SB0030206	42 UR 15SS0040002 40.5 UR 15SB0040206	59.4 UR 15SS0050002 39.8 UR 15SB0050206	41.8 UR 15SS0060002 45.5 UR 15SB0060206-D
METHACRYLONITRILE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
METHYL IODIDE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
METHYL METHACRYLATE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
METHYL TERT-BUTYL ETHER	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
METHYLENE CHLORIDE	5 J 15SS0010002 7 J 15SB0010206	6 J 15SS0020002 2 J 15SB0020206	10 J 15SS0030002 18 J 15SB0030206	7 J 15SS0040002 11 J 15SB0040206	4 J 15SS0050002 1 J 15SB0050206	4 J 15SS0060002 3 J 15SB0060206-D
PROPIONITRILE	33.8 UR 15SS0010002 36.4 UR 15SB0010206	46 UR 15SS0020002 37.5 UR 15SB0020206	45.8 UR 15SS0030002 39.3 UR 15SB0030206	42 UR 15SS0040002 40.5 UR 15SB0040206	59.4 UR 15SS0050002 39.8 UR 15SB0050206	41.8 UR 15SS0060002 45.5 UR 15SB0060206-D
STYRENE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
TETRACHLOROETHENE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
TOLUENE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
TOTAL XYLENES	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB001 12/9/2004	15SB002 12/8/2004	15SB003 12/9/2004	15SB004 12/9/2004	15SB005 12/8/2004	15SB006 12/8/2004
TRANS-1,2-DICHLOROETHENE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
TRANS-1,3-DICHLOROPROPENE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
TRANS-1,4-DICHLORO-2-BUTENE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
TRICHLOROETHENE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
TRICHLOROFLUOROMETHANE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 2 J 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
VINYL ACETATE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
VINYL CHLORIDE	0.846 U 15SS0010002 0.91 U 15SB0010206	1.15 U 15SS0020002 0.938 U 15SB0020206	1.14 U 15SS0030002 0.982 U 15SB0030206	1.05 U 15SS0040002 1.01 U 15SB0040206	1.48 U 15SS0050002 0.995 U 15SB0050206	1.04 U 15SS0060002 1.14 U 15SB0060206-D
Semivolatile Organics (ug/kg)						
1,2,4,5-TETRACHLOROBENZENE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
1,2,4-TRICHLOROBENZENE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
1,2-DICHLOROBENZENE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
1,3-DICHLOROBENZENE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
1,4-DICHLOROBENZENE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
1,4-DIOXANE	113 U 15SS0010002	134 U 15SS0020002	440 U 15SS0030002	107 U 15SS0040002	450 U 15SS0050002	111 U 15SS0060002 118 U 15SB0060206-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB001 12/9/2004	15SB002 12/8/2004	15SB003 12/9/2004	15SB004 12/9/2004	15SB005 12/8/2004	15SB006 12/8/2004
1,4-NAPHTHOQUINONE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
1,4-PHENYLENEDIAMINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 UJ 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
1-NAPHTHYLAMINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
2,2'-OXYBIS(1-CHLOROPROPANE)	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 UJ 15SB0060206-D
2,3,4,6-TETRACHLOROPHENOL	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
2,4,5-TRICHLOROPHENOL	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
2,4,6-TRICHLOROPHENOL	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
2,4-DICHLOROPHENOL	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
2,4-DIMETHYLPHENOL	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
2,4-DINITROPHENOL	75.5 UJ 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
2,6-DICHLOROPHENOL	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
2-ACETYLAMINOFLUORENE	75.5 U 15SS0010002	89.6 UJ 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 UJ 15SS0060002 79.4 U 15SB0060206-D
2-CHLORONAPHTHALENE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
2-CHLOROPHENOL	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
2-METHYLNAPHTHALENE	21 J 15SS0010002 3.85 U 15SB0010206	94 J 15SS0020002 47 15SB0020206	100 15SS0030002 4.05 U 15SB0030206	14.1 U 15SS0040002 3.98 U 15SB0040206	111 U 15SS0050002 3.96 U 15SB0050206	170 15SS0060002 15 J 15SB0060206-D
2-METHYLPHENOL	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D

APPE[illegible]LE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB001 12/9/2004	15SB002 12/8/2004	15SB003 12/9/2004	15SB004 12/9/2004	15SB005 12/8/2004	15SB006 12/8/2004
2-NAPHTHYLAMINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
2-NITROANILINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
2-NITROPHENOL	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
2-PICOLINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
3&4-METHYLPHENOL	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
3,3'-DICHLOROBENZIDINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
3,3'-DIMETHYLBENZIDINE	75.5 U 15SS0010002	89.6 UJ 15SS0020002	295 UJ 15SS0030002	71.7 UJ 15SS0040002	301 UJ 15SS0050002	74.4 UJ 15SS0060002 79.4 UJ 15SB0060206-D
3-METHYLCHOLANTHRENE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
3-NITROANILINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
4,6-DINITRO-2-METHYLPHENOL	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 UJ 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
4-AMINOBIPHENYL	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 UJ 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
4-BROMOPHENYL PHENYL ETHER	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 UJ 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
4-CHLORO-3-METHYLPHENOL	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
4-CHLOROANILINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
4-CHLOROPHENYL PHENYL ETHER	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
4-NITROANILINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB001 12/9/2004	15SB002 12/8/2004	15SB003 12/9/2004	15SB004 12/9/2004	15SB005 12/8/2004	15SB006 12/8/2004
4-NITROPHENOL	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
4-NITROQUINOLINE-1-OXIDE	75.5 UR 15SS0010002	89.6 UR 15SS0020002	295 UR 15SS0030002	71.7 UR 15SS0040002	301 UR 15SS0050002	74.4 UR 15SS0060002 79.4 UR 15SB0060206-D
5-NITRO-O-TOLUIDINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
7,12-DIMETHYLBENZ(A)ANTHRACENE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
A,A-DIMETHYLPHENETHYLAMINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
ACENAPHTHENE	230 15SS0010002 3.85 U 15SB0010206	9 J 15SS0020002 110 15SB0020206	410 15SS0030002 4.05 U 15SB0030206	14.1 U 15SS0040002 3.98 U 15SB0040206	111 U 15SS0050002 3.96 U 15SB0050206	27.5 U 15SS0060002 5 J 15SB0060206-D
ACENAPHTHYLENE	220 15SS0010002 3.85 U 15SB0010206	40 J 15SS0020002 3.97 U 15SB0020206	1200 15SS0030002 4.05 U 15SB0030206	14.1 U 15SS0040002 3.98 U 15SB0040206	150 J 15SS0050002 3.96 U 15SB0050206	27.5 U 15SS0060002 3.91 U 15SB0060206-D
ACETOPHENONE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
ANILINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
ANTHRACENE	750 15SS0010002 3.85 U 15SB0010206	75 J 15SS0020002 120 15SB0020206	1200 15SS0030002 4.05 J 15SB0030206	16 J 15SS0040002 5 J 15SB0040206	150 J 15SS0050002 3.96 U 15SB0050206	78 15SS0060002 14 J 15SB0060206-D
ARAMITE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
BENZO(A)ANTHRACENE	1200 J 15SS0010002 3.85 UJ 15SB0010206	770 J 15SS0020002 100 J 15SB0020206	4600 J 15SS0030002 15 J 15SB0030206	14.1 UJ 15SS0040002 3.98 UJ 15SB0040206	460 15SS0050002 3.96 UJ 15SB0050206	92 J 15SS0060002 45 J 15SB0060206-D
BENZO(A)PYRENE	1300 15SS0010002 3.85 U 15SB0010206	1100 J 15SS0020002 57 15SB0020206	10000 15SS0030002 12 15SB0030206	130 15SS0040002 3.98 U 15SB0040206	730 15SS0050002 3.96 U 15SB0050206	27.5 U 15SS0060002 45 J 15SB0060206-D
BENZO(B)FLUORANTHENE	1500 15SS0010002 3.85 U 15SB0010206	2100 J 15SS0020002 80 15SB0020206	12000 15SS0030002 11 15SB0030206	14.1 U 15SS0040002 3.98 U 15SB0040206	620 15SS0050002 3.96 U 15SB0050206	27.5 U 15SS0060002 110 J 15SB0060206-D
BENZO(G,H,I)PERYLENE	2700 15SS0010002 3.85 U 15SB0010206	850 J 15SS0020002 19 15SB0020206	13000 15SS0030002 6 J 15SB0030206	1900 15SS0040002 3.98 U 15SB0040206	4700 15SS0050002 3.96 U 15SB0050206	27.5 U 15SS0060002 44 J 15SB0060206-D
BENZO(K)FLUORANTHENE	750 15SS0010002 3.85 U 15SB0010206	2200 J 15SS0020002 55 15SB0020206	6900 15SS0030002 16 15SB0030206	14.1 U 15SS0040002 3.98 U 15SB0040206	270 15SS0050002 3.96 U 15SB0050206	27.5 U 15SS0060002 45 J 15SB0060206-D

APPE[illegible]LE G-1
RESULTS FOR CHEMICALS ANA[illegible]D IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB001 12/9/2004	15SB002 12/8/2004	15SB003 12/9/2004	15SB004 12/9/2004	15SB005 12/8/2004	15SB006 12/8/2004
BENZYL ALCOHOL	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
BIS(2-CHLOROETHOXY)METHANE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
BIS(2-CHLOROETHYL)ETHER	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
BIS(2-ETHYLHEXYL)PHTHALATE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
BUTYL BENZYL PHTHALATE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
CHLOROBENZILATE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
CHRYSENE	1300 J 15SS0010002 3.85 U 15SB0010206	890 J 15SS0020002 90 15SB0020206	9500 J 15SS0030002 15 15SB0030206	14.1 UJ 15SS0040002 3.98 U 15SB0040206	450 15SS0050002 3.96 U 15SB0050206	92 J 15SS0060002 71 J 15SB0060206-D
DI-N-BUTYL PHTHALATE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 UJ 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
DI-N-OCTYL PHTHALATE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
DIALLATE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 UJ 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
DIBENZO(A,H)ANTHRACENE	540 15SS0010002 3.85 U 15SB0010206	250 J 15SS0020002 7 J 15SB0020206	3200 15SS0030002 4.05 U 15SB0030206	14.1 U 15SS0040002 3.98 U 15SB0040206	111 U 15SS0050002 3.96 U 15SB0050206	27.5 U 15SS0060002 12 J 15SB0060206-D
DIBENZOFURAN	140 J 15SS0010002	89.6 U 15SS0020002	460 J 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
DIETHYL PHTHALATE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
DIMETHYL PHTHALATE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
DIPHENYLAMINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 UJ 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
ETHYL METHANE SULFONATE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB001 12/9/2004	15SB002 12/8/2004	15SB003 12/9/2004	15SB004 12/9/2004	15SB005 12/8/2004	15SB006 12/8/2004
FLUORANTHENE	3100 15SS0010002 3.85 U 15SB0010206	640 J 15SS0020002 370 15SB0020206	6000 15SS0030002 48 15SB0030206	23 J 15SS0040002 3.98 U 15SB0040206	330 15SS0050002 14 15SB0050206	110 15SS0060002 90 J 15SB0060206-D
FLUORENE	330 15SS0010002 3.85 U 15SB0010206	10 J 15SS0020002 120 15SB0020206	170 15SS0030002 4.05 U 15SB0030206	14.1 U 15SS0040002 3.98 U 15SB0040206	111 U 15SS0050002 4 J 15SB0050206	27.5 U 15SS0060002 5 J 15SB0060206-D
HEXACHLOROBENZENE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 UJ 15SS0050002	74.4 U 15SS0060002 79.4 UJ 15SB0060206-D
HEXACHLOROBUTADIENE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
HEXACHLOROCYCLOPENTADIENE	75.5 UJ 15SS0010002	89.6 UJ 15SS0020002	295 UJ 15SS0030002	71.7 UJ 15SS0040002	301 UJ 15SS0050002	74.4 UJ 15SS0060002 79.4 UJ 15SB0060206-D
HEXACHLOROETHANE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
HEXACHLOROPROPENE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
INDENO(1,2,3-CD)PYRENE	1900 15SS0010002 3.85 U 15SB0010206	770 J 15SS0020002 20 15SB0020206	11000 15SS0030002 6 J 15SB0030206	250 15SS0040002 3.98 U 15SB0040206	1200 15SS0050002 3.96 U 15SB0050206	27.5 U 15SS0060002 38 J 15SB0060206-D
ISODRIN	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 UJ 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
ISOPHORONE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
ISOSAFROLE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
KEPONE	75.5 UJ 15SS0010002	89.6 UR 15SS0020002	295 UR 15SS0030002	71.7 UR 15SS0040002	301 UR 15SS0050002	74.4 UR 15SS0060002 79.4 UJ 15SB0060206-D
METHAPYRILENE	75.5 UJ 15SS0010002	89.6 UJ 15SS0020002	295 UJ 15SS0030002	71.7 UJ 15SS0040002	301 UJ 15SS0050002	74.4 UJ 15SS0060002 79.4 UJ 15SB0060206-D
METHYL METHANE SULFONATE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
N-NITROSO-DI-N-BUTYLAMINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
N-NITROSO-DI-N-PROPYLAMINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 UJ 15SB0060206-D

APPE[illegible]LE G-1
RESULTS FOR CHEMICALS AN[illegible] IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB001 12/9/2004	15SB002 12/8/2004	15SB003 12/9/2004	15SB004 12/9/2004	15SB005 12/8/2004	15SB006 12/8/2004
N-NITROSODIETHYLAMINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
N-NITROSODIMETHYLAMINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 UJ 15SS0050002	74.4 U 15SS0060002 79.4 UJ 15SB0060206-D
N-NITROSODIPHENYLAMINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 UJ 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
N-NITROSOMETHYLETHYLAMINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
N-NITROSOMORPHOLINE	75.5 UJ 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 UJ 15SB0060206-D
N-NITROSOPIPERIDINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 UJ 15SB0060206-D
N-NITROSOPYRROLIDINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
NAPHTHALENE	40 15SS0010002 3.85 U 15SB0010206	65 J 15SS0020002 42 15SB0020206	230 15SS0030002 4.05 U 15SB0030206	14.1 U 15SS0040002 3.98 U 15SB0040206	111 U 15SS0050002 3.96 U 15SB0050206	89 15SS0060002 13 J 15SB0060206-D
O,O,O-TRIETHYL PHOSPHOROTHIOATE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
O-TOLUIDINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
P-(DIMETHYLAMINO)AZOBENZENE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
PENTACHLOROBENZENE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
PENTACHLOROETHANE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
PENTACHLORONITROBENZENE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 UJ 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
PHENACETIN	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 UJ 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
PHENANTHRENE	2800 15SS0010002 3.85 U 15SB0010206	170 J 15SS0020002 510 15SB0020206	1300 15SS0030002 18 15SB0030206	33 15SS0040002 3.98 U 15SB0040206	120 J 15SS0050002 10 15SB0050206	520 15SS0060002 79 J 15SB0060206-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB001 12/9/2004	15SB002 12/8/2004	15SB003 12/9/2004	15SB004 12/9/2004	15SB005 12/8/2004	15SB006 12/8/2004
PHENOL	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
PRONAMIDE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 UJ 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
PYRENE	3900 J 15SS0010002 3.85 U 15SB0010206	790 J 15SS0020002 390 15SB0020206	14000 J 15SS0030002 61 15SB0030206	97 J 15SS0040002 12 15SB0040206	1000 15SS0050002 12 15SB0050206	190 J 15SS0060002 110 J 15SB0060206-D
PYRIDINE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
SAFROLE	75.5 U 15SS0010002	89.6 U 15SS0020002	295 U 15SS0030002	71.7 U 15SS0040002	301 U 15SS0050002	74.4 U 15SS0060002 79.4 U 15SB0060206-D
Pesticides PCBs (ug/kg)						
4,4'-DDD						
4,4'-DDE						
4,4'-DDT						
ALDRIN						
ALPHA-BHC						
ALPHA-CHLORDANE						
AROCLOR-1016						
AROCLOR-1221						
AROCLOR-1232						
AROCLOR-1242						
AROCLOR-1248						
AROCLOR-1254						
AROCLOR-1260						
BETA-BHC						
DELTA-BHC						
DIELDRIN						

APPE[illegible]ILE G-1
RESULTS FOR CHEMICALS AN[illegible] IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB001 12/9/2004	15SB002 12/8/2004	15SB003 12/9/2004	15SB004 12/9/2004	15SB005 12/8/2004	15SB006 12/8/2004
ENDOSULFAN I						
ENDOSULFAN II						
ENDOSULFAN SULFATE						
ENDRIN ALDEHYDE						
ENDRIN KETONE						
ENDRIN						
GAMMA-BHC (LINDANE)						
GAMMA-CHLORDANE						
HEPTACHLOR EPOXIDE						
HEPTACHLOR						
METHOXYCHLOR						
TOXAPHENE						
Herbicides (ug/kg)						
2,4,5-T	1.52 U 15SS0010002	1.8 U 15SS0020002	1.48 U 15SS0030002	1.45 U 15SS0040002	11.4 U 15SS0050002	1.5 U 15SS0060002 1.6 UJ 15SB0060206-D
2,4,5-TP (SILVEX)	1.52 U 15SS0010002	1.8 U 15SS0020002	1.48 U 15SS0030002	1.45 U 15SS0040002	11.4 U 15SS0050002	1.5 U 15SS0060002 1.6 UJ 15SB0060206-D
2,4-D	1.52 U 15SS0010002	1.8 U 15SS0020002	1.48 U 15SS0030002	1.45 U 15SS0040002	11.4 U 15SS0050002	1.5 U 15SS0060002 1.6 UJ 15SB0060206-D
DINOSEB	1.52 U 15SS0010002	1.8 U 15SS0020002	1.48 U 15SS0030002	1.45 U 15SS0040002	11.4 U 15SS0050002	1.5 U 15SS0060002 1.6 UJ 15SB0060206-D
HEXACHLOROPHENE	0.958 U 15SS0010002	1.14 U 15SS0020002	0.935 U 15SS0030002	0.91 U 15SS0040002	7.17 U 15SS0050002	0.944 U 15SS0060002 1.01 UJ 15SB0060206-D
PENTACHLOROPHENOL	0.507 U 15SS0010002	0.602 U 15SS0020002	0.495 U 15SS0030002	0.482 U 15SS0040002	3.8 U 15SS0050002	0.5 U 15SS0060002 0.533 UJ 15SB0060206-D
Inorganics (mg/kg)						
ALUMINUM	15600 J 15SS0010002	19900 J 15SS0020002	6140 J 15SS0030002	1890 J 15SS0040002	1700 J 15SS0050002	8230 J 15SS0060002 14300 J 15SB0060206-D
ANTIMONY	0.36 U 15SS0010002	1.2 U 15SS0020002	0.54 U 15SS0030002	0.11 U 15SS0040002	0.12 U 15SS0050002	2.7 J 15SS0060002 0.68 J 15SB0060206-D
ARSENIC	3.7 J 15SS0010002	8.4 J 15SS0020002	20.6 J 15SS0030002	0.79 J 15SS0040002	0.98 J 15SS0050002	7.8 J 15SS0060002 5.6 J 15SB0060206-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB001 12/9/2004	15SB002 12/8/2004	15SB003 12/9/2004	15SB004 12/9/2004	15SB005 12/8/2004	15SB006 12/8/2004
BARIUM	42.8 J 15SS0010002	122 J 15SS0020002	50.5 J 15SS0030002	16 J 15SS0040002	16.4 J 15SS0050002	72.1 J 15SS0060002 194 J 15SB0060206-D
BERYLLIUM	0.38 J 15SS0010002	2 J 15SS0020002	0.44 J 15SS0030002	0.1 U 15SS0040002	0.1 U 15SS0050002	0.87 J 15SS0060002 0.98 J 15SB0060206-D
CADMIUM	0.26 U 15SS0010002	6.9 J 15SS0020002	0.59 J 15SS0030002	0.43 J 15SS0040002	0.52 J 15SS0050002	1.1 J 15SS0060002 0.71 J 15SB0060206-D
CALCIUM	46900 J 15SS0010002	37300 J 15SS0020002	230000 J 15SS0030002	327000 J 15SS0040002	381000 J 15SS0050002	92100 J 15SS0060002 18500 J 15SB0060206-D
CHROMIUM	24.2 J 15SS0010002	25 J 15SS0020002	13.1 J 15SS0030002	7.2 J 15SS0040002	6 J 15SS0050002	15.8 J 15SS0060002 24.3 J 15SB0060206-D
COBALT	1.6 J 15SS0010002	6.8 J 15SS0020002	2.5 J 15SS0030002	0.59 J 15SS0040002	0.67 J 15SS0050002	4.9 J 15SS0060002 9.9 J 15SB0060206-D
COPPER	6.2 J 15SS0010002	15.4 J 15SS0020002	10 J 15SS0030002	1.4 J 15SS0040002	1.9 J 15SS0050002	20.1 J 15SS0060002 13.1 J 15SB0060206-D
IRON	14500 J 15SS0010002	43300 J 15SS0020002	12500 J 15SS0030002	1870 J 15SS0040002	2200 J 15SS0050002	23200 J 15SS0060002 24800 J 15SB0060206-D
LEAD	6.6 J 15SS0010002	15 J 15SS0020002	27.6 J 15SS0030002	1.7 J 15SS0040002	4 J 15SS0050002	29.8 J 15SS0060002 20.7 J 15SB0060206-D
MAGNESIUM	2160 J 15SS0010002	2440 J 15SS0020002	42700 J 15SS0030002	6770 J 15SS0040002	12000 J 15SS0050002	3390 J 15SS0060002 2770 J 15SB0060206-D
MANGANESE	28.6 J 15SS0010002	414 J 15SS0020002	156 J 15SS0030002	69.7 J 15SS0040002	69.2 J 15SS0050002	215 J 15SS0060002 502 J 15SB0060206-D
MERCURY	0.014 J 15SS0010002	0.045 J 15SS0020002	0.017 J 15SS0030002	0.006 U 15SS0040002	0.006 U 15SS0050002	0.031 J 15SS0060002
NICKEL	7.2 J 15SS0010002	17.6 J 15SS0020002	11.6 J 15SS0030002	4.2 J 15SS0040002	5 J 15SS0050002	14.7 J 15SS0060002 25.2 J 15SB0060206-D
POTASSIUM	1260 J 15SS0010002	1470 J 15SS0020002	912 J 15SS0030002	583 J 15SS0040002	419 J 15SS0050002	806 J 15SS0060002 2080 J 15SB0060206-D
SELENIUM	0.18 U 15SS0010002	0.54 J 15SS0020002	0.99 J 15SS0030002	0.06 U 15SS0040002	0.06 U 15SS0050002	0.41 J 15SS0060002 0.4 J 15SB0060206-D
SILVER	0.042 U 15SS0010002	0.07 U 15SS0020002	0.35 U 15SS0030002	0.041 U 15SS0040002	0.16 U 15SS0050002	0.09 U 15SS0060002 0.08 U 15SB0060206-D

APP[illegible]BLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB001 12/9/2004	15SB002 12/8/2004	15SB003 12/9/2004	15SB004 12/9/2004	15SB005 12/8/2004	15SB006 12/8/2004
SODIUM	59.8 U 15SS0010002	150 J 15SS0020002	269 J 15SS0030002	95.2 J 15SS0040002	111 J 15SS0050002	116 J 15SS0060002 105 J 15SB0060206-D
THALLIUM	0.19 U 15SS0010002	0.49 U 15SS0020002	0.24 U 15SS0030002	0.39 U 15SS0040002	0.06 U 15SS0050002	0.23 U 15SS0060002 0.21 U 15SB0060206-D
TIN	0.8 U 15SS0010002	0.45 U 15SS0020002	0.62 U 15SS0030002	0.28 U 15SS0040002	0.26 U 15SS0050002	2.2 J 15SS0060002 0.61 U 15SB0060206-D
VANADIUM	21.7 J 15SS0010002	40 J 15SS0020002	20.2 J 15SS0030002	5.3 J 15SS0040002	5.7 J 15SS0050002	19.7 J 15SS0060002 23.5 J 15SB0060206-D
ZINC	20.6 J 15SS0010002	626 15SS0020002	51.8 J 15SS0030002	22.6 J 15SS0040002	33.5 J 15SS0050002	111 15SS0060002 80.7 J 15SB0060206-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB007 12/8/2004	15SB008 12/8/2004	15SB009 12/8/2004	15SB010 12/8/2004	15SB011 12/8/2004	15SB012 12/8/2004
Volatile Organics (ug/kg)						
1,1,1,2-TETRACHLOROETHANE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
1,1,1-TRICHLOROETHANE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
1,1,2,2-TETRACHLOROETHANE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
1,1,2-TRICHLOROETHANE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
1,1-DICHLOROETHANE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
1,1-DICHLOROETHENE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
1,2,3-TRICHLOROPROPANE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
1,2-DIBROMO-3-CHLOROPROPANE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
1,2-DIBROMOETHANE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
1,2-DICHLOROETHANE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
1,2-DICHLOROPROPANE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
2-BUTANONE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 8 J 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 10 J 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 13 J 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	22 15SS0120002 1.02 U 15SB0120206

APPE[illegible]BLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB007 12/8/2004	15SB008 12/8/2004	15SB009 12/8/2004	15SB010 12/8/2004	15SB011 12/8/2004	15SB012 12/8/2004
2-HEXANONE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
3-CHLOROPROPENE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
4-METHYL-2-PENTANONE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
ACETONE	11 U 15SS0070002 6 BU 15SB0070206	0.8 UJ 15SS0080002 35 U 15SB0080206 11 U 15SB0080610	6 U 15SS0090002 42 U 15SB0090206 7 U 15SB0090610	5 U 15SS0100002 67 J 15SB0100206 14 U 15SB0100610	6 U 15SS0110002 12 BU 15SB0110206	73 J 15SS0120002 11 BU 15SB0120206
ACETONITRILE	41.6 UR 15SS0070002 35.6 UR 15SB0070206	32 UR 15SS0080002 42.3 UR 15SB0080206 40 UR 15SB0080610	52.5 UR 15SS0090002 45.4 UR 15SB0090206 37.5 UR 15SB0090610	51.5 UR 15SS0100002 59.1 UR 15SB0100206 39.9 UR 15SB0100610	38.8 UR 15SS0110002 40.8 UR 15SB0110206	42.5 UR 15SS0120002 40.6 UR 15SB0120206
ACROLEIN	1.04 UR 15SS0070002 0.891 UR 15SB0070206	0.8 UR 15SS0080002 1.06 UR 15SB0080206 1 UR 15SB0080610	1.31 UR 15SS0090002 1.13 UR 15SB0090206 0.936 UR 15SB0090610	1.29 UR 15SS0100002 1.48 UR 15SB0100206 0.998 UR 15SB0100610	0.97 UR 15SS0110002 1.02 UR 15SB0110206	1.06 UR 15SS0120002 1.02 UR 15SB0120206
ACRYLONITRILE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
BENZENE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
BROMODICHLOROMETHANE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
BROMOFORM	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
BROMOMETHANE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
CARBON DISULFIDE	1.04 U 15SS0070002 1 J 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB007 12/8/2004	15SB008 12/8/2004	15SB009 12/8/2004	15SB010 12/8/2004	15SB011 12/8/2004	15SB012 12/8/2004
CARBON TETRACHLORIDE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
CHLOROBENZENE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
CHLORODIBROMOMETHANE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
CHLOROETHANE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
CHLOROFORM	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
CHLOROMETHANE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
CHLOROPRENE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
CIS-1,2-DICHLOROETHENE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
CIS-1,3-DICHLOROPROPENE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
DIBROMOMETHANE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U-15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
DICHLORODIFLUOROMETHANE	1.04 UJ 15SS0070002 0.891 U 15SB0070206	0.8 UJ 15SS0080002 1.06 U 15SB0080206 1 UJ 15SB0080610	1.31 U 15SS0090002 1.13 UJ 15SB0090206 0.936 UJ 15SB0090610	1.29 UJ 15SS0100002 1.48 U 15SB0100206 0.998 UR 15SB0100610	0.97 U 15SS0110002 1.02 UJ 15SB0110206	1.06 UJ 15SS0120002 1.02 UJ 15SB0120206
ETHYL METHACRYLATE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206

APPE[illegible]LE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB007 12/8/2004	15SB008 12/8/2004	15SB009 12/8/2004	15SB010 12/8/2004	15SB011 12/8/2004	15SB012 12/8/2004
ETHYLBENZENE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
ISOBUTANOL	41.6 UR 15SS0070002 35.6 UR 15SB0070206	32 UR 15SS0080002 42.3 UR 15SB0080206 40 UR 15SB0080610	52.5 UR 15SS0090002 45.4 UR 15SB0090206 37.5 UR 15SB0090610	51.5 UR 15SS0100002 59.1 UR 15SB0100206 39.9 UR 15SB0100610	38.8 UR 15SS0110002 40.8 UR 15SB0110206	42.5 UR 15SS0120002 40.6 UR 15SB0120206
METHACRYLONITRILE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
METHYL IODIDE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
METHYL METHACRYLATE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
METHYL TERT-BUTYL ETHER	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
METHYLENE CHLORIDE	4 J 15SS0070002 0.891 U 15SB0070206	3 J 15SS0080002 6 J 15SB0080206 5 J 15SB0080610	8 J 15SS0090002 5 J 15SB0090206 4 J 15SB0090610	3 J 15SS0100002 7 J 15SB0100206 10 J 15SB0100610	1 J 15SS0110002 1.35 J 15SB0110206	1.06 UJ 15SS0120002 1.02 U 15SB0120206
PROPIONITRILE	41.6 UR 15SS0070002 35.6 UR 15SB0070206	32 UR 15SS0080002 42.3 UR 15SB0080206 40 UR 15SB0080610	52.5 UR 15SS0090002 45.4 UR 15SB0090206 37.5 UR 15SB0090610	51.5 UR 15SS0100002 59.1 UR 15SB0100206 39.9 UR 15SB0100610	38.8 UR 15SS0110002 40.8 UR 15SB0110206	42.5 UR 15SS0120002 40.6 UR 15SB0120206
STYRENE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
TETRACHLOROETHENE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
TOLUENE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
TOTAL XYLENES	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 J 15SS0120002 1.02 U 15SB0120206

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB007 12/8/2004	15SB008 12/8/2004	15SB009 12/8/2004	15SB010 12/8/2004	15SB011 12/8/2004	15SB012 12/8/2004
TRANS-1,2-DICHLOROETHENE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
TRANS-1,3-DICHLOROPROPENE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
TRANS-1,4-DICHLORO-2-BUTENE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
TRICHLOROETHENE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
TRICHLOROFLUOROMETHANE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
VINYL ACETATE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
VINYL CHLORIDE	1.04 U 15SS0070002 0.891 U 15SB0070206	0.8 U 15SS0080002 1.06 U 15SB0080206 1 U 15SB0080610	1.31 U 15SS0090002 1.13 U 15SB0090206 0.936 U 15SB0090610	1.29 U 15SS0100002 1.48 U 15SB0100206 0.998 U 15SB0100610	0.97 U 15SS0110002 1.02 U 15SB0110206	1.06 U 15SS0120002 1.02 U 15SB0120206
Semivolatile Organics (ug/kg)						
1,2,4,5-TETRACHLOROBENZENE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
1,2,4-TRICHLOROBENZENE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
1,2-DICHLOROBENZENE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
1,3-DICHLOROBENZENE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
1,4-DICHLOROBENZENE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
1,4-DIOXANE	125 U 15SS0070002	113 U 15SS0080002 123 U 15SB0080206 121 U 15SB0080610	108 U 15SS0090002 130 U 15SB0090206 120 U 15SB0090610	236 U 15SS0100002 130 U 15SB0100206 122 U 15SB0100610	115 U 15SS0110002	122 U 15SS0120002

APPE[illegible]BLE G-1
RESULTS FOR CHEMICALS ANA[illegible]D IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB007 12/8/2004	15SB008 12/8/2004	15SB009 12/8/2004	15SB010 12/8/2004	15SB011 12/8/2004	15SB012 12/8/2004
1,4-NAPHTHOQUINONE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
1,4-PHENYLENEDIAMINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
1-NAPHTHYLAMINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
2,2'-OXYBIS(1-CHLOROPROPANE)	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
2,3,4,6-TETRACHLOROPHENOL	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
2,4,5-TRICHLOROPHENOL	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
2,4,6-TRICHLOROPHENOL	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
2,4-DICHLOROPHENOL	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
2,4-DIMETHYLPHENOL	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
2,4-DINITROPHENOL	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
2,6-DICHLOROPHENOL	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
2-ACETYLAMINOFLUORENE	83.9 U 15SS0070002	75.5 UJ 15SS0080002 82.3 UJ 15SB0080206 80.8 UJ 15SB0080610	72.1 UJ 15SS0090002 87.4 UJ 15SB0090206 80.4 UJ 15SB0090610	158 UJ 15SS0100002 86.9 UJ 15SB0100206 81.5 UJ 15SB0100610	77.4 UJ 15SS0110002	81.8 UJ 15SS0120002
2-CHLORONAPHTHALENE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
2-CHLOROPHENOL	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
2-METHYLNAPHTHALENE	590 J 15SS0070002 27 15SB0070206	31 J 15SS0080002 4.05 UJ 15SB0080206 3.98 UJ 15SB0080610	14.2 UJ 15SS0090002 4.3 UJ 15SB0090206 3.96 UJ 15SB0090610	15.6 UJ 15SS0100002 4.28 UJ 15SB0100206 4.01 UJ 15SB0100610	7 J 15SS0110002	4.03 UJ 15SS0120002
2-METHYLPHENOL	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB007 12/8/2004	15SB008 12/8/2004	15SB009 12/8/2004	15SB010 12/8/2004	15SB011 12/8/2004	15SB012 12/8/2004
2-NAPHTHYLAMINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
2-NITROANILINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
2-NITROPHENOL	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
2-PICOLINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
3&4-METHYLPHENOL	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
3,3'-DICHLOROBENZIDINE	83.9 U 15SS0070002	75.5 UJ 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 UJ 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 UJ 15SS0100002 86.9 UR 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
3,3'-DIMETHYLBENZIDINE	83.9 U 15SS0070002	75.5 UJ 15SS0080002 82.3 UJ 15SB0080206 80.8 UJ 15SB0080610	72.1 UJ 15SS0090002 87.4 UJ 15SB0090206 80.4 UJ 15SB0090610	158 UJ 15SS0100002 86.9 UJ 15SB0100206 81.5 UJ 15SB0100610	77.4 UJ 15SS0110002	81.8 UJ 15SS0120002
3-METHYLCHOLANTHRENE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
3-NITROANILINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
4,6-DINITRO-2-METHYLPHENOL	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
4-AMINOBIPHENYL	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
4-BROMOPHENYL PHENYL ETHER	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
4-CHLORO-3-METHYLPHENOL	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
4-CHLOROANILINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
4-CHLOROPHENYL PHENYL ETHER	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
4-NITROANILINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002

APP[illegible]BLE G-1
RESULTS FOR CHEMICALS A[illegible]D IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB007 12/8/2004	15SB008 12/8/2004	15SB009 12/8/2004	15SB010 12/8/2004	15SB011 12/8/2004	15SB012 12/8/2004
4-NITROPHENOL	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
4-NITROQUINOLINE-1-OXIDE	83.9 UR 15SS0070002	75.5 UR 15SS0080002 82.3 UR 15SB0080206 80.8 UR 15SB0080610	72.1 UR 15SS0090002 87.4 UR 15SB0090206 80.4 UR 15SB0090610	158 UR 15SS0100002 86.9 UR 15SB0100206 81.5 UR 15SB0100610	77.4 UR 15SS0110002	81.8 UR 15SS0120002
5-NITRO-O-TOLUIDINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
7,12-DIMETHYLBENZ(A)ANTHRACENE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
A,A-DIMETHYLPHENETHYLAMINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
ACENAPHTHENE	4.13 UJ 15SS0070002 3.87 U 15SB0070206	7.43 UJ 15SS0080002 4.05 UJ 15SB0080206 3.98 UJ 15SB0080610	14.2 UJ 15SS0090002 4.3 UJ 15SB0090206 3.96 UJ 15SB0090610	15.6 UJ 15SS0100002 4.28 UJ 15SB0100206 4.01 UJ 15SB0100610	3.81 UJ 15SS0110002	4.03 UJ 15SS0120002
ACENAPHTHYLENE	4.13 UJ 15SS0070002 3.87 U 15SB0070206	8 J 15SS0080002 4.05 UJ 15SB0080206 3.98 UJ 15SB0080610	23 J 15SS0090002 4.3 UJ 15SB0090206 3.96 UJ 15SB0090610	15.6 UJ 15SS0100002 4.28 UJ 15SB0100206 4.01 UJ 15SB0100610	4 J 15SS0110002	4.03 UJ 15SS0120002
ACETOPHENONE	160 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 130 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	100 U 15SS0120002
ANILINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
ANTHRACENE	24 15SS0070002 3.87 U 15SB0070206	10 J 15SS0080002 4.05 U 15SB0080206 3.98 U 15SB0080610	17 J 15SS0090002 4.3 U 15SB0090206 3.96 U 15SB0090610	15.6 U 15SS0100002 4.28 U 15SB0100206 4.01 U 15SB0100610	3.81 U 15SS0110002	4.03 U 15SS0120002
ARAMITE	83.9 U 15SS0070002	75.5 UJ 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 UJ 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 UJ 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
BENZO(A)ANTHRACENE	27 15SS0070002 3.87 UJ 15SB0070206	47 15SS0080002 4.05 U 15SB0080206 3.98 U 15SB0080610	20 J 15SS0090002 4.3 U 15SB0090206 3.96 U 15SB0090610	15.6 U 15SS0100002 4.28 U 15SB0100206 4.01 U 15SB0100610	18 15SS0110002	8 J 15SS0120002
BENZO(A)PYRENE	21 15SS0070002 3.87 U 15SB0070206	44 15SS0080002 4.05 U 15SB0080206 3.98 U 15SB0080610	14.2 U 15SS0090002 4.3 U 15SB0090206 3.96 U 15SB0090610	15.6 U 15SS0100002 4.28 U 15SB0100206 4.01 U 15SB0100610	23 15SS0110002	4.03 U 15SS0120002
BENZO(B)FLUORANTHENE	4.13 U 15SS0070002 3.87 U 15SB0070206	60 15SS0080002 4.05 U 15SB0080206 3.98 U 15SB0080610	14.2 U 15SS0090002 4.3 U 15SB0090206 3.96 U 15SB0090610	15.6 U 15SS0100002 4.28 U 15SB0100206 4.01 U 15SB0100610	24 15SS0110002	17 15SS0120002
BENZO(G,H,I)PERYLENE	4.13 U 15SS0070002 3.87 U 15SB0070206	85 15SS0080002 4.05 U 15SB0080206 3.98 U 15SB0080610	14.2 U 15SS0090002 4.3 U 15SB0090206 3.96 U 15SB0090610	15.6 U 15SS0100002 4.28 U 15SB0100206 4.01 U 15SB0100610	30 15SS0110002	4.03 U 15SS0120002
BENZO(K)FLUORANTHENE	4.13 U 15SS0070002 3.87 U 15SB0070206	40 15SS0080002 4.05 U 15SB0080206 3.98 U 15SB0080610	14.2 U 15SS0090002 4.3 U 15SB0090206 3.96 U 15SB0090610	15.6 U 15SS0100002 4.28 U 15SB0100206 4.01 U 15SB0100610	16 15SS0110002	11 15SS0120002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB007 12/8/2004	15SB008 12/8/2004	15SB009 12/8/2004	15SB010 12/8/2004	15SB011 12/8/2004	15SB012 12/8/2004
BENZYL ALCOHOL	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
BIS(2-CHLOROETHOXY)METHANE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
BIS(2-CHLOROETHYL)ETHER	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
BIS(2-ETHYLHEXYL)PHTHALATE	120 J 15SS0070002	79 J 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 UJ 15SS0090002 110 J 15SB0090206 80.4 U 15SB0090610	158 UJ 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	250 J 15SS0120002
BUTYL BENZYL PHTHALATE	83.9 U 15SS0070002	75.5 UJ 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 UJ 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 UJ 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
CHLOROBENZILATE	83.9 U 15SS0070002	75.5 UJ 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 UJ 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 UJ 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
CHRYSENE	36 15SS0070002 3.87 U 15SB0070206	58 15SS0080002 4.05 U 15SB0080206 3.98 U 15SB0080610	23 J 15SS0090002 4.3 U 15SB0090206 3.96 U 15SB0090610	42 15SS0100002 4.28 U 15SB0100206 4.01 U 15SB0100610	21 15SS0110002	23 15SS0120002
DI-N-BUTYL PHTHALATE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 100 J 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	91 J 15SS0120002
DI-N-OCTYL PHTHALATE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
DIALLATE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
DIBENZO(A,H)ANTHRACENE	4.13 U 15SS0070002 3.87 U 15SB0070206	7.43 U 15SS0080002 4.05 U 15SB0080206 3.98 U 15SB0080610	14.2 U 15SS0090002 4.3 U 15SB0090206 3.96 U 15SB0090610	15.6 U 15SS0100002 4.28 U 15SB0100206 4.01 U 15SB0100610	3.81 U 15SS0110002	4.03 U 15SS0120002
DIBENZOFURAN	95 J 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
DIETHYL PHTHALATE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
DIMETHYL PHTHALATE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
DIPHENYLAMINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
ETHYL METHANE SULFONATE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB007 12/8/2004	15SB008 12/8/2004	15SB009 12/8/2004	15SB010 12/8/2004	15SB011 12/8/2004	15SB012 12/8/2004
FLUORANTHENE	41 15SS0070002 3.87 U 15SB0070206	54 15SS0080002 4.05 U 15SB0080206 3.98 U 15SB0080610	26 J 15SS0090002 4.3 U 15SB0090206 3.96 U 15SB0090610	20 J 15SS0100002 4.28 U 15SB0100206 4.01 U 15SB0100610	21 15SS0110002	13 15SS0120002
FLUORENE	4.13 UJ 15SS0070002 3.87 U 15SB0070206	7.43 UJ 15SS0080002 4.05 UJ 15SB0080206 3.98 UJ 15SB0080610	14.2 UJ 15SS0090002 4.3 UJ 15SB0090206 3.96 UJ 15SB0090610	15.6 UJ 15SS0100002 4.28 UJ 15SB0100206 4.01 UJ 15SB0100610	3.81 UJ 15SS0110002	4.03 UJ 15SS0120002
HEXACHLOROBENZENE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
HEXACHLOROBUTADIENE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
HEXACHLOROCYCLOPENTADIENE	83.9 UJ 15SS0070002	75.5 UJ 15SS0080002 82.3 UJ 15SB0080206 80.8 UJ 15SB0080610	72.1 UJ 15SS0090002 87.4 UJ 15SB0090206 80.4 UJ 15SB0090610	158 UJ 15SS0100002 86.9 UR 15SB0100206 81.5 UJ 15SB0100610	77.4 UJ 15SS0110002	81.8 UJ 15SS0120002
HEXACHLOROETHANE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
HEXACHLOROPROPENE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
INDENO(1,2,3-CD)PYRENE	4.13 U 15SS0070002 3.87 U 15SB0070206	50 15SS0080002 4.05 U 15SB0080206 3.98 U 15SB0080610	14.2 U 15SS0090002 4.3 U 15SB0090206 3.96 U 15SB0090610	15.6 U 15SS0100002 4.28 U 15SB0100206 4.01 U 15SB0100610	23 15SS0110002	4.03 U 15SS0120002
ISODRIN	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
ISOPHORONE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
ISOSAFROLE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 1300 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
KEPONE	83.9 UJ 15SS0070002	75.5 UJ 15SS0080002 82.3 UJ 15SB0080206 80.8 UJ 15SB0080610	72.1 UJ 15SS0090002 87.4 UJ 15SB0090206 80.4 UJ 15SB0090610	158 UJ 15SS0100002 86.9 UJ 15SB0100206 81.5 UJ 15SB0100610	77.4 UJ 15SS0110002	81.8 UJ 15SS0120002
METHAPYRILENE	83.9 U 15SS0070002	75.5 UJ 15SS0080002 82.3 UJ 15SB0080206 80.8 UJ 15SB0080610	72.1 UJ 15SS0090002 87.4 UJ 15SB0090206 80.4 UJ 15SB0090610	158 UJ 15SS0100002 86.9 UJ 15SB0100206 81.5 UJ 15SB0100610	77.4 UJ 15SS0110002	81.8 UJ 15SS0120002
METHYL METHANE SULFONATE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
N-NITROSO-DI-N-BUTYLAMINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
N-NITROSO-DI-N-PROPYLAMINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB007 12/8/2004	15SB008 12/8/2004	15SB009 12/8/2004	15SB010 12/8/2004	15SB011 12/8/2004	15SB012 12/8/2004
N-NITROSODIETHYLAMINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
N-NITROSODIMETHYLAMINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
N-NITROSODIPHENYLAMINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
N-NITROSOMETHYLETHYLAMINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
N-NITROSOMORPHOLINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
N-NITROSOPIPERIDINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
N-NITROSOPYRROLIDINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
NAPHTHALENE	280 J 15SS0070002 16 15SB0070206	13 J 15SS0080002 4.05 UJ 15SB0080206 3.98 UJ 15SB0080610	14.2 UJ 15SS0090002 4.3 UJ 15SB0090206 3.96 UJ 15SB0090610	15.6 UJ 15SS0100002 4.28 UJ 15SB0100206 4.01 UJ 15SB0100610	7 J 15SS0110002	4.03 UJ 15SS0120002
O,O,O-TRIETHYL PHOSPHOROTHIOATE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
O-TOLUIDINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
P-(DIMETHYLAMINO)AZOBENZENE	83.9 U 15SS0070002	75.5 UJ 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 UJ 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 UJ 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
PENTACHLOROBENZENE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
PENTACHLOROETHANE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
PENTACHLORONITROBENZENE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
PHENACETIN	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
PHENANTHRENE	220 15SS0070002 11 15SB0070206	58 15SS0080002 4.05 U 15SB0080206 3.98 U 15SB0080610	30 15SS0090002 4.3 U 15SB0090206 3.96 U 15SB0090610	19 J 15SS0100002 4.28 U 15SB0100206 4.01 U 15SB0100610	13 15SS0110002	4.03 U 15SS0120002

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB007 12/8/2004	15SB008 12/8/2004	15SB009 12/8/2004	15SB010 12/8/2004	15SB011 12/8/2004	15SB012 12/8/2004
PHENOL	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
PRONAMIDE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
PYRENE	52 15SS0070002 3.87 U 15SB0070206	50 15SS0080002 4.05 U 15SB0080206 3.98 U 15SB0080610	29 15SS0090002 4.3 U 15SB0090206 3.96 U 15SB0090610	27 J 15SS0100002 4.28 U 15SB0100206 4.01 U 15SB0100610	24 15SS0110002	15 15SS0120002
PYRIDINE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
SAFROLE	83.9 U 15SS0070002	75.5 U 15SS0080002 82.3 U 15SB0080206 80.8 U 15SB0080610	72.1 U 15SS0090002 87.4 U 15SB0090206 80.4 U 15SB0090610	158 U 15SS0100002 86.9 U 15SB0100206 81.5 U 15SB0100610	77.4 U 15SS0110002	81.8 U 15SS0120002
Pesticides PCBs (ug/kg)						
4,4'-DDD						
4,4'-DDE						
4,4'-DDT						
ALDRIN						
ALPHA-BHC						
ALPHA-CHLORDANE						
AROCLOR-1016					10.4 U 15SS0110002	11 U 15SS0120002
AROCLOR-1221					10.4 U 15SS0110002	11 U 15SS0120002
AROCLOR-1232					10.4 U 15SS0110002	11 U 15SS0120002
AROCLOR-1242					10.4 U 15SS0110002	11 U 15SS0120002
AROCLOR-1248					10.4 U 15SS0110002	11 U 15SS0120002
AROCLOR-1254					10.4 U 15SS0110002	11 U 15SS0120002
AROCLOR-1260					10.4 U 15SS0110002	11 U 15SS0120002
BETA-BHC						
DELTA-BHC						
DIELDRIN						

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB007 12/8/2004	15SB008 12/8/2004	15SB009 12/8/2004	15SB010 12/8/2004	15SB011 12/8/2004	15SB012 12/8/2004
ENDOSULFAN I						
ENDOSULFAN II						
ENDOSULFAN SULFATE						
ENDRIN ALDEHYDE						
ENDRIN KETONE						
ENDRIN						
GAMMA-BHC (LINDANE)						
GAMMA-CHLORDANE						
HEPTACHLOR EPOXIDE						
HEPTACHLOR						
METHOXYCHLOR						
TOXAPHENE						
Herbicides (ug/kg)						
2,4,5-T	1.69 U 15SS0070002					
2,4,5-TP (SILVEX)	1.69 U 15SS0070002					
2,4-D	1.69 U 15SS0070002					
DINOSEB	1.69 U 15SS0070002					
HEXACHLOROPHENE	1.06 U 15SS0070002					
PENTACHLOROPHENOL	0.563 U 15SS0070002					
Inorganics (mg/kg)						
ALUMINUM	15100 J 15SS0070002	13400 J 15SS0080002 19200 J 15SB0080206 25500 J 15SB0080610	2850 J 15SS0090002 20700 J 15SB0090206 20200 J 15SB0090610	3230 J 15SS0100002 23600 J 15SB0100206 18700 J 15SB0100610		
ANTIMONY	1.5 J 15SS0070002	0.51 U 15SS0080002 0.31 U 15SB0080206 0.37 U 15SB0080610	0.59 U 15SS0090002 0.42 U 15SB0090206 0.39 U 15SB0090610	1.4 J 15SS0100002 0.58 U 15SB0100206 0.3 U 15SB0100610		
ARSENIC	5.8 J 15SS0070002	9.1 J 15SS0080002 4.5 J 15SB0080206 8.1 J 15SB0080610	7.7 J 15SS0090002 6.4 J 15SB0090206 7.7 J 15SB0090610	5.9 J 15SS0100002 14.6 J 15SB0100206 8.4 J 15SB0100610		

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB007 12/8/2004	15SB008 12/8/2004	15SB009 12/8/2004	15SB010 12/8/2004	15SB011 12/8/2004	15SB012 12/8/2004
BARIUM	74.5 J 15SS0070002	72.5 J 15SS0080002 157 J 15SB0080206 59.4 J 15SB0080610	38.6 J 15SS0090002 141 J 15SB0090206 53.7 J 15SB0090610	35.8 J 15SS0100002 85.8 J 15SB0100206 157 J 15SB0100610		
BERYLLIUM	1.1 J 15SS0070002	0.7 J 15SS0080002 0.84 J 15SB0080206 0.69 J 15SB0080610	0.17 U 15SS0090002 1 J 15SB0090206 0.64 J 15SB0090610	0.22 U 15SS0100002 1.1 J 15SB0100206 0.9 J 15SB0100610		
CADMIUM	2.3 J 15SS0070002	0.51 J 15SS0080002 0.3 J 15SB0080206 0.34 J 15SB0080610	0.6 J 15SS0090002 0.54 J 15SB0090206 0.31 J 15SB0090610	0.89 J 15SS0100002 0.43 J 15SB0100206 0.44 J 15SB0100610		
CALCIUM	3460 J 15SS0070002	50100 J 15SS0080002 1370 J 15SB0080206 301 U 15SB0080610	345000 J 15SS0090002 1430 J 15SB0090206 391 U 15SB0090610	341000 J 15SS0100002 1320 J 15SB0100206 726 J 15SB0100610		
CHROMIUM	20.8 J 15SS0070002	23.7 J 15SS0080002 16.5 J 15SB0080206 27.6 J 15SB0080610	9 J 15SS0090002 17 J 15SB0090206 26.3 J 15SB0090610	10.1 J 15SS0100002 19.4 J 15SB0100206 23.1 J 15SB0100610		
COBALT	7.4 J 15SS0070002	7.7 J 15SS0080002 13.7 J 15SB0080206 11.4 J 15SB0080610	1.6 J 15SS0090002 16.2 J 15SB0090206 5.4 J 15SB0090610	2.2 J 15SS0100002 54.2 J 15SB0100206 8 J 15SB0100610		
COPPER	14.4 J 15SS0070002	12.4 J 15SS0080002 6.1 J 15SB0080206 11 J 15SB0080610	5.4 J 15SS0090002 7.7 J 15SB0090206 9.9 J 15SB0090610	6.1 J 15SS0100002 7.4 J 15SB0100206 11.1 J 15SB0100610		
IRON	24300 J 15SS0070002	27200 J 15SS0080002 16500 J 15SB0080206 28300 J 15SB0080610	5010 J 15SS0090002 22500 J 15SB0090206 29400 J 15SB0090610	4900 J 15SS0100002 21600 J 15SB0100206 30800 J 15SB0100610		
LEAD	15.5 J 15SS0070002	155 J 15SS0080002 13.5 J 15SB0080206 11.1 J 15SB0080610	20.3 J 15SS0090002 15.4 J 15SB0090206 10.3 J 15SB0090610	31.1 J 15SS0100002 11.7 J 15SB0100206 14.5 J 15SB0100610		
MAGNESIUM	993 J 15SS0070002	2840 J 15SS0080002 1030 J 15SB0080206 1320 J 15SB0080610	19600 J 15SS0090002 1190 J 15SB0090206 1650 J 15SB0090610	18900 J 15SS0100002 1400 J 15SB0100206 1550 J 15SB0100610		
MANGANESE	130 J 15SS0070002	321 J 15SS0080002 1400 J 15SB0080206 397 J 15SB0080610	200 J 15SS0090002 3570 J 15SB0090206 201 J 15SB0090610	192 J 15SS0100002 160 J 15SB0100206 399 J 15SB0100610		
MERCURY	0.03 J 15SS0070002	0.051 J 15SS0080002 0.042 J 15SB0080206 0.025 J 15SB0080610	0.013 J 15SS0090002 0.049 J 15SB0090206 0.008 J 15SB0090610	0.13 15SS0100002 0.055 J 15SB0100206 0.008 J 15SB0100610		
NICKEL	15.8 J 15SS0070002	19 J 15SS0080002 17.7 J 15SB0080206 13.3 J 15SB0080610	9.3 J 15SS0090002 20.9 J 15SB0090206 12.7 J 15SB0090610	10.6 J 15SS0100002 25.2 J 15SB0100206 12.2 J 15SB0100610		
POTASSIUM	975 J 15SS0070002	1690 J 15SS0080002 1200 J 15SB0080206 1360 J 15SB0080610	783 J 15SS0090002 1260 J 15SB0090206 1260 J 15SB0090610	699 J 15SS0100002 1500 J 15SB0100206 1240 J 15SB0100610		
SELENIUM	0.55 J 15SS0070002	0.41 J 15SS0080002 0.4 J 15SB0080206 0.39 J 15SB0080610	0.57 J 15SS0090002 0.51 J 15SB0090206 0.28 U 15SB0090610	0.28 U 15SS0100002 0.79 J 15SB0100206 0.34 J 15SB0100610		
SILVER	0.06 U 15SS0070002	0.06 U 15SS0080002 0.06 U 15SB0080206 0.05 U 15SB0080610	0.05 U 15SS0090002 0.07 U 15SB0090206 0.06 U 15SB0090610	0.09 U 15SS0100002 0.08 U 15SB0100206 0.07 U 15SB0100610		

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB007 12/8/2004	15SB008 12/8/2004	15SB009 12/8/2004	15SB010 12/8/2004	15SB011 12/8/2004	15SB012 12/8/2004
SODIUM	170 J 15SS0070002	132 J 15SS0080002 112 J 15SB0080206 110 J 15SB0080610	182 J 15SS0090002 135 J 15SB0090206 88.6 J 15SB0090610	183 J 15SS0100002 118 J 15SB0100206 105 J 15SB0100610		
THALLIUM	0.39 U 15SS0070002	0.17 U 15SS0080002 0.3 U 15SB0080206 0.3 U 15SB0080610	0.09 U 15SS0090002 0.32 U 15SB0090206 0.24 U 15SB0090610	0.08 U 15SS0100002 0.33 U 15SB0100206 0.23 U 15SB0100610		
TIN	0.7 U 15SS0070002	0.89 U 15SS0080002 0.46 U 15SB0080206 0.51 U 15SB0080610	0.57 U 15SS0090002 0.54 U 15SB0090206 0.57 U 15SB0090610	1.2 U 15SS0100002 0.58 U 15SB0100206 0.53 U 15SB0100610		
VANADIUM	32.6 J 15SS0070002	26.2 J 15SS0080002 30.1 J 15SB0080206 34.3 J 15SB0080610	14.6 J 15SS0090002 31.1 J 15SB0090206 34.5 J 15SB0090610	23.3 J 15SS0100002 34.8 J 15SB0100206 37.9 J 15SB0100610		
ZINC	214 15SS0070002	60.6 15SS0080002 48.9 15SB0080206 40.7 J 15SB0080610	35.4 J 15SS0090002 46.4 15SB0090206 26.8 J 15SB0090610	42.9 J 15SS0100002 47.6 J 15SB0100206 34.4 J 15SB0100610		

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RESULTS FOR CHEMICALS ANA[illegible] IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB013 12/8/2004	15SB014 12/11/2004	15SB015 12/11/2004	15SB016 12/11/2004	15SB017 12/11/2004	15SB018 12/11/2004
Volatile Organics (ug/kg)						
1,1,1,2-TETRACHLOROETHANE	0.992 U 15SS0130002 1.02 U 15SB0130206					
1,1,1-TRICHLOROETHANE	0.992 U 15SS0130002 1.02 U 15SB0130206					
1,1,2,2-TETRACHLOROETHANE	0.992 U 15SS0130002 1.02 U 15SB0130206					
1,1,2-TRICHLOROETHANE	0.992 U 15SS0130002 1.02 U 15SB0130206					
1,1-DICHLOROETHANE	0.992 U 15SS0130002 1.02 U 15SB0130206					
1,1-DICHLOROETHENE	0.992 U 15SS0130002 1.02 U 15SB0130206					
1,2,3-TRICHLOROPROPANE	0.992 U 15SS0130002 1.02 U 15SB0130206					
1,2-DIBROMO-3-CHLOROPROPANE	0.992 U 15SS0130002 1.02 U 15SB0130206					
1,2-DIBROMOETHANE	0.992 U 15SS0130002 1.02 U 15SB0130206					
1,2-DICHLOROETHANE	0.992 U 15SS0130002 1.02 U 15SB0130206					
1,2-DICHLOROPROPANE	0.992 U 15SS0130002 1.02 U 15SB0130206					
2-BUTANONE	8 J 15SS0130002 1.2 J 15SB0130206					

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB013 12/8/2004	15SB014 12/11/2004	15SB015 12/11/2004	15SB016 12/11/2004	15SB017 12/11/2004	15SB018 12/11/2004
2-HEXANONE	0.992 U 15SS0130002 1.02 U 15SB0130206					
3-CHLOROPROPENE	0.992 U 15SS0130002 1.02 U 15SB0130206					
4-METHYL-2-PENTANONE	0.992 U 15SS0130002 1.02 U 15SB0130206					
ACETONE	22 U 15SS0130002 11 BU 15SB0130206					
ACETONITRILE	39.7 UR 15SS0130002 41 UR 15SB0130206					
ACROLEIN	0.992 UR 15SS0130002 1.02 UR 15SB0130206					
ACRYLONITRILE	0.992 U 15SS0130002 1.02 U 15SB0130206					
BENZENE	0.992 U 15SS0130002 1.02 U 15SB0130206					
BROMODICHLOROMETHANE	0.992 U 15SS0130002 1.02 U 15SB0130206					
BROMOFORM	0.992 U 15SS0130002 1.02 U 15SB0130206					
BROMOMETHANE	0.992 U 15SS0130002 1.02 U 15SB0130206					
CARBON DISULFIDE	0.992 U 15SS0130002 1.02 U 15SB0130206					

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB013 12/8/2004	15SB014 12/11/2004	15SB015 12/11/2004	15SB016 12/11/2004	15SB017 12/11/2004	15SB018 12/11/2004
CARBON TETRACHLORIDE	0.992 U 15SS0130002 1.02 U 15SB0130206					
CHLOROBENZENE	0.992 U 15SS0130002 1.02 U 15SB0130206					
CHLORODIBROMOMETHANE	0.992 U 15SS0130002 1.02 U 15SB0130206					
CHLOROETHANE	0.992 U 15SS0130002 1.02 U 15SB0130206					
CHLOROFORM	0.992 U 15SS0130002 1.02 U 15SB0130206					
CHLOROMETHANE	0.992 U 15SS0130002 1.02 U 15SB0130206					
CHLOROPRENE	0.992 U 15SS0130002 1.02 U 15SB0130206					
CIS-1,2-DICHLOROETHENE	0.992 U 15SS0130002 1.02 U 15SB0130206					
CIS-1,3-DICHLOROPROPENE	0.992 U 15SS0130002 1.02 U 15SB0130206					
DIBROMOMETHANE	0.992 U 15SS0130002 1.02 U 15SB0130206					
DICHLORODIFLUOROMETHANE	0.992 UJ 15SS0130002 1.02 UJ 15SB0130206					
ETHYL METHACRYLATE	0.992 U 15SS0130002 1.02 U 15SB0130206					

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB013 12/8/2004	15SB014 12/11/2004	15SB015 12/11/2004	15SB016 12/11/2004	15SB017 12/11/2004	15SB018 12/11/2004
ETHYLBENZENE	0.992 U 15SS0130002 1.02 U 15SB0130206					
ISOBUTANOL	39.7 UR 15SS0130002 41 UR 15SB0130206					
METHACRYLONITRILE	0.992 U 15SS0130002 1.02 U 15SB0130206					
METHYL IODIDE	0.992 U 15SS0130002 1.02 U 15SB0130206					
METHYL METHACRYLATE	0.992 U 15SS0130002 1.02 U 15SB0130206					
METHYL TERT-BUTYL ETHER	0.992 U 15SS0130002 1.02 U 15SB0130206					
METHYLENE CHLORIDE	0.992 UJ 15SS0130002 2 J 15SB0130206					
PROPIONITRILE	39.7 UR 15SS0130002 41 UR 15SB0130206					
STYRENE	0.992 U 15SS0130002 1.02 U 15SB0130206					
TETRACHLOROETHENE	0.992 U 15SS0130002 1.02 U 15SB0130206					
TOLUENE	0.992 U 15SS0130002 1.02 U 15SB0130206					
TOTAL XYLENES	0.992 U 15SS0130002 1.02 U 15SB0130206					

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB013 12/8/2004	15SB014 12/11/2004	15SB015 12/11/2004	15SB016 12/11/2004	15SB017 12/11/2004	15SB018 12/11/2004
TRANS-1,2-DICHLOROETHENE	0.992 U 15SS0130002 1.02 U 15SB0130206					
TRANS-1,3-DICHLOROPROPENE	0.992 U 15SS0130002 1.02 U 15SB0130206					
TRANS-1,4-DICHLORO-2-BUTENE	0.992 U 15SS0130002 1.02 U 15SB0130206					
TRICHLOROETHENE	0.992 U 15SS0130002 1.02 U 15SB0130206					
TRICHLOROFLUOROMETHANE	0.992 U 15SS0130002 1.02 U 15SB0130206					
VINYL ACETATE	0.992 U 15SS0130002 1.02 U 15SB0130206					
VINYL CHLORIDE	0.992 U 15SS0130002 1.02 U 15SB0130206					
Semivolatile Organics (ug/kg)						
1,2,4,5-TETRACHLOROBENZENE	79.1 U 15SS0130002					
1,2,4-TRICHLOROBENZENE	79.1 U 15SS0130002					
1,2-DICHLOROBENZENE	79.1 U 15SS0130002					
1,3-DICHLOROBENZENE	79.1 U 15SS0130002					
1,4-DICHLOROBENZENE	79.1 U 15SS0130002					
1,4-DIOXANE	118 U 15SS0130002					

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB013 12/8/2004	15SB014 12/11/2004	15SB015 12/11/2004	15SB016 12/11/2004	15SB017 12/11/2004	15SB018 12/11/2004
1,4-NAPHTHOQUINONE	79.1 U 15SS0130002					
1,4-PHENYLENEDIAMINE	79.1 U 15SS0130002					
1-NAPHTHYLAMINE	79.1 U 15SS0130002					
2,2'-OXYBIS(1-CHLOROPROPANE)	79.1 U 15SS0130002					
2,3,4,6-TETRACHLOROPHENOL	79.1 U 15SS0130002					
2,4,5-TRICHLOROPHENOL	79.1 U 15SS0130002					
2,4,6-TRICHLOROPHENOL	79.1 U 15SS0130002					
2,4-DICHLOROPHENOL	79.1 U 15SS0130002					
2,4-DIMETHYLPHENOL	79.1 U 15SS0130002					
2,4-DINITROPHENOL	79.1 U 15SS0130002					
2,6-DICHLOROPHENOL	79.1 U 15SS0130002					
2-ACETYLAMINOFLUORENE	79.1 UJ 15SS0130002					
2-CHLORONAPHTHALENE	79.1 U 15SS0130002					
2-CHLOROPHENOL	79.1 U 15SS0130002					
2-METHYLNAPHTHALENE	3.9 UJ 15SS0130002					
2-METHYLPHENOL	79.1 U 15SS0130002					

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RESULTS FOR CHEMICALS AN[illegible]ED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB013 12/8/2004	15SB014 12/11/2004	15SB015 12/11/2004	15SB016 12/11/2004	15SB017 12/11/2004	15SB018 12/11/2004
2-NAPHTHYLAMINE	79.1 U 15SS0130002					
2-NITROANILINE	79.1 U 15SS0130002					
2-NITROPHENOL	79.1 U 15SS0130002					
2-PICOLINE	79.1 U 15SS0130002					
3&4-METHYLPHENOL	79.1 U 15SS0130002					
3,3'-DICHLOROBENZIDINE	79.1 U 15SS0130002					
3,3'-DIMETHYLBENZIDINE	79.1 UJ 15SS0130002					
3-METHYLCHOLANTHRENE	79.1 U 15SS0130002					
3-NITROANILINE	79.1 U 15SS0130002					
4,6-DINITRO-2-METHYLPHENOL	79.1 U 15SS0130002					
4-AMINOBIPHENYL	79.1 U 15SS0130002					
4-BROMOPHENYL PHENYL ETHER	79.1 U 15SS0130002					
4-CHLORO-3-METHYLPHENOL	79.1 U 15SS0130002					
4-CHLOROANILINE	79.1 U 15SS0130002					
4-CHLOROPHENYL PHENYL ETHER	79.1 U 15SS0130002					
4-NITROANILINE	79.1 U 15SS0130002					

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB013 12/8/2004	15SB014 12/11/2004	15SB015 12/11/2004	15SB016 12/11/2004	15SB017 12/11/2004	15SB018 12/11/2004
4-NITROPHENOL	79.1 U 15SS0130002					
4-NITROQUINOLINE-1-OXIDE	79.1 UR 15SS0130002					
5-NITRO-O-TOLUIDINE	79.1 U 15SS0130002					
7,12-DIMETHYLBENZ(A)ANTHRACENE	79.1 U 15SS0130002					
A,A-DIMETHYLPHENETHYLAMINE	79.1 U 15SS0130002					
ACENAPHTHENE	3.9 UJ 15SS0130002					
ACENAPHTHYLENE	3.9 UJ 15SS0130002					
ACETOPHENONE	79.1 U 15SS0130002					
ANILINE	79.1 U 15SS0130002					
ANTHRACENE	3.9 U 15SS0130002					
ARAMITE	79.1 U 15SS0130002					
BENZO(A)ANTHRACENE	3.9 U 15SS0130002					
BENZO(A)PYRENE	3.9 U 15SS0130002					
BENZO(B)FLUORANTHENE	3.9 U 15SS0130002					
BENZO(G,H,I)PERYLENE	3.9 U 15SS0130002					
BENZO(K)FLUORANTHENE	3.9 U 15SS0130002					

APPENDIX LE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB013 12/8/2004	15SB014 12/11/2004	15SB015 12/11/2004	15SB016 12/11/2004	15SB017 12/11/2004	15SB018 12/11/2004
BENZYL ALCOHOL	79.1 U 15SS0130002					
BIS(2-CHLOROETHOXY)METHANE	79.1 U 15SS0130002					
BIS(2-CHLOROETHYL)ETHER	79.1 U 15SS0130002					
BIS(2-ETHYLHEXYL)PHTHALATE	79.1 U 15SS0130002					
BUTYL BENZYL PHTHALATE	79.1 U 15SS0130002					
CHLOROBENZILATE	79.1 U 15SS0130002					
CHRYSENE	3.9 U 15SS0130002					
DI-N-BUTYL PHTHALATE	79.1 U 15SS0130002					
DI-N-OCTYL PHTHALATE	79.1 U 15SS0130002					
DIALLATE	79.1 U 15SS0130002					
DIBENZO(A,H)ANTHRACENE	3.9 U 15SS0130002					
DIBENZOFURAN	79.1 U 15SS0130002					
DIETHYL PHTHALATE	79.1 U 15SS0130002					
DIMETHYL PHTHALATE	79.1 U 15SS0130002					
DIPHENYLAMINE	79.1 U 15SS0130002					
ETHYL METHANE SULFONATE	79.1 U 15SS0130002					

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB013 12/8/2004	15SB014 12/11/2004	15SB015 12/11/2004	15SB016 12/11/2004	15SB017 12/11/2004	15SB018 12/11/2004
FLUORANTHENE	3.9 U 15SS0130002					
FLUORENE	3.9 UJ 15SS0130002					
HEXACHLOROBENZENE	79.1 U 15SS0130002					
HEXACHLOROBUTADIENE	79.1 U 15SS0130002					
HEXACHLOROCYCLOPENTADIENE	79.1 UJ 15SS0130002					
HEXACHLOROETHANE	79.1 U 15SS0130002					
HEXACHLOROPROPENE	79.1 U 15SS0130002					
INDENO(1,2,3-CD)PYRENE	3.9 U 15SS0130002					
ISODRIN	79.1 U 15SS0130002					
ISOPHORONE	79.1 U 15SS0130002					
ISOSAFROLE	79.1 U 15SS0130002					
KEPONE	79.1 UJ 15SS0130002					
METHAPYRILENE	79.1 UJ 15SS0130002					
METHYL METHANE SULFONATE	79.1 U 15SS0130002					
N-NITROSO-DI-N-BUTYLAMINE	79.1 U 15SS0130002					
N-NITROSO-DI-N-PROPYLAMINE	79.1 U 15SS0130002					

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB013 12/8/2004	15SB014 12/11/2004	15SB015 12/11/2004	15SB016 12/11/2004	15SB017 12/11/2004	15SB018 12/11/2004
N-NITROSODIETHYLAMINE	79.1 U 15SS0130002					
N-NITROSODIMETHYLAMINE	79.1 U 15SS0130002					
N-NITROSODIPHENYLAMINE	79.1 U 15SS0130002					
N-NITROSOMETHYLETHYLAMINE	79.1 U 15SS0130002					
N-NITROSOMORPHOLINE	79.1 U 15SS0130002					
N-NITROSOPIPERIDINE	79.1 U 15SS0130002					
N-NITROSOPYRROLIDINE	79.1 U 15SS0130002					
NAPHTHALENE	3.9 UJ 15SS0130002					
O,O,O-TRIETHYL PHOSPHOROTHIOATE	79.1 U 15SS0130002					
O-TOLUIDINE	79.1 U 15SS0130002					
P-(DIMETHYLAMINO)AZOBENZENE	79.1 U 15SS0130002					
PENTACHLOROBENZENE	79.1 U 15SS0130002					
PENTACHLOROETHANE	79.1 U 15SS0130002					
PENTACHLORONITROBENZENE	79.1 U 15SS0130002					
PHENACETIN	79.1 U 15SS0130002					
PHENANTHRENE	3.9 U 15SS0130002					

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB013 12/8/2004	15SB014 12/11/2004	15SB015 12/11/2004	15SB016 12/11/2004	15SB017 12/11/2004	15SB018 12/11/2004
PHENOL	79.1 U 15SS0130002					
PRONAMIDE	79.1 U 15SS0130002					
PYRENE	3.9 U 15SS0130002					
PYRIDINE	79.1 U 15SS0130002					
SAFROLE	79.1 U 15SS0130002					
Pesticides PCBs (ug/kg)						
4,4'-DDD		1.62 U 15SS0140002 1.53 U 15SB0140206-D	1.6 U 15SS0150002	1.6 U 15SS0160002	1.61 U 15SS0170002	1.63 U 15SS0180002
4,4'-DDE		1.62 U 15SS0140002 1.53 U 15SB0140206-D	1.6 U 15SS0150002	1.6 U 15SS0160002	1.61 U 15SS0170002	1.63 U 15SS0180002
4,4'-DDT		1.62 U 15SS0140002 1.53 U 15SB0140206-D	1.6 U 15SS0150002	1.6 U 15SS0160002	1.61 U 15SS0170002	1.63 U 15SS0180002
ALDRIN		0.778 U 15SS0140002 0.734 U 15SB0140206-D	0.77 U 15SS0150002	0.772 U 15SS0160002	0.773 U 15SS0170002	0.787 U 15SS0180002
ALPHA-BHC		0.778 U 15SS0140002 0.734 U 15SB0140206-D	0.77 U 15SS0150002	0.772 U 15SS0160002	0.773 U 15SS0170002	0.787 U 15SS0180002
ALPHA-CHLORDANE		0.778 U 15SS0140002 0.734 U 15SB0140206-D	0.77 U 15SS0150002	0.772 U 15SS0160002	0.773 U 15SS0170002	0.787 U 15SS0180002
AROCLOR-1016	10.6 U 15SS0130002					
AROCLOR-1221	10.6 U 15SS0130002					
AROCLOR-1232	10.6 U 15SS0130002					
AROCLOR-1242	10.6 U 15SS0130002					
AROCLOR-1248	10.6 U 15SS0130002					
AROCLOR-1254	10.6 U 15SS0130002					
AROCLOR-1260	10.6 U 15SS0130002					
BETA-BHC		0.778 U 15SS0140002 0.734 U 15SB0140206-D	0.77 U 15SS0150002	0.772 U 15SS0160002	0.773 U 15SS0170002	0.787 U 15SS0180002
DELTA-BHC		0.778 U 15SS0140002 0.734 U 15SB0140206-D	0.77 U 15SS0150002	0.772 U 15SS0160002	0.773 U 15SS0170002	0.787 U 15SS0180002
DIELDRIN		1.62 U 15SS0140002 1.53 U 15SB0140206-D	1.6 U 15SS0150002	1.6 U 15SS0160002	1.61 U 15SS0170002	1.63 U 15SS0180002

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB013 12/8/2004	15SB014 12/11/2004	15SB015 12/11/2004	15SB016 12/11/2004	15SB017 12/11/2004	15SB018 12/11/2004
ENDOSULFAN I		0.778 U 15SS0140002 0.734 U 15SB0140206-D	0.77 U 15SS0150002	0.772 U 15SS0160002	0.773 U 15SS0170002	0.787 U 15SS0180002
ENDOSULFAN II		1.62 U 15SS0140002 1.53 U 15SB0140206-D	1.6 U 15SS0150002	1.6 U 15SS0160002	1.61 U 15SS0170002	1.63 U 15SS0180002
ENDOSULFAN SULFATE		1.62 U 15SS0140002 1.53 U 15SB0140206-D	1.6 U 15SS0150002	1.6 U 15SS0160002	1.61 U 15SS0170002	1.63 U 15SS0180002
ENDRIN ALDEHYDE		1.62 U 15SS0140002 1.53 U 15SB0140206-D	1.6 U 15SS0150002	1.6 U 15SS0160002	1.61 U 15SS0170002	1.63 U 15SS0180002
ENDRIN KETONE		1.62 U 15SS0140002 1.53 U 15SB0140206-D	1.6 U 15SS0150002	1.6 U 15SS0160002	1.61 U 15SS0170002	1.63 U 15SS0180002
ENDRIN		1.62 U 15SS0140002 1.53 U 15SB0140206-D	1.6 U 15SS0150002	1.6 U 15SS0160002	1.61 U 15SS0170002	1.63 U 15SS0180002
GAMMA-BHC (LINDANE)		0.778 U 15SS0140002 0.734 U 15SB0140206-D	0.77 U 15SS0150002	0.772 U 15SS0160002	0.773 U 15SS0170002	0.787 U 15SS0180002
GAMMA-CHLORDANE		0.778 U 15SS0140002 0.734 U 15SB0140206-D	0.77 U 15SS0150002	0.772 U 15SS0160002	0.773 U 15SS0170002	0.787 U 15SS0180002
HEPTACHLOR EPOXIDE		0.778 U 15SS0140002 0.734 U 15SB0140206-D	0.77 U 15SS0150002	0.772 U 15SS0160002	0.773 U 15SS0170002	0.787 U 15SS0180002
HEPTACHLOR		0.778 U 15SS0140002 0.734 U 15SB0140206-D	0.77 U 15SS0150002	0.772 U 15SS0160002	0.773 U 15SS0170002	0.787 U 15SS0180002
METHOXYCHLOR		7.78 U 15SS0140002 7.34 U 15SB0140206-D	7.7 U 15SS0150002	7.72 U 15SS0160002	7.73 U 15SS0170002	7.87 U 15SS0180002
TOXAPHENE		20.4 U 15SS0140002 19.2 U 15SB0140206-D	20.1 U 15SS0150002	20.2 U 15SS0160002	20.2 U 15SS0170002	20.6 U 15SS0180002
Herbicides (ug/kg)						
2,4,5-T		1.62 U 15SS0140002 1.53 U 15SB0140206-D	1.6 U 15SS0150002	1.6 U 15SS0160002	1.61 U 15SS0170002	1.63 U 15SS0180002
2,4,5-TP (SILVEX)		1.62 U 15SS0140002 1.53 U 15SB0140206-D	1.6 U 15SS0150002	1.6 U 15SS0160002	1.61 U 15SS0170002	1.63 U 15SS0180002
2,4-D		1.62 U 15SS0140002 1.53 U 15SB0140206-D	1.6 U 15SS0150002	1.6 U 15SS0160002	1.61 U 15SS0170002	1.63 U 15SS0180002
DINOSEB		1.62 U 15SS0140002 1.53 U 15SB0140206-D	1.6 U 15SS0150002	1.6 U 15SS0160002	1.61 U 15SS0170002	1.63 U 15SS0180002
HEXACHLOROPHENE		1.02 U 15SS0140002 0.96 U 15SB0140206-D	1.01 U 15SS0150002	1.01 U 15SS0160002	1.01 U 15SS0170002	1.03 U 15SS0180002
PENTACHLOROPHENOL		0.539 U 15SS0140002 0.508 U 15SB0140206-D	0.533 U 15SS0150002	0.534 U 15SS0160002	0.535 U 15SS0170002	0.545 U 15SS0180002
Inorganics (mg/kg)						
ALUMINUM		27800 J 15SS0140002 11000 J 15SB0140206-D	26300 J 15SS0150002	22100 J 15SS0160002	22900 J 15SS0170002	24500 J 15SS0180002
ANTIMONY		0.32 U 15SS0140002 0.86 J 15SB0140206-D	0.36 U 15SS0150002	0.28 U 15SS0160002	0.3 U 15SS0170002	0.3 U 15SS0180002
ARSENIC		8.3 J 15SS0140002 15.2 J 15SB0140206-D	9.2 J 15SS0150002	7.8 J 15SS0160002	8.3 J 15SS0170002	8.6 J 15SS0180002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB013 12/8/2004	15SB014 12/11/2004	15SB015 12/11/2004	15SB016 12/11/2004	15SB017 12/11/2004	15SB018 12/11/2004
BARIUM		254 J 15SS0140002 75.8 J 15SB0140206-D	157 J 15SS0150002	84.7 J 15SS0160002	75.3 J 15SS0170002	94.3 J 15SS0180002
BERYLLIUM		1.1 J 15SS0140002 1.4 J 15SB0140206-D	0.76 J 15SS0150002	0.79 J 15SS0160002	0.86 J 15SS0170002	0.93 J 15SS0180002
CADMIUM		0.16 U 15SS0140002 0.38 J 15SB0140206-D	0.25 U 15SS0150002	0.21 U 15SS0160002	0.26 U 15SS0170002	0.34 U 15SS0180002
CALCIUM		2980 J 15SS0140002 2860 J 15SB0140206-D	3760 J 15SS0150002	1900 J 15SS0160002	8310 J 15SS0170002	119000 J 15SS0180002
CHROMIUM		36.8 J 15SS0140002 36.8 J 15SB0140206-D	30.2 J 15SS0150002	23.7 J 15SS0160002	28.6 J 15SS0170002	34 J 15SS0180002
COBALT		3.4 J 15SS0140002 16 J 15SB0140206-D	4.6 J 15SS0150002	10.5 J 15SS0160002	6.1 J 15SS0170002	4.8 J 15SS0180002
COPPER		13.3 J 15SS0140002 11.3 J 15SB0140206-D	12.9 J 15SS0150002	9.9 J 15SS0160002	13 J 15SS0170002	12.8 J 15SS0180002
IRON		28000 J 15SS0140002 88500 J 15SB0140206-D	27600 J 15SS0150002	23300 J 15SS0160002	32400 J 15SS0170002	37000 J 15SS0180002
LEAD		13.5 J 15SS0140002 16.8 J 15SB0140206-D	14.7 J 15SS0150002	14 J 15SS0160002	15.3 J 15SS0170002	16.6 J 15SS0180002
MAGNESIUM		2530 J 15SS0140002 1240 J 15SB0140206-D	2930 J 15SS0150002	1880 J 15SS0160002	3770 J 15SS0170002	2600 J 15SS0180002
MANGANESE		50.1 J 15SS0140002 1210 J 15SB0140206-D	168 J 15SS0150002	378 J 15SS0160002	233 J 15SS0170002	161 J 15SS0180002
MERCURY		0.007 U 15SS0140002	0.025 J 15SS0150002	0.013 J 15SS0160002	0.02 J 15SS0170002	0.007 U 15SS0180002
NICKEL		13.4 J 15SS0140002 31.2 J 15SB0140206-D	13.5 J 15SS0150002	15.4 J 15SS0160002	16.6 J 15SS0170002	15.1 J 15SS0180002
POTASSIUM		2190 J 15SS0140002 1250 J 15SB0140206-D	2330 J 15SS0150002	2100 J 15SS0160002	1920 J 15SS0170002	2380 J 15SS0180002
SELENIUM		0.32 U 15SS0140002 0.37 J 15SB0140206-D	0.39 U 15SS0150002	0.25 U 15SS0160002	0.42 U 15SS0170002	0.5 U 15SS0180002
SILVER		0.043 U 15SS0140002 0.043 U 15SB0140206-D	0.049 U 15SS0150002	0.045 U 15SS0160002	0.05 U 15SS0170002	0.045 U 15SS0180002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB013 12/8/2004	15SB014 12/11/2004	15SB015 12/11/2004	15SB016 12/11/2004	15SB017 12/11/2004	15SB018 12/11/2004
SODIUM		167 J 15SS0140002 74 J 15SB0140206-D	308 J 15SS0150002	129 J 15SS0160002	185 J 15SS0170002	287 J 15SS0180002
THALLIUM		0.32 U 15SS0140002 0.13 U 15SB0140206-D	0.36 U 15SS0150002	0.3 U 15SS0160002	0.32 U 15SS0170002	0.32 U 15SS0180002
TIN		0.52 J 15SS0140002 0.5 U 15SB0140206-D	0.39 J 15SS0150002	0.34 J 15SS0160002	0.39 J 15SS0170002	0.52 J 15SS0180002
VANADIUM		40.6 J 15SS0140002 33.2 J 15SB0140206-D	43.8 J 15SS0150002	34.8 J 15SS0160002	36.7 J 15SS0170002	38.6 J 15SS0180002
ZINC		24.8 J 15SS0140002 57.7 J 15SB0140206-D	38.8 J 15SS0150002	34.5 J 15SS0160002	45.1 J 15SS0170002	34.6 J 15SS0180002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB019 12/10/2004	15SB020 12/10/2004	15SB021 12/10/2004	15SB022 12/10/2004	15SB023 12/10/2004	15SB024 12/11/2004
Volatile Organics (ug/kg)						
1,1,1,2-TETRACHLOROETHANE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
1,1,1-TRICHLOROETHANE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
1,1,2,2-TETRACHLOROETHANE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
1,1,2-TRICHLOROETHANE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
1,1-DICHLOROETHANE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
1,1-DICHLOROETHENE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
1,2,3-TRICHLOROPROPANE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
1,2-DIBROMO-3-CHLOROPROPANE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
1,2-DIBROMOETHANE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
1,2-DICHLOROETHANE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
1,2-DICHLOROPROPANE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
2-BUTANONE	0.982 U 15SS0190002 0.939 U 15SB0190206	4 J 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	6 J 15SS0220002 0.876 U 15SB0220206	4 J 15SS0230002 1 J 15SB0230206-D	

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB019 12/10/2004	15SB020 12/10/2004	15SB021 12/10/2004	15SB022 12/10/2004	15SB023 12/10/2004	15SB024 12/11/2004
2-HEXANONE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
3-CHLOROPROPENE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
4-METHYL-2-PENTANONE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
ACETONE	26 J 15SS0190002 7 J 15SB0190206	38 J 15SS0200002 7 J 15SB0200206	7 U 15SS0210002 3 J 15SB0210206	30 J 15SS0220002 15 J 15SB0220206	25 J 15SS0230002 10 J 15SB0230206-D	
ACETONITRILE	39.3 UR 15SS0190002 37.6 UR 15SB0190206	42.2 UR 15SS0200002 40.7 UR 15SB0200206	37.6 UR 15SS0210002 42 UR 15SB0210206	39 UR 15SS0220002 35 UR 15SB0220206	36.2 UR 15SS0230002 38 UR 15SB0230206-D	
ACROLEIN	0.982 UR 15SS0190002 0.939 UR 15SB0190206	1.06 UR 15SS0200002 1.02 UR 15SB0200206	0.939 UR 15SS0210002 1.05 UR 15SB0210206	0.975 UR 15SS0220002 0.876 UR 15SB0220206	0.905 UR 15SS0230002 0.949 UR 15SB0230206-D	
ACRYLONITRILE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
BENZENE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
BROMODICHLOROMETHANE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
BROMOFORM	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
BROMOMETHANE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
CARBON DISULFIDE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB019 12/10/2004	15SB020 12/10/2004	15SB021 12/10/2004	15SB022 12/10/2004	15SB023 12/10/2004	15SB024 12/11/2004
CARBON TETRACHLORIDE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
CHLOROBENZENE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
CHLORODIBROMOMETHANE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
CHLOROETHANE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
CHLOROFORM	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
CHLOROMETHANE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
CHLOROPRENE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
CIS-1,2-DICHLOROETHENE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	5 15SS0220002 2 J 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
CIS-1,3-DICHLOROPROPENE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
DIBROMOMETHANE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
DICHLORODIFLUOROMETHANE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
ETHYL METHACRYLATE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	

APPEN[illegible]E G-1
RESULTS FOR CHEMICALS ANA[illegible]N ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB019 12/10/2004	15SB020 12/10/2004	15SB021 12/10/2004	15SB022 12/10/2004	15SB023 12/10/2004	15SB024 12/11/2004
ETHYLBENZENE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
ISOBUTANOL	39.3 UR 15SS0190002 37.6 UR 15SB0190206	42.2 UR 15SS0200002 40.7 UR 15SB0200206	37.6 UR 15SS0210002 42 UR 15SB0210206	39 UR 15SS0220002 35 UR 15SB0220206	36.2 UR 15SS0230002 38 UR 15SB0230206-D	
METHACRYLONITRILE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
METHYL IODIDE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
METHYL METHACRYLATE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
METHYL TERT-BUTYL ETHER	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
METHYLENE CHLORIDE	60 J 15SS0190002 24 J 15SB0190206	10 U 15SS0200002 18 J 15SB0200206	8 U 15SS0210002 1.05 UJ 15SB0210206	5 U 15SS0220002 3 J 15SB0220206	7 U 15SS0230002 0.949 UJ 15SB0230206-D	
PROPIONITRILE	39.3 UR 15SS0190002 37.6 UR 15SB0190206	42.2 UR 15SS0200002 40.7 UR 15SB0200206	37.6 UR 15SS0210002 42 UR 15SB0210206	39 UR 15SS0220002 35 UR 15SB0220206	36.2 UR 15SS0230002 38 UR 15SB0230206-D	
STYRENE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
TETRACHLOROETHENE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
TOLUENE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
TOTAL XYLENES	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB019 12/10/2004	15SB020 12/10/2004	15SB021 12/10/2004	15SB022 12/10/2004	15SB023 12/10/2004	15SB024 12/11/2004
TRANS-1,2-DICHLOROETHENE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
TRANS-1,3-DICHLOROPROPENE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
TRANS-1,4-DICHLORO-2-BUTENE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
TRICHLOROETHENE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
TRICHLOROFLUOROMETHANE	2 J 15SS0190002 2 J 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
VINYL ACETATE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
VINYL CHLORIDE	0.982 U 15SS0190002 0.939 U 15SB0190206	1.06 U 15SS0200002 1.02 U 15SB0200206	0.939 U 15SS0210002 1.05 U 15SB0210206	0.975 U 15SS0220002 0.876 U 15SB0220206	0.905 U 15SS0230002 0.949 U 15SB0230206-D	
Semivolatile Organics (ug/kg)						
1,2,4,5-TETRACHLOROBENZENE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
1,2,4-TRICHLOROBENZENE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
1,2-DICHLOROBENZENE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
1,3-DICHLOROBENZENE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
1,4-DICHLOROBENZENE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
1,4-DIOXANE	123 U 15SS0190002	121 U 15SS0200002	115 U 15SS0210002	119 U 15SS0220002	113 U 15SS0230002 122 U 15SB0230206-D	121 U 15SS0240002

APPEN[illegible]LE G-1
RESULTS FOR CHEMICALS ANA[illegible] IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB019 12/10/2004	15SB020 12/10/2004	15SB021 12/10/2004	15SB022 12/10/2004	15SB023 12/10/2004	15SB024 12/11/2004
1,4-NAPHTHOQUINONE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
1,4-PHENYLENEDIAMINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
1-NAPHTHYLAMINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
2,2'-OXYBIS(1-CHLOROPROPANE)	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 UJ 15SB0230206-D	80.8 U 15SS0240002
2,3,4,6-TETRACHLOROPHENOL	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
2,4,5-TRICHLOROPHENOL	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
2,4,6-TRICHLOROPHENOL	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
2,4-DICHLOROPHENOL	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
2,4-DIMETHYLPHENOL	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
2,4-DINITROPHENOL	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
2,6-DICHLOROPHENOL	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
2-ACETYLAMINOFLUORENE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
2-CHLORONAPHTHALENE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
2-CHLOROPHENOL	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
2-METHYLNAPHTHALENE	34 15SS0190002	4 U 15SS0200002	3.78 U 15SS0210002	5 J 15SS0220002 5 J 15SB0220206	17 J 15SS0230002 4.01 U 15SB0230206-D	3.98 U 15SS0240002
2-METHYLPHENOL	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB019 12/10/2004	15SB020 12/10/2004	15SB021 12/10/2004	15SB022 12/10/2004	15SB023 12/10/2004	15SB024 12/11/2004
2-NAPHTHYLAMINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
2-NITROANILINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
2-NITROPHENOL	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
2-PICOLINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
3&4-METHYLPHENOL	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
3,3'-DICHLOROBENZIDINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
3,3'-DIMETHYLBENZIDINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 UJ 15SB0230206-D	80.8 U 15SS0240002
3-METHYLCHOLANTHRENE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
3-NITROANILINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
4,6-DINITRO-2-METHYLPHENOL	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
4-AMINOBIPHENYL	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
4-BROMOPHENYL PHENYL ETHER	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
4-CHLORO-3-METHYLPHENOL	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
4-CHLOROANILINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
4-CHLOROPHENYL PHENYL ETHER	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
4-NITROANILINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB019 12/10/2004	15SB020 12/10/2004	15SB021 12/10/2004	15SB022 12/10/2004	15SB023 12/10/2004	15SB024 12/11/2004
4-NITROPHENOL	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
4-NITROQUINOLINE-1-OXIDE	82.2 UR 15SS0190002	81.3 UR 15SS0200002	76.7 UR 15SS0210002	79.7 UR 15SS0220002	75.8 UR 15SS0230002 81.5 UR 15SB0230206-D	80.8 UR 15SS0240002
5-NITRO-O-TOLUIDINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
7,12-DIMETHYLBENZ(A)ANTHRACENE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
A,A-DIMETHYLPHENETHYLAMINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
ACENAPHTHENE	9 15SS0190002	5 J 15SS0200002	5 J 15SS0210002	20 15SS0220002 8 15SB0220206	14.9 U 15SS0230002 26 15SB0230206-D	3.98 U 15SS0240002
ACENAPHTHYLENE	4.05 U 15SS0190002	4 U 15SS0200002	3.78 U 15SS0210002	3.92 U 15SS0220002 3.8 U 15SB0220206	23 J 15SS0230002 4.01 U 15SB0230206-D	3.98 U 15SS0240002
ACETOPHENONE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
ANILINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
ANTHRACENE	24 15SS0190002	12 15SS0200002	5 J 15SS0210002	40 15SS0220002 8 15SB0220206	30 J 15SS0230002 25 15SB0230206-D	3.98 U 15SS0240002
ARAMITE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
BENZO(A)ANTHRACENE	29 15SS0190002	22 15SS0200002	7 J 15SS0210002	58 15SS0220002 12 15SB0220206	130 J 15SS0230002 78 15SB0230206-D	3.98 U 15SS0240002
BENZO(A)PYRENE	24 15SS0190002	23 15SS0200002	8 15SS0210002	55 15SS0220002 13 15SB0220206	160 15SS0230002 130 15SB0230206-D	3.98 U 15SS0240002
BENZO(B)FLUORANTHENE	15 15SS0190002	22 15SS0200002	3.78 U 15SS0210002	56 15SS0220002 11 15SB0220206	140 15SS0230002 180 15SB0230206-D	3.98 U 15SS0240002
BENZO(G,H,I)PERYLENE	22 15SS0190002	34 15SS0200002	19 15SS0210002	71 15SS0220002 14 15SB0220206	210 15SS0230002 93 15SB0230206-D	3.98 U 15SS0240002
BENZO(K)FLUORANTHENE	17 15SS0190002	14 15SS0200002	3.78 U 15SS0210002	27 15SS0220002 8 15SB0220206	100 15SS0230002 68 15SB0230206-D	3.98 U 15SS0240002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB019 12/10/2004	15SB020 12/10/2004	15SB021 12/10/2004	15SB022 12/10/2004	15SB023 12/10/2004	15SB024 12/11/2004
BENZYL ALCOHOL	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
BIS(2-CHLOROETHOXY)METHANE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
BIS(2-CHLOROETHYL)ETHER	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
BIS(2-ETHYLHEXYL)PHTHALATE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 13000 J 15SB0230206-D	80.8 U 15SS0240002
BUTYL BENZYL PHTHALATE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
CHLOROBENZILATE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
CHRYSENE	33 15SS0190002	25 15SS0200002	7 J 15SS0210002	68 15SS0220002 13 15SB0220206	170 J 15SS0230002 100 15SB0230206-D	3.98 U 15SS0240002
DI-N-BUTYL PHTHALATE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
DI-N-OCTYL PHTHALATE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
DIALLATE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
DIBENZO(A,H)ANTHRACENE	4.05 U 15SS0190002	4 U 15SS0200002	3.78 U 15SS0210002	3.92 U 15SS0220002 3.8 U 15SB0220206	14.9 U 15SS0230002 23 15SB0230206-D	3.98 U 15SS0240002
DIBENZOFURAN	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
DIETHYL PHTHALATE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
DIMETHYL PHTHALATE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
DIPHENYLAMINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
ETHYL METHANE SULFONATE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB019 12/10/2004	15SB020 12/10/2004	15SB021 12/10/2004	15SB022 12/10/2004	15SB023 12/10/2004	15SB024 12/11/2004
FLUORANTHENE	41 15SS0190002	48 15SS0200002	12 15SS0210002	130 15SS0220002 26 15SB0220206	110 15SS0230002 180 15SB0230206-D	4 J 15SS0240002
FLUORENE	8 J 15SS0190002	6 J 15SS0200002	3.78 U 15SS0210002	19 15SS0220002 7 J 15SB0220206	21 J 15SS0230002 20 15SB0230206-D	3.98 U 15SS0240002
HEXACHLOROBENZENE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 UJ 15SB0230206-D	80.8 U 15SS0240002
HEXACHLOROBUTADIENE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
HEXACHLOROCYCLOPENTADIENE	82.2 UJ 15SS0190002	81.3 UJ 15SS0200002	76.7 UJ 15SS0210002	79.7 UJ 15SS0220002	75.8 UJ 15SS0230002 81.5 UJ 15SB0230206-D	80.8 UJ 15SS0240002
HEXACHLOROETHANE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
HEXACHLOROPROPENE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
INDENO(1,2,3-CD)PYRENE	14 15SS0190002	22 15SS0200002	3.78 U 15SS0210002	51 15SS0220002 8 15SB0220206	160 15SS0230002 74 15SB0230206-D	3.98 U 15SS0240002
ISODRIN	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
ISOPHORONE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 UJ 15SB0230206-D	80.8 U 15SS0240002
ISOSAFROLE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
KEPONE	82.2 UR 15SS0190002	81.3 UR 15SS0200002	76.7 UR 15SS0210002	79.7 UR 15SS0220002	75.8 UR 15SS0230002 81.5 UJ 15SB0230206-D	80.8 UJ 15SS0240002
METHAPYRILENE	82.2 UJ 15SS0190002	81.3 UJ 15SS0200002	76.7 UJ 15SS0210002	79.7 UJ 15SS0220002	75.8 UJ 15SS0230002 81.5 UJ 15SB0230206-D	80.8 UJ 15SS0240002
METHYL METHANE SULFONATE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
N-NITROSO-DI-N-BUTYLAMINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
N-NITROSO-DI-N-PROPYLAMINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 UJ 15SB0230206-D	80.8 U 15SS0240002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB019 12/10/2004	15SB020 12/10/2004	15SB021 12/10/2004	15SB022 12/10/2004	15SB023 12/10/2004	15SB024 12/11/2004
N-NITROSODIETHYLAMINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
N-NITROSODIMETHYLAMINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 UJ 15SB0230206-D	80.8 U 15SS0240002
N-NITROSODIPHENYLAMINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
N-NITROSOMETHYLETHYLAMINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
N-NITROSOMORPHOLINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 UJ 15SB0230206-D	80.8 U 15SS0240002
N-NITROSOPIPERIDINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 UJ 15SB0230206-D	80.8 U 15SS0240002
N-NITROSOPYRROLIDINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
NAPHTHALENE	15 15SS0190002	4 U 15SS0200002	4 J 15SS0210002	9 15SS0220002 15 15SB0220206	14.9 U 15SS0230002 4.01 U 15SB0230206-D	3.98 U 15SS0240002
O,O,O-TRIETHYL PHOSPHOROTHIOATE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
O-TOLUIDINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
P-(DIMETHYLAMINO)AZOBENZENE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
PENTACHLOROBENZENE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
PENTACHLOROETHANE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
PENTACHLORONITROBENZENE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
PHENACETIN	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
PHENANTHRENE	170 15SS0190002	69 15SS0200002	21 15SS0210002	190 15SS0220002 36 15SB0220206	92 15SS0230002 13 J 15SB0230206-D	6 J 15SS0240002

APPENDIX LE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB019 12/10/2004	15SB020 12/10/2004	15SB021 12/10/2004	15SB022 12/10/2004	15SB023 12/10/2004	15SB024 12/11/2004
PHENOL	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
PRONAMIDE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
PYRENE	68 15SS0190002	73 15SS0200002	18 15SS0210002	190 15SS0220002 40 15SB0220206	210 J 15SS0230002 400 15SB0230206-D	3.98 U 15SS0240002
PYRIDINE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
SAFROLE	82.2 U 15SS0190002	81.3 U 15SS0200002	76.7 U 15SS0210002	79.7 U 15SS0220002	75.8 U 15SS0230002 81.5 U 15SB0230206-D	80.8 U 15SS0240002
Pesticides PCBs (ug/kg)						
4,4'-DDD	1.66 U 15SS0190002	1.64 U 15SS0200002	1.55 U 15SS0210002	110 15SS0220002	38 15SS0230002 1.64 U 15SB0230206-D	
4,4'-DDE	2 J 15SS0190002	1.64 U 15SS0200002	1.55 U 15SS0210002	1.61 U 15SS0220002	1.53 U 15SS0230002 1.64 U 15SB0230206-D	
4,4'-DDT	1.66 U 15SS0190002	1.64 U 15SS0200002	1.55 U 15SS0210002	1.61 U 15SS0220002	1.53 U 15SS0230002 1.64 U 15SB0230206-D	
ALDRIN	0.798 U 15SS0190002	0.789 U 15SS0200002	0.745 U 15SS0210002	0.773 U 15SS0220002	0.735 U 15SS0230002 0.791 U 15SB0230206-D	
ALPHA-BHC	0.798 U 15SS0190002	0.789 U 15SS0200002	0.745 U 15SS0210002	0.773 U 15SS0220002	0.735 U 15SS0230002 0.791 U 15SB0230206-D	
ALPHA-CHLORDANE	0.798 U 15SS0190002	69 15SS0200002	0.745 U 15SS0210002	11 15SS0220002	1.6 J 15SS0230002 0.791 U 15SB0230206-D	
AROCLOR-1016	11 U 15SS0190002	10.9 U 15SS0200002	10.3 U 15SS0210002	10.7 U 15SS0220002 10.4 U 15SB0220206	10.2 U 15SS0230002 10.9 U 15SB0230206-D	
AROCLOR-1221	11 U 15SS0190002	10.9 U 15SS0200002	10.3 U 15SS0210002	10.7 U 15SS0220002 10.4 U 15SB0220206	10.2 U 15SS0230002 10.9 U 15SB0230206-D	
AROCLOR-1232	11 U 15SS0190002	10.9 U 15SS0200002	10.3 U 15SS0210002	10.7 U 15SS0220002 10.4 U 15SB0220206	10.2 U 15SS0230002 10.9 U 15SB0230206-D	
AROCLOR-1242	11 U 15SS0190002	10.9 U 15SS0200002	10.3 U 15SS0210002	10.7 U 15SS0220002 10.4 U 15SB0220206	10.2 U 15SS0230002 10.9 U 15SB0230206-D	
AROCLOR-1248	11 U 15SS0190002	10.9 U 15SS0200002	10.3 U 15SS0210002	10.7 U 15SS0220002 10.4 U 15SB0220206	10.2 U 15SS0230002 10.9 U 15SB0230206-D	
AROCLOR-1254	11 U 15SS0190002	10.9 U 15SS0200002	10.3 U 15SS0210002	10.7 U 15SS0220002 10.4 U 15SB0220206	10.2 U 15SS0230002 10.9 U 15SB0230206-D	
AROCLOR-1260	11 U 15SS0190002	10.9 U 15SS0200002	10.3 U 15SS0210002	190 15SS0220002 10.4 U 15SB0220206	1200 15SS0230002 10.9 U 15SB0230206-D	
BETA-BHC	0.798 U 15SS0190002	0.789 U 15SS0200002	0.745 U 15SS0210002	0.773 U 15SS0220002	0.735 U 15SS0230002 0.791 U 15SB0230206-D	
DELTA-BHC	0.798 U 15SS0190002	0.789 U 15SS0200002	0.745 U 15SS0210002	0.773 U 15SS0220002	0.735 U 15SS0230002 0.791 U 15SB0230206-D	
DIELDRIN	1.66 U 15SS0190002	1.64 U 15SS0200002	1.55 U 15SS0210002	1.61 U 15SS0220002	1.53 U 15SS0230002 1.64 U 15SB0230206-D	

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB019 12/10/2004	15SB020 12/10/2004	15SB021 12/10/2004	15SB022 12/10/2004	15SB023 12/10/2004	15SB024 12/11/2004
ENDOSULFAN I	0.798 U 15SS0190002	0.789 U 15SS0200002	0.745 U 15SS0210002	0.773 U 15SS0220002	0.735 U 15SS0230002 0.791 U 15SB0230206-D	
ENDOSULFAN II	1.66 U 15SS0190002	1.64 U 15SS0200002	1.55 U 15SS0210002	1.61 U 15SS0220002	1.53 U 15SS0230002 1.64 U 15SB0230206-D	
ENDOSULFAN SULFATE	1.66 U 15SS0190002	1.64 U 15SS0200002	1.55 U 15SS0210002	1.61 U 15SS0220002	1.53 U 15SS0230002 1.64 U 15SB0230206-D	
ENDRIN ALDEHYDE	1.66 U 15SS0190002	1.64 U 15SS0200002	1.55 U 15SS0210002	1.61 U 15SS0220002	1.53 U 15SS0230002 1.64 U 15SB0230206-D	
ENDRIN KETONE	1.66 U 15SS0190002	1.64 U 15SS0200002	1.55 U 15SS0210002	1.61 U 15SS0220002	1.53 U 15SS0230002 1.64 U 15SB0230206-D	
ENDRIN	1.66 U 15SS0190002	1.64 U 15SS0200002	1.55 U 15SS0210002	1.61 U 15SS0220002	1.53 U 15SS0230002 1.64 U 15SB0230206-D	
GAMMA-BHC (LINDANE)	0.798 U 15SS0190002	0.789 U 15SS0200002	0.745 U 15SS0210002	0.773 U 15SS0220002	0.735 U 15SS0230002 0.791 U 15SB0230206-D	
GAMMA-CHLORDANE	0.798 U 15SS0190002	75 15SS0200002	0.745 U 15SS0210002	12 15SS0220002	0.735 U 15SS0230002 0.791 U 15SB0230206-D	
HEPTACHLOR EPOXIDE	0.798 U 15SS0190002	4.8 15SS0200002	0.745 U 15SS0210002	0.773 U 15SS0220002	0.735 U 15SS0230002 0.791 U 15SB0230206-D	
HEPTACHLOR	0.798 U 15SS0190002	8.5 15SS0200002	0.745 U 15SS0210002	0.773 U 15SS0220002	0.735 U 15SS0230002 0.791 U 15SB0230206-D	
METHOXYCHLOR	7.98 U 15SS0190002	7.89 U 15SS0200002	7.45 U 15SS0210002	7.73 U 15SS0220002	7.35 U 15SS0230002 7.91 U 15SB0230206-D	
TOXAPHENE	20.9 U 15SS0190002	20.6 U 15SS0200002	19.5 U 15SS0210002	20.2 U 15SS0220002	19.2 U 15SS0230002 20.7 U 15SB0230206-D	
Herbicides (ug/kg)						
2,4,5-T	1.66 U 15SS0190002	1.64 U 15SS0200002	1.55 U 15SS0210002	1.61 U 15SS0220002	1.53 U 15SS0230002 1.64 U 15SB0230206-D	
2,4,5-TP (SILVEX)	1.66 U 15SS0190002	1.64 U 15SS0200002	1.55 U 15SS0210002	1.61 U 15SS0220002	1.53 U 15SS0230002 1.64 U 15SB0230206-D	
2,4-D	1.66 U 15SS0190002	1.64 U 15SS0200002	1.55 U 15SS0210002	1.61 U 15SS0220002	1.53 U 15SS0230002 1.64 U 15SB0230206-D	
DINOSEB	1.66 U 15SS0190002	1.64 U 15SS0200002	1.55 U 15SS0210002	1.61 U 15SS0220002	1.53 U 15SS0230002 1.64 U 15SB0230206-D	
HEXACHLOROPHENE	1.04 U 15SS0190002	1.03 U 15SS0200002	0.974 U 15SS0210002	1.01 U 15SS0220002	0.962 U 15SS0230002 1.03 U 15SB0230206-D	
PENTACHLOROPHENOL	0.552 U 15SS0190002	0.546 U 15SS0200002	0.515 U 15SS0210002	0.535 U 15SS0220002	0.509 U 15SS0230002 0.547 U 15SB0230206-D	
Inorganics (mg/kg)						
ALUMINUM	13200 J 15SS0190002	29900 J 15SS0200002	16100 J 15SS0210002	19700 J 15SS0220002	20600 J 15SS0230002 26800 J 15SB0230206-D	
ANTIMONY	0.44 U 15SS0190002	0.25 U 15SS0200002	0.15 U 15SS0210002	0.32 U 15SS0220002	0.46 U 15SS0230002 0.63 J 15SB0230206-D	
ARSENIC	5.5 J 15SS0190002	7.3 J 15SS0200002	5.1 J 15SS0210002	8.3 J 15SS0220002	13.4 J 15SS0230002 9.6 J 15SB0230206-D	

APPEN[illegible]LE G-1
RESULTS FOR CHEMICALS ANA[illegible]D IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB019 12/10/2004	15SB020 12/10/2004	15SB021 12/10/2004	15SB022 12/10/2004	15SB023 12/10/2004	15SB024 12/11/2004
BARIUM	72.5 J 15SS0190002	75.3 J 15SS0200002	61.4 J 15SS0210002	90.4 J 15SS0220002	80.6 J 15SS0230002 82.3 J 15SB0230206-D	
BERYLLIUM	2.9 15SS0190002	0.58 15SS0200002	0.51 15SS0210002	0.65 15SS0220002	0.59 15SS0230002 0.71 J 15SB0230206-D	
CADMIUM	0.41 J 15SS0190002	0.33 J 15SS0200002	0.18 J 15SS0210002	0.38 J 15SS0220002	0.38 J 15SS0230002 0.36 J 15SB0230206-D	
CALCIUM	52100 J 15SS0190002	1660 J 15SS0200002	1430 J 15SS0210002	26800 J 15SS0220002	54300 J 15SS0230002 2550 J 15SB0230206-D	
CHROMIUM	15.3 J 15SS0190002	27.8 J 15SS0200002	19.8 J 15SS0210002	23.8 J 15SS0220002	28.4 J 15SS0230002 24.4 J 15SB0230206-D	
COBALT	6.2 J 15SS0190002	4.4 J 15SS0200002	3.5 J 15SS0210002	6.9 J 15SS0220002	5.4 J 15SS0230002 9.1 J 15SB0230206-D	
COPPER	18.8 J 15SS0190002	18.2 J 15SS0200002	7.6 J 15SS0210002	12.4 J 15SS0220002	13.2 J 15SS0230002 16.8 J 15SB0230206-D	
IRON	24700 J 15SS0190002	27100 J 15SS0200002	18200 J 15SS0210002	19100 J 15SS0220002	23100 J 15SS0230002 25100 J 15SB0230206-D	
LEAD	9.2 J 15SS0190002	9.8 J 15SS0200002	6.6 J 15SS0210002	18.1 J 15SS0220002	15.8 J 15SS0230002 15.2 J 15SB0230206-D	
MAGNESIUM	2800 J 15SS0190002	4450 J 15SS0200002	1550 J 15SS0210002	4660 J 15SS0220002	4610 J 15SS0230002 3070 J 15SB0230206-D	
MANGANESE	222 15SS0190002	118 15SS0200002	86.1 15SS0210002	246 15SS0220002	189 15SS0230002 141 J 15SB0230206-D	
MERCURY	0.017 J 15SS0190002	0.02 J 15SS0200002	0.007 U 15SS0210002	0.023 J 15SS0220002	0.027 J 15SS0230002	
NICKEL	16.1 J 15SS0190002	15.7 J 15SS0200002	9.5 J 15SS0210002	14.7 J 15SS0220002	14.5 J 15SS0230002 17.3 J 15SB0230206-D	
POTASSIUM	1400 J 15SS0190002	2280 J 15SS0200002	1030 J 15SS0210002	1710 J 15SS0220002	1840 J 15SS0230002 2050 J 15SB0230206-D	
SELENIUM	0.5 J 15SS0190002	0.27 J 15SS0200002	0.14 J 15SS0210002	0.29 J 15SS0220002	0.35 J 15SS0230002 0.41 J 15SB0230206-D	
SILVER	0.053 U 15SS0190002	0.043 U 15SS0200002	0.046 U 15SS0210002	0.046 U 15SS0220002	0.048 U 15SS0230002 0.06 U 15SB0230206-D	

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB019 12/10/2004	15SB020 12/10/2004	15SB021 12/10/2004	15SB022 12/10/2004	15SB023 12/10/2004	15SB024 12/11/2004
SODIUM	1250 J 15SS0190002	150 J 15SS0200002	82.7 J 15SS0210002	216 J 15SS0220002	128 J 15SS0230002 99.8 J 15SB0230206-D	
THALLIUM	0.23 U 15SS0190002	0.38 U 15SS0200002	0.19 U 15SS0210002	0.29 U 15SS0220002	0.28 U 15SS0230002 0.36 J 15SB0230206-D	
TIN	0.81 U 15SS0190002	0.67 U 15SS0200002	0.44 U 15SS0210002	0.61 U 15SS0220002	0.8 U 15SS0230002 0.63 U 15SB0230206-D	
VANADIUM	31.4 J 15SS0190002	43.7 J 15SS0200002	30 J 15SS0210002	35.7 J 15SS0220002	38.8 J 15SS0230002 47.8 J 15SB0230206-D	
ZINC	46.9 J 15SS0190002	57.7 J 15SS0200002	20.1 J 15SS0210002	48.7 J 15SS0220002	46.8 J 15SS0230002 52.6 J 15SB0230206-D	

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB025 12/11/2004	15SB026 12/11/2004	15SB027 12/11/2004	15SB028 12/11/2004	15SB029 12/9/2004	15SB030 12/14/2004
Volatile Organics (ug/kg)						
1,1,1,2-TETRACHLOROETHANE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
1,1,1-TRICHLOROETHANE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
1,1,2,2-TETRACHLOROETHANE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
1,1,2-TRICHLOROETHANE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
1,1-DICHLOROETHANE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
1,1-DICHLOROETHENE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
1,2,3-TRICHLOROPROPANE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
1,2-DIBROMO-3-CHLOROPROPANE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
1,2-DIBROMOETHANE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
1,2-DICHLOROETHANE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
1,2-DICHLOROPROPANE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
2-BUTANONE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB025 12/11/2004	15SB026 12/11/2004	15SB027 12/11/2004	15SB028 12/11/2004	15SB029 12/9/2004	15SB030 12/14/2004
2-HEXANONE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
3-CHLOROPROPENE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
4-METHYL-2-PENTANONE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
ACETONE					5 U 15SS0290002 3 BU 15SB0290206	39 U 15SS0300002 34 J 15SB0300206
ACETONITRILE					32.2 UR 15SS0290002 41.5 UR 15SB0290206	47.5 UR 15SS0300002 47.7 UR 15SB0300206
ACROLEIN					0.806 UR 15SS0290002 1.04 UR 15SB0290206	1.19 UR 15SS0300002 1.19 UR 15SB0300206
ACRYLONITRILE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
BENZENE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
BROMODICHLOROMETHANE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
BROMOFORM					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
BROMOMETHANE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
CARBON DISULFIDE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 UJ 15SS0300002 1.19 UJ 15SB0300206

APPENDIX LE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB025 12/11/2004	15SB026 12/11/2004	15SB027 12/11/2004	15SB028 12/11/2004	15SB029 12/9/2004	15SB030 12/14/2004
CARBON TETRACHLORIDE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
CHLOROBENZENE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
CHLORODIBROMOMETHANE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
CHLOROETHANE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
CHLOROFORM					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
CHLOROMETHANE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
CHLOROPRENE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
CIS-1,2-DICHLOROETHENE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
CIS-1,3-DICHLOROPROPENE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
DIBROMOMETHANE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
DICHLORODIFLUOROMETHANE					0.806 U 15SS0290002 1.04 UR 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
ETHYL METHACRYLATE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB025 12/11/2004	15SB026 12/11/2004	15SB027 12/11/2004	15SB028 12/11/2004	15SB029 12/9/2004	15SB030 12/14/2004
ETHYLBENZENE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
ISOBUTANOL					32.2 UR 15SS0290002 41.5 UR 15SB0290206	47.5 UR 15SS0300002 47.7 UR 15SB0300206
METHACRYLONITRILE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
METHYL IODIDE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
METHYL METHACRYLATE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
METHYL TERT-BUTYL ETHER					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
METHYLENE CHLORIDE					15 J 15SS0290002 15 J 15SB0290206	97 J 15SS0300002 6 J 15SB0300206
PROPIONITRILE					32.2 UR 15SS0290002 41.5 UR 15SB0290206	47.5 UR 15SS0300002 47.7 UR 15SB0300206
STYRENE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
TETRACHLOROETHENE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
TOLUENE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
TOTAL XYLENES					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB025 12/11/2004	15SB026 12/11/2004	15SB027 12/11/2004	15SB028 12/11/2004	15SB029 12/9/2004	15SB030 12/14/2004
TRANS-1,2-DICHLOROETHENE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
TRANS-1,3-DICHLOROPROPENE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
TRANS-1,4-DICHLORO-2-BUTENE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
TRICHLOROETHENE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
TRICHLOROFLUOROMETHANE					1 J 15SS0290002 1.44 J 15SB0290206	3 J 15SS0300002 1.19 U 15SB0300206
VINYL ACETATE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 UJ 15SS0300002 1.19 UJ 15SB0300206
VINYL CHLORIDE					0.806 U 15SS0290002 1.04 U 15SB0290206	1.19 U 15SS0300002 1.19 U 15SB0300206
Semivolatile Organics (ug/kg)						
1,2,4,5-TETRACHLOROBENZENE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
1,2,4-TRICHLOROBENZENE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
1,2-DICHLOROBENZENE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
1,3-DICHLOROBENZENE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
1,4-DICHLOROBENZENE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
1,4-DIOXANE	119 U 15SS0250002	112 U 15SS0260002	113 U 15SS0270002	110 U 15SS0280002 109 U 15SB0280206-D	115 U 15SS0290002	124 U 15SS0300002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB025 12/11/2004	15SB026 12/11/2004	15SB027 12/11/2004	15SB028 12/11/2004	15SB029 12/9/2004	15SB030 12/14/2004
1,4-NAPHTHOQUINONE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
1,4-PHENYLENEDIAMINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
1-NAPHTHYLAMINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
2,2'-OXYBIS(1-CHLOROPROPANE)	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 UJ 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
2,3,4,6-TETRACHLOROPHENOL	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
2,4,5-TRICHLOROPHENOL	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
2,4,6-TRICHLOROPHENOL	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
2,4-DICHLOROPHENOL	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
2,4-DIMETHYLPHENOL	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
2,4-DINITROPHENOL	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 UJ 15SS0290002	82.8 U 15SS0300002
2,6-DICHLOROPHENOL	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
2-ACETYLAMINOFLUORENE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
2-CHLORONAPHTHALENE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
2-CHLOROPHENOL	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
2-METHYLNAPHTHALENE	3.94 U 15SS0250002	3.71 U 15SS0260002	3.72 U 15SS0270002	3.63 U 15SS0280002 4 J 15SB0280206-D	3.8 U 15SS0290002	4.08 U 15SS0300002
2-METHYLPHENOL	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB025 12/11/2004	15SB026 12/11/2004	15SB027 12/11/2004	15SB028 12/11/2004	15SB029 12/9/2004	15SB030 12/14/2004
2-NAPHTHYLAMINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
2-NITROANILINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
2-NITROPHENOL	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
2-PICOLINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
3&4-METHYLPHENOL	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
3,3'-DICHLOROBENZIDINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
3,3'-DIMETHYLBENZIDINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 UJ 15SB0280206-D	77.1 U 15SS0290002	82.8 UJ 15SS0300002
3-METHYLCHOLANTHRENE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
3-NITROANILINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
4,6-DINITRO-2-METHYLPHENOL	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
4-AMINOBIPHENYL	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
4-BROMOPHENYL PHENYL ETHER	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
4-CHLORO-3-METHYLPHENOL	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
4-CHLOROANILINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
4-CHLOROPHENYL PHENYL ETHER	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
4-NITROANILINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB025 12/11/2004	15SB026 12/11/2004	15SB027 12/11/2004	15SB028 12/11/2004	15SB029 12/9/2004	15SB030 12/14/2004
4-NITROPHENOL	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
4-NITROQUINOLINE-1-OXIDE	80 UR 15SS0250002	75.4 UR 15SS0260002	75.5 UR 15SS0270002	73.8 UR 15SS0280002 72.9 UR 15SB0280206-D	77.1 UR 15SS0290002	82.8 UR 15SS0300002
5-NITRO-O-TOLUIDINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
7,12-DIMETHYLBENZ(A)ANTHRACENE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
A,A-DIMETHYLPHENETHYLAMINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
ACENAPHTHENE	3.94 U 15SS0250002	3.71 U 15SS0260002	3.72 U 15SS0270002	3.63 U 15SS0280002 11 J 15SB0280206-D	3.8 U 15SS0290002	4.08 U 15SS0300002
ACENAPHTHYLENE	3.94 U 15SS0250002	3.71 U 15SS0260002	3.72 U 15SS0270002	3.63 U 15SS0280002 3.59 U 15SB0280206-D	3.8 U 15SS0290002	4.08 U 15SS0300002
ACETOPHENONE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
ANILINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
ANTHRACENE	3.94 U 15SS0250002	3.71 U 15SS0260002	3.72 U 15SS0270002	3.63 U 15SS0280002 16 J 15SB0280206-D	3.8 U 15SS0290002	4.08 U 15SS0300002
ARAMITE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
BENZO(A)ANTHRACENE	3.94 U 15SS0250002	3.71 U 15SS0260002	3.72 U 15SS0270002	3.63 U 15SS0280002 22 J 15SB0280206-D	15 15SS0290002	4.08 U 15SS0300002
BENZO(A)PYRENE	3.94 U 15SS0250002	3.71 U 15SS0260002	3.72 U 15SS0270002	3.63 U 15SS0280002 29 J 15SB0280206-D	13 J 15SS0290002	4.08 U 15SS0300002
BENZO(B)FLUORANTHENE	3.94 U 15SS0250002	3.71 U 15SS0260002	3.72 U 15SS0270002	3.63 U 15SS0280002 29 J 15SB0280206-D	13 J 15SS0290002	4.08 U 15SS0300002
BENZO(G,H,I)PERYLENE	3.94 U 15SS0250002	3.71 U 15SS0260002	3.72 U 15SS0270002	3.63 U 15SS0280002 39 J 15SB0280206-D	16 J 15SS0290002	4.08 U 15SS0300002
BENZO(K)FLUORANTHENE	3.94 U 15SS0250002	3.71 U 15SS0260002	3.72 U 15SS0270002	3.63 U 15SS0280002 14 J 15SB0280206-D	10 J 15SS0290002	4.08 U 15SS0300002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB025 12/11/2004	15SB026 12/11/2004	15SB027 12/11/2004	15SB028 12/11/2004	15SB029 12/9/2004	15SB030 12/14/2004
BENZYL ALCOHOL	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
BIS(2-CHLOROETHOXY)METHANE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
BIS(2-CHLOROETHYL)ETHER	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
BIS(2-ETHYLHEXYL)PHTHALATE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	93 J 15SS0290002	760 15SS0300002
BUTYL BENZYL PHTHALATE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
CHLOROBENZILATE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
CHRYSENE	3.94 U 15SS0250002	3.71 U 15SS0260002	3.72 U 15SS0270002	3.63 U 15SS0280002 29 J 15SB0280206-D	11 15SS0290002	4.08 U 15SS0300002
DI-N-BUTYL PHTHALATE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	120 J 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
DI-N-OCTYL PHTHALATE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	920 J 15SS0300002
DIALLATE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
DIBENZO(A,H)ANTHRACENE	3.94 U 15SS0250002	3.71 U 15SS0260002	3.72 U 15SS0270002	3.63 U 15SS0280002 3.59 UJ 15SB0280206-D	3.8 UJ 15SS0290002	4.08 U 15SS0300002
DIBENZOFURAN	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
DIETHYL PHTHALATE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
DIMETHYL PHTHALATE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
DIPHENYLAMINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
ETHYL METHANE SULFONATE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB025 12/11/2004	15SB026 12/11/2004	15SB027 12/11/2004	15SB028 12/11/2004	15SB029 12/9/2004	15SB030 12/14/2004
FLUORANTHENE	5 J 15SS0250002	3.71 U 15SS0260002	3.72 U 15SS0270002	10 15SS0280002 58 J 15SB0280206-D	21 15SS0290002	4.08 U 15SS0300002
FLUORENE	3.94 U 15SS0250002	3.71 U 15SS0260002	3.72 U 15SS0270002	3.63 U 15SS0280002 12 15SB0280206-D	3.8 U 15SS0290002	4.08 U 15SS0300002
HEXACHLOROBENZENE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 UJ 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
HEXACHLOROBUTADIENE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
HEXACHLOROCYCLOPENTADIENE	80 UJ 15SS0250002	75.4 UJ 15SS0260002	75.5 UJ 15SS0270002	73.8 UJ 15SS0280002 72.9 UJ 15SB0280206-D	77.1 UJ 15SS0290002	82.8 UJ 15SS0300002
HEXACHLOROETHANE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
HEXACHLOROPROPENE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
INDENO(1,2,3-CD)PYRENE	3.94 U 15SS0250002	3.71 U 15SS0260002	3.72 U 15SS0270002	3.63 U 15SS0280002 28 J 15SB0280206-D	11 J 15SS0290002	4.08 U 15SS0300002
ISODRIN	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
ISOPHORONE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
ISOSAFROLE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
KEPONE	80 UJ 15SS0250002	75.4 UJ 15SS0260002	75.5 UJ 15SS0270002	73.8 UJ 15SS0280002 72.9 UJ 15SB0280206-D	77.1 UJ 15SS0290002	82.8 UJ 15SS0300002
METHAPYRILENE	80 UJ 15SS0250002	75.4 UJ 15SS0260002	75.5 UJ 15SS0270002	73.8 UJ 15SS0280002 72.9 UJ 15SB0280206-D	77.1 UJ 15SS0290002	82.8 UJ 15SS0300002
METHYL METHANE SULFONATE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
N-NITROSO-DI-N-BUTYLAMINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
N-NITROSO-DI-N-PROPYLAMINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 UJ 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002

APPE[illegible]BLE G-1
RESULTS FOR CHEMICALS ANA[illegible]ED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB025 12/11/2004	15SB026 12/11/2004	15SB027 12/11/2004	15SB028 12/11/2004	15SB029 12/9/2004	15SB030 12/14/2004
N-NITROSODIETHYLAMINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
N-NITROSODIMETHYLAMINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 UJ 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
N-NITROSODIPHENYLAMINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
N-NITROSOMETHYLETHYLAMINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
N-NITROSOMORPHOLINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 UJ 15SB0280206-D	77.1 UJ 15SS0290002	82.8 U 15SS0300002
N-NITROSOPIPERIDINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 UJ 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
N-NITROSOPYRROLIDINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
NAPHTHALENE	3.94 U 15SS0250002	3.71 U 15SS0260002	3.72 U 15SS0270002	3.63 U 15SS0280002 9 J 15SB0280206-D	3.8 U 15SS0290002	4.08 U 15SS0300002
O,O,O-TRIETHYL PHOSPHOROTHIOATE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
O-TOLUIDINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
P-(DIMETHYLAMINO)AZOBENZENE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
PENTACHLOROBENZENE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
PENTACHLOROETHANE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
PENTACHLORONITROBENZENE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
PHENACETIN	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
PHENANTHRENE	5 J 15SS0250002	3.71 U 15SS0260002	3.72 U 15SS0270002	9 15SS0280002 88 J 15SB0280206-D	12 15SS0290002	4.08 U 15SS0300002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB025 12/11/2004	15SB026 12/11/2004	15SB027 12/11/2004	15SB028 12/11/2004	15SB029 12/9/2004	15SB030 12/14/2004
PHENOL	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
PRONAMIDE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
PYRENE	3.94 U 15SS0250002	3.71 U 15SS0260002	3.72 U 15SS0270002	7 J 15SS0280002 78 J 15SB0280206-D	32 15SS0290002	4.08 U 15SS0300002
PYRIDINE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
SAFROLE	80 U 15SS0250002	75.4 U 15SS0260002	75.5 U 15SS0270002	73.8 U 15SS0280002 72.9 U 15SB0280206-D	77.1 U 15SS0290002	82.8 U 15SS0300002
Pesticides PCBs (ug/kg)						
4,4'-DDD					1.55 U 15SS0290002	1.67 U 15SS0300002
4,4'-DDE					1.55 U 15SS0290002	1.67 U 15SS0300002
4,4'-DDT					1.55 U 15SS0290002	1.67 U 15SS0300002
ALDRIN					0.748 U 15SS0290002	0.803 U 15SS0300002
ALPHA-BHC					0.748 U 15SS0290002	0.803 U 15SS0300002
ALPHA-CHLORDANE					3.7 15SS0290002	0.803 U 15SS0300002
AROCLOR-1016					10.4 U 15SS0290002	11.1 U 15SS0300002
AROCLOR-1221					10.4 U 15SS0290002	11.1 U 15SS0300002
AROCLOR-1232					10.4 U 15SS0290002	11.1 U 15SS0300002
AROCLOR-1242					10.4 U 15SS0290002	11.1 U 15SS0300002
AROCLOR-1248					10.4 U 15SS0290002	11.1 U 15SS0300002
AROCLOR-1254					10.4 U 15SS0290002	11.1 U 15SS0300002
AROCLOR-1260					10.4 U 15SS0290002	11.1 U 15SS0300002
BETA-BHC					0.748 U 15SS0290002	0.803 U 15SS0300002
DELTA-BHC					0.748 U 15SS0290002	0.803 U 15SS0300002
DIELDRIN					1.55 U 15SS0290002	1.67 U 15SS0300002

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB025 12/11/2004	15SB026 12/11/2004	15SB027 12/11/2004	15SB028 12/11/2004	15SB029 12/9/2004	15SB030 12/14/2004
ENDOSULFAN I					0.748 U 15SS0290002	0.803 U 15SS0300002
ENDOSULFAN II					1.55 U 15SS0290002	1.67 U 15SS0300002
ENDOSULFAN SULFATE					1.55 U 15SS0290002	1.67 U 15SS0300002
ENDRIN ALDEHYDE					1.55 U 15SS0290002	1.67 U 15SS0300002
ENDRIN KETONE					1.55 U 15SS0290002	1.67 U 15SS0300002
ENDRIN					1.55 U 15SS0290002	1.67 U 15SS0300002
GAMMA-BHC (LINDANE)					0.748 U 15SS0290002	0.803 U 15SS0300002
GAMMA-CHLORDANE					3.6 15SS0290002	0.803 U 15SS0300002
HEPTACHLOR EPOXIDE					0.748 U 15SS0290002	0.803 U 15SS0300002
HEPTACHLOR					0.748 U 15SS0290002	0.803 U 15SS0300002
METHOXYCHLOR					7.48 U 15SS0290002	8.03 U 15SS0300002
TOXAPHENE					19.6 U 15SS0290002	21 U 15SS0300002
Herbicides (ug/kg)						
2,4,5-T					1.55 U 15SS0290002	1.67 U 15SS0300002
2,4,5-TP (SILVEX)					1.55 U 15SS0290002	1.67 U 15SS0300002
2,4-D					1.55 U 15SS0290002	1.67 U 15SS0300002
DINOSEB					1.55 U 15SS0290002	1.67 U 15SS0300002
HEXACHLOROPHENE					0.978 U 15SS0290002	1.05 U 15SS0300002
PENTACHLOROPHENOL					0.518 U 15SS0290002	0.556 U 15SS0300002
Inorganics (mg/kg)						
ALUMINUM					17500 J 15SS0290002	21200 J 15SS0300002
ANTIMONY					0.05 U 15SS0290002	0.21 U 15SS0300002
ARSENIC					6.6 J 15SS0290002	13.7 J 15SS0300002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB025 12/11/2004	15SB026 12/11/2004	15SB027 12/11/2004	15SB028 12/11/2004	15SB029 12/9/2004	15SB030 12/14/2004
BARIUM					61.5 J 15SS0290002	93 J 15SS0300002
BERYLLIUM					0.52 15SS0290002	0.73 15SS0300002
CADMIUM					0.27 J 15SS0290002	0.3 J 15SS0300002
CALCIUM					21200 J 15SS0290002	1190 J 15SS0300002
CHROMIUM					20.6 J 15SS0290002	39.9 J 15SS0300002
COBALT					4.8 J 15SS0290002	14 J 15SS0300002
COPPER					9.8 J 15SS0290002	8.7 J 15SS0300002
IRON					18500 J 15SS0290002	31800 J 15SS0300002
LEAD					13.5 J 15SS0290002	20.5 J 15SS0300002
MAGNESIUM					2720 J 15SS0290002	1770 J 15SS0300002
MANGANESE					196 J 15SS0290002	406 J 15SS0300002
MERCURY					0.013 J 15SS0290002	0.043 J 15SS0300002
NICKEL					12.3 J 15SS0290002	15.2 J 15SS0300002
POTASSIUM					1380 J 15SS0290002	1430 J 15SS0300002
SELENIUM					0.28 J 15SS0290002	0.81 15SS0300002
SILVER					0.049 U 15SS0290002	0.049 U 15SS0300002

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB025 12/11/2004	15SB026 12/11/2004	15SB027 12/11/2004	15SB028 12/11/2004	15SB029 12/9/2004	15SB030 12/14/2004
SODIUM					62.7 U 15SS0290002	69.8 U 15SS0300002
THALLIUM					0.23 J 15SS0290002	0.36 J 15SS0300002
TIN					0.28 U 15SS0290002	0.36 U 15SS0300002
VANADIUM					28 15SS0290002	46.6 15SS0300002
ZINC					32 J 15SS0290002	38.3 J 15SS0300002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB031 12/9/2004	15SB032 12/9/2004	15SB033 12/14/2004	15SB034 12/14/2004	15SB035 12/9/2004	15SB036 12/14/2004
Volatile Organics (ug/kg)						
1,1,1,2-TETRACHLOROETHANE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
1,1,1-TRICHLOROETHANE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
1,1,2,2-TETRACHLOROETHANE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
1,1,2-TRICHLOROETHANE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
1,1-DICHLOROETHANE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
1,1-DICHLOROETHENE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
1,2,3-TRICHLOROPROPANE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
1,2-DIBROMO-3-CHLOROPROPANE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
1,2-DIBROMOETHANE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
1,2-DICHLOROETHANE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
1,2-DICHLOROPROPANE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
2-BUTANONE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 7 J 15SB0310610 12 J 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 1 J 15SB0350206	3 J 15SS0360002

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB031 12/9/2004	15SB032 12/9/2004	15SB033 12/14/2004	15SB034 12/14/2004	15SB035 12/9/2004	15SB036 12/14/2004
2-HEXANONE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
3-CHLOROPROPENE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
4-METHYL-2-PENTANONE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
ACETONE	25 U 15SS0310002 13 BU 15SB0310206 28 BU 15SB0310610 72 BJ 15SB0311014	10 U 15SS0320002 5 BU 15SB0320206	9 U 15SS0330002	9 U 15SS0340002	10 U 15SS0350002 19 BU 15SB0350206	19 U 15SS0360002
ACETONITRILE	40.4 UR 15SS0310002 42.8 UR 15SB0310206 42.3 UR 15SB0310610 44.7 UR 15SB0311014	41.8 UR 15SS0320002 40.5 UR 15SB0320206	43.3 UR 15SS0330002	36.6 UR 15SS0340002	49 UR 15SS0350002 31.8 UR 15SB0350206	48.8 UR 15SS0360002
ACROLEIN	1.01 UR 15SS0310002 1.07 UR 15SB0310206 1.06 UR 15SB0310610 1.12 UR 15SB0311014	1.04 UR 15SS0320002 1.01 UR 15SB0320206	1.08 UR 15SS0330002	0.914 UR 15SS0340002	1.22 UR 15SS0350002 0.796 UR 15SB0350206	1.22 UR 15SS0360002
ACRYLONITRILE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
BENZENE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
BROMODICHLOROMETHANE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
BROMOFORM	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
BROMOMETHANE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
CARBON DISULFIDE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 UJ 15SS0330002	0.914 UJ 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 UJ 15SS0360002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB031 12/9/2004	15SB032 12/9/2004	15SB033 12/14/2004	15SB034 12/14/2004	15SB035 12/9/2004	15SB036 12/14/2004
CARBON TETRACHLORIDE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
CHLOROBENZENE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
CHLORODIBROMOMETHANE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
CHLOROETHANE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
CHLOROFORM	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
CHLOROMETHANE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
CHLOROPRENE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
CIS-1,2-DICHLOROETHENE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
CIS-1,3-DICHLOROPROPENE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
DIBROMOMETHANE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
DICHLORODIFLUOROMETHANE	1.01 UJ 15SS0310002 1.07 UR 15SB0310206 1.06 UR 15SB0310610 1.12 UR 15SB0311014	1.04 U 15SS0320002 1.01 UR 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 UR 15SB0350206	1.22 U 15SS0360002
ETHYL METHACRYLATE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002

APPE[illegible]LE G-1
RESULTS FOR CHEMICALS ANAL[illegible]D IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB031 12/9/2004	15SB032 12/9/2004	15SB033 12/14/2004	15SB034 12/14/2004	15SB035 12/9/2004	15SB036 12/14/2004
ETHYLBENZENE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
ISOBUTANOL	40.4 UR 15SS0310002 42.8 UR 15SB0310206 42.3 UR 15SB0310610 44.7 UR 15SB0311014	41.8 UR 15SS0320002 40.5 UR 15SB0320206	43.3 UR 15SS0330002	36.6 UR 15SS0340002	49 UR 15SS0350002 31.8 UR 15SB0350206	48.8 UR 15SS0360002
METHACRYLONITRILE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
METHYL IODIDE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
METHYL METHACRYLATE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
METHYL TERT-BUTYL ETHER	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
METHYLENE CHLORIDE	16 J 15SS0310002 15 J 15SB0310206 4 J 15SB0310610 33 J 15SB0311014	19 J 15SS0320002 10 J 15SB0320206	28 J 15SS0330002	8 J 15SS0340002	27 J 15SS0350002 20 J 15SB0350206	7 J 15SS0360002
PROPIONITRILE	40.4 UR 15SS0310002 42.8 UR 15SB0310206 42.3 UR 15SB0310610 44.7 UR 15SB0311014	41.8 UR 15SS0320002 40.5 UR 15SB0320206	43.3 UR 15SS0330002	36.6 UR 15SS0340002	49 UR 15SS0350002 31.8 UR 15SB0350206	48.8 UR 15SS0360002
STYRENE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
TETRACHLOROETHENE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
TOLUENE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
TOTAL XYLENES	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.13 J 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB031 12/9/2004	15SB032 12/9/2004	15SB033 12/14/2004	15SB034 12/14/2004	15SB035 12/9/2004	15SB036 12/14/2004
TRANS-1,2-DICHLOROETHENE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
TRANS-1,3-DICHLOROPROPENE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
TRANS-1,4-DICHLORO-2-BUTENE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
TRICHLOROETHENE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
TRICHLOROFLUOROMETHANE	3 J 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 3 J 15SB0311014	2 J 15SS0320002 1.01 U 15SB0320206	3 J 15SS0330002	0.914 U 15SS0340002	2 J 15SS0350002 2 J 15SB0350206	1.22 U 15SS0360002
VINYL ACETATE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 UJ 15SS0330002	0.914 UJ 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 UJ 15SS0360002
VINYL CHLORIDE	1.01 UJ 15SS0310002 1.07 U 15SB0310206 1.06 U 15SB0310610 1.12 U 15SB0311014	1.04 U 15SS0320002 1.01 U 15SB0320206	1.08 U 15SS0330002	0.914 U 15SS0340002	1.22 U 15SS0350002 0.796 U 15SB0350206	1.22 U 15SS0360002
Semivolatile Organics (ug/kg)						
1,2,4,5-TETRACHLOROBENZENE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
1,2,4-TRICHLOROBENZENE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
1,2-DICHLOROBENZENE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
1,3-DICHLOROBENZENE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
1,4-DICHLOROBENZENE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
1,4-DIOXANE	114 U 15SS0310002	120 U 15SS0320002	122 U 15SS0330002	117 U 15SS0340002	128 U 15SS0350002	127 U 15SS0360002

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB031 12/9/2004	15SB032 12/9/2004	15SB033 12/14/2004	15SB034 12/14/2004	15SB035 12/9/2004	15SB036 12/14/2004
1,4-NAPHTHOQUINONE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
1,4-PHENYLENEDIAMINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
1-NAPHTHYLAMINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
2,2'-OXYBIS(1-CHLOROPROPANE)	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
2,3,4,6-TETRACHLOROPHENOL	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
2,4,5-TRICHLOROPHENOL	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
2,4,6-TRICHLOROPHENOL	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
2,4-DICHLOROPHENOL	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
2,4-DIMETHYLPHENOL	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
2,4-DINITROPHENOL	76 UJ 15SS0310002	80.4 UJ 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
2,6-DICHLOROPHENOL	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
2-ACETYLAMINOFLUORENE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
2-CHLORONAPHTHALENE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
2-CHLOROPHENOL	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
2-METHYLNAPHTHALENE	3.75 U 15SS0310002	3.96 U 15SS0320002	4.01 U 15SS0330002	3.87 U 15SS0340002	4.21 U 15SS0350002	4.19 U 15SS0360002
2-METHYLPHENOL	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB031 12/9/2004	15SB032 12/9/2004	15SB033 12/14/2004	15SB034 12/14/2004	15SB035 12/9/2004	15SB036 12/14/2004
2-NAPHTHYLAMINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
2-NITROANILINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
2-NITROPHENOL	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
2-PICOLINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
3&4-METHYLPHENOL	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
3,3'-DICHLOROBENZIDINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
3,3'-DIMETHYLBENZIDINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 UJ 15SS0330002	78.5 UJ 15SS0340002	85.5 UJ 15SS0350002	85.1 UJ 15SS0360002
3-METHYLCHOLANTHRENE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
3-NITROANILINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
4,6-DINITRO-2-METHYLPHENOL	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
4-AMINOBIPHENYL	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
4-BROMOPHENYL PHENYL ETHER	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
4-CHLORO-3-METHYLPHENOL	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
4-CHLOROANILINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
4-CHLOROPHENYL PHENYL ETHER	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
4-NITROANILINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB031 12/9/2004	15SB032 12/9/2004	15SB033 12/14/2004	15SB034 12/14/2004	15SB035 12/9/2004	15SB036 12/14/2004
4-NITROPHENOL	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
4-NITROQUINOLINE-1-OXIDE	76 UR 15SS0310002	80.4 UR 15SS0320002	81.4 UR 15SS0330002	78.5 UR 15SS0340002	85.5 UR 15SS0350002	85.1 UR 15SS0360002
5-NITRO-O-TOLUIDINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
7,12-DIMETHYLBENZ(A)ANTHRACENE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
A,A-DIMETHYLPHENETHYLAMINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
ACENAPHTHENE	3.75 U 15SS0310002	3.96 U 15SS0320002	4.01 U 15SS0330002	3.87 U 15SS0340002	4.21 U 15SS0350002	4.19 U 15SS0360002
ACENAPHTHYLENE	3.75 U 15SS0310002	3.96 U 15SS0320002	4.01 U 15SS0330002	3.87 U 15SS0340002	4.21 U 15SS0350002	4.19 U 15SS0360002
ACETOPHENONE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
ANILINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
ANTHRACENE	3.75 U 15SS0310002	3.96 U 15SS0320002	4.01 U 15SS0330002	3.87 U 15SS0340002	4.21 U 15SS0350002	4.19 U 15SS0360002
ARAMITE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
BENZO(A)ANTHRACENE	3.75 U 15SS0310002	3.96 U 15SS0320002	12 15SS0330002	3.87 U 15SS0340002	17 J 15SS0350002	5 J 15SS0360002
BENZO(A)PYRENE	3.75 UJ 15SS0310002	3.96 UJ 15SS0320002	7 J 15SS0330002	3.87 U 15SS0340002	19 J 15SS0350002	4.19 U 15SS0360002
BENZO(B)FLUORANTHENE	3.75 UJ 15SS0310002	3.96 UJ 15SS0320002	9 15SS0330002	3.87 U 15SS0340002	23 J 15SS0350002	4.19 U 15SS0360002
BENZO(G,H,I)PERYLENE	3.75 UJ 15SS0310002	3.96 UJ 15SS0320002	17 15SS0330002	3.87 U 15SS0340002	24 J 15SS0350002	4.19 U 15SS0360002
BENZO(K)FLUORANTHENE	3.75 UJ 15SS0310002	3.96 UJ 15SS0320002	6 J 15SS0330002	3.87 U 15SS0340002	10 J 15SS0350002	4.19 U 15SS0360002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB031 12/9/2004	15SB032 12/9/2004	15SB033 12/14/2004	15SB034 12/14/2004	15SB035 12/9/2004	15SB036 12/14/2004
BENZYL ALCOHOL	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
BIS(2-CHLOROETHOXY)METHANE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
BIS(2-CHLOROETHYL)ETHER	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
BIS(2-ETHYLHEXYL)PHTHALATE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	85 J 15SS0340002	85.5 U 15SS0350002	170 J 15SS0360002
BUTYL BENZYL PHTHALATE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
CHLOROBENZILATE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
CHRYSENE	3.75 U 15SS0310002	3.96 U 15SS0320002	18 15SS0330002	3.87 U 15SS0340002	20 J 15SS0350002	6 J 15SS0360002
DI-N-BUTYL PHTHALATE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
DI-N-OCTYL PHTHALATE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
DIALLATE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
DIBENZO(A,H)ANTHRACENE	3.75 UJ 15SS0310002	3.96 UJ 15SS0320002	4.01 U 15SS0330002	3.87 U 15SS0340002	4.21 UJ 15SS0350002	4.19 U 15SS0360002
DIBENZOFURAN	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
DIETHYL PHTHALATE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
DIMETHYL PHTHALATE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
DIPHENYLAMINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
ETHYL METHANE SULFONATE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002

APPEN[illegible]BLE G-1
RESULTS FOR CHEMICALS ANA[illegible]D IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB031 12/9/2004	15SB032 12/9/2004	15SB033 12/14/2004	15SB034 12/14/2004	15SB035 12/9/2004	15SB036 12/14/2004
FLUORANTHENE	3.75 U 15SS0310002	5 J 15SS0320002	38 15SS0330002	6 J 15SS0340002	29 15SS0350002	11 15SS0360002
FLUORENE	3.75 U 15SS0310002	3.96 U 15SS0320002	4.01 U 15SS0330002	3.87 U 15SS0340002	4.21 U 15SS0350002	4.19 U 15SS0360002
HEXACHLOROBENZENE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
HEXACHLOROBUTADIENE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
HEXACHLOROCYCLOPENTADIENE	76 UJ 15SS0310002	80.4 UJ 15SS0320002	81.4 UJ 15SS0330002	78.5 UJ 15SS0340002	85.5 UJ 15SS0350002	85.1 UJ 15SS0360002
HEXACHLOROETHANE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
HEXACHLOROPROPENE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
INDENO(1,2,3-CD)PYRENE	3.75 UJ 15SS0310002	3.96 UJ 15SS0320002	4.01 U 15SS0330002	3.87 U 15SS0340002	19 J 15SS0350002	4.19 U 15SS0360002
ISODRIN	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
ISOPHORONE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
ISOSAFROLE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
KEPONE	76 UJ 15SS0310002	80.4 UJ 15SS0320002	81.4 UJ 15SS0330002	78.5 UJ 15SS0340002	85.5 UR 15SS0350002	85.1 UJ 15SS0360002
METHAPYRILENE	76 UJ 15SS0310002	80.4 UJ 15SS0320002	81.4 UJ 15SS0330002	78.5 UJ 15SS0340002	85.5 UJ 15SS0350002	85.1 UJ 15SS0360002
METHYL METHANE SULFONATE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
N-NITROSO-DI-N-BUTYLAMINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
N-NITROSO-DI-N-PROPYLAMINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB031 12/9/2004	15SB032 12/9/2004	15SB033 12/14/2004	15SB034 12/14/2004	15SB035 12/9/2004	15SB036 12/14/2004
N-NITROSODIETHYLAMINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
N-NITROSODIMETHYLAMINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
N-NITROSODIPHENYLAMINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
N-NITROSOMETHYLETHYLAMINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
N-NITROSOMORPHOLINE	76 UJ 15SS0310002	80.4 UJ 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
N-NITROSOPIPERIDINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
N-NITROSOPYRROLIDINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
NAPHTHALENE	3.75 U 15SS0310002	3.96 U 15SS0320002	4.01 U 15SS0330002	3.87 U 15SS0340002	4.21 U 15SS0350002	4.19 U 15SS0360002
O,O,O-TRIETHYL PHOSPHOROTHIOATE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
O-TOLUIDINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
P-(DIMETHYLAMINO)AZOBENZENE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
PENTACHLOROBENZENE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
PENTACHLOROETHANE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
PENTACHLORONITROBENZENE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
PHENACETIN	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
PHENANTHRENE	3.75 U 15SS0310002	5 J 15SS0320002	22 15SS0330002	3.87 U 15SS0340002	20 15SS0350002	7 J 15SS0360002

APPEN[illegible]LE G-1
RESULTS FOR CHEMICALS ANA[illegible]D IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB031 12/9/2004	15SB032 12/9/2004	15SB033 12/14/2004	15SB034 12/14/2004	15SB035 12/9/2004	15SB036 12/14/2004
PHENOL	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
PRONAMIDE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
PYRENE	3.75 U 15SS0310002	7 J 15SS0320002	30 15SS0330002	6 J 15SS0340002	47 J 15SS0350002	10 15SS0360002
PYRIDINE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
SAFROLE	76 U 15SS0310002	80.4 U 15SS0320002	81.4 U 15SS0330002	78.5 U 15SS0340002	85.5 U 15SS0350002	85.1 U 15SS0360002
Pesticides PCBs (ug/kg)						
4,4'-DDD	1.53 U 15SS0310002	1.62 U 15SS0320002	1.64 U 15SS0330002	1.58 U 15SS0340002	1.72 U 15SS0350002	1.72 U 15SS0360002
4,4'-DDE	1.53 U 15SS0310002	1.62 U 15SS0320002	1.64 U 15SS0330002	1.58 U 15SS0340002	1.72 U 15SS0350002	1.72 U 15SS0360002
4,4'-DDT	1.53 U 15SS0310002	1.62 U 15SS0320002	1.64 U 15SS0330002	1.58 U 15SS0340002	1.72 U 15SS0350002	1.72 U 15SS0360002
ALDRIN	0.738 U 15SS0310002	0.78 U 15SS0320002	0.79 U 15SS0330002	0.762 U 15SS0340002	0.829 U 15SS0350002	0.826 U 15SS0360002
ALPHA-BHC	0.738 U 15SS0310002	0.78 U 15SS0320002	0.79 U 15SS0330002	0.762 U 15SS0340002	0.829 U 15SS0350002	0.826 U 15SS0360002
ALPHA-CHLORDANE	0.738 U 15SS0310002	0.78 U 15SS0320002	0.79 U 15SS0330002	0.762 U 15SS0340002	0.829 U 15SS0350002	0.826 U 15SS0360002
AROCLOR-1016	10.2 U 15SS0310002	10.8 U 15SS0320002	10.9 U 15SS0330002	10.6 U 15SS0340002	11.5 U 15SS0350002	11.4 U 15SS0360002
AROCLOR-1221	10.2 U 15SS0310002	10.8 U 15SS0320002	10.9 U 15SS0330002	10.6 U 15SS0340002	11.5 U 15SS0350002	11.4 U 15SS0360002
AROCLOR-1232	10.2 U 15SS0310002	10.8 U 15SS0320002	10.9 U 15SS0330002	10.6 U 15SS0340002	11.5 U 15SS0350002	11.4 U 15SS0360002
AROCLOR-1242	10.2 U 15SS0310002	10.8 U 15SS0320002	10.9 U 15SS0330002	10.6 U 15SS0340002	11.5 U 15SS0350002	11.4 U 15SS0360002
AROCLOR-1248	10.2 U 15SS0310002	10.8 U 15SS0320002	10.9 U 15SS0330002	10.6 U 15SS0340002	11.5 U 15SS0350002	11.4 U 15SS0360002
AROCLOR-1254	10.2 U 15SS0310002	10.8 U 15SS0320002	10.9 U 15SS0330002	10.6 U 15SS0340002	11.5 U 15SS0350002	11.4 U 15SS0360002
AROCLOR-1260	10.2 U 15SS0310002	10.8 U 15SS0320002	10.9 U 15SS0330002	20 15SS0340002	11.5 U 15SS0350002	32 15SS0360002
BETA-BHC	0.738 U 15SS0310002	0.78 U 15SS0320002	0.79 U 15SS0330002	0.762 U 15SS0340002	0.829 U 15SS0350002	0.826 U 15SS0360002
DELTA-BHC	0.738 U 15SS0310002	0.78 U 15SS0320002	0.79 U 15SS0330002	0.762 U 15SS0340002	0.829 U 15SS0350002	0.826 U 15SS0360002
DIELDRIN	1.53 U 15SS0310002	1.62 U 15SS0320002	1.64 U 15SS0330002	1.58 U 15SS0340002	1.72 U 15SS0350002	1.72 U 15SS0360002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB031 12/9/2004	15SB032 12/9/2004	15SB033 12/14/2004	15SB034 12/14/2004	15SB035 12/9/2004	15SB036 12/14/2004
ENDOSULFAN I	0.738 U 15SS0310002	0.78 U 15SS0320002	0.79 U 15SS0330002	0.762 U 15SS0340002	0.829 U 15SS0350002	0.826 U 15SS0360002
ENDOSULFAN II	1.53 U 15SS0310002	1.62 U 15SS0320002	1.64 U 15SS0330002	1.58 U 15SS0340002	1.72 U 15SS0350002	1.72 U 15SS0360002
ENDOSULFAN SULFATE	1.53 U 15SS0310002	1.62 U 15SS0320002	1.64 U 15SS0330002	1.58 U 15SS0340002	1.72 U 15SS0350002	1.72 U 15SS0360002
ENDRIN ALDEHYDE	1.53 U 15SS0310002	1.62 U 15SS0320002	1.64 U 15SS0330002	1.58 U 15SS0340002	1.72 U 15SS0350002	1.72 U 15SS0360002
ENDRIN KETONE	1.53 U 15SS0310002	1.62 U 15SS0320002	1.64 U 15SS0330002	1.58 U 15SS0340002	1.72 U 15SS0350002	1.72 U 15SS0360002
ENDRIN	1.53 U 15SS0310002	1.62 U 15SS0320002	1.64 U 15SS0330002	1.58 U 15SS0340002	1.72 U 15SS0350002	1.72 U 15SS0360002
GAMMA-BHC (LINDANE)	0.738 U 15SS0310002	0.78 U 15SS0320002	0.79 U 15SS0330002	0.762 U 15SS0340002	0.829 U 15SS0350002	0.826 U 15SS0360002
GAMMA-CHLORDANE	0.738 U 15SS0310002	0.78 U 15SS0320002	0.79 U 15SS0330002	0.762 U 15SS0340002	0.829 U 15SS0350002	0.826 U 15SS0360002
HEPTACHLOR EPOXIDE	0.738 U 15SS0310002	0.78 U 15SS0320002	0.79 U 15SS0330002	0.762 U 15SS0340002	0.829 U 15SS0350002	0.826 U 15SS0360002
HEPTACHLOR	0.738 U 15SS0310002	0.78 U 15SS0320002	0.79 U 15SS0330002	0.762 U 15SS0340002	0.829 U 15SS0350002	0.826 U 15SS0360002
METHOXYCHLOR	7.38 U 15SS0310002	7.8 U 15SS0320002	7.9 U 15SS0330002	7.62 U 15SS0340002	8.29 U 15SS0350002	8.26 U 15SS0360002
TOXAPHENE	19.3 U 15SS0310002	20.4 U 15SS0320002	20.7 U 15SS0330002	19.9 U 15SS0340002	21.7 U 15SS0350002	21.6 U 15SS0360002
Herbicides (ug/kg)						
2,4,5-T	1.53 U 15SS0310002	1.62 U 15SS0320002	1.64 U 15SS0330002	1.58 U 15SS0340002	1.72 U 15SS0350002	1.72 U 15SS0360002
2,4,5-TP (SILVEX)	1.53 U 15SS0310002	1.62 U 15SS0320002	1.64 U 15SS0330002	1.58 U 15SS0340002	1.72 U 15SS0350002	1.72 U 15SS0360002
2,4-D	1.53 U 15SS0310002	1.62 U 15SS0320002	1.64 U 15SS0330002	1.58 U 15SS0340002	1.72 U 15SS0350002	1.72 U 15SS0360002
DINOSEB	1.53 U 15SS0310002	1.62 U 15SS0320002	1.64 U 15SS0330002	1.58 U 15SS0340002	1.72 U 15SS0350002	1.72 U 15SS0360002
HEXACHLOROPHENE	0.965 U 15SS0310002	1.02 U 15SS0320002	1.03 U 15SS0330002	0.996 U 15SS0340002	1.08 U 15SS0350002	1.08 U 15SS0360002
PENTACHLOROPHENOL	0.511 U 15SS0310002	0.54 U 15SS0320002	0.547 U 15SS0330002	0.528 U 15SS0340002	0.574 U 15SS0350002	0.572 U 15SS0360002
Inorganics (mg/kg)						
ALUMINUM	29900 J 15SS0310002	13900 J 15SS0320002	14300 J 15SS0330002	15800 J 15SS0340002	19500 J 15SS0350002	12500 J 15SS0360002
ANTIMONY	0.022 U 15SS0310002	0.19 U 15SS0320002	0.46 U 15SS0330002	0.44 U 15SS0340002	0.25 U 15SS0350002	0.27 U 15SS0360002
ARSENIC	3.4 J 15SS0310002	6.2 J 15SS0320002	12.7 J 15SS0330002	5.8 J 15SS0340002	14.9 J 15SS0350002	20.7 J 15SS0360002

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB031 12/9/2004	15SB032 12/9/2004	15SB033 12/14/2004	15SB034 12/14/2004	15SB035 12/9/2004	15SB036 12/14/2004
BARIUM	76.6 J 15SS0310002	69.2 J 15SS0320002	74.8 J 15SS0330002	68.6 J 15SS0340002	102 J 15SS0350002	98 J 15SS0360002
BERYLLIUM	0.64 15SS0310002	0.81 15SS0320002	0.62 15SS0330002	0.52 15SS0340002	1.6 15SS0350002	1.5 15SS0360002
CADMIUM	0.21 J 15SS0310002	0.21 J 15SS0320002	0.32 J 15SS0330002	0.36 J 15SS0340002	0.34 J 15SS0350002	0.37 J 15SS0360002
CALCIUM	2530 J 15SS0310002	1340 J 15SS0320002	1530 J 15SS0330002	7850 J 15SS0340002	1690 J 15SS0350002	1580 J 15SS0360002
CHROMIUM	31 J 15SS0310002	22.1 J 15SS0320002	29.5 J 15SS0330002	20.4 J 15SS0340002	34.4 J 15SS0350002	49.7 J 15SS0360002
COBALT	3.4 J 15SS0310002	10.9 J 15SS0320002	8.1 J 15SS0330002	6.2 J 15SS0340002	59.6 J 15SS0350002	9.2 J 15SS0360002
COPPER	10.5 J 15SS0310002	8.4 J 15SS0320002	16.8 J 15SS0330002	9.3 J 15SS0340002	11 J 15SS0350002	15.3 J 15SS0360002
IRON	19000 J 15SS0310002	23700 J 15SS0320002	51200 J 15SS0330002	16700 J 15SS0340002	48200 J 15SS0350002	57600 J 15SS0360002
LEAD	12.8 J 15SS0310002	15.6 J 15SS0320002	26.3 J 15SS0330002	21.5 J 15SS0340002	24.6 J 15SS0350002	21.6 J 15SS0360002
MAGNESIUM	1660 J 15SS0310002	1110 J 15SS0320002	1090 J 15SS0330002	1810 J 15SS0340002	1520 J 15SS0350002	790 J 15SS0360002
MANGANESE	58.3 J 15SS0310002	568 J 15SS0320002	423 J 15SS0330002	294 J 15SS0340002	4400 J 15SS0350002	857 J 15SS0360002
MERCURY	0.007 U 15SS0310002	0.025 J 15SS0320002	0.041 J 15SS0330002	0.023 J 15SS0340002	0.049 J 15SS0350002	0.063 J 15SS0360002
NICKEL	15.2 J 15SS0310002	11.7 J 15SS0320002	13.8 J 15SS0330002	12.3 J 15SS0340002	31.6 J 15SS0350002	16.8 J 15SS0360002
POTASSIUM	1660 J 15SS0310002	968 J 15SS0320002	1270 J 15SS0330002	1340 J 15SS0340002	1400 J 15SS0350002	974 J 15SS0360002
SELENIUM	0.11 J 15SS0310002	0.4 J 15SS0320002	0.76 15SS0330002	0.36 J 15SS0340002	0.78 15SS0350002	0.71 15SS0360002
SILVER	0.043 U 15SS0310002	0.048 U 15SS0320002	0.05 U 15SS0330002	0.043 U 15SS0340002	0.051 U 15SS0350002	0.06 U 15SS0360002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB031 12/9/2004	15SB032 12/9/2004	15SB033 12/14/2004	15SB034 12/14/2004	15SB035 12/9/2004	15SB036 12/14/2004
SODIUM	76.6 U 15SS0310002	81.8 U 15SS0320002	48.7 U 15SS0330002	56.3 U 15SS0340002	76.5 U 15SS0350002	35.3 U 15SS0360002
THALLIUM	0.35 J 15SS0310002	0.29 J 15SS0320002	0.33 J 15SS0330002	0.3 J 15SS0340002	0.43 J 15SS0350002	0.21 J 15SS0360002
TIN	0.38 U 15SS0310002	0.27 U 15SS0320002	0.32 U 15SS0330002	0.35 U 15SS0340002	0.28 U 15SS0350002	0.32 U 15SS0360002
VANADIUM	30.2 15SS0310002	27.1 15SS0320002	31.6 15SS0330002	26.9 15SS0340002	41.7 15SS0350002	57.4 15SS0360002
ZINC	24.6 J 15SS0310002	34.2 J 15SS0320002	50.4 J 15SS0330002	47.3 J 15SS0340002	63.2 J 15SS0350002	53.5 J 15SS0360002

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB037 12/9/2004	15SB038 12/14/2004	15SB039 12/10/2004	15SB040 12/10/2004	15SB041 12/14/2004	15SB042 12/10/2004
Volatile Organics (ug/kg)						
1,1,1,2-TETRACHLOROETHANE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
1,1,1-TRICHLOROETHANE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
1,1,2,2-TETRACHLOROETHANE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
1,1,2-TRICHLOROETHANE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
1,1-DICHLOROETHANE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
1,1-DICHLOROETHENE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
1,2,3-TRICHLOROPROPANE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
1,2-DIBROMO-3-CHLOROPROPANE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
1,2-DIBROMOETHANE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
1,2-DICHLOROETHANE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
1,2-DICHLOROPROPANE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
2-BUTANONE	3 J 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	6 J 15SS0420002 0.873 U 15SB0420206

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB037 12/9/2004	15SB038 12/14/2004	15SB039 12/10/2004	15SB040 12/10/2004	15SB041 12/14/2004	15SB042 12/10/2004
2-HEXANONE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
3-CHLOROPROPENE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
4-METHYL-2-PENTANONE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
ACETONE	32 U 15SS0370002 3 BU 15SB0370206	23 U 15SS0380002	3 U 15SS0390002	18 U 15SS0400002 3 J 15SB0400206	32 U 15SS0410002	28 J 15SS0420002 6 J 15SB0420206
ACETONITRILE	45.9 UR 15SS0370002 49.2 UR 15SB0370206	43.5 UR 15SS0380002	36.8 UR 15SS0390002	46.2 UR 15SS0400002 39.6 UR 15SB0400206	44.9 UR 15SS0410002	39.2 UR 15SS0420002 34.9 UR 15SB0420206
ACROLEIN	1.15 UR 15SS0370002 1.23 UR 15SB0370206	1.09 UR 15SS0380002	0.919 UR 15SS0390002	1.15 UR 15SS0400002 0.99 UR 15SB0400206	1.12 UR 15SS0410002	0.98 UR 15SS0420002 0.873 UR 15SB0420206
ACRYLONITRILE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
BENZENE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
BROMODICHLOROMETHANE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
BROMOFORM	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
BROMOMETHANE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
CARBON DISULFIDE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 UJ 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 UJ 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB037 12/9/2004	15SB038 12/14/2004	15SB039 12/10/2004	15SB040 12/10/2004	15SB041 12/14/2004	15SB042 12/10/2004
CARBON TETRACHLORIDE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
CHLOROBENZENE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
CHLORODIBROMOMETHANE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
CHLOROETHANE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
CHLOROFORM	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
CHLOROMETHANE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
CHLOROPRENE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
CIS-1,2-DICHLOROETHENE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	1 J 15SS0420002 0.873 U 15SB0420206
CIS-1,3-DICHLOROPROPENE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
DIBROMOMETHANE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
DICHLORODIFLUOROMETHANE	1.15 U 15SS0370002 1.23 UR 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
ETHYL METHACRYLATE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB037 12/9/2004	15SB038 12/14/2004	15SB039 12/10/2004	15SB040 12/10/2004	15SB041 12/14/2004	15SB042 12/10/2004
ETHYLBENZENE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
ISOBUTANOL	45.9 UR 15SS0370002 49.2 UR 15SB0370206	43.5 UR 15SS0380002	36.8 UR 15SS0390002	46.2 UR 15SS0400002 39.6 UR 15SB0400206	44.9 UR 15SS0410002	39.2 UR 15SS0420002 34.9 UR 15SB0420206
METHACRYLONITRILE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
METHYL IODIDE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
METHYL METHACRYLATE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
METHYL TERT-BUTYL ETHER	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
METHYLENE CHLORIDE	5 J 15SS0370002 20 J 15SB0370206	39 J 15SS0380002	14 J 15SS0390002	51 J 15SS0400002 0.99 UJ 15SB0400206	9 J 15SS0410002	5 U 15SS0420002 14 J 15SB0420206
PROPIONITRILE	45.9 UR 15SS0370002 49.2 UR 15SB0370206	43.5 UR 15SS0380002	36.8 UR 15SS0390002	46.2 UR 15SS0400002 39.6 UR 15SB0400206	44.9 UR 15SS0410002	39.2 UR 15SS0420002 34.9 UR 15SB0420206
STYRENE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
TETRACHLOROETHENE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
TOLUENE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
TOTAL XYLENES	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB037 12/9/2004	15SB038 12/14/2004	15SB039 12/10/2004	15SB040 12/10/2004	15SB041 12/14/2004	15SB042 12/10/2004
TRANS-1,2-DICHLOROETHENE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
TRANS-1,3-DICHLOROPROPENE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
TRANS-1,4-DICHLORO-2-BUTENE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
TRICHLOROETHENE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
TRICHLOROFLUOROMETHANE	1.15 U 15SS0370002 2 J 15SB0370206	2 J 15SS0380002	0.919 U 15SS0390002	2 J 15SS0400002 0.99 U 15SB0400206	2 J 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
VINYL ACETATE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 UJ 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 UJ 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
VINYL CHLORIDE	1.15 U 15SS0370002 1.23 U 15SB0370206	1.09 U 15SS0380002	0.919 U 15SS0390002	1.15 U 15SS0400002 0.99 U 15SB0400206	1.12 U 15SS0410002	0.98 U 15SS0420002 0.873 U 15SB0420206
Semivolatile Organics (ug/kg)						
1,2,4,5-TETRACHLOROBENZENE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
1,2,4-TRICHLOROBENZENE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
1,2-DICHLOROBENZENE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
1,3-DICHLOROBENZENE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
1,4-DICHLOROBENZENE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
1,4-DIOXANE	127 U 15SS0370002	121 U 15SS0380002	112 U 15SS0390002	130 U 15SS0400002	125 U 15SS0410002	123 U 15SS0420002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB037 12/9/2004	15SB038 12/14/2004	15SB039 12/10/2004	15SB040 12/10/2004	15SB041 12/14/2004	15SB042 12/10/2004
1,4-NAPHTHOQUINONE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
1,4-PHENYLENEDIAMINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
1-NAPHTHYLAMINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
2,2'-OXYBIS(1-CHLOROPROPANE)	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
2,3,4,6-TETRACHLOROPHENOL	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
2,4,5-TRICHLOROPHENOL	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
2,4,6-TRICHLOROPHENOL	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
2,4-DICHLOROPHENOL	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
2,4-DIMETHYLPHENOL	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
2,4-DINITROPHENOL	85.4 UJ 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
2,6-DICHLOROPHENOL	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
2-ACETYLAMINOFLUORENE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
2-CHLORONAPHTHALENE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
2-CHLOROPHENOL	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
2-METHYLNAPHTHALENE	4.2 U 15SS0370002	5 J 15SS0380002	3.7 U 15SS0390002	4.28 U 15SS0400002	4.12 U 15SS0410002	4.04 U 15SS0420002
2-METHYLPHENOL	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002

APPE[illegible]LE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB037 12/9/2004	15SB038 12/14/2004	15SB039 12/10/2004	15SB040 12/10/2004	15SB041 12/14/2004	15SB042 12/10/2004
2-NAPHTHYLAMINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
2-NITROANILINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
2-NITROPHENOL	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
2-PICOLINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
3&4-METHYLPHENOL	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
3,3'-DICHLOROBENZIDINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
3,3'-DIMETHYLBENZIDINE	85.4 U 15SS0370002	80.9 UJ 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 UJ 15SS0410002	82.1 U 15SS0420002
3-METHYLCHOLANTHRENE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
3-NITROANILINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
4,6-DINITRO-2-METHYLPHENOL	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
4-AMINOBIPHENYL	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
4-BROMOPHENYL PHENYL ETHER	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
4-CHLORO-3-METHYLPHENOL	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
4-CHLOROANILINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
4-CHLOROPHENYL PHENYL ETHER	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
4-NITROANILINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB037 12/9/2004	15SB038 12/14/2004	15SB039 12/10/2004	15SB040 12/10/2004	15SB041 12/14/2004	15SB042 12/10/2004
4-NITROPHENOL	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
4-NITROQUINOLINE-1-OXIDE	85.4 UR 15SS0370002	80.9 UR 15SS0380002	75.1 UR 15SS0390002	86.9 UR 15SS0400002	83.6 UR 15SS0410002	82.1 UR 15SS0420002
5-NITRO-O-TOLUIDINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
7,12-DIMETHYLBENZ(A)ANTHRACENE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
A,A-DIMETHYLPHENETHYLAMINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
ACENAPHTHENE	4.2 U 15SS0370002	21 15SS0380002	3.7 U 15SS0390002	4.28 U 15SS0400002	4.12 U 15SS0410002	4.04 U 15SS0420002
ACENAPHTHYLENE	4.2 U 15SS0370002	3.99 U 15SS0380002	3.7 U 15SS0390002	4.28 U 15SS0400002	4.12 U 15SS0410002	4.04 U 15SS0420002
ACETOPHENONE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
ANILINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
ANTHRACENE	4.2 U 15SS0370002	9 15SS0380002	3.7 U 15SS0390002	4.28 U 15SS0400002	4.12 U 15SS0410002	4.04 U 15SS0420002
ARAMITE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
BENZO(A)ANTHRACENE	4.2 UJ 15SS0370002	42 15SS0380002	3.7 U 15SS0390002	7 J 15SS0400002	4.12 U 15SS0410002	8 J 15SS0420002
BENZO(A)PYRENE	4.2 UJ 15SS0370002	26 15SS0380002	3.7 U 15SS0390002	4.28 U 15SS0400002	4.12 U 15SS0410002	9 15SS0420002
BENZO(B)FLUORANTHENE	4.2 UJ 15SS0370002	27 15SS0380002	3.7 U 15SS0390002	5 J 15SS0400002	4.12 U 15SS0410002	4.04 U 15SS0420002
BENZO(G,H,I)PERYLENE	4.2 UJ 15SS0370002	33 15SS0380002	3.7 U 15SS0390002	4.28 U 15SS0400002	4.12 U 15SS0410002	14 15SS0420002
BENZO(K)FLUORANTHENE	4.2 UJ 15SS0370002	21 15SS0380002	3.7 U 15SS0390002	4.28 U 15SS0400002	4.12 U 15SS0410002	4.04 U 15SS0420002

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB037 12/9/2004	15SB038 12/14/2004	15SB039 12/10/2004	15SB040 12/10/2004	15SB041 12/14/2004	15SB042 12/10/2004
BENZYL ALCOHOL	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
BIS(2-CHLOROETHOXY)METHANE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
BIS(2-CHLOROETHYL)ETHER	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
BIS(2-ETHYLHEXYL)PHTHALATE	100 J 15SS0370002	250 J 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	130 J 15SS0410002	82.1 U 15SS0420002
BUTYL BENZYL PHTHALATE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
CHLOROBENZILATE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
CHRYSENE	4.2 UJ 15SS0370002	69 15SS0380002	3.7 U 15SS0390002	6 J 15SS0400002	4.12 U 15SS0410002	10 15SS0420002
DI-N-BUTYL PHTHALATE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	100 J 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
DI-N-OCTYL PHTHALATE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
DIALLATE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
DIBENZO(A,H)ANTHRACENE	4.2 UJ 15SS0370002	3.99 U 15SS0380002	3.7 U 15SS0390002	4.28 U 15SS0400002	4.12 U 15SS0410002	4.04 U 15SS0420002
DIBENZOFURAN	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
DIETHYL PHTHALATE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
DIMETHYL PHTHALATE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
DIPHENYLAMINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
ETHYL METHANE SULFONATE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB037 12/9/2004	15SB038 12/14/2004	15SB039 12/10/2004	15SB040 12/10/2004	15SB041 12/14/2004	15SB042 12/10/2004
FLUORANTHENE	4.2 U 15SS0370002	160 15SS0380002	3.7 U 15SS0390002	10 15SS0400002	4.12 U 15SS0410002	17 15SS0420002
FLUORENE	4.2 U 15SS0370002	3.99 U 15SS0380002	3.7 U 15SS0390002	4.28 U 15SS0400002	4.12 U 15SS0410002	4.04 U 15SS0420002
HEXACHLOROBENZENE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
HEXACHLOROBUTADIENE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
HEXACHLOROCYCLOPENTADIENE	85.4 UJ 15SS0370002	80.9 UJ 15SS0380002	75.1 UJ 15SS0390002	86.9 UJ 15SS0400002	83.6 UJ 15SS0410002	82.1 UJ 15SS0420002
HEXACHLOROETHANE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
HEXACHLOROPROPENE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
INDENO(1,2,3-CD)PYRENE	4.2 UJ 15SS0370002	3.99 U 15SS0380002	3.7 U 15SS0390002	4.28 U 15SS0400002	4.12 U 15SS0410002	4.04 U 15SS0420002
ISODRIN	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
ISOPHORONE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
ISOSAFROLE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
KEPONE	85.4 UJ 15SS0370002	80.9 UJ 15SS0380002	75.1 UR 15SS0390002	86.9 UR 15SS0400002	83.6 UJ 15SS0410002	82.1 UR 15SS0420002
METHAPYRILENE	85.4 UJ 15SS0370002	80.9 UJ 15SS0380002	75.1 UJ 15SS0390002	86.9 UJ 15SS0400002	83.6 UJ 15SS0410002	82.1 UJ 15SS0420002
METHYL METHANE SULFONATE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
N-NITROSO-DI-N-BUTYLAMINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
N-NITROSO-DI-N-PROPYLAMINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002

APPEN[illegible]E G-1
RESULTS FOR CHEMICALS ANA[illegible] IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB037 12/9/2004	15SB038 12/14/2004	15SB039 12/10/2004	15SB040 12/10/2004	15SB041 12/14/2004	15SB042 12/10/2004
N-NITROSODIETHYLAMINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
N-NITROSODIMETHYLAMINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
N-NITROSODIPHENYLAMINE	85.4 U 15SS0370002	1500 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
N-NITROSOMETHYLETHYLAMINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
N-NITROSOMORPHOLINE	85.4 UJ 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
N-NITROSOPIPERIDINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
N-NITROSOPYRROLIDINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
NAPHTHALENE	4.2 U 15SS0370002	7 J 15SS0380002	3.7 U 15SS0390002	4.28 U 15SS0400002	4.12 U 15SS0410002	4.04 U 15SS0420002
O,O,O-TRIETHYL PHOSPHOROTHIOATE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
O-TOLUIDINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
P-(DIMETHYLAMINO)AZOBENZENE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
PENTACHLOROBENZENE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
PENTACHLOROETHANE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
PENTACHLORONITROBENZENE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
PHENACETIN	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
PHENANTHRENE	4.2 U 15SS0370002	52 15SS0380002	3.7 U 15SS0390002	12 15SS0400002	4.12 U 15SS0410002	16 15SS0420002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB037 12/9/2004	15SB038 12/14/2004	15SB039 12/10/2004	15SB040 12/10/2004	15SB041 12/14/2004	15SB042 12/10/2004
PHENOL	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
PRONAMIDE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
PYRENE	4.2 UJ 15SS0370002	110 15SS0380002	3.7 U 15SS0390002	12 15SS0400002	4.12 U 15SS0410002	23 15SS0420002
PYRIDINE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
SAFROLE	85.4 U 15SS0370002	80.9 U 15SS0380002	75.1 U 15SS0390002	86.9 U 15SS0400002	83.6 U 15SS0410002	82.1 U 15SS0420002
Pesticides PCBs (ug/kg)						
4,4'-DDD	1.72 U 15SS0370002	1.63 UJ 15SS0380002	1.51 U 15SS0390002	1.75 U 15SS0400002	1.69 U 15SS0410002	
4,4'-DDE	1.72 U 15SS0370002	1.63 UJ 15SS0380002	1.51 U 15SS0390002	1.75 U 15SS0400002	1.69 U 15SS0410002	
4,4'-DDT	1.72 U 15SS0370002	1.63 U 15SS0380002	1.51 U 15SS0390002	1.75 U 15SS0400002	1.69 U 15SS0410002	
ALDRIN	0.828 U 15SS0370002	0.785 U 15SS0380002	0.729 U 15SS0390002	0.843 U 15SS0400002	0.811 U 15SS0410002	
ALPHA-BHC	0.828 U 15SS0370002	0.785 U 15SS0380002	0.729 U 15SS0390002	0.843 U 15SS0400002	0.811 U 15SS0410002	
ALPHA-CHLORDANE	0.828 U 15SS0370002	0.785 U 15SS0380002	0.729 U 15SS0390002	0.843 U 15SS0400002	0.811 U 15SS0410002	
AROCLOR-1016	11.5 U 15SS0370002	10.9 U 15SS0380002	10.1 U 15SS0390002	11.7 U 15SS0400002	11.2 U 15SS0410002	
AROCLOR-1221	11.5 U 15SS0370002	10.9 U 15SS0380002	10.1 U 15SS0390002	11.7 U 15SS0400002	11.2 U 15SS0410002	
AROCLOR-1232	11.5 U 15SS0370002	10.9 U 15SS0380002	10.1 U 15SS0390002	11.7 U 15SS0400002	11.2 U 15SS0410002	
AROCLOR-1242	11.5 U 15SS0370002	10.9 U 15SS0380002	10.1 U 15SS0390002	11.7 U 15SS0400002	11.2 U 15SS0410002	
AROCLOR-1248	11.5 U 15SS0370002	10.9 U 15SS0380002	10.1 U 15SS0390002	11.7 U 15SS0400002	11.2 U 15SS0410002	
AROCLOR-1254	11.5 U 15SS0370002	10.9 U 15SS0380002	10.1 U 15SS0390002	11.7 U 15SS0400002	11.2 U 15SS0410002	
AROCLOR-1260	11.5 U 15SS0370002	10.9 U 15SS0380002	10.1 U 15SS0390002	11.7 U 15SS0400002	11.2 U 15SS0410002	
BETA-BHC	0.828 U 15SS0370002	0.785 U 15SS0380002	0.729 U 15SS0390002	0.843 U 15SS0400002	0.811 U 15SS0410002	
DELTA-BHC	0.828 U 15SS0370002	0.785 UJ 15SS0380002	0.729 U 15SS0390002	0.843 U 15SS0400002	0.811 U 15SS0410002	
DIELDRIN	1.72 U 15SS0370002	1.63 U 15SS0380002	1.51 U 15SS0390002	1.75 U 15SS0400002	1.69 U 15SS0410002	

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB037 12/9/2004	15SB038 12/14/2004	15SB039 12/10/2004	15SB040 12/10/2004	15SB041 12/14/2004	15SB042 12/10/2004
ENDOSULFAN I	0.828 U 15SS0370002	0.785 U 15SS0380002	0.729 U 15SS0390002	0.843 U 15SS0400002	0.811 U 15SS0410002	
ENDOSULFAN II	1.72 U 15SS0370002	1.63 U 15SS0380002	1.51 U 15SS0390002	1.75 U 15SS0400002	1.69 U 15SS0410002	
ENDOSULFAN SULFATE	1.72 U 15SS0370002	1.63 U 15SS0380002	1.51 U 15SS0390002	1.75 U 15SS0400002	1.69 U 15SS0410002	
ENDRIN ALDEHYDE	1.72 U 15SS0370002	1.63 U 15SS0380002	1.51 U 15SS0390002	1.75 U 15SS0400002	1.69 U 15SS0410002	
ENDRIN KETONE	1.72 U 15SS0370002	1.63 U 15SS0380002	1.51 U 15SS0390002	1.75 U 15SS0400002	1.69 U 15SS0410002	
ENDRIN	1.72 U 15SS0370002	1.63 U 15SS0380002	1.51 U 15SS0390002	1.75 U 15SS0400002	1.69 U 15SS0410002	
GAMMA-BHC (LINDANE)	0.828 U 15SS0370002	0.785 U 15SS0380002	0.729 U 15SS0390002	0.843 U 15SS0400002	0.811 U 15SS0410002	
GAMMA-CHLORDANE	0.828 U 15SS0370002	0.785 U 15SS0380002	0.729 U 15SS0390002	0.843 U 15SS0400002	0.811 U 15SS0410002	
HEPTACHLOR EPOXIDE	0.828 U 15SS0370002	0.785 U 15SS0380002	0.729 U 15SS0390002	0.843 U 15SS0400002	0.811 U 15SS0410002	
HEPTACHLOR	0.828 U 15SS0370002	0.785 U 15SS0380002	0.729 U 15SS0390002	0.843 U 15SS0400002	0.811 U 15SS0410002	
METHOXYCHLOR	8.28 U 15SS0370002	7.85 U 15SS0380002	7.29 U 15SS0390002	8.43 U 15SS0400002	8.11 U 15SS0410002	
TOXAPHENE	21.7 U 15SS0370002	20.5 U 15SS0380002	19.1 U 15SS0390002	22 U 15SS0400002	21.2 U 15SS0410002	
Herbicides (ug/kg)						
2,4,5-T	1.72 U 15SS0370002	1.63 U 15SS0380002	1.51 U 15SS0390002	1.75 U 15SS0400002	1.69 U 15SS0410002	
2,4,5-TP (SILVEX)	1.72 U 15SS0370002	1.63 U 15SS0380002	1.51 U 15SS0390002	1.75 U 15SS0400002	1.69 U 15SS0410002	
2,4-D	1.72 U 15SS0370002	1.63 U 15SS0380002	1.51 U 15SS0390002	1.75 U 15SS0400002	1.69 U 15SS0410002	
DINOSEB	1.72 U 15SS0370002	1.63 U 15SS0380002	1.51 U 15SS0390002	1.75 U 15SS0400002	1.69 U 15SS0410002	
HEXACHLOROPHENE	1.08 U 15SS0370002	1.03 U 15SS0380002	0.953 U 15SS0390002	1.1 U 15SS0400002	1.06 U 15SS0410002	
PENTACHLOROPHENOL	0.573 U 15SS0370002	0.543 U 15SS0380002	0.504 U 15SS0390002	0.584 U 15SS0400002	0.562 U 15SS0410002	
Inorganics (mg/kg)						
ALUMINUM	16700 J 15SS0370002	11300 J 15SS0380002	13600 J 15SS0390002	19200 J 15SS0400002	18500 J 15SS0410002	19300 J 15SS0420002
ANTIMONY	0.09 U 15SS0370002	0.54 U 15SS0380002	0.19 U 15SS0390002	0.22 U 15SS0400002	0.03 U 15SS0410002	0.24 U 15SS0420002
ARSENIC	7.2 J 15SS0370002	12.9 J 15SS0380002	4.9 J 15SS0390002	5 J 15SS0400002	6.1 J 15SS0410002	7.8 J 15SS0420002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB037 12/9/2004	15SB038 12/14/2004	15SB039 12/10/2004	15SB040 12/10/2004	15SB041 12/14/2004	15SB042 12/10/2004
BARIUM	117 J 15SS0370002	135 J 15SS0380002	50.9 J 15SS0390002	86.5 J 15SS0400002	112 J 15SS0410002	82.9 J 15SS0420002
BERYLLIUM	1.1 15SS0370002	0.65 15SS0380002	0.31 J 15SS0390002	0.59 15SS0400002	0.76 15SS0410002	0.49 J 15SS0420002
CADMIUM	0.25 J 15SS0370002	0.25 J 15SS0380002	0.19 J 15SS0390002	0.39 J 15SS0400002	0.23 J 15SS0410002	0.25 J 15SS0420002
CALCIUM	1470 J 15SS0370002	170 J 15SS0380002	883 J 15SS0390002	110000 J 15SS0400002	753 J 15SS0410002	4720 J 15SS0420002
CHROMIUM	26.3 J 15SS0370002	32.3 J 15SS0380002	18.1 J 15SS0390002	23 J 15SS0400002	16.9 J 15SS0410002	23.4 J 15SS0420002
COBALT	20.8 J 15SS0370002	11.3 J 15SS0380002	4.3 J 15SS0390002	7 J 15SS0400002	14.3 J 15SS0410002	5.2 J 15SS0420002
COPPER	11.1 J 15SS0370002	10.6 J 15SS0380002	7.5 J 15SS0390002	9.4 J 15SS0400002	7.6 J 15SS0410002	12.8 J 15SS0420002
IRON	36900 J 15SS0370002	37300 J 15SS0380002	15200 J 15SS0390002	14900 J 15SS0400002	15400 J 15SS0410002	21900 J 15SS0420002
LEAD	19.2 J 15SS0370002	25.7 J 15SS0380002	13.2 J 15SS0390002	10 J 15SS0400002	15.4 J 15SS0410002	10.2 J 15SS0420002
MAGNESIUM	1210 J 15SS0370002	754 J 15SS0380002	1540 J 15SS0390002	9980 J 15SS0400002	1560 J 15SS0410002	3240 J 15SS0420002
MANGANESE	1570 J 15SS0370002	815 J 15SS0380002	421 15SS0390002	310 15SS0400002	992 J 15SS0410002	176 15SS0420002
MERCURY	0.044 J 15SS0370002	0.052 J 15SS0380002	0.01 J 15SS0390002	0.019 J 15SS0400002	0.041 J 15SS0410002	0.017 J 15SS0420002
NICKEL	19.5 J 15SS0370002	13.6 J 15SS0380002	8.6 J 15SS0390002	15.3 J 15SS0400002	20.4 J 15SS0410002	13 J 15SS0420002
POTASSIUM	1150 J 15SS0370002	908 J 15SS0380002	900 J 15SS0390002	1930 J 15SS0400002	1330 J 15SS0410002	1550 J 15SS0420002
SELENIUM	0.52 15SS0370002	1.1 15SS0380002	0.19 J 15SS0390002	0.69 15SS0400002	0.57 15SS0410002	0.28 J 15SS0420002
SILVER	0.05 U 15SS0370002	0.046 U 15SS0380002	0.046 U 15SS0390002	0.055 U 15SS0400002	0.047 U 15SS0410002	0.054 U 15SS0420002

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB037 12/9/2004	15SB038 12/14/2004	15SB039 12/10/2004	15SB040 12/10/2004	15SB041 12/14/2004	15SB042 12/10/2004
SODIUM	53.3 U 15SS0370002	61 U 15SS0380002	135 J 15SS0390002	136 J 15SS0400002	49.7 U 15SS0410002	116 J 15SS0420002
THALLIUM	0.34 J 15SS0370002	0.47 J 15SS0380002	0.18 U 15SS0390002	0.28 U 15SS0400002	0.36 J 15SS0410002	0.23 U 15SS0420002
TIN	0.21 U 15SS0370002	0.21 U 15SS0380002	0.49 U 15SS0390002	0.58 U 15SS0400002	0.26 U 15SS0410002	0.61 U 15SS0420002
VANADIUM	29.5 15SS0370002	31.3 15SS0380002	30.2 J 15SS0390002	34.7 J 15SS0400002	27.3 15SS0410002	36.6 J 15SS0420002
ZINC	59.7 J 15SS0370002	34.8 J 15SS0380002	19.4 J 15SS0390002	36 J 15SS0400002	48.5 J 15SS0410002	36.3 J 15SS0420002

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB043 12/10/2004	15SB044 12/10/2004	15SB045 12/10/2004	15SB046 12/10/2004	15SB047 12/9/2004	15SB048 12/9/2004
Volatile Organics (ug/kg)						
1,1,1,2-TETRACHLOROETHANE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
1,1,1-TRICHLOROETHANE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
1,1,2,2-TETRACHLOROETHANE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
1,1,2-TRICHLOROETHANE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
1,1-DICHLOROETHANE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
1,1-DICHLOROETHENE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
1,2,3-TRICHLOROPROPANE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
1,2-DIBROMO-3-CHLOROPROPANE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
1,2-DIBROMOETHANE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
1,2-DICHLOROETHANE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
1,2-DICHLOROPROPANE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
2-BUTANONE	1.04 U 15SS0430002 3 J 15SB0430206	19 15SS0440002 2 J 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 4 J 15SB0460206 7 J 15SB0460610 18 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 2 J 15SB0480206-D 2 J 15SB0480610 0.867 U 15SB0481015

APPEN[illegible]E G-1
RESULTS FOR CHEMICALS ANAL[illegible] IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB043 12/10/2004	15SB044 12/10/2004	15SB045 12/10/2004	15SB046 12/10/2004	15SB047 12/9/2004	15SB048 12/9/2004
2-HEXANONE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 2 J 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
3-CHLOROPROPENE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
4-METHYL-2-PENTANONE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
ACETONE	11 U 15SS0430002 29 J 15SB0430206	79 J 15SS0440002 15 J 15SB0440206	3 U 15SS0450002 11 U 15SB0450206 18 J 15SB0450610 6 J 15SB0451012	3 U 15SS0460002 40 J 15SB0460206 69 J 15SB0460610 71 J 15SB0461020	2 U 15SS0470002	4 U 15SS0480002 12 U 15SB0480206-D 20 BU 15SB0480610 5 BU 15SB0481015
ACETONITRILE	41.8 UR 15SS0430002 37.3 UR 15SB0430206	38.9 UR 15SS0440002 32.6 UR 15SB0440206	36.3 UR 15SS0450002 38 UR 15SB0450206 38 UR 15SB0450610 37.1 UR 15SB0451012	37.1 UR 15SS0460002 35.1 UR 15SB0460206 41.5 UR 15SB0460610 51.2 UR 15SB0461020	35.2 UR 15SS0470002	37.3 UR 15SS0480002 35.9 UR 15SB0480206-D 44 UR 15SB0480610 34.7 UR 15SB0481015
ACROLEIN	1.04 UR 15SS0430002 0.933 UR 15SB0430206	0.972 UR 15SS0440002 0.815 UR 15SB0440206	0.908 UR 15SS0450002 0.95 UR 15SB0450206 0.95 UR 15SB0450610 0.928 UR 15SB0451012	0.927 UR 15SS0460002 0.878 UR 15SB0460206 1.04 UR 15SB0460610 1.28 UR 15SB0461020	0.88 UR 15SS0470002	0.932 UR 15SS0480002 0.899 UR 15SB0480206-D 1.1 UR 15SB0480610 0.867 UR 15SB0481015
ACRYLONITRILE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
BENZENE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
BROMODICHLOROMETHANE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
BROMOFORM	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
BROMOMETHANE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
CARBON DISULFIDE	1.04 U 15SS0430002 0.933 U 15SB0430206	1 J 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 2 J 15SB0460610 3 J 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 2 J 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB043 12/10/2004	15SB044 12/10/2004	15SB045 12/10/2004	15SB046 12/10/2004	15SB047 12/9/2004	15SB048 12/9/2004
CARBON TETRACHLORIDE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
CHLOROBENZENE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
CHLORODIBROMOMETHANE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
CHLOROETHANE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
CHLOROFORM	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
CHLOROMETHANE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
CHLOROPRENE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
CIS-1,2-DICHLOROETHENE	1.04 U 15SS0430002 2 J 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
CIS-1,3-DICHLOROPROPENE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
DIBROMOMETHANE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
DICHLORODIFLUOROMETHANE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 UR 15SS0470002	0.932 UR 15SS0480002 0.899 U 15SB0480206-D 1.1 UR 15SB0480610 0.867 U 15SB0481015
ETHYL METHACRYLATE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015

APPEN[illegible]E G-1
RESULTS FOR CHEMICALS ANA[illegible]N ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB043 12/10/2004	15SB044 12/10/2004	15SB045 12/10/2004	15SB046 12/10/2004	15SB047 12/9/2004	15SB048 12/9/2004
ETHYLBENZENE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
ISOBUTANOL	41.8 UR 15SS0430002 37.3 UR 15SB0430206	38.9 UR 15SS0440002 32.6 UR 15SB0440206	36.3 UR 15SS0450002 38 UR 15SB0450206 38 UR 15SB0450610 37.1 UR 15SB0451012	37.1 UR 15SS0460002 35.1 UR 15SB0460206 41.5 UR 15SB0460610 51.2 UR 15SB0461020	35.2 UR 15SS0470002	37.3 UR 15SS0480002 35.9 UR 15SB0480206-D 44 UR 15SB0480610 34.7 UR 15SB0481015
METHACRYLONITRILE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
METHYL IODIDE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
METHYL METHACRYLATE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
METHYL TERT-BUTYL ETHER	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
METHYLENE CHLORIDE	4 U 15SS0430002 15 J 15SB0430206	7 U 15SS0440002 12 J 15SB0440206	4 U 15SS0450002 10 U 15SB0450206 54 J 15SB0450610 13 J 15SB0451012	4 U 15SS0460002 10 U 15SB0460206 33 J 15SB0460610 21 J 15SB0461020	6 J 15SS0470002	10 J 15SS0480002 5 J 15SB0480206-D 3 J 15SB0480610 11 J 15SB0481015
PROPIONITRILE	41.8 UR 15SS0430002 37.3 UR 15SB0430206	38.9 UR 15SS0440002 32.6 UR 15SB0440206	36.3 UR 15SS0450002 38 UR 15SB0450206 38 UR 15SB0450610 37.1 UR 15SB0451012	37.1 UR 15SS0460002 35.1 UR 15SB0460206 41.5 UR 15SB0460610 51.2 UR 15SB0461020	35.2 UR 15SS0470002	37.3 UR 15SS0480002 35.9 UR 15SB0480206-D 44 UR 15SB0480610 34.7 UR 15SB0481015
STYRENE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
TETRACHLOROETHENE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
TOLUENE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
TOTAL XYLENES	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB043 12/10/2004	15SB044 12/10/2004	15SB045 12/10/2004	15SB046 12/10/2004	15SB047 12/9/2004	15SB048 12/9/2004
TRANS-1,2-DICHLOROETHENE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
TRANS-1,3-DICHLOROPROPENE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
TRANS-1,4-DICHLORO-2-BUTENE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
TRICHLOROETHENE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
TRICHLOROFLUOROMETHANE	1.04 U 15SS0430002 1 J 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 3 15SB0450610 1 J 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 2 J 15SB0460610 2 J 15SB0461020	0.88 U 15SS0470002	1 J 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
VINYL ACETATE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
VINYL CHLORIDE	1.04 U 15SS0430002 0.933 U 15SB0430206	0.972 U 15SS0440002 0.815 U 15SB0440206	0.908 U 15SS0450002 0.95 U 15SB0450206 0.95 U 15SB0450610 0.928 U 15SB0451012	0.927 U 15SS0460002 0.878 U 15SB0460206 1.04 U 15SB0460610 1.28 U 15SB0461020	0.88 U 15SS0470002	0.932 U 15SS0480002 0.899 U 15SB0480206-D 1.1 U 15SB0480610 0.867 U 15SB0481015
Semivolatile Organics (ug/kg)						
1,2,4,5-TETRACHLOROBENZENE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
1,2,4-TRICHLOROBENZENE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
1,2-DICHLOROBENZENE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
1,3-DICHLOROBENZENE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
1,4-DICHLOROBENZENE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
1,4-DIOXANE	122 U 15SS0430002	118 U 15SS0440002	115 U 15SS0450002 114 U 15SB0450206	119 U 15SS0460002 120 U 15SB0460206	113 U 15SS0470002	117 U 15SS0480002 114 U 15SB0480206-D

APPENDIX LE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB043 12/10/2004	15SB044 12/10/2004	15SB045 12/10/2004	15SB046 12/10/2004	15SB047 12/9/2004	15SB048 12/9/2004
1,4-NAPHTHOQUINONE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
1,4-PHENYLENEDIAMINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
1-NAPHTHYLAMINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
2,2'-OXYBIS(1-CHLOROPROPANE)	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
2,3,4,6-TETRACHLOROPHENOL	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
2,4,5-TRICHLOROPHENOL	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
2,4,6-TRICHLOROPHENOL	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
2,4-DICHLOROPHENOL	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
2,4-DIMETHYLPHENOL	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
2,4-DINITROPHENOL	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 UJ 15SS0470002	78.1 UJ 15SS0480002 76.2 UJ 15SB0480206-D
2,6-DICHLOROPHENOL	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
2-ACETYLAMINOFLUORENE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
2-CHLORONAPHTHALENE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
2-CHLOROPHENOL	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
2-METHYLNAPHTHALENE	8 J 15SS0430002	6 J 15SS0440002	10 15SS0450002 18 15SB0450206	8 15SS0460002 3.97 U 15SB0460206	5 J 15SS0470002	6 J 15SS0480002 3.75 U 15SB0480206-D
2-METHYLPHENOL	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB043 12/10/2004	15SB044 12/10/2004	15SB045 12/10/2004	15SB046 12/10/2004	15SB047 12/9/2004	15SB048 12/9/2004
2-NAPHTHYLAMINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
2-NITROANILINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
2-NITROPHENOL	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
2-PICOLINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
3&4-METHYLPHENOL	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
3,3'-DICHLOROBENZIDINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
3,3'-DIMETHYLBENZIDINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
3-METHYLCHOLANTHRENE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
3-NITROANILINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
4,6-DINITRO-2-METHYLPHENOL	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
4-AMINOBIPHENYL	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
4-BROMOPHENYL PHENYL ETHER	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
4-CHLORO-3-METHYLPHENOL	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
4-CHLOROANILINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
4-CHLOROPHENYL PHENYL ETHER	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
4-NITROANILINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D

APPEN[illegible].E G-1
RESULTS FOR CHEMICALS ANAL[illegible] IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB043 12/10/2004	15SB044 12/10/2004	15SB045 12/10/2004	15SB046 12/10/2004	15SB047 12/9/2004	15SB048 12/9/2004
4-NITROPHENOL	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
4-NITROQUINOLINE-1-OXIDE	81.4 UR 15SS0430002	79.4 UR 15SS0440002	77 UR 15SS0450002 76.7 UR 15SB0450206	79.7 UR 15SS0460002 80.6 UR 15SB0460206	75.6 UR 15SS0470002	78.1 UR 15SS0480002 76.2 UR 15SB0480206-D
5-NITRO-O-TOLUIDINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
7,12-DIMETHYLBENZ(A)ANTHRACENE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
A,A-DIMETHYLPHENETHYLAMINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
ACENAPHTHENE	26 15SS0430002	3.91 U 15SS0440002	3.79 U 15SS0450002 3.78 U 15SB0450206	6 J 15SS0460002 3.97 U 15SB0460206	3.72 U 15SS0470002	3.85 U 15SS0480002 3.75 U 15SB0480206-D
ACENAPHTHYLENE	4.01 U 15SS0430002	3.91 U 15SS0440002	3.79 U 15SS0450002 3.78 U 15SB0450206	26 15SS0460002 3.97 U 15SB0460206	7 J 15SS0470002	3.85 U 15SS0480002 3.75 U 15SB0480206-D
ACETOPHENONE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	150 J 15SS0460002 140 J 15SB0460206	75.6 U 15SS0470002	310 U 15SS0480002 89 U 15SB0480206-D
ANILINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
ANTHRACENE	56 15SS0430002	6 J 15SS0440002	3.79 U 15SS0450002 3.78 U 15SB0450206	38 15SS0460002 3.97 U 15SB0460206	14 15SS0470002	5 J 15SS0480002 3.75 U 15SB0480206-D
ARAMITE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
BENZO(A)ANTHRACENE	110 15SS0430002	35 15SS0440002	24 15SS0450002 8 15SB0450206	210 15SS0460002 14 15SB0460206	85 15SS0470002	3.85 UJ 15SS0480002 3.75 U 15SB0480206-D
BENZO(A)PYRENE	100 15SS0430002	36 15SS0440002	52 15SS0450002 10 15SB0450206	210 15SS0460002 12 15SB0460206	61 J 15SS0470002	3.85 U 15SS0480002 3.75 UJ 15SB0480206-D
BENZO(B)FLUORANTHENE	100 15SS0430002	48 15SS0440002	80 15SS0450002 18 15SB0450206	340 15SS0460002 22 15SB0460206	73 J 15SS0470002	3.85 U 15SS0480002 3.75 UJ 15SB0480206-D
BENZO(G,H,I)PERYLENE	140 15SS0430002	48 15SS0440002	86 15SS0450002 19 15SB0450206	260 15SS0460002 16 15SB0460206	58 J 15SS0470002	3.85 U 15SS0480002 3.75 UJ 15SB0480206-D
BENZO(K)FLUORANTHENE	52 15SS0430002	33 15SS0440002	47 15SS0450002 3.78 U 15SB0450206	170 15SS0460002 9 15SB0460206	43 J 15SS0470002	3.85 U 15SS0480002 3.75 UJ 15SB0480206-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB043 12/10/2004	15SB044 12/10/2004	15SB045 12/10/2004	15SB046 12/10/2004	15SB047 12/9/2004	15SB048 12/9/2004
BENZYL ALCOHOL	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
BIS(2-CHLOROETHOXY)METHANE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
BIS(2-CHLOROETHYL)ETHER	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
BIS(2-ETHYLHEXYL)PHTHALATE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
BUTYL BENZYL PHTHALATE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
CHLOROBENZILATE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
CHRYSENE	130 15SS0430002	63 15SS0440002	63 15SS0450002 19 15SB0450206	270 15SS0460002 18 15SB0460206	83 15SS0470002	3.85 UJ 15SS0480002 3.75 U 15SB0480206-D
DI-N-BUTYL PHTHALATE	81.4 U 15SS0430002	290 J 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 180 J 15SB0460206	75.6 U 15SS0470002	240 J 15SS0480002 76.2 U 15SB0480206-D
DI-N-OCTYL PHTHALATE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
DIALLATE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
DIBENZO(A,H)ANTHRACENE	4.01 U 15SS0430002	3.91 U 15SS0440002	18 15SS0450002 3.78 U 15SB0450206	75 15SS0460002 3.97 U 15SB0460206	3.72 UJ 15SS0470002	3.85 U 15SS0480002 3.75 UJ 15SB0480206-D
DIBENZOFURAN	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
DIETHYL PHTHALATE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
DIMETHYL PHTHALATE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
DIPHENYLAMINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
ETHYL METHANE SULFONATE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB043 12/10/2004	15SB044 12/10/2004	15SB045 12/10/2004	15SB046 12/10/2004	15SB047 12/9/2004	15SB048 12/9/2004
FLUORANTHENE	240 15SS0430002	88 15SS0440002	40 15SS0450002 12 15SB0450206	210 15SS0460002 16 15SB0460206	110 15SS0470002	5 J 15SS0480002 3.75 U 15SB0480206-D
FLUORENE	28 15SS0430002	3.91 U 15SS0440002	3.79 U 15SS0450002 4 J 15SB0450206	6 J 15SS0460002 3.97 U 15SB0460206	3.72 U 15SS0470002	3.85 U 15SS0480002 3.75 U 15SB0480206-D
HEXACHLOROBENZENE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
HEXACHLOROBUTADIENE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
HEXACHLOROCYCLOPENTADIENE	81.4 UJ 15SS0430002	79.4 UJ 15SS0440002	77 UJ 15SS0450002 76.7 UR 15SB0450206	79.7 UJ 15SS0460002 80.6 UJ 15SB0460206	75.6 UJ 15SS0470002	78.1 UJ 15SS0480002 76.2 UJ 15SB0480206-D
HEXACHLOROETHANE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
HEXACHLOROPROPENE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
INDENO(1,2,3-CD)PYRENE	89 15SS0430002	38 15SS0440002	57 15SS0450002 9 15SB0450206	210 15SS0460002 12 15SB0460206	43 J 15SS0470002	3.85 U 15SS0480002 3.75 UJ 15SB0480206-D
ISODRIN	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
ISOPHORONE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
ISOSAFROLE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 6000 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
KEPONE	81.4 UR 15SS0430002	79.4 UR 15SS0440002	77 UR 15SS0450002 76.7 UR 15SB0450206	79.7 UR 15SS0460002 80.6 UR 15SB0460206	75.6 UJ 15SS0470002	78.1 UJ 15SS0480002 76.2 UJ 15SB0480206-D
METHAPYRILENE	81.4 UJ 15SS0430002	79.4 UJ 15SS0440002	77 UJ 15SS0450002 76.7 UJ 15SB0450206	79.7 UJ 15SS0460002 80.6 UJ 15SB0460206	75.6 UJ 15SS0470002	78.1 UJ 15SS0480002 76.2 UJ 15SB0480206-D
METHYL METHANE SULFONATE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
N-NITROSO-DI-N-BUTYLAMINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
N-NITROSO-DI-N-PROPYLAMINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB043 12/10/2004	15SB044 12/10/2004	15SB045 12/10/2004	15SB046 12/10/2004	15SB047 12/9/2004	15SB048 12/9/2004
N-NITROSODIETHYLAMINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
N-NITROSODIMETHYLAMINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
N-NITROSODIPHENYLAMINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
N-NITROSOMETHYLETHYLAMINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
N-NITROSOMORPHOLINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 UJ 15SS0470002	78.1 UJ 15SS0480002 76.2 UJ 15SB0480206-D
N-NITROSOPIPERIDINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
N-NITROSOPYRROLIDINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
NAPHTHALENE	16 15SS0430002	5 J 15SS0440002	7 J 15SS0450002 7 J 15SB0450206	8 15SS0460002 6 J 15SB0460206	3.72 U 15SS0470002	3.85 U 15SS0480002 3.75 U 15SB0480206-D
O,O,O-TRIETHYL PHOSPHOROTHIOATE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
O-TOLUIDINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
P-(DIMETHYLAMINO)AZOBENZENE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
PENTACHLOROBENZENE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
PENTACHLOROETHANE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
PENTACHLORONITROBENZENE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
PHENACETIN	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
PHENANTHRENE	270 15SS0430002	47 15SS0440002	25 15SS0450002 42 15SB0450206	46 15SS0460002 6 J 15SB0460206	63 15SS0470002	5 J 15SS0480002 6 J 15SB0480206-D

APPE LE G-1
RESULTS FOR CHEMICALS ANA D IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB043 12/10/2004	15SB044 12/10/2004	15SB045 12/10/2004	15SB046 12/10/2004	15SB047 12/9/2004	15SB048 12/9/2004
PHENOL	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
PRONAMIDE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
PYRENE	320 15SS0430002	140 15SS0440002	85 15SS0450002 24 15SB0450206	330 15SS0460002 26 15SB0460206	140 15SS0470002	7 J 15SS0480002 14 15SB0480206-D
PYRIDINE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
SAFROLE	81.4 U 15SS0430002	79.4 U 15SS0440002	77 U 15SS0450002 76.7 U 15SB0450206	79.7 U 15SS0460002 80.6 U 15SB0460206	75.6 U 15SS0470002	78.1 U 15SS0480002 76.2 U 15SB0480206-D
Pesticides PCBs (ug/kg)						
4,4'-DDD			1.55 U 15SS0450002 1.54 U 15SB0450206	1.61 U 15SS0460002 1.62 U 15SB0460206	1.73 U 15SS0470002	3.3 J 15SS0480002 2.3 J 15SB0480206
4,4'-DDE			1.55 U 15SS0450002 1.54 U 15SB0450206	1.61 U 15SS0460002 1.62 U 15SB0460206	1.73 U 15SS0470002	1.66 U 15SS0480002 1.59 U 15SB0480206
4,4'-DDT			1.55 U 15SS0450002 1.54 U 15SB0450206	1.61 U 15SS0460002 1.62 U 15SB0460206	1.73 U 15SS0470002	1.66 U 15SS0480002 1.59 J 15SB0480206
ALDRIN			0.747 U 15SS0450002 0.744 U 15SB0450206	0.773 U 15SS0460002 0.782 U 15SB0460206	0.831 U 15SS0470002	0.8 U 15SS0480002 0.767 U 15SB0480206
ALPHA-BHC			0.747 U 15SS0450002 0.744 U 15SB0450206	0.773 U 15SS0460002 0.782 U 15SB0460206	0.831 U 15SS0470002	0.8 U 15SS0480002 0.767 U 15SB0480206
ALPHA-CHLORDANE			0.747 U 15SS0450002 0.744 U 15SB0450206	0.773 U 15SS0460002 0.782 U 15SB0460206	0.831 U 15SS0470002	0.8 U 15SS0480002 0.767 U 15SB0480206
AROCLOR-1016			10.3 U 15SS0450002 10.3 U 15SB0450206	10.7 U 15SS0460002 10.8 U 15SB0460206	11.5 UJ 15SS0470002	11.1 UJ 15SS0480002 10.6 UJ 15SB0480206
AROCLOR-1221			10.3 U 15SS0450002 10.3 U 15SB0450206	10.7 U 15SS0460002 10.8 U 15SB0460206	11.5 U 15SS0470002	11.1 U 15SS0480002 10.6 U 15SB0480206
AROCLOR-1232			10.3 U 15SS0450002 10.3 U 15SB0450206	10.7 U 15SS0460002 10.8 U 15SB0460206	11.5 U 15SS0470002	11.1 U 15SS0480002 10.6 U 15SB0480206
AROCLOR-1242			10.3 U 15SS0450002 10.3 U 15SB0450206	10.7 U 15SS0460002 10.8 U 15SB0460206	11.5 U 15SS0470002	11.1 U 15SS0480002 10.6 U 15SB0480206
AROCLOR-1248			10.3 U 15SS0450002 10.3 U 15SB0450206	10.7 U 15SS0460002 10.8 U 15SB0460206	11.5 U 15SS0470002	11.1 U 15SS0480002 10.6 U 15SB0480206
AROCLOR-1254			10.3 U 15SS0450002 10.3 U 15SB0450206	10.7 U 15SS0460002 10.8 U 15SB0460206	11.5 U 15SS0470002	11.1 U 15SS0480002 10.6 U 15SB0480206
AROCLOR-1260			10.3 U 15SS0450002 10.3 U 15SB0450206	10.7 U 15SS0460002 10.8 U 15SB0460206	11.5 U 15SS0470002	11.1 U 15SS0480002 10.6 U 15SB0480206
BETA-BHC			0.747 U 15SS0450002 0.744 U 15SB0450206	0.773 U 15SS0460002 0.782 U 15SB0460206	0.831 U 15SS0470002	0.8 U 15SS0480002 0.767 U 15SB0480206
DELTA-BHC			0.747 U 15SS0450002 0.744 U 15SB0450206	0.773 U 15SS0460002 0.782 U 15SB0460206	0.831 U 15SS0470002	0.8 U 15SS0480002 0.767 U 15SB0480206
DIELDRIN			1.55 U 15SS0450002 1.54 U 15SB0450206	1.61 U 15SS0460002 1.62 U 15SB0460206	1.73 U 15SS0470002	1.66 U 15SS0480002 1.59 U 15SB0480206

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB043 12/10/2004	15SB044 12/10/2004	15SB045 12/10/2004	15SB046 12/10/2004	15SB047 12/9/2004	15SB048 12/9/2004
ENDOSULFAN I			0.747 U 15SS0450002 0.744 U 15SB0450206	0.773 U 15SS0460002 0.782 U 15SB0460206	0.831 U 15SS0470002	0.8 U 15SS0480002 0.767 U 15SB0480206
ENDOSULFAN II			1.55 U 15SS0450002 1.54 U 15SB0450206	1.61 U 15SS0460002 1.62 U 15SB0460206	1.73 U 15SS0470002	1.66 U 15SS0480002 1.59 U 15SB0480206
ENDOSULFAN SULFATE			1.55 U 15SS0450002 1.54 U 15SB0450206	1.61 U 15SS0460002 1.62 U 15SB0460206	1.73 U 15SS0470002	1.66 U 15SS0480002 1.59 U 15SB0480206
ENDRIN ALDEHYDE			1.55 U 15SS0450002 1.54 U 15SB0450206	1.61 U 15SS0460002 1.62 U 15SB0460206	1.73 U 15SS0470002	1.66 U 15SS0480002 1.59 U 15SB0480206
ENDRIN KETONE			1.55 U 15SS0450002 1.54 U 15SB0450206	1.61 U 15SS0460002 1.62 U 15SB0460206	1.73 U 15SS0470002	1.66 U 15SS0480002 1.59 U 15SB0480206
ENDRIN			1.55 U 15SS0450002 1.54 U 15SB0450206	1.61 U 15SS0460002 1.62 U 15SB0460206	1.73 U 15SS0470002	1.66 U 15SS0480002 1.59 U 15SB0480206
GAMMA-BHC (LINDANE)			0.747 U 15SS0450002 0.744 U 15SB0450206	0.773 U 15SS0460002 0.782 U 15SB0460206	0.831 U 15SS0470002	0.8 U 15SS0480002 0.767 U 15SB0480206
GAMMA-CHLORDANE			0.747 U 15SS0450002 0.744 U 15SB0450206	0.773 U 15SS0460002 0.782 U 15SB0460206	0.831 U 15SS0470002	0.8 U 15SS0480002 0.767 U 15SB0480206
HEPTACHLOR EPOXIDE			0.747 U 15SS0450002 0.744 U 15SB0450206	0.773 U 15SS0460002 0.782 U 15SB0460206	0.831 U 15SS0470002	0.8 U 15SS0480002 0.767 U 15SB0480206
HEPTACHLOR			0.747 U 15SS0450002 0.744 U 15SB0450206	0.773 U 15SS0460002 0.782 U 15SB0460206	0.831 U 15SS0470002	0.8 U 15SS0480002 0.767 U 15SB0480206
METHOXYCHLOR			7.47 U 15SS0450002 7.44 U 15SB0450206	7.73 U 15SS0460002 7.82 U 15SB0460206	8.31 U 15SS0470002	8 U 15SS0480002 7.67 U 15SB0480206
TOXAPHENE			19.5 U 15SS0450002 19.5 U 15SB0450206	20.2 U 15SS0460002 20.5 U 15SB0460206	21.7 U 15SS0470002	20.9 U 15SS0480002 20 U 15SB0480206
Herbicides (ug/kg)						
2,4,5-T			1.55 U 15SS0450002 1.54 U 15SB0450206	1.61 U 15SS0460002 1.62 U 15SB0460206	1.52 U 15SS0470002	1.57 U 15SS0480002 1.54 U 15SB0480206-D
2,4,5-TP (SILVEX)			1.55 U 15SS0450002 1.54 U 15SB0450206	1.61 U 15SS0460002 1.62 U 15SB0460206	1.52 U 15SS0470002	1.57 U 15SS0480002 1.54 U 15SB0480206-D
2,4-D			1.55 U 15SS0450002 1.54 U 15SB0450206	1.61 U 15SS0460002 1.62 U 15SB0460206	1.52 U 15SS0470002	1.57 U 15SS0480002 1.54 U 15SB0480206-D
DINOSEB			1.55 U 15SS0450002 1.54 U 15SB0450206	1.61 U 15SS0460002 1.62 U 15SB0460206	1.52 U 15SS0470002	1.57 U 15SS0480002 1.54 U 15SB0480206-D
HEXACHLOROPHENE			0.977 U 15SS0450002 0.973 U 15SB0450206	1.01 U 15SS0460002 1.02 U 15SB0460206	0.959 U 15SS0470002	0.991 U 15SS0480002 0.967 U 15SB0480206-D
PENTACHLOROPHENOL			0.517 U 15SS0450002 0.515 U 15SB0450206	0.535 U 15SS0460002 0.542 U 15SB0460206	0.508 U 15SS0470002	0.524 U 15SS0480002 0.512 U 15SB0480206-D
Inorganics (mg/kg)						
ALUMINUM	16400 J 15SS0430002	24700 J 15SS0440002	19300 J 15SS0450002 14400 J 15SB0450206	22600 J 15SS0460002 19100 J 15SB0460206	21100 J 15SS0470002	20100 J 15SS0480002 20400 J 15SB0480206-D
ANTIMONY	0.35 U 15SS0430002	0.32 U 15SS0440002	0.32 U 15SS0450002 0.24 U 15SB0450206	0.32 U 15SS0460002 0.25 U 15SB0460206	0.2 U 15SS0470002	0.37 U 15SS0480002 0.39 U 15SB0480206-D
ARSENIC	8.5 J 15SS0430002	6.1 J 15SS0440002	11.8 J 15SS0450002 7.2 J 15SB0450206	8.3 J 15SS0460002 5.2 J 15SB0460206	9.9 J 15SS0470002	8.4 J 15SS0480002 17.5 J 15SB0480206-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB043 12/10/2004	15SB044 12/10/2004	15SB045 12/10/2004	15SB046 12/10/2004	15SB047 12/9/2004	15SB048 12/9/2004
BARIUM	60.1 J 15SS0430002	113 J 15SS0440002	87.1 J 15SS0450002 65.8 J 15SB0450206	69.2 J 15SS0460002 69.3 J 15SB0460206	84.5 J 15SS0470002	87.1 J 15SS0480002 104 J 15SB0480206-D
BERYLLIUM	0.97 15SS0430002	0.85 15SS0440002	0.6 15SS0450002 0.79 15SB0450206	0.64 15SS0460002 0.55 15SB0460206	0.59 15SS0470002	0.77 J 15SS0480002 0.71 J 15SB0480206-D
CADMIUM	0.21 J 15SS0430002	0.18 J 15SS0440002	0.25 J 15SS0450002 0.27 J 15SB0450206	0.26 J 15SS0460002 0.22 J 15SB0460206	0.25 J 15SS0470002	0.86 J 15SS0480002 0.59 15SB0480206-D
CALCIUM	1270 J 15SS0430002	4000 J 15SS0440002	9140 J 15SS0450002 22900 J 15SB0450206	3300 J 15SS0460002 1400 J 15SB0460206	2280 J 15SS0470002	32700 J 15SS0480002 29200 J 15SB0480206-D
CHROMIUM	40.2 J 15SS0430002	36.8 J 15SS0440002	21 J 15SS0450002 26.5 J 15SB0450206	25.1 J 15SS0460002 21.4 J 15SB0460206	23 J 15SS0470002	23.3 J 15SS0480002 22.5 J 15SB0480206-D
COBALT	5.3 J 15SS0430002	5.1 J 15SS0440002	6.4 J 15SS0450002 7.4 J 15SB0450206	5.1 J 15SS0460002 10.2 J 15SB0460206	4.3 J 15SS0470002	7 J 15SS0480002 11 J 15SB0480206-D
COPPER	13.3 J 15SS0430002	16.8 J 15SS0440002	9.2 J 15SS0450002 11.9 J 15SB0450206	13 J 15SS0460002 10.2 J 15SB0460206	15.8 J 15SS0470002	10.7 J 15SS0480002 15.1 J 15SB0480206-D
IRON	46500 J 15SS0430002	34300 J 15SS0440002	16300 J 15SS0450002 20000 J 15SB0450206	24300 J 15SS0460002 19000 J 15SB0460206	25300 J 15SS0470002	23500 J 15SS0480002 21800 J 15SB0480206-D
LEAD	13.4 J 15SS0430002	11 J 15SS0440002	10.6 J 15SS0450002 9.5 J 15SB0450206	11 J 15SS0460002 9.2 J 15SB0460206	16.1 J 15SS0470002	14.8 J 15SS0480002 26.4 J 15SB0480206-D
MAGNESIUM	1290 J 15SS0430002	2540 J 15SS0440002	3020 J 15SS0450002 3550 J 15SB0450206	3560 J 15SS0460002 2090 J 15SB0460206	2890 J 15SS0470002	3550 J 15SS0480002 3530 J 15SB0480206-D
MANGANESE	170 15SS0430002	116 15SS0440002	156 15SS0450002 241 15SB0450206	246 15SS0460002 101 15SB0460206	180 J 15SS0470002	346 J 15SS0480002 333 J 15SB0480206-D
MERCURY	0.007 U 15SS0430002	0.05 J 15SS0440002	0.031 J 15SS0450002 0.012 J 15SB0450206	0.026 J 15SS0460002 0.007 U 15SB0460206	0.083 J 15SS0470002	0.038 J 15SS0480002 0.015 J 15SB0480206-D
NICKEL	15.7 J 15SS0430002	16.7 J 15SS0440002	12.7 J 15SS0450002 21.6 J 15SB0450206	13.2 J 15SS0460002 12 J 15SB0460206	13.6 J 15SS0470002	14.3 J 15SS0480002 17.9 J 15SB0480206-D
POTASSIUM	1130 J 15SS0430002	2720 J 15SS0440002	1510 J 15SS0450002 2350 J 15SB0450206	1550 J 15SS0460002 1050 J 15SB0460206	1660 J 15SS0470002	1740 J 15SS0480002 1640 J 15SB0480206-D
SELENIUM	0.31 J 15SS0430002	0.33 J 15SS0440002	0.29 J 15SS0450002 0.36 J 15SB0450206	0.33 J 15SS0460002 0.16 J 15SB0460206	0.46 J 15SS0470002	0.39 J 15SS0480002 0.4 J 15SB0480206-D
SILVER	0.045 U 15SS0430002	0.046 U 15SS0440002	0.04 J 15SS0450002 0.044 U 15SB0450206	0.05 U 15SS0460002 0.05 J 15SB0460206	0.044 U 15SS0470002	0.05 U 15SS0480002 0.044 U 15SB0480206-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB043 12/10/2004	15SB044 12/10/2004	15SB045 12/10/2004	15SB046 12/10/2004	15SB047 12/9/2004	15SB048 12/9/2004
SODIUM	76.4 J 15SS0430002	142 J 15SS0440002	99.9 J 15SS0450002 120 J 15SB0450206	126 J 15SS0460002 82.3 J 15SB0460206	121 U 15SS0470002	87.7 J 15SS0480002 100 U 15SB0480206-D
THALLIUM	0.19 U 15SS0430002	0.28 U 15SS0440002	0.26 U 15SS0450002 0.17 U 15SB0450206	0.28 U 15SS0460002 0.23 U 15SB0460206	0.37 J 15SS0470002	0.26 U 15SS0480002 0.39 J 15SB0480206-D
TIN	0.63 U 15SS0430002	0.67 U 15SS0440002	0.66 U 15SS0450002 0.5 U 15SB0450206	0.71 U 15SS0460002 0.71 U 15SB0460206	0.36 U 15SS0470002	0.56 U 15SS0480002 0.65 U 15SB0480206-D
VANADIUM	37.2 J 15SS0430002	34.5 J 15SS0440002	30.4 J 15SS0450002 23.8 J 15SB0450206	40.5 J 15SS0460002 31 J 15SB0460206	39.4 15SS0470002	37.3 J 15SS0480002 36 15SB0480206-D
ZINC	38.1 J 15SS0430002	30.6 J 15SS0440002	40.6 J 15SS0450002 42.3 J 15SB0450206	36.7 J 15SS0460002 26 J 15SB0460206	42.7 J 15SS0470002	43.7 15SS0480002 63.5 J 15SB0480206-D

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB049 12/14/2004	15SB062 12/14/2004
Volatile Organics (ug/kg)		
1,1,1,2-TETRACHLOROETHANE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
1,1,1-TRICHLOROETHANE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
1,1,2,2-TETRACHLOROETHANE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
1,1,2-TRICHLOROETHANE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
1,1-DICHLOROETHANE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
1,1-DICHLOROETHENE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
1,2,3-TRICHLOROPROPANE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
1,2-DIBROMO-3-CHLOROPROPANE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
1,2-DIBROMOETHANE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
1,2-DICHLOROETHANE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
1,2-DICHLOROPROPANE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
2-BUTANONE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 4 J 15SB0620206

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB049 12/14/2004	15SB062 12/14/2004
2-HEXANONE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
3-CHLOROPROPENE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
4-METHYL-2-PENTANONE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
ACETONE	12 U 15SS0490002	1.09 U 15SS0620002-D 32 J 15SB0620206
ACETONITRILE	44.7 UR 15SS0490002	43.6 UR 15SS0620002-D 49.5 UR 15SB0620206
ACROLEIN	1.12 UR 15SS0490002	1.09 UR 15SS0620002-D 1.24 UR 15SB0620206
ACRYLONITRILE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
BENZENE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
BROMODICHLOROMETHANE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
BROMOFORM	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
BROMOMETHANE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
CARBON DISULFIDE	1.12 UJ 15SS0490002	1.09 UJ 15SS0620002-D 1.24 UJ 15SB0620206

APPEN[illegible]LE G-1
RESULTS FOR CHEMICALS ANAL[illegible]N ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB049 12/14/2004	15SB062 12/14/2004
CARBON TETRACHLORIDE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
CHLOROBENZENE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
CHLORODIBROMOMETHANE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
CHLOROETHANE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
CHLOROFORM	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
CHLOROMETHANE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
CHLOROPRENE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
CIS-1,2-DICHLOROETHENE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
CIS-1,3-DICHLOROPROPENE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
DIBROMOMETHANE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
DICHLORODIFLUOROMETHANE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
ETHYL METHACRYLATE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB049 12/14/2004	15SB062 12/14/2004
ETHYLBENZENE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
ISOBUTANOL	44.7 UR 15SS0490002	43.6 UR 15SS0620002-D 49.5 UR 15SB0620206
METHACRYLONITRILE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
METHYL IODIDE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
METHYL METHACRYLATE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
METHYL TERT-BUTYL ETHER	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
METHYLENE CHLORIDE	28 J 15SS0490002	56 J 15SS0620002-D 1.24 UJ 15SB0620206
PROPIONITRILE	44.7 UR 15SS0490002	43.6 UR 15SS0620002-D 49.5 UR 15SB0620206
STYRENE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
TETRACHLOROETHENE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
TOLUENE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
TOTAL XYLENES	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB049 12/14/2004	15SB062 12/14/2004
TRANS-1,2-DICHLOROETHENE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
TRANS-1,3-DICHLOROPROPENE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
TRANS-1,4-DICHLORO-2-BUTENE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
TRICHLOROETHENE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
TRICHLOROFLUOROMETHANE	2 J 15SS0490002	4 15SS0620002-D 1.24 U 15SB0620206
VINYL ACETATE	1.12 UJ 15SS0490002	1.09 UJ 15SS0620002-D 1.24 UJ 15SB0620206
VINYL CHLORIDE	1.12 U 15SS0490002	1.09 U 15SS0620002-D 1.24 U 15SB0620206
Semivolatile Organics (ug/kg)		
1,2,4,5-TETRACHLOROBENZENE	86 U 15SS0490002	81.1 U 15SS0620002-D
1,2,4-TRICHLOROBENZENE	86 U 15SS0490002	81.1 U 15SS0620002-D
1,2-DICHLOROBENZENE	86 U 15SS0490002	81.1 U 15SS0620002-D
1,3-DICHLOROBENZENE	86 U 15SS0490002	81.1 U 15SS0620002-D
1,4-DICHLOROBENZENE	86 U 15SS0490002	81.1 U 15SS0620002-D
1,4-DIOXANE	128 U 15SS0490002	121 U 15SS0620002-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB049 12/14/2004	15SB062 12/14/2004
1,4-NAPHTHOQUINONE	86 U 15SS0490002	81.1 U 15SS0620002-D
1,4-PHENYLENEDIAMINE	86 U 15SS0490002	81.1 U 15SS0620002-D
1-NAPHTHYLAMINE	86 U 15SS0490002	81.1 U 15SS0620002-D
2,2'-OXYBIS(1-CHLOROPROPANE)	86 U 15SS0490002	81.1 U 15SS0620002-D
2,3,4,6-TETRACHLOROPHENOL	86 U 15SS0490002	81.1 U 15SS0620002-D
2,4,5-TRICHLOROPHENOL	86 U 15SS0490002	81.1 U 15SS0620002-D
2,4,6-TRICHLOROPHENOL	86 U 15SS0490002	81.1 U 15SS0620002-D
2,4-DICHLOROPHENOL	86 U 15SS0490002	81.1 U 15SS0620002-D
2,4-DIMETHYLPHENOL	86 U 15SS0490002	81.1 U 15SS0620002-D
2,4-DINITROPHENOL	86 U 15SS0490002	81.1 U 15SS0620002-D
2,6-DICHLOROPHENOL	86 U 15SS0490002	81.1 U 15SS0620002-D
2-ACETYLAMINOFLUORENE	86 UJ 15SS0490002	81.1 U 15SS0620002-D
2-CHLORONAPHTHALENE	86 U 15SS0490002	81.1 U 15SS0620002-D
2-CHLOROPHENOL	86 U 15SS0490002	81.1 U 15SS0620002-D
2-METHYLNAPHTHALENE	16.9 U 15SS0490002	4 U 15SS0620002-D
2-METHYLPHENOL	86 U 15SS0490002	81.1 U 15SS0620002-D

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB049 12/14/2004	15SB062 12/14/2004
2-NAPHTHYLAMINE	86 U 15SS0490002	81.1 U 15SS0620002-D
2-NITROANILINE	86 U 15SS0490002	81.1 U 15SS0620002-D
2-NITROPHENOL	86 U 15SS0490002	81.1 U 15SS0620002-D
2-PICOLINE	86 U 15SS0490002	81.1 U 15SS0620002-D
3&4-METHYLPHENOL	86 U 15SS0490002	81.1 U 15SS0620002-D
3,3'-DICHLOROBENZIDINE	86 UJ 15SS0490002	81.1 U 15SS0620002-D
3,3'-DIMETHYLBENZIDINE	86 UJ 15SS0490002	81.1 UJ 15SS0620002-D
3-METHYLCHOLANTHRENE	86 U 15SS0490002	81.1 U 15SS0620002-D
3-NITROANILINE	86 U 15SS0490002	81.1 U 15SS0620002-D
4,6-DINITRO-2-METHYLPHENOL	86 U 15SS0490002	81.1 U 15SS0620002-D
4-AMINOBIPHENYL	86 U 15SS0490002	81.1 U 15SS0620002-D
4-BROMOPHENYL PHENYL ETHER	86 U 15SS0490002	81.1 U 15SS0620002-D
4-CHLORO-3-METHYLPHENOL	86 U 15SS0490002	81.1 U 15SS0620002-D
4-CHLOROANILINE	86 U 15SS0490002	81.1 U 15SS0620002-D
4-CHLOROPHENYL PHENYL ETHER	86 U 15SS0490002	81.1 U 15SS0620002-D
4-NITROANILINE	86 U 15SS0490002	81.1 U 15SS0620002-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB049 12/14/2004	15SB062 12/14/2004
4-NITROPHENOL	86 U 15SS0490002	81.1 U 15SS0620002-D
4-NITROQUINOLINE-1-OXIDE	86 UR 15SS0490002	81.1 UR 15SS0620002-D
5-NITRO-O-TOLUIDINE	86 U 15SS0490002	81.1 U 15SS0620002-D
7,12-DIMETHYLBENZ(A)ANTHRACENE	86 U 15SS0490002	81.1 U 15SS0620002-D
A,A-DIMETHYLPHENETHYLAMINE	86 UJ 15SS0490002	81.1 U 15SS0620002-D
ACENAPHTHENE	16.9 U 15SS0490002	4 U 15SS0620002-D
ACENAPHTHYLENE	87 15SS0490002	4 U 15SS0620002-D
ACETOPHENONE	86 U 15SS0490002	81.1 U 15SS0620002-D
ANILINE	86 U 15SS0490002	81.1 U 15SS0620002-D
ANTHRACENE	120 15SS0490002	4 U 15SS0620002-D
ARAMITE	86 U 15SS0490002	81.1 U 15SS0620002-D
BENZO(A)ANTHRACENE	850 15SS0490002	4 U 15SS0620002-D
BENZO(A)PYRENE	820 15SS0490002	4 U 15SS0620002-D
BENZO(B)FLUORANTHENE	970 15SS0490002	4 U 15SS0620002-D
BENZO(G,H,I)PERYLENE	710 15SS0490002	4 U 15SS0620002-D
BENZO(K)FLUORANTHENE	750 15SS0490002	4 U 15SS0620002-D

APPENDIX G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB049 12/14/2004	15SB062 12/14/2004
BENZYL ALCOHOL	86 U 15SS0490002	81.1 U 15SS0620002-D
BIS(2-CHLOROETHOXY)METHANE	86 U 15SS0490002	81.1 U 15SS0620002-D
BIS(2-CHLOROETHYL)ETHER	86 U 15SS0490002	81.1 U 15SS0620002-D
BIS(2-ETHYLHEXYL)PHTHALATE	150 J 15SS0490002	81.1 U 15SS0620002-D
BUTYL BENZYL PHTHALATE	86 UJ 15SS0490002	81.1 U 15SS0620002-D
CHLOROBENZILATE	86 UJ 15SS0490002	81.1 U 15SS0620002-D
CHRYSENE	1100 15SS0490002	4 U 15SS0620002-D
DI-N-BUTYL PHTHALATE	130 J 15SS0490002	81.1 U 15SS0620002-D
DI-N-OCTYL PHTHALATE	86 U 15SS0490002	81.1 U 15SS0620002-D
DIALLATE	86 U 15SS0490002	81.1 U 15SS0620002-D
DIBENZO(A,H)ANTHRACENE	220 15SS0490002	4 U 15SS0620002-D
DIBENZOFURAN	86 U 15SS0490002	81.1 U 15SS0620002-D
DIETHYL PHTHALATE	86 U 15SS0490002	81.1 U 15SS0620002-D
DIMETHYL PHTHALATE	86 U 15SS0490002	81.1 U 15SS0620002-D
DIPHENYLAMINE	86 U 15SS0490002	81.1 U 15SS0620002-D
ETHYL METHANE SULFONATE	86 U 15SS0490002	81.1 U 15SS0620002-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB049 12/14/2004	15SB062 12/14/2004
FLUORANTHENE	940 15SS0490002	4 U 15SS0620002-D
FLUORENE	16.9 U 15SS0490002	4 U 15SS0620002-D
HEXACHLOROBENZENE	86 U 15SS0490002	81.1 U 15SS0620002-D
HEXACHLOROBUTADIENE	86 U 15SS0490002	81.1 U 15SS0620002-D
HEXACHLOROCYCLOPENTADIENE	86 UJ 15SS0490002	81.1 UJ 15SS0620002-D
HEXACHLOROETHANE	86 U 15SS0490002	81.1 U 15SS0620002-D
HEXACHLOROPROPENE	86 U 15SS0490002	81.1 U 15SS0620002-D
INDENO(1,2,3-CD)PYRENE	650 15SS0490002	4 U 15SS0620002-D
ISODRIN	86 U 15SS0490002	81.1 U 15SS0620002-D
ISOPHORONE	86 U 15SS0490002	81.1 U 15SS0620002-D
ISOSAFROLE	86 U 15SS0490002	81.1 U 15SS0620002-D
KEPONE	86 UJ 15SS0490002	81.1 UJ 15SS0620002-D
METHAPYRILENE	86 U 15SS0490002	81.1 UJ 15SS0620002-D
METHYL METHANE SULFONATE	86 U 15SS0490002	81.1 U 15SS0620002-D
N-NITROSO-DI-N-BUTYLAMINE	86 U 15SS0490002	81.1 U 15SS0620002-D
N-NITROSO-DI-N-PROPYLAMINE	86 UJ 15SS0490002	81.1 U 15SS0620002-D

APPEN[illegible]LE G-1
RESULTS FOR CHEMICALS ANA[illegible]D IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB049 12/14/2004	15SB062 12/14/2004
N-NITROSODIETHYLAMINE	86 U 15SS0490002	81.1 U 15SS0620002-D
N-NITROSODIMETHYLAMINE	86 UJ 15SS0490002	81.1 U 15SS0620002-D
N-NITROSODIPHENYLAMINE	86 U 15SS0490002	81.1 U 15SS0620002-D
N-NITROSOMETHYLETHYLAMINE	86 U 15SS0490002	81.1 U 15SS0620002-D
N-NITROSOMORPHOLINE	86 UJ 15SS0490002	81.1 U 15SS0620002-D
N-NITROSOPIPERIDINE	86 U 15SS0490002	81.1 U 15SS0620002-D
N-NITROSOPYRROLIDINE	86 UJ 15SS0490002	81.1 U 15SS0620002-D
NAPHTHALENE	16.9 U 15SS0490002	4 U 15SS0620002-D
O,O,O-TRIETHYL PHOSPHOROTHIOATE	86 U 15SS0490002	81.1 U 15SS0620002-D
O-TOLUIDINE	86 U 15SS0490002	81.1 U 15SS0620002-D
P-(DIMETHYLAMINO)AZOBENZENE	86 U 15SS0490002	81.1 U 15SS0620002-D
PENTACHLOROBENZENE	86 U 15SS0490002	81.1 U 15SS0620002-D
PENTACHLOROETHANE	86 U 15SS0490002	81.1 U 15SS0620002-D
PENTACHLORONITROBENZENE	86 U 15SS0490002	81.1 U 15SS0620002-D
PHENACETIN	86 U 15SS0490002	81.1 U 15SS0620002-D
PHENANTHRENE	130 15SS0490002	4 U 15SS0620002-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB049 12/14/2004	15SB062 12/14/2004
PHENOL	86 U 15SS0490002	81.1 U 15SS0620002-D
PRONAMIDE	86 U 15SS0490002	81.1 U 15SS0620002-D
PYRENE	1600 15SS0490002	4 U 15SS0620002-D
PYRIDINE	86 U 15SS0490002	81.1 U 15SS0620002-D
SAFROLE	86 U 15SS0490002	81.1 U 15SS0620002-D
Pesticides PCBs (ug/kg)		
4,4'-DDD	2.7 J 15SS0490002	1.63 UJ 15SS0620002-D
4,4'-DDE	12 15SS0490002	1.63 UJ 15SS0620002-D
4,4'-DDT	14 15SS0490002	1.63 U 15SS0620002-D
ALDRIN	0.834 U 15SS0490002	0.787 U 15SS0620002-D
ALPHA-BHC	0.834 U 15SS0490002	0.787 U 15SS0620002-D
ALPHA-CHLORDANE	0.834 U 15SS0490002	0.787 U 15SS0620002-D
AROCLOR-1016	11.6 U 15SS0490002	10.9 U 15SS0620002-D
AROCLOR-1221	11.6 U 15SS0490002	10.9 U 15SS0620002-D
AROCLOR-1232	11.6 U 15SS0490002	10.9 U 15SS0620002-D
AROCLOR-1242	11.6 U 15SS0490002	10.9 U 15SS0620002-D
AROCLOR-1248	11.6 U 15SS0490002	10.9 U 15SS0620002-D
AROCLOR-1254	11.6 U 15SS0490002	10.9 U 15SS0620002-D
AROCLOR-1260	11.6 U 15SS0490002	10.9 U 15SS0620002-D
BETA-BHC	0.834 U 15SS0490002	0.787 U 15SS0620002-D
DELTA-BHC	0.834 U 15SS0490002	0.787 UJ 15SS0620002-D
DIELDRIN	1.73 U 15SS0490002	1.63 U 15SS0620002-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB049 12/14/2004	15SB062 12/14/2004
ENDOSULFAN I	0.834 U 15SS0490002	0.787 U 15SS0620002-D
ENDOSULFAN II	1.73 U 15SS0490002	1.63 U 15SS0620002-D
ENDOSULFAN SULFATE	1.73 U 15SS0490002	1.63 U 15SS0620002-D
ENDRIN ALDEHYDE	1.73 U 15SS0490002	1.63 U 15SS0620002-D
ENDRIN KETONE	1.73 U 15SS0490002	1.63 U 15SS0620002-D
ENDRIN	1.73 U 15SS0490002	1.63 U 15SS0620002-D
GAMMA-BHC (LINDANE)	0.834 U 15SS0490002	0.787 U 15SS0620002-D
GAMMA-CHLORDANE	0.834 U 15SS0490002	0.787 U 15SS0620002-D
HEPTACHLOR EPOXIDE	0.834 U 15SS0490002	0.787 U 15SS0620002-D
HEPTACHLOR	0.834 U 15SS0490002	0.787 U 15SS0620002-D
METHOXYCHLOR	8.34 U 15SS0490002	7.87 U 15SS0620002-D
TOXAPHENE	21.8 U 15SS0490002	20.6 U 15SS0620002-D
Herbicides (ug/kg)		
2,4,5-T	1.73 U 15SS0490002	1.63 U 15SS0620002-D
2,4,5-TP (SILVEX)	1.73 U 15SS0490002	1.63 U 15SS0620002-D
2,4-D	1.73 U 15SS0490002	1.63 U 15SS0620002-D
DINOSEB	1.73 U 15SS0490002	1.63 U 15SS0620002-D
HEXACHLOROPHENE	1.09 U 15SS0490002	1.03 U 15SS0620002-D
PENTACHLOROPHENOL	28 J 15SS0490002	0.545 U 15SS0620002-D
Inorganics (mg/kg)		
ALUMINUM	17800 J 15SS0490002	15200 J 15SS0620002-D
ANTIMONY	0.5 U 15SS0490002	0.12 U 15SS0620002-D
ARSENIC	8 J 15SS0490002	5.6 J 15SS0620002-D

APPENDIX TABLE G-1
RESULTS FOR CHEMICALS ANALYZED IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB049 12/14/2004	15SB062 12/14/2004
BARIUM	110 J 15SS0490002	108 J 15SS0620002-D
BERYLLIUM	1 15SS0490002	0.75 15SS0620002-D
CADMIUM	0.4 J 15SS0490002	0.26 J 15SS0620002-D
CALCIUM	3610 J 15SS0490002	1510 J 15SS0620002-D
CHROMIUM	20.8 J 15SS0490002	18 J 15SS0620002-D
COBALT	13.1 J 15SS0490002	12.4 J 15SS0620002-D
COPPER	11.7 J 15SS0490002	7.6 J 15SS0620002-D
IRON	20300 J 15SS0490002	14600 J 15SS0620002-D
LEAD	25.6 J 15SS0490002	19.2 J 15SS0620002-D
MAGNESIUM	1870 J 15SS0490002	1660 J 15SS0620002-D
MANGANESE	687 J 15SS0490002	1470 J 15SS0620002-D
MERCURY	0.035 J 15SS0490002	0.027 J 15SS0620002-D
NICKEL	21.2 J 15SS0490002	14.6 J 15SS0620002-D
POTASSIUM	1370 J 15SS0490002	1260 J 15SS0620002-D
SELENIUM	0.55 15SS0490002	0.37 J 15SS0620002-D
SILVER	0.07 U 15SS0490002	0.05 U 15SS0620002-D

APPE[illegible]LE G-1
RESULTS FOR CHEMICALS ANA[illegible]D IN ALL SOIL SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION SAMPLE DATE	15SB049 12/14/2004	15SB062 12/14/2004
SODIUM	81.6 U 15SS0490002	75.7 U 15SS0620002-D
THALLIUM	0.35 J 15SS0490002	0.39 J 15SS0620002-D
TIN	0.53 U 15SS0490002	0.29 U 15SS0620002-D
VANADIUM	30.1 15SS0490002	26.2 15SS0620002-D
ZINC	56.4 J 15SS0490002	37.1 J 15SS0620002-D

Data qualifiers (e.g., U, J) are defined in section 3 of the text.
ug/kg - micrograms per kilogram
mg/kg - milligrams per kilogram
(1) - Locations 8-10, 33,34, 36,38,39,41,50-61 were not sampled at depth due to refusal or no visible signs of conatmination in soil core

APPE[illegible]E G-2
RESULTS FOR CHEMICALS ANALYZED [illegible] SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL
LOCATION	15SW/SD004	15SW/SD004	15SW/SD006	15SW/SD006	15SW/SD006	15SW/SD006
SAMPLE NUMBER	15ST00401	15ST00401-F	15SW00601	15SW00601-D	15SW00601-F	15SW00601-F-D
SAMPLE CODE	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP
SAMPLE DEPTH	1/12/2005	1/12/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005
Volatile Organics (ug/L)						
1,1,1,2-TETRACHLOROETHANE	0.3 U		0.3 U	0.3 U		
1,1,1-TRICHLOROETHANE	0.3 U		0.3 U	0.3 U		
1,1,2,2-TETRACHLOROETHANE	0.3 U		0.3 U	0.3 U		
1,1,2-TRICHLOROETHANE	0.3 U		0.3 U	0.3 U		
1,1-DICHLOROETHANE	0.3 U		0.3 U	0.3 U		
1,1-DICHLOROETHENE	0.3 UJ		0.3 UJ	0.3 UJ		
1,2,3-TRICHLOROPROPANE	0.3 U		0.3 U	0.3 U		
1,2-DIBROMO-3-CHLOROPROPANE	0.3 U		0.3 U	0.3 U		
1,2-DIBROMOETHANE	0.3 U		0.3 U	0.3 U		
1,2-DICHLOROETHANE	0.3 U		0.3 U	0.3 U		
1,2-DICHLOROPROPANE	0.3 U		0.3 U	0.3 U		
2-BUTANONE	0.5 U		0.5 U	0.5 U		
2-HEXANONE	0.5 U		0.5 U	0.5 U		
3-CHLOROPROPENE	0.5 UJ		0.5 UJ	0.5 UJ		
4-METHYL-2-PENTANONE	0.5 U		0.5 U	0.5 U		
ACETONE	0.5 U		0.5 U	0.5 U		
ACETONITRILE	20 UR		20 UR	20 UR		
ACROLEIN	0.5 UR		0.5 UR	0.5 UR		
ACRYLONITRILE	0.5 U		0.5 U	0.5 U		
BENZENE	0.3 U		0.3 U	0.3 U		
BROMODICHLOROMETHANE	0.3 U		0.3 U	0.3 U		
BROMOFORM	0.3 U		0.3 U	0.3 U		
BROMOMETHANE	0.3 UJ		0.3 UJ	0.3 UJ		
CARBON DISULFIDE	0.3 U		0.3 U	0.3 U		
CARBON TETRACHLORIDE	0.3 U		0.3 U	0.3 U		
CHLOROBENZENE	0.3 U		0.3 U	0.3 U		
CHLORODIBROMOMETHANE	0.3 U		0.3 U	0.3 U		
CHLOROETHANE	0.5 U		0.5 U	0.5 U		
CHLOROFORM	0.3 U		0.3 U	0.3 U		
CHLOROMETHANE	0.3 U		0.3 U	0.3 U		
CHLOROPRENE	0.5 U		0.5 U	0.5 U		
CIS-1,2-DICHLOROETHENE	0.3 U		0.3 U	0.3 U		
CIS-1,3-DICHLOROPROPENE	0.3 U		0.3 U	0.3 U		
DIBROMOMETHANE	0.3 U		0.3 U	0.3 U		
DICHLORODIFLUOROMETHANE	0.3 U		0.3 U	0.3 U		
ETHYL METHACRYLATE	0.5 U		0.5 U	0.5 U		
ETHYLBENZENE	0.3 U		0.3 U	0.3 U		
ISOBUTANOL	20 UR		20 UR	20 UR		
METHACRYLONITRILE	0.3 U		0.3 U	0.3 U		
METHYL IODIDE	0.5 U		0.5 U	0.5 U		
METHYL METHACRYLATE	0.5 U		0.5 U	0.5 U		
METHYL TERT-BUTYL ETHER	0.5 U		0.5 U	0.5 U		
METHYLENE CHLORIDE	0.3 UJ		0.3 UJ	0.3 UJ		
PROPIONITRILE	20 UR		20 UR	20 UR		
STYRENE	0.3 U		0.3 U	0.3 U		
TETRACHLOROETHENE	0.3 U		0.3 U	0.3 U		
TOLUENE	0.3 U		0.3 U	0.3 U		
TOTAL XYLENES	0.3 U		0.3 U	0.3 U		

APPENDIX TABLE G-2
RESULTS FOR CHEMICALS ANALYZED IN ALL SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL
LOCATION	15SW/SD004	15SW/SD004	15SW/SD006	15SW/SD006	15SW/SD006	15SW/SD006
SAMPLE NUMBER	15ST00401	15ST00401-F	15SW00601	15SW00601-D	15SW00601-F	15SW00601-F-D
SAMPLE CODE	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP
SAMPLE DEPTH	1/12/2005	1/12/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005
TRANS-1,2-DICHLOROETHENE	0.3 U		0.3 U	0.3 U		
TRANS-1,3-DICHLOROPROPENE	0.3 U		0.3 U	0.3 U		
TRANS-1,4-DICHLORO-2-BUTENE	0.5 U		0.5 U	0.5 U		
TRICHLOROETHENE	0.3 U		0.3 U	0.3 U		
TRICHLOROFLUOROMETHANE	0.3 U		0.3 U	0.3 U		
VINYL ACETATE	0.5 U		0.5 U	0.5 U		
VINYL CHLORIDE	0.3 U		0.3 U	0.3 U		
Semivolatile Organics (ug/L)						
1,2,4,5-TETRACHLOROBENZENE	1 U		0.952 U	0.962 U		
1,2,4-TRICHLOROBENZENE	1 U		0.952 U	0.962 U		
1,2-DICHLOROBENZENE	1 U		0.952 U	0.962 U		
1,3-DICHLOROBENZENE	1 U		0.952 U	0.962 U		
1,4-DICHLOROBENZENE	1 U		0.952 U	0.962 U		
1,4-DIOXANE	1 UJ		0.952 UJ	0.962 UJ		
1,4-NAPHTHOQUINONE	1 U		0.952 U	0.962 U		
1,4-PHENYLENEDIAMINE	1 U		0.952 U	0.962 U		
1-NAPHTHYLAMINE	1 U		0.952 U	0.962 U		
2,2'-OXYBIS(1-CHLOROPROPANE)	1 UJ		0.952 UJ	0.962 UJ		
2,3,4,6-TETRACHLOROPHENOL	1 U		0.952 U	0.962 U		
2,4,5-TRICHLOROPHENOL	1 U		0.952 U	0.962 U		
2,4,6-TRICHLOROPHENOL	1 U		0.952 U	0.962 U		
2,4-DICHLOROPHENOL	1 U		0.952 U	0.962 U		
2,4-DIMETHYLPHENOL	1 U		0.952 U	0.962 U		
2,4-DINITROPHENOL	1 U		0.952 U	0.962 U		
2,6-DICHLOROPHENOL	1 U		0.952 U	0.962 U		
2-ACETYLAMINOFLUORENE	1 UJ		0.952 UJ	0.962 UJ		
2-CHLORONAPHTHALENE	1 U		0.952 U	0.962 U		
2-CHLOROPHENOL	1 U		0.952 U	0.962 U		
2-METHYLNAPHTHALENE	0.05 U		0.049 U	0.053 U		
2-METHYLPHENOL	1 U		0.952 U	0.962 U		
2-NAPHTHYLAMINE	1 U		0.952 U	0.962 U		
2-NITROANILINE	1 U		0.952 U	0.962 U		
2-NITROPHENOL	1 U		0.952 U	0.962 U		
2-PICOLINE	1 U		0.952 U	0.962 U		
3&4-METHYLPHENOL	1 U		0.952 U	0.962 U		
3,3'-DICHLOROBENZIDINE	1 U		0.952 UR	0.962 U		
3,3'-DIMETHYLBENZIDINE	1 UJ		0.952 UJ	0.962 UJ		
3-METHYLCHOLANTHRENE	1 U		0.952 U	0.962 U		
3-NITROANILINE	1 U		0.952 U	0.962 U		
4,6-DINITRO-2-METHYLPHENOL	1 U		0.952 U	0.962 U		
4-AMINOBIPHENYL	1 U		0.952 U	0.962 U		
4-BROMOPHENYL PHENYL ETHER	1 U		0.952 U	0.962 U		
4-CHLORO-3-METHYLPHENOL	1 U		0.952 U	0.962 U		
4-CHLOROANILINE	1 U		0.952 U	0.962 U		
4-CHLOROPHENYL PHENYL ETHER	1 U		0.952 U	0.962 U		
4-NITROANILINE	1 U		0.952 U	0.962 U		
4-NITROPHENOL	1 UJ		0.952 UJ	0.962 UJ		
4-NITROQUINOLINE-1-OXIDE	1 UR		0.952 UR	0.962 UR		
5-NITRO-O-TOLUIDINE	1 U		0.952 U	0.962 U		

APPE[illegible]LE G-2
RESULTS FOR CHEMICALS ANALYZED IN ALL SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL
LOCATION	15SW/SD004	15SW/SD004	15SW/SD006	15SW/SD006	15SW/SD006	15SW/SD006
SAMPLE NUMBER	15ST00401	15ST00401-F	15SW00601	15SW00601-D	15SW00601-F	15SW00601-F-D
SAMPLE CODE	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP
SAMPLE DEPTH	1/12/2005	1/12/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005
7,12-DIMETHYLBENZ(A)ANTHRACENE	1 U		0.952 U	0.962 U		
A,A-DIMETHYLPHENETHYLAMINE	1 U		0.952 U	0.962 U		
ACENAPHTHENE	0.05 U		0.049 U	0.053 U		
ACENAPHTHYLENE	0.05 U		0.049 U	0.06 J		
ACETOPHENONE	1 U		0.952 U	0.962 U		
ANILINE	1 U		0.952 U	0.962 U		
ANTHRACENE	0.05 U		0.07 J	0.1 J		
ARAMITE	1 U		0.952 U	0.962 U		
BENZO(A)ANTHRACENE	0.05 U		0.25	0.31		
BENZO(A)PYRENE	0.05 U		0.25	0.3		
BENZO(B)FLUORANTHENE	0.05 U		0.56	0.65		
BENZO(G,H,I)PERYLENE	0.05 U		0.24	0.3		
BENZO(K)FLUORANTHENE	0.05 U		0.19 J	0.29 J		
BENZYL ALCOHOL	1 U		0.952 U	0.962 U		
BIS(2-CHLOROETHOXY)METHANE	1 U		0.952 U	0.962 U		
BIS(2-CHLOROETHYL)ETHER	1 U		0.952 U	0.962 U		
BIS(2-ETHYLHEXYL)PHTHALATE	1 U		0.952 U	0.962 U		
BUTYL BENZYL PHTHALATE	1 U		0.952 U	0.962 U		
CHLOROBENZILATE	1 U		0.952 U	0.962 U		
CHRYSENE	0.05 U		0.48	0.56		
DI-N-BUTYL PHTHALATE	1 U		0.952 U	0.962 U		
DI-N-OCTYL PHTHALATE	1 U		0.952 U	0.962 U		
DIALLATE	1 U		0.952 U	0.962 U		
DIBENZO(A,H)ANTHRACENE	0.05 U		0.049 U	0.053 U		
DIBENZOFURAN	1 U		0.952 U	0.962 U		
DIETHYL PHTHALATE	1 U		0.952 U	0.962 U		
DIMETHYL PHTHALATE	1 U		0.952 U	0.962 U		
DIPHENYLAMINE	1 U		0.952 U	0.962 U		
ETHYL METHANE SULFONATE	1 U		0.952 U	0.962 U		
FLUORANTHENE	0.05 U		1.32	1.51		
FLUORENE	0.05 U		0.049 U	0.06 J		
HEXACHLOROBENZENE	1 UJ		0.952 UJ	0.962 UJ		
HEXACHLOROBUTADIENE	1 U		0.952 U	0.962 U		
HEXACHLOROCYCLOPENTADIENE	1 UJ		0.952 UJ	0.962 UJ		
HEXACHLOROETHANE	1 U		0.952 U	0.962 U		
HEXACHLOROPROPENE	1 U		0.952 U	0.962 U		
INDENO(1,2,3-CD)PYRENE	0.05 U		0.22	0.26		
ISODRIN	1 U		0.952 U	0.962 U		
ISOPHORONE	1 U		0.952 U	0.962 U		
ISOSAFROLE	1 U		0.952 U	0.962 U		
KEPONE	1 UJ		0.952 UJ	0.962 UJ		
METHAPYRILENE	1 UJ		0.952 UJ	0.962 UJ		
METHYL METHANE SULFONATE	1 U		0.952 U	0.962 U		
N-NITROSO-DI-N-BUTYLAMINE	1 U		0.952 U	0.962 U		
N-NITROSO-DI-N-PROPYLAMINE	1 U		0.952 U	0.962 U		
N-NITROSODIETHYLAMINE	1 U		0.952 U	0.962 U		
N-NITROSODIMETHYLAMINE	1 UJ		0.952 UJ	0.962 UJ		
N-NITROSODIPHENYLAMINE	1 U		0.952 U	0.962 U		
N-NITROSOMETHYLETHYLAMINE	1 U		0.952 U	0.962 U		

APPENDIX TABLE G-2
RESULTS FOR CHEMICALS ANALYZED IN ALL SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL
LOCATION	15SW/SD004	15SW/SD004	15SW/SD006	15SW/SD006	15SW/SD006	15SW/SD006
SAMPLE NUMBER	15ST00401	15ST00401-F	15SW00601	15SW00601-D	15SW00601-F	15SW00601-F-D
SAMPLE CODE	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP
SAMPLE DEPTH	1/12/2005	1/12/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005
N-NITROSOMORPHOLINE	1 U		0.952 U	0.962 U		
N-NITROSOPIPERIDINE	1 U		0.952 U	0.962 U		
N-NITROSOPYRROLIDINE	1 U		0.952 U	0.962 U		
NAPHTHALENE	0.05 U		0.049 U	0.053 U		
O,O,O-TRIETHYL PHOSPHOROTHIOATE	1 U		0.952 U	0.962 U		
O-TOLUIDINE	1 U		0.952 U	0.962 U		
P-(DIMETHYLAMINO)AZOBENZENE	1 U		0.952 U	0.962 U		
PENTACHLOROBENZENE	1 U		0.952 U	0.962 U		
PENTACHLOROETHANE	1 U		0.952 U	0.962 U		
PENTACHLORONITROBENZENE	1 U		0.952 U	0.962 U		
PHENACETIN	1 U		0.952 U	0.962 U		
PHENANTHRENE	0.05 U		0.47	0.63		
PHENOL	1 U		0.952 U	0.962 U		
PRONAMIDE	1 U		0.952 U	0.962 U		
PYRENE	0.05 U		1.03	1.23		
PYRIDINE	1 UJ		0.952 UJ	0.962 UJ		
SAFROLE	1 U		0.952 U	0.962 U		
Pesticides PCBs (ug/L)						
4,4'-DDD	0.052 U		0.048 U	0.049 U		
4,4'-DDE	0.052 U		0.048 U	0.049 U		
4,4'-DDT	0.052 U		0.048 U	0.049 U		
ALDRIN	0.026 U		0.024 U	0.024 U		
ALPHA-BHC	0.026 U		0.024 U	0.024 U		
ALPHA-CHLORDANE	0.026 U		0.024 U	0.024 U		
AROCLOR-1016	0.258 U		0.24 U	0.243 U		
AROCLOR-1221	0.258 U		0.24 U	0.243 U		
AROCLOR-1232	0.258 U		0.24 U	0.243 U		
AROCLOR-1242	0.258 U		0.24 U	0.243 U		
AROCLOR-1248	0.258 U		0.24 U	0.243 U		
AROCLOR-1254	0.258 U		0.24 U	0.243 U		
AROCLOR-1260	0.258 U		0.24 U	0.243 U		
BETA-BHC	0.026 U		0.024 U	0.024 U		
DELTA-BHC	0.026 U		0.024 U	0.024 U		
DIELDRIN	0.052 U		0.048 U	0.049 U		
ENDOSULFAN I	0.026 U		0.024 U	0.024 U		
ENDOSULFAN II	0.052 U		0.048 U	0.049 U		
ENDOSULFAN SULFATE	0.052 U		0.048 U	0.049 U		
ENDRIN	0.052 U		0.048 U	0.049 U		
ENDRIN ALDEHYDE	0.052 U		0.048 U	0.049 U		
ENDRIN KETONE	0.052 U		0.048 U	0.049 U		
GAMMA-BHC (LINDANE)	0.026 U		0.024 U	0.024 U		
GAMMA-CHLORDANE	0.026 U		0.024 U	0.024 U		
HEPTACHLOR	0.026 U		0.024 U	0.024 U		
HEPTACHLOR EPOXIDE	0.026 U		0.024 U	0.024 U		
METHOXYCHLOR	0.258 U		0.24 U	0.243 U		
TOXAPHENE	2.58 U		2.4 U	2.43 U		
Herbicides (ug/L)						
2,4,5-T	0.04 U		0.04 U	0.04 U		
2,4,5-TP (SILVEX)	0.04 U		0.04 U	0.04 U		

APPEN[illegible]E G-2
RESULTS FOR CHEMICALS ANALYZED [illegible] SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL
LOCATION	15SW/SD004	15SW/SD004	15SW/SD006	15SW/SD006	15SW/SD006	15SW/SD006
SAMPLE NUMBER	15ST00401	15ST00401-F	15SW00601	15SW00601-D	15SW00601-F	15SW00601-F-D
SAMPLE CODE	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP
SAMPLE DEPTH	1/12/2005	1/12/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005
2,4-D	0.04 U		0.04 U	0.04 U		
DINOSEB	0.04 U		0.04 U	0.04 U		
HEXACHLOROPHENE	0.025 U		0.025 U	0.025 U		
PENTACHLOROPHENOL	0.06 J		0.075 J	0.081 J		
Total Metals (ug/L)						
ALUMINUM	54.6 J		240 J	268 J		
ANTIMONY	0.3 U		0.22 U	0.59 U		
ARSENIC	0.59 U		0.57 U	0.76 U		
BARIUM	78.8 J		74.4 J	77.4 J		
BERYLLIUM	0.02 U		0.03 U	0.2 U		
CADMIUM	0.06 U		0.1 U	0.27 U		
CALCIUM	68600 J		81200 J	83300 J		
CHROMIUM	0.94 U		0.79 U	0.97 U		
COBALT	0.16 U		5.8 J	6.2 J		
COPPER	1.6 J		1.4 J	1.5 J		
IRON	49.9 U		699 J	781 J		
LEAD	0.369 U		0.48 U	0.595 U		
MAGNESIUM	12000 J		18700 J	17200 J		
MANGANESE	6.4 J		1230	1290		
MERCURY	0.043 U		0.042 U	0.036 U		
NICKEL	1.4 J		3.7 J	3.8 J		
POTASSIUM	757 J		2350 J	2400 J		
SELENIUM	1.3 J		0.56 U	0.74 U		
SILVER	0.028 UJ		0.028 UJ	0.21 U		

APPENDIX TABLE G-2
RESULTS FOR CHEMICALS ANALYZED IN ALL SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL
LOCATION	15SW/SD004	15SW/SD004	15SW/SD006	15SW/SD006	15SW/SD006	15SW/SD006
SAMPLE NUMBER	15ST00401	15ST00401-F	15SW00601	15SW00601-D	15SW00601-F	15SW00601-F-D
SAMPLE CODE	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP
SAMPLE DEPTH	1/12/2005	1/12/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005
SODIUM	126000 J		59400 J	61800 J		
THALLIUM	0.06 U		0.08 U	0.12 U		
TIN	0.048 U		0.048 U	0.22 U		
VANADIUM	1.14 U		1.14 U	1.14 U		
ZINC	102 J		25.2 J	25.6 J		
Dissolved Metals (ug/L)						
ALUMINUM, FILTERED		8.35 U			8.35 U	8.35 U
ANTIMONY, FILTERED		0.085 U			0.085 U	0.48 U
ARSENIC, FILTERED		0.22 U			0.25 U	0.14 U
BARIUM, FILTERED		78.9 J			74.4 J	77.1 J
BERYLLIUM, FILTERED		0.02 U			0.02 U	0.02 U
CADMIUM, FILTERED		0.039 U			0.06 U	0.039 U
CALCIUM, FILTERED		72500 J			87200 J	81000 J
CHROMIUM, FILTERED		1.3 U			0.52 U	0.66 U
COBALT, FILTERED		0.26 J			6.1	6.5
COPPER, FILTERED		3.2 J			1.6 J	1.7 J
IRON, FILTERED		311 J			210 U	359 J
LEAD, FILTERED		0.18 U			0.069 U	0.169 U
MAGNESIUM, FILTERED		14100			19900	19600
MANGANESE, FILTERED		6.1 J			1230	1190
MERCURY, FILTERED		0.049 U			0.033 U	0.035 U
NICKEL, FILTERED		3.8 J			5.1 J	6.5 J
POTASSIUM, FILTERED		788 J			2530 J	2580 J
SELENIUM, FILTERED		1.1 J			0.55 U	0.55 U
SILVER, FILTERED		0.028 UJ			0.028 UJ	0.15 U
SODIUM, FILTERED		132000 J			59800 J	59600 J
THALLIUM, FILTERED		0.043 U			0.09 U	0.08 U
TIN, FILTERED		0.19 U			0.17 U	0.22 U
VANADIUM, FILTERED		1.14 U			1.14 U	1.14 U
ZINC, FILTERED		88 J			15.7 J	15.7 J
Field Parameters						
DISSOLVED OXYGEN - METER (mg/L)	10.76		10.47			
OXIDATION REDUCTION POTENTIAL (MV	53.1		30.4			
PH (S.U.)	7.76		7.75			
SPECIFIC CONDUCTANCE (MS/CM)	0.72		1.028			
TEMPERATURE (C)	12.21		10.97			
TURBIDITY (NTU)	5.3		13			

APPE[illegible]LE G-2
RESULTS FOR CHEMICALS ANALYZED [illegible] SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL
LOCATION	15SW/SD007	15SW/SD008	15SW/SD009	15SW/SD009	15SW/SD010	15SW/SD010
SAMPLE NUMBER	15SW00701	15SW00801	15SW00901	15SW00901-F	15ST01001	15ST01001-F
SAMPLE CODE	NOT FOUND	NOT FOUND	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DEPTH	1/12/2005	1/12/2005	1/12/2005	1/12/2005	1/12/2005	1/12/2005
Volatile Organics (ug/L)						
1,1,1,2-TETRACHLOROETHANE			0.3 U		0.3 U	
1,1,1-TRICHLOROETHANE			0.3 U		0.3 U	
1,1,2,2-TETRACHLOROETHANE			0.3 U		0.3 U	
1,1,2-TRICHLOROETHANE			0.3 U		0.3 U	
1,1-DICHLOROETHANE			0.3 U		0.3 U	
1,1-DICHLOROETHENE			0.3 UJ		0.3 UJ	
1,2,3-TRICHLOROPROPANE			0.3 U		0.3 U	
1,2-DIBROMO-3-CHLOROPROPANE			0.3 U		0.3 U	
1,2-DIBROMOETHANE			0.3 U		0.3 U	
1,2-DICHLOROETHANE			0.3 U		0.3 U	
1,2-DICHLOROPROPANE			0.3 U		0.3 U	
2-BUTANONE			0.5 U		0.5 U	
2-HEXANONE			0.5 U		0.5 U	
3-CHLOROPROPENE			0.5 UJ		0.5 UJ	
4-METHYL-2-PENTANONE			0.5 U		0.5 U	
ACETONE			0.5 U		0.5 U	
ACETONITRILE			20 UR		20 UR	
ACROLEIN			0.5 UR		0.5 UR	
ACRYLONITRILE			0.5 U		0.5 U	
BENZENE			0.3 U		0.3 U	
BROMODICHLOROMETHANE			0.3 U		0.3 U	
BROMOFORM			0.3 U		0.3 U	
BROMOMETHANE			0.3 UJ		0.3 UJ	
CARBON DISULFIDE			0.3 U		0.3 U	
CARBON TETRACHLORIDE			0.3 U		0.3 U	
CHLOROBENZENE			0.3 U		0.3 U	
CHLORODIBROMOMETHANE			0.3 U		0.3 U	
CHLOROETHANE			0.5 U		0.5 U	
CHLOROFORM			0.3 U		0.3 U	
CHLOROMETHANE			0.3 U		0.3 U	
CHLOROPRENE			0.5 U		0.5 U	
CIS-1,2-DICHLOROETHENE			0.3 U		0.3 U	
CIS-1,3-DICHLOROPROPENE			0.3 U		0.3 U	
DIBROMOMETHANE			0.3 U		0.3 U	
DICHLORODIFLUOROMETHANE			0.3 U		0.3 U	
ETHYL METHACRYLATE			0.5 U		0.5 U	
ETHYLBENZENE			0.3 U		0.3 U	
ISOBUTANOL			20 UR		20 UR	
METHACRYLONITRILE			0.3 U		0.3 U	
METHYL IODIDE			0.5 U		0.5 U	
METHYL METHACRYLATE			0.5 U		0.5 U	
METHYL TERT-BUTYL ETHER			0.5 U		0.5 U	
METHYLENE CHLORIDE			0.3 UJ		0.3 UJ	
PROPIONITRILE			20 UR		20 UR	
STYRENE			0.3 U		0.3 U	
TETRACHLOROETHENE			0.3 U		0.3 U	
TOLUENE			0.3 U		0.3 U	
TOTAL XYLENES			0.3 U		0.3 U	

APPENDIX TABLE G-2
RESULTS FOR CHEMICALS ANALYZED IN ALL SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL
LOCATION	15SW/SD007	15SW/SD008	15SW/SD009	15SW/SD009	15SW/SD010	15SW/SD010
SAMPLE NUMBER	15SW00701	15SW00801	15SW00901	15SW00901-F	15ST01001	15ST01001-F
SAMPLE CODE	NOT FOUND	NOT FOUND	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DEPTH	1/12/2005	1/12/2005	1/12/2005	1/12/2005	1/12/2005	1/12/2005
TRANS-1,2-DICHLOROETHENE			0.3 U		0.3 U	
TRANS-1,3-DICHLOROPROPENE			0.3 U		0.3 U	
TRANS-1,4-DICHLORO-2-BUTENE			0.5 U		0.5 U	
TRICHLOROETHENE			0.3 U		0.3 U	
TRICHLOROFLUOROMETHANE			0.3 U		0.3 U	
VINYL ACETATE			0.5 U		0.5 U	
VINYL CHLORIDE			0.3 U		0.3 U	
Semivolatile Organics (ug/L)						
1,2,4,5-TETRACHLOROBENZENE			0.952 U		1.01 U	
1,2,4-TRICHLOROBENZENE			0.952 U		1.01 U	
1,2-DICHLOROBENZENE			0.952 U		1.01 U	
1,3-DICHLOROBENZENE			0.952 U		1.01 U	
1,4-DICHLOROBENZENE			0.952 U		1.01 U	
1,4-DIOXANE			0.952 UJ		1.01 U	
1,4-NAPHTHOQUINONE			0.952 U		1.01 U	
1,4-PHENYLENEDIAMINE			0.952 U		1.01 U	
1-NAPHTHYLAMINE			0.952 U		1.01 U	
2,2'-OXYBIS(1-CHLOROPROPANE)			0.952 UJ		1.01 UJ	
2,3,4,6-TETRACHLOROPHENOL			0.952 U		1.01 U	
2,4,5-TRICHLOROPHENOL			0.952 U		1.01 U	
2,4,6-TRICHLOROPHENOL			0.952 U		1.01 U	
2,4-DICHLOROPHENOL			0.952 U		1.01 U	
2,4-DIMETHYLPHENOL			0.952 U		1.01 U	
2,4-DINITROPHENOL			0.952 U		1.01 U	
2,6-DICHLOROPHENOL			0.952 U		1.01 U	
2-ACETYLAMINOFLUORENE			0.952 U		1.01 U	
2-CHLORONAPHTHALENE			0.952 UJ		1.01 U	
2-CHLOROPHENOL			0.952 U		1.01 U	
2-METHYLNAPHTHALENE			0.952 U		1.01 U	
2-METHYLPHENOL			0.048 U		0.049 U	
2-NAPHTHYLAMINE			0.952 U		1.01 U	
2-NITROANILINE			0.952 U		1.01 U	
2-NITROPHENOL			0.952 U		1.01 U	
2-PICOLINE			0.952 U		1.01 U	
3&4-METHYLPHENOL			0.952 U		1.01 U	
3,3'-DICHLOROBENZIDINE			0.952 U		1.01 UJ	
3,3'-DIMETHYLBENZIDINE			0.952 U		1.01 U	
3-METHYLCHOLANTHRENE			0.952 UJ		1.01 U	
3-NITROANILINE			0.952 U		1.01 U	
4,6-DINITRO-2-METHYLPHENOL			0.952 U		1.01 U	
4-AMINOBIPHENYL			0.952 U		1.01 U	
4-BROMOPHENYL PHENYL ETHER			0.952 U		1.01 U	
4-CHLORO-3-METHYLPHENOL			0.952 U		1.01 U	
4-CHLOROANILINE			0.952 U		1.01 U	
4-CHLOROPHENYL PHENYL ETHER			0.952 U		1.01 U	
4-NITROANILINE			0.952 U		1.01 U	
4-NITROPHENOL			0.952 U		1.01 U	
4-NITROQUINOLINE-1-OXIDE			0.952 UJ		1.01 U	
5-NITRO-O-TOLUIDINE			0.952 UR		1.01 UR	
			0.952 U		1.01 U	

APPE[illegible]LE G-2
RESULTS FOR CHEMICALS ANALYZE[illegible] SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL
LOCATION	15SW/SD007	15SW/SD008	15SW/SD009	15SW/SD009	15SW/SD010	15SW/SD010
SAMPLE NUMBER	15SW00701	15SW00801	15SW00901	15SW00901-F	15ST01001	15ST01001-F
SAMPLE CODE	NOT FOUND	NOT FOUND	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DEPTH	1/12/2005	1/12/2005	1/12/2005	1/12/2005	1/12/2005	1/12/2005
7,12-DIMETHYLBENZ(A)ANTHRACENE			0.952 U		1.01 U	
A,A-DIMETHYLPHENETHYLAMINE			0.952 U		1.01 U	
ACENAPHTHENE			0.048 U		0.33	
ACENAPHTHYLENE			0.048 U		0.43	
ACETOPHENONE			0.952 U		1.01 UJ	
ANILINE			0.952 U		1.01 U	
ANTHRACENE			0.048 U		0.36	
ARAMITE			0.952 U		1.01 U	
BENZO(A)ANTHRACENE			0.048 U		1.84	
BENZO(A)PYRENE			0.048 U		2.38	
BENZO(B)FLUORANTHENE			0.048 U		5.83	
BENZO(G,H,I)PERYLENE			0.048 U		2.46	
BENZO(K)FLUORANTHENE			0.048 U		1.72	
BENZYL ALCOHOL			0.952 U		1.01 U	
BIS(2-CHLOROETHOXY)METHANE			0.952 U		1.01 U	
BIS(2-CHLOROETHYL)ETHER			0.952 U		1.01 U	
BIS(2-ETHYLHEXYL)PHTHALATE			0.952 U		1.01 J	
BUTYL BENZYL PHTHALATE			0.952 U		1.01 U	
CHLOROBENZILATE			0.952 U		1.01 U	
CHRYSENE			0.048 U		4.46	
DI-N-BUTYL PHTHALATE			0.952 U		1.01 U	
DI-N-OCTYL PHTHALATE			0.952 U		1.01 U	
DIALLATE			0.952 U		1.01 U	
DIBENZO(A,H)ANTHRACENE			0.048 U		0.46	
DIBENZOFURAN			0.952 U		1.01 U	
DIETHYL PHTHALATE			0.952 U		1.01 U	
DIMETHYL PHTHALATE			0.952 U		1.01 U	
DIPHENYLAMINE			0.952 U		1.01 U	
ETHYL METHANE SULFONATE			0.952 U		1.01 U	
FLUORANTHENE			0.048 U		11.9	
FLUORENE			0.048 U		0.34	
HEXACHLOROBENZENE			0.952 UJ		1.01 UJ	
HEXACHLOROBUTADIENE			0.952 U		1.01 U	
HEXACHLOROCYCLOPENTADIENE			0.952 UJ		1.01 UJ	
HEXACHLOROETHANE			0.952 U		1.01 U	
HEXACHLOROPROPENE			0.952 U		1.01 U	
INDENO(1,2,3-CD)PYRENE			0.048 U		2.09	
ISODRIN			0.952 U		1.01 U	
ISOPHORONE			0.952 U		1.01 U	
ISOSAFROLE			0.952 U		1.01 U	
KEPONE			0.952 UJ		1.01 UJ	
METHAPYRILENE			0.952 UJ		1.01 U	
METHYL METHANE SULFONATE			0.952 U		1.01 U	
N-NITROSO-DI-N-BUTYLAMINE			0.952 U		1.01 U	
N-NITROSO-DI-N-PROPYLAMINE			0.952 U		1.01 UJ	
N-NITROSODIETHYLAMINE			0.952 U		1.01 U	
N-NITROSODIMETHYLAMINE			0.952 UJ		1.01 U	
N-NITROSODIPHENYLAMINE			0.952 U		1.01 U	
N-NITROSOMETHYLETHYLAMINE			0.952 U		1.01 U	

APPENDIX TABLE G-2
RESULTS FOR CHEMICALS ANALYZED IN ALL SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL
LOCATION	15SW/SD007	15SW/SD008	15SW/SD009	15SW/SD009	15SW/SD010	15SW/SD010
SAMPLE NUMBER	15SW00701	15SW00801	15SW00901	15SW00901-F	15ST01001	15ST01001-F
SAMPLE CODE	NOT FOUND	NOT FOUND	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DEPTH	1/12/2005	1/12/2005	1/12/2005	1/12/2005	1/12/2005	1/12/2005
N-NITROSOMORPHOLINE			0.952 U		1.01 UJ	
N-NITROSOPIPERIDINE			0.952 U		1.01 UJ	
N-NITROSOPYRROLIDINE			0.952 U		1.01 U	
NAPHTHALENE			0.048 U		0.12	
O,O,O-TRIETHYL PHOSPHOROTHIOATE			0.952 U		1.01 U	
O-TOLUIDINE			0.952 U		1.01 U	
P-(DIMETHYLAMINO)AZOBENZENE			0.952 U		1.01 U	
PENTACHLOROBENZENE			0.952 U		1.01 U	
PENTACHLOROETHANE			0.952 U		1.01 U	
PENTACHLORONITROBENZENE			0.952 U		1.01 U	
PHENACETIN			0.952 U		1.01 U	
PHENANTHRENE			0.048 U		4.73	
PHENOL			0.952 U		1.01 U	
PRONAMIDE			0.952 U		1.01 U	
PYRENE			0.06 J		8.61	
PYRIDINE			0.952 UJ		1.01 UJ	
SAFROLE			0.952 U		1.01 U	
Pesticides PCBs (ug/L)						
4,4'-DDD			0.048 U		0.05 U	
4,4'-DDE			0.048 U		0.05 U	
4,4'-DDT			0.048 U		0.05 U	
ALDRIN			0.024 U		0.025 U	
ALPHA-BHC			0.024 U		0.025 U	
ALPHA-CHLORDANE			0.024 U		0.025 U	
AROCLOR-1016			0.24 U		0.248 U	
AROCLOR-1221			0.24 U		0.248 U	
AROCLOR-1232			0.24 U		0.248 U	
AROCLOR-1242			0.24 U		0.248 U	
AROCLOR-1248			0.24 U		0.248 U	
AROCLOR-1254			0.24 U		0.248 U	
AROCLOR-1260			0.24 U		0.248 U	
BETA-BHC			0.024 U		0.025 U	
DELTA-BHC			0.024 U		0.025 U	
DIELDRIN			0.048 U		0.05 U	
ENDOSULFAN I			0.024 U		0.025 U	
ENDOSULFAN II			0.048 U		0.05 U	
ENDOSULFAN SULFATE			0.048 U		0.05 U	
ENDRIN			0.048 U		0.05 U	
ENDRIN ALDEHYDE			0.048 U		0.05 U	
ENDRIN KETONE			0.048 U		0.05 U	
GAMMA-BHC (LINDANE)			0.024 U		0.025 U	
GAMMA-CHLORDANE			0.024 U		0.025 U	
HEPTACHLOR			0.024 U		0.025 U	
HEPTACHLOR EPOXIDE			0.024 U		0.025 U	
METHOXYCHLOR			0.24 U		0.248 U	
TOXAPHENE			2.4 U		2.48 U	
Herbicides (ug/L)						
2,4,5-T			0.04 U		0.04 U	
2,4,5-TP (SILVEX)			0.04 U		0.04 U	

APPENDIX G-2
RESULTS FOR CHEMICALS ANALYZED IN SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL
LOCATION	15SW/SD007	15SW/SD008	15SW/SD009	15SW/SD009	15SW/SD010	15SW/SD010
SAMPLE NUMBER	15SW00701	15SW00801	15SW00901	15SW00901-F	15ST01001	15ST01001-F
SAMPLE CODE	NOT FOUND	NOT FOUND	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DEPTH	1/12/2005	1/12/2005	1/12/2005	1/12/2005	1/12/2005	1/12/2005
2,4-D			0.04 U		0.04 U	
DINOSEB			0.04 U		0.04 U	
HEXACHLOROPHENE			0.025 U		0.025 U	
PENTACHLOROPHENOL			0.022 J		0.037 J	
Total Metals (ug/L)						
ALUMINUM			61.2 J		606 J	
ANTIMONY			0.4 U		0.27 U	
ARSENIC			0.87 U		0.61 U	
BARIUM			61.7 J		25.4 J	
BERYLLIUM			0.06 U		0.07 U	
CADMIUM			0.18 U		0.15 U	
CALCIUM			69200 J		30400 J	
CHROMIUM			0.97 U		1.3 J	
COBALT			1.7 J		0.53 U	
COPPER			1.3 J		2.6 J	
IRON			911 J		764 J	
LEAD			0.387 U		1.6 J	
MAGNESIUM			12700 J		8600 J	
MANGANESE			401		48.1	
MERCURY			0.043 U		0.05 U	
NICKEL			0.88 U		1.9 J	
POTASSIUM			1350 J		2250 J	
SELENIUM			0.66 U		0.65 U	
SILVER			0.07 U		0.04 U	

APPENDIX TABLE G-2
RESULTS FOR CHEMICALS ANALYZED IN ALL SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL
LOCATION	15SW/SD007	15SW/SD008	15SW/SD009	15SW/SD009	15SW/SD010	15SW/SD010
SAMPLE NUMBER	15SW00701	15SW00801	15SW00901	15SW00901-F	15ST01001	15ST01001-F
SAMPLE CODE	NOT FOUND	NOT FOUND	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DEPTH	1/12/2005	1/12/2005	1/12/2005	1/12/2005	1/12/2005	1/12/2005
SODIUM			74400 J		15600 J	
THALLIUM			0.08 U		0.12 U	
TIN			0.07 U		0.35 U	
VANADIUM			1.14 U		1.4 J	
ZINC			18.5 J		28.7 J	
Dissolved Metals (ug/L)						
ALUMINUM, FILTERED				8.35 U		29.8 J
ANTIMONY, FILTERED				0.085 U		0.085 U
ARSENIC, FILTERED				0.047 U		0.047 U
BARIUM, FILTERED				61.1 J		18.7 J
BERYLLIUM, FILTERED				0.02 U		0.02 U
CADMIUM, FILTERED				0.04 U		0.039 U
CALCIUM, FILTERED				70300 J		30400 J
CHROMIUM, FILTERED				0.87 U		0.98 U
COBALT, FILTERED				2		0.27 J
COPPER, FILTERED				1.8 J		1 J
IRON, FILTERED				425 J		120 U
LEAD, FILTERED				0.193 U		0.069 U
MAGNESIUM, FILTERED				15400		10000
MANGANESE, FILTERED				394		31
MERCURY, FILTERED				0.03 U		0.036 U
NICKEL, FILTERED				3.2 J		2 J
POTASSIUM, FILTERED				1560 J		2260 J
SELENIUM, FILTERED				0.46 U		0.45 U
SILVER, FILTERED				0.03 U		0.028 UJ
SODIUM, FILTERED				75000 J		16100 J
THALLIUM, FILTERED				0.05 U		0.07 U
TIN, FILTERED				0.2 U		0.15 U
VANADIUM, FILTERED				1.14 U		1.14 U
ZINC, FILTERED				20.2 J		2.1 J
Field Parameters						
DISSOLVED OXYGEN - METER (mg/L)			10.14		10.38	
OXIDATION REDUCTION POTENTIAL (MV)			-6.8		32.7	
PH (S.U.)			7.03		7.84	
SPECIFIC CONDUCTANCE (MS/CM)			0.522		0.237	
TEMPERATURE (C)			10.48		12.94	
TURBIDITY (NTU)			8.3		35	

APPE LE G-2
RESULTS FOR CHEMICALS ANALYZED IN SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY
LOCATION	15SW/SD011	15SW/SD011	15SW/SD012	15SW/SD005	15SW/SD005	15SW/SD013	15SW/SD013	15SW/SD016	15SW/SD016
SAMPLE NUMBER	15ST01101	15ST01101-F	15ST01201	15SW00501	15SW00501-F	15SW01301	15SW01301-F	15SW01601	15SW01601-F
SAMPLE CODE	NORMAL	NORMAL	NOT FOUND	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DEPTH	1/12/2005	1/12/2005	1/12/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005
Volatile Organics (ug/L)									
1,1,1,2-TETRACHLOROETHANE	0.3 U			0.3 U		0.3 U		0.3 U	
1,1,1-TRICHLOROETHANE	0.3 U			0.3 U		0.3 U		0.3 U	
1,1,2,2-TETRACHLOROETHANE	0.3 U			0.3 U		0.3 U		0.3 U	
1,1,2-TRICHLOROETHANE	0.3 U			0.3 U		0.3 U		0.3 U	
1,1-DICHLOROETHANE	0.3 U			0.3 U		0.3 U		0.3 U	
1,1-DICHLOROETHENE	0.3 UJ			0.3 UJ		0.3 UJ		0.3 UJ	
1,2,3-TRICHLOROPROPANE	0.3 U			0.3 U		0.3 U		0.3 U	
1,2-DIBROMO-3-CHLOROPROPANE	0.3 U			0.3 U		0.3 U		0.3 U	
1,2-DIBROMOETHANE	0.3 U			0.3 U		0.3 U		0.3 U	
1,2-DICHLOROETHANE	0.3 U			0.3 U		0.3 U		0.3 U	
1,2-DICHLOROPROPANE	0.3 U			0.3 U		0.3 U		0.3 U	
2-BUTANONE	0.5 U			0.5 U		0.5 U		0.5 U	
2-HEXANONE	0.5 U			0.5 U		0.5 U		0.5 U	
3-CHLOROPROPENE	0.5 UJ			0.5 UJ		0.5 UJ		0.5 UJ	
4-METHYL-2-PENTANONE	0.5 U			0.5 U		0.5 U		0.5 U	
ACETONE	0.5 U			0.5 U		0.5 U		0.5 U	
ACETONITRILE	20 UR			20 UR		20 UR		20 UR	
ACROLEIN	0.5 UR			0.5 UR		0.5 UR		0.5 UR	
ACRYLONITRILE	0.5 U			0.5 U		0.5 U		0.5 U	
BENZENE	0.3 U			0.3 U		0.3 U		0.3 U	
BROMODICHLOROMETHANE	0.3 U			0.3 U		0.3 U		0.3 U	
BROMOFORM	0.3 U			0.3 U		0.3 U		0.3 U	
BROMOMETHANE	0.3 UJ			0.3 UJ		0.3 UJ		0.3 UJ	
CARBON DISULFIDE	0.3 U			0.3 U		0.3 U		0.3 U	
CARBON TETRACHLORIDE	0.3 U			0.3 U		0.3 U		0.3 U	
CHLOROBENZENE	0.3 U			0.3 U		0.3 U		0.3 U	
CHLORODIBROMOMETHANE	0.3 U			0.3 U		0.3 U		0.3 U	
CHLOROETHANE	0.5 U			0.5 U		0.5 U		0.5 U	
CHLOROFORM	0.3 U			0.3 U		0.3 U		0.3 U	
CHLOROMETHANE	0.3 U			0.3 U		0.3 U		0.3 U	
CHLOROPRENE	0.5 U			0.5 U		0.5 U		0.5 U	
CIS-1,2-DICHLOROETHENE	0.3 U			0.3 U		0.3 U		0.3 U	
CIS-1,3-DICHLOROPROPENE	0.3 U			0.3 U		0.3 U		0.3 U	
DIBROMOMETHANE	0.3 U			0.3 U		0.3 U		0.3 U	
DICHLORODIFLUOROMETHANE	0.3 U			0.3 U		0.3 U		0.3 U	
ETHYL METHACRYLATE	0.5 U			0.5 U		0.5 U		0.5 U	
ETHYLBENZENE	0.3 U			0.3 U		0.3 U		0.3 U	
ISOBUTANOL	20 UR			20 UR		20 UR		20 UR	
METHACRYLONITRILE	0.3 U			0.3 U		0.3 U		0.3 U	
METHYL IODIDE	0.5 U			0.5 U		0.5 U		0.5 U	
METHYL METHACRYLATE	0.5 U			0.5 U		0.5 U		0.5 U	
METHYL TERT-BUTYL ETHER	0.5 U			0.5 U		0.5 U		0.5 U	
METHYLENE CHLORIDE	0.3 UJ			0.3 UJ		0.3 UJ		0.3 UJ	
PROPIONITRILE	20 UR			20 UR		20 UR		20 UR	
STYRENE	0.3 U			0.3 U		0.3 U		0.3 U	
TETRACHLOROETHENE	0.3 U			0.3 U		0.3 U		0.3 U	
TOLUENE	0.3 U			0.3 U		0.3 U		0.3 U	
TOTAL XYLENES	0.3 U			0.3 U		0.3 U		0.3 U	

APPENDIX TABLE G-2
RESULTS FOR CHEMICALS ANALYZED IN ALL SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY
LOCATION	15SW/SD011	15SW/SD011	15SW/SD012	15SW/SD005	15SW/SD005	15SW/SD013	15SW/SD013	15SW/SD016	15SW/SD016
SAMPLE NUMBER	15ST01101	15ST01101-F	15ST01201	15SW00501	15SW00501-F	15SW01301	15SW01301-F	15SW01601	15SW01601-F
SAMPLE CODE	NORMAL	NORMAL	NOT FOUND	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DEPTH	1/12/2005	1/12/2005	1/12/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005
TRANS-1,2-DICHLOROETHENE	0.3 U			0.3 U		0.3 U		0.3 U	
TRANS-1,3-DICHLOROPROPENE	0.3 U			0.3 U		0.3 U		0.3 U	
TRANS-1,4-DICHLORO-2-BUTENE	0.5 U			0.5 U		0.5 U		0.5 U	
TRICHLOROETHENE	0.3 U			0.3 U		0.3 U		0.3 U	
TRICHLOROFLUOROMETHANE	0.3 U			0.3 U		0.3 U		0.3 U	
VINYL ACETATE	0.5 U			0.5 U		0.5 U		0.5 U	
VINYL CHLORIDE	0.3 U			0.3 U		0.3 U		0.3 U	
Semivolatile Organics (ug/L)									
1,2,4,5-TETRACHLOROBENZENE	1.03 U			0.962 U		0.98 U		0.98 U	
1,2,4-TRICHLOROBENZENE	1.03 U			0.962 U		0.98 U		0.98 U	
1,2-DICHLOROBENZENE	1.03 U			0.962 U		0.98 U		0.98 U	
1,3-DICHLOROBENZENE	1.03 U			0.962 U		0.98 U		0.98 U	
1,4-DICHLOROBENZENE	1.03 U			0.962 U		0.98 U		0.98 U	
1,4-DIOXANE	1.03 UJ			0.962 UJ		0.98 UJ		0.98 UJ	
1,4-NAPHTHOQUINONE	1.03 U			0.962 U		0.98 U		0.98 U	
1,4-PHENYLENEDIAMINE	1.03 U			0.962 U		0.98 U		0.98 U	
1-NAPHTHYLAMINE	1.03 U			0.962 U		0.98 U		0.98 U	
2,2'-OXYBIS(1-CHLOROPROPANE)	1.03 UJ			0.962 UJ		0.98 UJ		0.98 UJ	
2,3,4,6-TETRACHLOROPHENOL	1.03 UR			0.962 U		0.98 U		0.98 U	
2,4,5-TRICHLOROPHENOL	1.03 UR			0.962 U		0.98 U		0.98 U	
2,4,6-TRICHLOROPHENOL	1.03 UR			0.962 U		0.98 U		0.98 U	
2,4-DICHLOROPHENOL	1.03 UR			0.962 U		0.98 U		0.98 U	
2,4-DIMETHYLPHENOL	1.03 UR			0.962 U		0.98 U		0.98 U	
2,4-DINITROPHENOL	1.03 UR			0.962 U		0.98 U		0.98 U	
2,6-DICHLOROPHENOL	1.03 UR			0.962 U		0.98 U		0.98 U	
2-ACETYLAMINOFLUORENE	1.03 UJ			0.962 UJ		0.98 UJ		0.98 UJ	
2-CHLORONAPHTHALENE	1.03 U			0.962 U		0.98 U		0.98 U	
2-CHLOROPHENOL	1.03 UR			0.962 U		0.98 U		0.98 U	
2-METHYLNAPHTHALENE	0.053 U			0.048 U		0.05 U		0.049 U	
2-METHYLPHENOL	1.03 UR			0.962 U		0.98 U		0.98 U	
2-NAPHTHYLAMINE	1.03 U			0.962 U		0.98 U		0.98 U	
2-NITROANILINE	1.03 U			0.962 U		0.98 U		0.98 U	
2-NITROPHENOL	1.03 UR			0.962 U		0.98 U		0.98 U	
2-PICOLINE	1.03 U			0.962 U		0.98 U		0.98 U	
3&4-METHYLPHENOL	1.03 UR			0.962 U		0.98 U		0.98 U	
3,3'-DICHLOROBENZIDINE	1.03 U			0.962 U		0.98 U		0.98 U	
3,3'-DIMETHYLBENZIDINE	1.03 UJ			0.962 UJ		0.98 UJ		0.98 UJ	
3-METHYLCHOLANTHRENE	1.03 U			0.962 U		0.98 U		0.98 U	
3-NITROANILINE	1.03 U			0.962 U		0.98 U		0.98 U	
4,6-DINITRO-2-METHYLPHENOL	1.03 UR			0.962 U		0.98 U		0.98 U	
4-AMINOBIPHENYL	1.03 U			0.962 U		0.98 U		0.98 U	
4-BROMOPHENYL PHENYL ETHER	1.03 U			0.962 U		0.98 U		0.98 U	
4-CHLORO-3-METHYLPHENOL	1.03 UR			0.962 U		0.98 U		0.98 U	
4-CHLOROANILINE	1.03 U			0.962 U		0.98 U		0.98 U	
4-CHLOROPHENYL PHENYL ETHER	1.03 U			0.962 U		0.98 U		0.98 U	
4-NITROANILINE	1.03 U			0.962 U		0.98 U		0.98 U	
4-NITROPHENOL	1.03 UR			0.962 UJ		0.98 UJ		0.98 UJ	
4-NITROQUINOLINE-1-OXIDE	1.03 UR			0.962 UR		0.98 UR		0.98 UR	
5-NITRO-O-TOLUIDINE	1.03 U			0.962 U		0.98 U		0.98 U	

APPE[illegible]LE G-2
RESULTS FOR CHEMICALS ANALYZED [illegible] SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY
LOCATION	15SW/SD011	15SW/SD011	15SW/SD012	15SW/SD005	15SW/SD005	15SW/SD013	15SW/SD013	15SW/SD016	15SW/SD016
SAMPLE NUMBER	15ST01101	15ST01101-F	15ST01201	15SW00501	15SW00501-F	15SW01301	15SW01301-F	15SW01601	15SW01601-F
SAMPLE CODE	NORMAL	NORMAL	NOT FOUND	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DEPTH	1/12/2005	1/12/2005	1/12/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005
7,12-DIMETHYLBENZ(A)ANTHRACENE	1.03 U			0.962 U		0.98 U		0.98 U	
A,A-DIMETHYLPHENETHYLAMINE	1.03 U			0.962 U		0.98 U		0.98 U	
ACENAPHTHENE	0.053 U			0.048 U		0.06 J		0.049 U	
ACENAPHTHYLENE	0.053 U			0.048 U		0.05 U		0.049 U	
ACETOPHENONE	1.03 U			0.962 U		0.98 U		0.98 U	
ANILINE	1.03 U			0.962 U		0.98 U		0.98 U	
ANTHRACENE	0.2			0.048 U		0.05 U		0.049 U	
ARAMITE	1.03 U			0.962 U		0.98 U		0.98 U	
BENZO(A)ANTHRACENE	1.04			0.048 U		0.05 U		0.13	
BENZO(A)PYRENE	1.62			0.048 U		0.05 U		0.14	
BENZO(B)FLUORANTHENE	3.6			0.048 U		0.05 U		0.28	
BENZO(G,H,I)PERYLENE	1.77			0.048 U		0.05 U		0.13	
BENZO(K)FLUORANTHENE	0.96			0.048 U		0.05 U		0.11	
BENZYL ALCOHOL	1.03 U			0.962 U		0.98 U		0.98 U	
BIS(2-CHLOROETHOXY)METHANE	1.03 U			0.962 U		0.98 U		0.98 U	
BIS(2-CHLOROETHYL)ETHER	1.03 U			0.962 U		0.98 U		0.98 U	
BIS(2-ETHYLHEXYL)PHTHALATE	1.03 U			0.962 U		0.98 U		0.98 U	
BUTYL BENZYL PHTHALATE	1.03 U			0.962 U		0.98 U		0.98 U	
CHLOROBENZILATE	1.03 U			0.962 U		0.98 U		0.98 U	
CHRYSENE	2.75			0.048 U		0.05 U		0.25	
DI-N-BUTYL PHTHALATE	1.03 U			0.962 U		0.98 U		0.98 U	
DI-N-OCTYL PHTHALATE	1.03 U			0.962 U		0.98 U		0.98 U	
DIALLATE	1.03 U			0.962 U		0.98 U		0.98 U	
DIBENZO(A,H)ANTHRACENE	0.3			0.048 U		0.05 U		0.049 U	
DIBENZOFURAN	1.03 U			0.962 U		0.98 U		0.98 U	
DIETHYL PHTHALATE	1.03 U			0.962 U		0.98 U		0.98 U	
DIMETHYL PHTHALATE	1.03 U			0.962 U		0.98 U		0.98 U	
DIPHENYLAMINE	1.03 U			0.962 U		0.98 U		0.98 U	
ETHYL METHANE SULFONATE	1.03 U			0.962 U		0.98 U		0.98 U	
FLUORANTHENE	4.84			0.048 U		0.1		0.81	
FLUORENE	0.08 J			0.048 U		0.05 U		0.049 U	
HEXACHLOROBENZENE	1.03 UJ			0.962 UJ		0.98 UJ		0.98 UJ	
HEXACHLOROBUTADIENE	1.03 U			0.962 U		0.98 U		0.98 U	
HEXACHLOROCYCLOPENTADIENE	1.03 UJ			0.962 UJ		0.98 UJ		0.98 UJ	
HEXACHLOROETHANE	1.03 U			0.962 U		0.98 U		0.98 U	
HEXACHLOROPROPENE	1.03 U			0.962 U		0.98 U		0.98 U	
INDENO(1,2,3-CD)PYRENE	1.5			0.048 U		0.05 U		0.09 J	
ISODRIN	1.03 U			0.962 U		0.98 U		0.98 U	
ISOPHORONE	1.03 U			0.962 U		0.98 U		0.98 U	
ISOSAFROLE	1.03 U			0.962 U		0.98 U		0.98 U	
KEPONE	1.03 UJ			0.962 UJ		0.98 UJ		0.98 UJ	
METHAPYRILENE	1.03 UJ			0.962 UJ		0.98 UJ		0.98 UJ	
METHYL METHANE SULFONATE	1.03 U			0.962 U		0.98 U		0.98 U	
N-NITROSO-DI-N-BUTYLAMINE	1.03 U			0.962 U		0.98 U		0.98 U	
N-NITROSO-DI-N-PROPYLAMINE	1.03 U			0.962 U		0.98 U		0.98 U	
N-NITROSODIETHYLAMINE	1.03 U			0.962 U		0.98 U		0.98 U	
N-NITROSODIMETHYLAMINE	1.03 UJ			0.962 UJ		0.98 UJ		0.98 UJ	
N-NITROSODIPHENYLAMINE	1.03 U			0.962 U		0.98 U		0.98 U	
N-NITROSOMETHYLETHYLAMINE	1.03 U			0.962 U		0.98 U		0.98 U	

APPENDIX TABLE G-2
RESULTS FOR CHEMICALS ANALYZED IN ALL SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY
LOCATION	15SW/SD011	15SW/SD011	15SW/SD012	15SW/SD005	15SW/SD005	15SW/SD013	15SW/SD013	15SW/SD016	15SW/SD016
SAMPLE NUMBER	15ST01101	15ST01101-F	15ST01201	15SW00501	15SW00501-F	15SW01301	15SW01301-F	15SW01601	15SW01601-F
SAMPLE CODE	NORMAL	NORMAL	NOT FOUND	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DEPTH	1/12/2005	1/12/2005	1/12/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005
N-NITROSOMORPHOLINE	1.03 U			0.962 U		0.98 U		0.98 U	
N-NITROSOPIPERIDINE	1.03 U			0.962 U		0.98 U		0.98 U	
N-NITROSOPYRROLIDINE	1.03 U			0.962 U		0.98 U		0.98 U	
NAPHTHALENE	0.053 U			0.048 U		0.05 J		0.049 U	
O,O,O-TRIETHYL PHOSPHOROTHIOATE	1.03 U			0.962 U		0.98 U		0.98 U	
O-TOLUIDINE	1.03 U			0.962 U		0.98 U		0.98 U	
P-(DIMETHYLAMINO)AZOBENZENE	1.03 U			0.962 U		0.98 U		0.98 U	
PENTACHLOROBENZENE	1.03 U			0.962 U		0.98 U		0.98 U	
PENTACHLOROETHANE	1.03 U			0.962 U		0.98 U		0.98 U	
PENTACHLORONITROBENZENE	1.03 U			0.962 U		0.98 U		0.98 U	
PHENACETIN	1.03 U			0.962 U		0.98 U		0.98 U	
PHENANTHRENE	2.48			0.048 U		0.06 J		0.34	
PHENOL	1.03 UR			0.962 U		0.98 U		0.98 U	
PRONAMIDE	1.03 U			0.962 U		0.98 U		0.98 U	
PYRENE	5.55			0.05 J		0.09 J		0.57	
PYRIDINE	1.03 UJ			0.962 UJ		0.98 UJ		0.98 UJ	
SAFROLE	1.03 U			0.962 U		0.98 U		0.98 U	
Pesticides PCBs (ug/L)									
4,4'-DDD	0.056 U					0.048 U		0.054 U	
4,4'-DDE	0.056 U					0.048 U		0.054 U	
4,4'-DDT	0.056 U					0.048 U		0.054 U	
ALDRIN	0.028 U					0.024 U		0.027 U	
ALPHA-BHC	0.028 U					0.024 U		0.027 U	
ALPHA-CHLORDANE	0.028 U					0.024 U		0.027 U	
AROCLOR-1016	0.28 U			0.245 U		0.24 U		0.27 U	
AROCLOR-1221	0.28 U			0.245 U		0.24 U		0.27 U	
AROCLOR-1232	0.28 U			0.245 U		0.24 U		0.27 U	
AROCLOR-1242	0.28 U			0.245 U		0.24 U		0.27 U	
AROCLOR-1248	0.28 U			0.245 U		0.24 U		0.27 U	
AROCLOR-1254	0.28 U			0.245 U		0.24 U		0.27 U	
AROCLOR-1260	0.28 U			0.245 U		0.24 U		0.27 U	
BETA-BHC	0.028 U					0.024 U		0.027 U	
DELTA-BHC	0.028 U					0.024 U		0.027 U	
DIELDRIN	0.056 U					0.048 U		0.054 U	
ENDOSULFAN I	0.028 U					0.024 U		0.027 U	
ENDOSULFAN II	0.056 U					0.048 U		0.054 U	
ENDOSULFAN SULFATE	0.056 U					0.048 U		0.054 U	
ENDRIN	0.056 U					0.048 U		0.054 U	
ENDRIN ALDEHYDE	0.056 U					0.048 U		0.054 U	
ENDRIN KETONE	0.056 U					0.048 U		0.054 U	
GAMMA-BHC (LINDANE)	0.028 U					0.024 U		0.027 U	
GAMMA-CHLORDANE	0.028 U					0.024 U		0.027 U	
HEPTACHLOR	0.028 U					0.024 U		0.027 U	
HEPTACHLOR EPOXIDE	0.028 U					0.024 U		0.027 U	
METHOXYCHLOR	0.28 U					0.24 U		0.27 U	
TOXAPHENE	2.8 U					2.4 U		2.7 U	
Herbicides (ug/L)									
2,4,5-T	0.04 U					0.04 U		0.04 U	
2,4,5-TP (SILVEX)	0.04 U					0.04 U		0.04 U	

APPE[illegible]E G-2
RESULTS FOR CHEMICALS ANALYZE[illegible] SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY
LOCATION	15SW/SD011	15SW/SD011	15SW/SD012	15SW/SD005	15SW/SD005	15SW/SD013	15SW/SD013	15SW/SD016	15SW/SD016
SAMPLE NUMBER	15ST01101	15ST01101-F	15ST01201	15SW00501	15SW00501-F	15SW01301	15SW01301-F	15SW01601	15SW01601-F
SAMPLE CODE	NORMAL	NORMAL	NOT FOUND	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DEPTH	1/12/2005	1/12/2005	1/12/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005
2,4-D	0.04 U					0.04 U		0.04 U	
DINOSEB	0.04 U					0.04 U		0.04 U	
HEXACHLOROPHENE	0.025 U					0.025 U		0.025 U	
PENTACHLOROPHENOL	0.033 J					0.028 J		0.065 J	
Total Metals (ug/L)									
ALUMINUM	500 J			130 J		586 J		1850 J	
ANTIMONY	0.27 U			0.25 U		2.5 J		0.23 U	
ARSENIC	0.54 U			0.5 U		1 U		1.2 U	
BARIUM	79.4 J			84.1 J		162 J		55.6 J	
BERYLLIUM	0.04 U			0.04 U		0.03 U		0.15 U	
CADMIUM	0.18 U			0.13 U		0.5 U		0.12 U	
CALCIUM	96300 J			86900 J		96900 J		64100 J	
CHROMIUM	3.6 J			0.6 U		1 U		3.5 J	
COBALT	0.53 U			0.91 U		1.4 J		3.7 J	
COPPER	8.1 J			1.1 U		4.9 J		3.4 J	
IRON	976 J			431 J		2660 J		2700 J	
LEAD	1.8 J			0.327 U		2.3 J		2.5 J	
MAGNESIUM	18900 J			16100 J		15400 J		12600 J	
MANGANESE	36.5 J			242		463		308	
MERCURY	0.052 U			0.036 U		0.034 U		0.044 U	
NICKEL	2.3 J			1.5 J		1.9 J		7.8 J	
POTASSIUM	6500 J			2230 J		2640 J		2300 J	
SELENIUM	0.45 U			0.46 U		0.75 U		0.38 U	
SILVER	0.07 U			0.03 U		0.028 UJ		0.028 UJ	

APPENDIX TABLE G-2
RESULTS FOR CHEMICALS ANALYZED IN ALL SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER AND OUTFALL	SEWER AND OUTFALL	SEWER AND OUTFALL	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY
LOCATION	15SW/SD011	15SW/SD011	15SW/SD012	15SW/SD005	15SW/SD005	15SW/SD013	15SW/SD013	15SW/SD016	15SW/SD016
SAMPLE NUMBER	15ST01101	15ST01101-F	15ST01201	15SW00501	15SW00501-F	15SW01301	15SW01301-F	15SW01601	15SW01601-F
SAMPLE CODE	NORMAL	NORMAL	NOT FOUND	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DEPTH	1/12/2005	1/12/2005	1/12/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005
SODIUM	135000 J			64700 J		15700 J		46500 J	
THALLIUM	0.08 U			0.07 U		0.09 U		0.11 U	
TIN	0.33 U			0.048 U		0.048 U		0.06 U	
VANADIUM	1.6 J			1.14 U		1.2 J		3.8	
ZINC	33.4 J			9.2 J		61.3 J		26 J	
Dissolved Metals (ug/L)									
ALUMINUM, FILTERED		10.1 J			8.35 U		8.35 U		21.9 J
ANTIMONY, FILTERED		0.085 U			0.085 U		1.8 U		0.085 U
ARSENIC, FILTERED		0.047 U			0.17 U		0.33 U		0.07 U
BARIUM, FILTERED		88.8 J			80 J		149 J		47.2 J
BERYLLIUM, FILTERED		0.02 U			0.02 U		0.02 U		0.02 U
CADMIUM, FILTERED		0.039 U			0.04 U		0.33 U		0.15 U
CALCIUM, FILTERED		99600 J			83400 J		99600 J		61800 J
CHROMIUM, FILTERED		3.4 J			0.49 U		0.32 U		0.5 U
COBALT, FILTERED		0.27 J			0.96 J		1.1		2.6
COPPER, FILTERED		5 J			1.7 J		2 J		2.7 J
IRON, FILTERED		422 J			359 J		952 J		166 U
LEAD, FILTERED		0.122 U			0.206 U		0.199 U		0.123 U
MAGNESIUM, FILTERED		21700			18000		16000		12100
MANGANESE, FILTERED		4.7 J			227		437		260
MERCURY, FILTERED		0.038 U			0.037 U		0.03 U		0.049 U
NICKEL, FILTERED		4.3 J			3.3 J		3.4 J		6.6 J
POTASSIUM, FILTERED		7590 J			2420 J		2720 J		1900 J
SELENIUM, FILTERED		0.34 U			0.54 U		0.67 J		0.31 U
SILVER, FILTERED		0.028 UJ			0.028 UJ		0.028 UJ		0.028 UJ
SODIUM, FILTERED		141000 J			64500 J		15300 J		49300 J
THALLIUM, FILTERED		0.043 U			0.06 U		0.08 U		0.08 U
TIN, FILTERED		0.3 U			0.16 U		0.048 U		0.23 U
VANADIUM, FILTERED		1.14 U			1.14 U		1.14 U		1.14 U
ZINC, FILTERED		5 J			7.1 J		41.1 J		4.3 J
Field Parameters									
DISSOLVED OXYGEN - METER (mg/L)	9.66			9.53		10.39		11.08	
OXIDATION REDUCTION POTENTIAL (MV)	115.5			24.3		-0.1		79.3	
PH (S.U.)	7.61			7.64		7.7		7.86	
SPECIFIC CONDUCTANCE (MS/CM)	0.946			1.08		0.783		0.771	
TEMPERATURE (C)	13.33			11.41		9.64		10.27	
TURBIDITY (NTU)	12			9.1		370		140	

APPE[illegible]LE G-2
RESULTS FOR CHEMICALS ANALYZED [illegible] SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TURKEY CREEK	TURKEY CREEK	TURKEY CREEK
LOCATION	15SW/SD017	15SW/SD017	15SW/SD018	15SW/SD018	15SW/SD019	15SW/SD019	15SW/SD001	15SW/SD001	15SW/SD002
SAMPLE NUMBER	15SW01701	15SW01701-F	15SW01801	15SW01801-F	15SW01901	15SW01901-F	15SW00101	15SW00101-F	15SW00201
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DEPTH	1/11/2005	1/11/2005	1/9/2005	1/9/2005	1/9/2005	1/9/2005	1/11/2005	1/11/2005	1/11/2005
Volatile Organics (ug/L)									
1,1,1,2-TETRACHLOROETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
1,1,1-TRICHLOROETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
1,1,2,2-TETRACHLOROETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
1,1,2-TRICHLOROETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
1,1-DICHLOROETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
1,1-DICHLOROETHENE	0.3 UJ		0.3 U		0.3 U		0.3 UJ		0.3 UJ
1,2,3-TRICHLOROPROPANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
1,2-DIBROMO-3-CHLOROPROPANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
1,2-DIBROMOETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
1,2-DICHLOROETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
1,2-DICHLOROPROPANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
2-BUTANONE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U
2-HEXANONE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U
3-CHLOROPROPENE	0.5 UJ		0.5 U		0.5 U		0.5 UJ		0.5 UJ
4-METHYL-2-PENTANONE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U
ACETONE	0.5 U		0.5 UJ		0.5 UJ		3.1 J		4 J
ACETONITRILE	20 UR		20 UR		20 UR		20 UR		20 UR
ACROLEIN	0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR
ACRYLONITRILE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U
BENZENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
BROMODICHLOROMETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
BROMOFORM	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
BROMOMETHANE	0.3 UJ		0.3 U		0.3 U		0.3 UJ		0.3 UJ
CARBON DISULFIDE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
CARBON TETRACHLORIDE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
CHLOROBENZENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
CHLORODIBROMOMETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
CHLOROETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U
CHLOROFORM	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
CHLOROMETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
CHLOROPRENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U
CIS-1,2-DICHLOROETHENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
CIS-1,3-DICHLOROPROPENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
DIBROMOMETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
DICHLORODIFLUOROMETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
ETHYL METHACRYLATE	0.5 U		0.5 UJ		0.5 UJ		0.5 U		0.5 U
ETHYLBENZENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
ISOBUTANOL	20 UR		20 UR		20 UR		20 UR		20 UR
METHACRYLONITRILE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
METHYL IODIDE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U
METHYL METHACRYLATE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U
METHYL TERT-BUTYL ETHER	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U
METHYLENE CHLORIDE	0.3 UJ		0.3 UJ		0.3 UJ		0.3 UJ		0.3 UJ
PROPIONITRILE	20 UR		20 UR		20 UR		20 UR		20 UR
STYRENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
TETRACHLOROETHENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
TOLUENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
TOTAL XYLENES	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U

APPENDIX TABLE G-2
RESULTS FOR CHEMICALS ANALYZED IN ALL SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TURKEY CREEK	TURKEY CREEK	TURKEY CREEK
LOCATION	15SW/SD017	15SW/SD017	15SW/SD018	15SW/SD018	15SW/SD019	15SW/SD019	15SW/SD001	15SW/SD001	15SW/SD002
SAMPLE NUMBER	15SW01701	15SW01701-F	15SW01801	15SW01801-F	15SW01901	15SW01901-F	15SW00101	15SW00101-F	15SW00201
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DEPTH	1/11/2005	1/11/2005	1/9/2005	1/9/2005	1/9/2005	1/9/2005	1/11/2005	1/11/2005	1/11/2005
TRANS-1,2-DICHLOROETHENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
TRANS-1,3-DICHLOROPROPENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
TRANS-1,4-DICHLORO-2-BUTENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U
TRICHLOROETHENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
TRICHLOROFLUOROMETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
VINYL ACETATE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U
VINYL CHLORIDE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U
Semivolatile Organics (ug/L)									
1,2,4,5-TETRACHLOROBENZENE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
1,2,4-TRICHLOROBENZENE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
1,2-DICHLOROBENZENE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
1,3-DICHLOROBENZENE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
1,4-DICHLOROBENZENE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
1,4-DIOXANE	0.971 UJ		1.04 U		0.972 U		0.971 UJ		1.03 UJ
1,4-NAPHTHOQUINONE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
1,4-PHENYLENEDIAMINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
1-NAPHTHYLAMINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
2,2'-OXYBIS(1-CHLOROPROPANE)	0.971 UJ		1.04 U		0.971 UJ		0.971 UJ		1.03 UJ
2,3,4,6-TETRACHLOROPHENOL	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
2,4,5-TRICHLOROPHENOL	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
2,4,6-TRICHLOROPHENOL	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
2,4-DICHLOROPHENOL	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
2,4-DIMETHYLPHENOL	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
2,4-DINITROPHENOL	0.971 U		1.04 UJ		0.971 U		0.971 U		1.03 U
2,6-DICHLOROPHENOL	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
2-ACETYLAMINOFLUORENE	0.971 UJ		1.04 U		0.971 U		0.971 UJ		1.03 UJ
2-CHLORONAPHTHALENE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
2-CHLOROPHENOL	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
2-METHYLNAPHTHALENE	0.048 U		0.052 U		0.049 U		0.049 U		0.056 U
2-METHYLPHENOL	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
2-NAPHTHYLAMINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
2-NITROANILINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
2-NITROPHENOL	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
2-PICOLINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
3&4-METHYLPHENOL	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
3,3'-DICHLOROBENZIDINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
3,3'-DIMETHYLBENZIDINE	0.971 UJ		1.04 UJ		0.971 UJ		0.971 UJ		1.03 UJ
3-METHYLCHOLANTHRENE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
3-NITROANILINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
4,6-DINITRO-2-METHYLPHENOL	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
4-AMINOBIPHENYL	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
4-BROMOPHENYL PHENYL ETHER	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
4-CHLORO-3-METHYLPHENOL	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
4-CHLOROANILINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
4-CHLOROPHENYL PHENYL ETHER	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
4-NITROANILINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
4-NITROPHENOL	0.971 UJ		1.04 UJ		0.971 U		0.971 UJ		1.03 UJ
4-NITROQUINOLINE-1-OXIDE	0.971 UR		1.04 UR		0.971 UR		0.971 UR		1.03 UR
5-NITRO-O-TOLUIDINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U

APPE[illegible]E G-2
RESULTS FOR CHEMICALS ANALYZED [illegible]L SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TURKEY CREEK	TURKEY CREEK	TURKEY CREEK
LOCATION	15SW/SD017	15SW/SD017	15SW/SD018	15SW/SD018	15SW/SD019	15SW/SD019	15SW/SD001	15SW/SD001	15SW/SD002
SAMPLE NUMBER	15SW01701	15SW01701-F	15SW01801	15SW01801-F	15SW01901	15SW01901-F	15SW00101	15SW00101-F	15SW00201
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DEPTH	1/11/2005	1/11/2005	1/9/2005	1/9/2005	1/9/2005	1/9/2005	1/11/2005	1/11/2005	1/11/2005
7,12-DIMETHYLBENZ(A)ANTHRACENE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
A,A-DIMETHYLPHENETHYLAMINE	0.971 U		1.04 UJ		0.971 U		0.971 U		1.03 U
ACENAPHTHENE	0.048 U		0.052 U		0.049 U		0.049 U		0.056 U
ACENAPHTHYLENE	0.048 U		0.052 U		0.049 U		0.049 U		0.056 U
ACETOPHENONE	0.971 U		1.04 U		0.971 UJ		0.971 U		1.03 U
ANILINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
ANTHRACENE	0.05 J		0.052 U		0.049 U		0.049 U		0.056 U
ARAMITE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
BENZO(A)ANTHRACENE	0.13		0.052 U		0.049 U		0.09 J		0.14
BENZO(A)PYRENE	0.12		0.052 U		0.049 U		0.1		0.16
BENZO(B)FLUORANTHENE	0.21		0.052 U		0.049 U		0.22		0.31
BENZO(G,H,I)PERYLENE	0.11		0.052 U		0.049 U		0.1		0.14
BENZO(K)FLUORANTHENE	0.14		0.052 U		0.049 U		0.08 J		0.13
BENZYL ALCOHOL	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
BIS(2-CHLOROETHOXY)METHANE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
BIS(2-CHLOROETHYL)ETHER	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
BIS(2-ETHYLHEXYL)PHTHALATE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
BUTYL BENZYL PHTHALATE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
CHLOROBENZILATE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
CHRYSENE	0.21		0.052 U		0.049 U		0.2		0.32
DI-N-BUTYL PHTHALATE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
DI-N-OCTYL PHTHALATE	0.971 U		1.04 U		0.971 UJ		0.971 U		1.03 U
DIALLATE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
DIBENZO(A,H)ANTHRACENE	0.048 U		0.052 U		0.049 U		0.049 U		0.056 U
DIBENZOFURAN	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
DIETHYL PHTHALATE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
DIMETHYL PHTHALATE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
DIPHENYLAMINE	0.971 U		1.04 U		0.97 U		0.971 U		1.03 U
ETHYL METHANE SULFONATE	0.971 U		1.04 U		0.971 UJ		0.971 U		1.03 U
FLUORANTHENE	0.71		0.052 U		0.049 U		0.56		0.95
FLUORENE	0.048 U		0.052 U		0.049 U		0.049 U		0.056 U
HEXACHLOROBENZENE	0.971 UJ		1.04 U		0.971 UJ		0.971 UJ		1.03 UJ
HEXACHLOROBUTADIENE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
HEXACHLOROCYCLOPENTADIENE	0.971 UJ		1.04 UJ		0.971 UJ		0.971 UJ		1.03 UJ
HEXACHLOROETHANE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
HEXACHLOROPROPENE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
INDENO(1,2,3-CD)PYRENE	0.09 J		0.052 U		0.049 U		0.08 J		0.11
ISODRIN	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
ISOPHORONE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
ISOSAFROLE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
KEPONE	0.971 UJ		1.04 UJ		0.971 UJ		0.971 UJ		1.03 UJ
METHAPYRILENE	0.971 UJ		1.04 UJ		0.971 UJ		0.971 UJ		1.03 UJ
METHYL METHANE SULFONATE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
N-NITROSO-DI-N-BUTYLAMINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
N-NITROSO-DI-N-PROPYLAMINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
N-NITROSODIETHYLAMINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
N-NITROSODIMETHYLAMINE	0.971 UJ		1.04 UJ		0.971 U		0.971 UJ		1.03 UJ
N-NITROSODIPHENYLAMINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
N-NITROSOMETHYLETHYLAMINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U

APPENDIX TABLE G-2
RESULTS FOR CHEMICALS ANALYZED IN ALL SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TURKEY CREEK	TURKEY CREEK	TURKEY CREEK
LOCATION	15SW/SD017	15SW/SD017	15SW/SD018	15SW/SD018	15SW/SD019	15SW/SD019	15SW/SD001	15SW/SD001	15SW/SD002
SAMPLE NUMBER	15SW01701	15SW01701-F	15SW01801	15SW01801-F	15SW01901	15SW01901-F	15SW00101	15SW00101-F	15SW00201
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DEPTH	1/11/2005	1/11/2005	1/9/2005	1/9/2005	1/9/2005	1/9/2005	1/11/2005	1/11/2005	1/11/2005
N-NITROSOMORPHOLINE	0.971 U		1.04 U		0.971 UJ		0.971 U		1.03 U
N-NITROSOPIPERIDINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
N-NITROSOPYRROLIDINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
NAPHTHALENE	0.048 U		0.052 U		0.049 U		0.049 U		0.056 U
O,O,O-TRIETHYL PHOSPHOROTHIOATE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
O-TOLUIDINE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
P-(DIMETHYLAMINO)AZOBENZENE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
PENTACHLOROBENZENE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
PENTACHLOROETHANE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
PENTACHLORONITROBENZENE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
PHENACETIN	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
PHENANTHRENE	0.28		0.052 U		0.049 U		0.23		0.42
PHENOL	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
PRONAMIDE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
PYRENE	0.53		0.052 U		0.049 U		0.41		0.64
PYRIDINE	0.971 UJ		1.04 U		0.971 U		0.971 UJ		1.03 UJ
SAFROLE	0.971 U		1.04 U		0.971 U		0.971 U		1.03 U
Pesticides PCBs (ug/L)									
4,4'-DDD	0.049 U		0.052 U		0.049 U		0.049 U		0.054 U
4,4'-DDE	0.049 U		0.052 U		0.049 U		0.049 U		0.054 U
4,4'-DDT	0.049 U		0.052 U		0.049 U		0.049 U		0.054 U
ALDRIN	0.024 U		0.026 U		0.024 U		0.024 U		0.027 U
ALPHA-BHC	0.024 U		0.026 U		0.024 U		0.024 U		0.027 U
ALPHA-CHLORDANE	0.024 U		0.026 U		0.024 U		0.024 U		0.027 U
AROCLOR-1016	0.243 U		0.258 U		0.245 U		0.243 U		0.27 U
AROCLOR-1221	0.243 U		0.258 U		0.245 U		0.243 U		0.27 U
AROCLOR-1232	0.243 U		0.258 U		0.245 U		0.243 U		0.27 U
AROCLOR-1242	0.243 U		0.258 U		0.245 U		0.243 U		0.27 U
AROCLOR-1248	0.243 U		0.258 U		0.245 U		0.243 U		0.27 U
AROCLOR-1254	0.243 U		0.258 U		0.245 U		0.243 U		0.27 U
AROCLOR-1260	0.243 U		0.258 U		0.245 U		0.243 U		0.27 U
BETA-BHC	0.024 U		0.026 U		0.024 U		0.024 U		0.027 U
DELTA-BHC	0.024 U		0.026 U		0.024 U		0.024 U		0.027 U
DIELDRIN	0.049 U		0.052 U		0.049 U		0.049 U		0.054 U
ENDOSULFAN I	0.024 U		0.026 U		0.024 U		0.024 U		0.027 U
ENDOSULFAN II	0.049 U		0.052 U		0.049 U		0.049 U		0.054 U
ENDOSULFAN SULFATE	0.049 U		0.052 U		0.049 U		0.049 U		0.054 U
ENDRIN	0.049 U		0.052 U		0.049 U		0.049 U		0.054 U
ENDRIN ALDEHYDE	0.049 U		0.052 U		0.049 U		0.049 U		0.054 U
ENDRIN KETONE	0.049 U		0.052 U		0.049 U		0.049 U		0.054 U
GAMMA-BHC (LINDANE)	0.024 U		0.026 U		0.024 U		0.024 U		0.027 U
GAMMA-CHLORDANE	0.024 U		0.026 U		0.024 U		0.024 U		0.027 U
HEPTACHLOR	0.024 U		0.026 U		0.024 U		0.024 U		0.027 U
HEPTACHLOR EPOXIDE	0.024 U		0.026 U		0.024 U		0.024 U		0.027 U
METHOXYCHLOR	0.243 U		0.258 U		0.243 U		0.243 U		0.27 U
TOXAPHENE	2.43 U		2.58 U		2.43 U		2.43 U		2.7 U
Herbicides (ug/L)									
2,4,5-T	0.04 U		0.04 U		0.04 U		0.04 U		0.04 U
2,4,5-TP (SILVEX)	0.04 U		0.04 U		0.04 U		0.04 U		0.04 U

APPEN[illegible] LE G-2
RESULTS FOR CHEMICALS ANALYZED [illegible] SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TURKEY CREEK	TURKEY CREEK	TURKEY CREEK
LOCATION	15SW/SD017	15SW/SD017	15SW/SD018	15SW/SD018	15SW/SD019	15SW/SD019	15SW/SD001	15SW/SD001	15SW/SD002
SAMPLE NUMBER	15SW01701	15SW01701-F	15SW01801	15SW01801-F	15SW01901	15SW01901-F	15SW00101	15SW00101-F	15SW00201
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DEPTH	1/11/2005	1/11/2005	1/9/2005	1/9/2005	1/9/2005	1/9/2005	1/11/2005	1/11/2005	1/11/2005
2,4-D	0.04 U		0.04 U		0.04 U		0.04 U		0.04 U
DINOSEB	0.04 U		0.04 U		0.04 U		0.04 U		0.04 U
HEXACHLOROPHENE	0.025 U		0.025 U		0.025 U		0.025 U		0.025 U
PENTACHLOROPHENOL	0.062 J		0.013 U		0.013 U		0.05 J		0.053 J
Total Metals (ug/L)									
ALUMINUM	1040 J		3020 J		1900 J		1080 J		41.6 U
ANTIMONY	0.19 U		0.34 U		0.19 U		0.42 U		0.49 U
ARSENIC	0.69 U		1.4 J		0.73 U		0.76 U		0.26 U
BARIUM	61 J		72.4 J		63.4 J		45.6 J		34.4 J
BERYLLIUM	0.08 U		0.13 U		0.07 U		0.1 U		0.05 U
CADMIUM	0.09 U		0.09 U		0.1 U		0.09 U		0.07 U
CALCIUM	71600 J		39000 J		32100 J		50800 J		43200 J
CHROMIUM	1.9 J		3.6 J		2.2 J		1.9 J		0.42 U
COBALT	4.2 J		1.6		1.4		1.4 J		0.5 U
COPPER	1.9 J		5.1 J		3.2 J		2.5 J		1.3 J
IRON	1430 J		3330 J		2160 J		1390 J		41 U
LEAD	1.1 J		2.9 J		1.2 J		1.5 J		0.279 U
MAGNESIUM	15200 J		8030 J		6630 J		10300 J		8840 J
MANGANESE	404		191 J		412 J		107		42
MERCURY	0.03 U		0.03 U		0.03 U		0.047 U		0.043 U
NICKEL	8 J		3.2		2.3		4.3 J		2.2 J
POTASSIUM	2420 J		1550 J		1340 J		1940 J		1670 J
SELENIUM	0.48 U		0.14 U		0.14 U		0.28 U		0.29 U
SILVER	0.028 UJ		0.028 U		0.028 U		0.028 UJ		0.04 U

APPENDIX TABLE G-2
RESULTS FOR CHEMICALS ANALYZED IN ALL SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TRIBUTARY	TURKEY CREEK	TURKEY CREEK	TURKEY CREEK
LOCATION	15SW/SD017	15SW/SD017	15SW/SD018	15SW/SD018	15SW/SD019	15SW/SD019	15SW/SD001	15SW/SD001	15SW/SD002
SAMPLE NUMBER	15SW01701	15SW01701-F	15SW01801	15SW01801-F	15SW01901	15SW01901-F	15SW00101	15SW00101-F	15SW00201
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DEPTH	1/11/2005	1/11/2005	1/9/2005	1/9/2005	1/9/2005	1/9/2005	1/11/2005	1/11/2005	1/11/2005
SODIUM	58900 J		29800 J		18400 J		28300 J		24000 J
THALLIUM	0.09 U		0.06 U		0.043 U		0.11 U		0.09 U
TIN	0.048 U		0.38 U		0.42 U		0.05 U		0.08 U
VANADIUM	1.9 J		6.1		3.4		2.1		1.14 U
ZINC	32.3 J		22.8 J		10.6 U		12.7 J		3.5 U
Dissolved Metals (ug/L)									
ALUMINUM, FILTERED		187		10.2 U		10.6 U		25.9 J	
ANTIMONY, FILTERED		0.085 U		0.39 U		0.19 U		0.085 U	
ARSENIC, FILTERED		0.22 U		0.31 U		0.19 U		17 J	
BARIUM, FILTERED		56.4 J		71.7 J		51.9 J		41.2 J	
BERYLLIUM, FILTERED		0.03 U		0.02 U		0.02 U		0.02 U	
CADMIUM, FILTERED		0.04 U		0.36 J		0.09 J		0.17 U	
CALCIUM, FILTERED		69600 J		34200		25200		47600 J	
CHROMIUM, FILTERED		0.83 U		0.37 U		0.34 U		0.47 U	
COBALT, FILTERED		4.1		0.38 J		0.94 J		0.92 J	
COPPER, FILTERED		1.9 J		1.4 J		1.3 J		1.5 J	
IRON, FILTERED		643 J		299 J		484 J		134 U	
LEAD, FILTERED		0.486 U		0.192 J		0.199 J		0.162 U	
MAGNESIUM, FILTERED		14800		8210 J		6410 J		9720	
MANGANESE, FILTERED		398		87.7 J		367 J		92.3	
MERCURY, FILTERED		0.03 U		0.22 U		0.049 U		0.03 U	
NICKEL, FILTERED		9 J		3 J		2.7 J		3.6 J	
POTASSIUM, FILTERED		2140 J		1100 J		861 J		1670 J	
SELENIUM, FILTERED		0.45 U		0.29 U		0.27 U		0.15 U	
SILVER, FILTERED		0.028 UJ		0.028 U		0.028 U		0.028 UJ	
SODIUM, FILTERED		59600 J		21800 J		14500 J		29400 J	
THALLIUM, FILTERED		0.08 U		0.1 J		0.09 J		0.08 U	
TIN, FILTERED		0.26 U		0.22 U		0.08 U		0.17 U	
VANADIUM, FILTERED		1.14 U		1.14 U		1.14 U		1.14 U	
ZINC, FILTERED		10.4 J		3.4 U		3.7 J		2.5 J	
Field Parameters									
DISSOLVED OXYGEN - METER (mg/L)	10.57						11.5		7.33
OXIDATION REDUCTION POTENTIAL (MV	4.4		27		-15.7		78.7		81
PH (S.U.)	7.74		7.57		7.82		7.86		7.25
SPECIFIC CONDUCTANCE (MS/CM)	0.947		0.512		0.375		0.579		0.48
TEMPERATURE (C)	10.87		6.73		7.37		9.7		9.36
TURBIDITY (NTU)	60		70		25		45		90

APPENDIX G-2
RESULTS FOR CHEMICALS ANALYZED IN SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	UPGRAD	UPGRAD	UPGRAD
STREAM ORDER	TURKEY CREEK	TURKEY CREEK	TURKEY CREEK			
LOCATION	15SW/SD002	15SW/SD015	15SW/SD015	15SW/SD003	15SW/SD014	15SW/SD014
SAMPLE NUMBER	15SW00201-F	15SW01501	15SW01501-F	15ST00301	15SW01401	15SW01401-F
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NOT FOUND	NORMAL	NORMAL
SAMPLE DEPTH	1/11/2005	1/11/2005	1/11/2005	1/12/2005	1/11/2005	1/11/2005
Volatile Organics (ug/L)						
1,1,1,2-TETRACHLOROETHANE		0.3 U			0.3 U	
1,1,1-TRICHLOROETHANE		0.3 U			0.3 U	
1,1,2,2-TETRACHLOROETHANE		0.3 U			0.3 U	
1,1,2-TRICHLOROETHANE		0.3 U			0.3 U	
1,1-DICHLOROETHANE		0.3 U			0.3 U	
1,1-DICHLOROETHENE		0.3 UJ			0.3 UJ	
1,2,3-TRICHLOROPROPANE		0.3 U			0.3 U	
1,2-DIBROMO-3-CHLOROPROPANE		0.3 U			0.3 U	
1,2-DIBROMOETHANE		0.3 U			0.3 U	
1,2-DICHLOROETHANE		0.3 U			0.3 U	
1,2-DICHLOROPROPANE		0.3 U			0.3 U	
2-BUTANONE		0.5 U			0.5 U	
2-HEXANONE		0.5 U			0.5 U	
3-CHLOROPROPENE		0.5 UJ			0.5 UJ	
4-METHYL-2-PENTANONE		0.5 U			0.5 U	
ACETONE		0.5 U			0.5 U	
ACETONITRILE		20 UR			20 UR	
ACROLEIN		0.5 UR			0.5 UR	
ACRYLONITRILE		0.5 U			0.5 U	
BENZENE		0.3 U			0.3 U	
BROMODICHLOROMETHANE		0.3 U			0.3 U	
BROMOFORM		0.3 U			0.3 U	
BROMOMETHANE		0.3 UJ			0.3 UJ	
CARBON DISULFIDE		0.3 U			0.3 U	
CARBON TETRACHLORIDE		0.3 U			0.3 U	
CHLOROBENZENE		0.3 U			0.3 U	
CHLORODIBROMOMETHANE		0.3 U			0.3 U	
CHLOROETHANE		0.5 U			0.5 U	
CHLOROFORM		0.3 U			0.3 U	
CHLOROMETHANE		0.3 U			0.3 U	
CHLOROPRENE		0.5 U			0.5 U	
CIS-1,2-DICHLOROETHENE		0.3 U			0.3 U	
CIS-1,3-DICHLOROPROPENE		0.3 U			0.3 U	
DIBROMOMETHANE		0.3 U			0.3 U	
DICHLORODIFLUOROMETHANE		0.3 U			0.3 U	
ETHYL METHACRYLATE		0.5 U			0.5 U	
ETHYLBENZENE		0.3 U			0.3 U	
ISOBUTANOL		20 UR			20 UR	
METHACRYLONITRILE		0.3 U			0.3 U	
METHYL IODIDE		0.5 U			0.5 U	
METHYL METHACRYLATE		0.5 U			0.5 U	
METHYL TERT-BUTYL ETHER		0.5 U			0.5 U	
METHYLENE CHLORIDE		0.3 UJ			0.3 UJ	
PROPIONITRILE		20 UR			20 UR	
STYRENE		0.3 U			0.3 U	
TETRACHLOROETHENE		0.3 U			0.3 U	
TOLUENE		0.3 U			0.3 U	
TOTAL XYLENES		0.3 U			0.3 U	

APPENDIX TABLE G-2
RESULTS FOR CHEMICALS ANALYZED IN ALL SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	UPGRAD	UPGRAD	UPGRAD
STREAM ORDER	TURKEY CREEK	TURKEY CREEK	TURKEY CREEK			
LOCATION	15SW/SD002	15SW/SD015	15SW/SD015	15SW/SD003	15SW/SD014	15SW/SD014
SAMPLE NUMBER	15SW00201-F	15SW01501	15SW01501-F	15ST00301	15SW01401	15SW01401-F
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NOT FOUND	NORMAL	NORMAL
SAMPLE DEPTH	1/11/2005	1/11/2005	1/11/2005	1/12/2005	1/11/2005	1/11/2005
TRANS-1,2-DICHLOROETHENE		0.3 U			0.3 U	
TRANS-1,3-DICHLOROPROPENE		0.3 U			0.3 U	
TRANS-1,4-DICHLORO-2-BUTENE		0.5 U			0.5 U	
TRICHLOROETHENE		0.3 U			0.3 U	
TRICHLOROFLUOROMETHANE		0.3 U			0.3 U	
VINYL ACETATE		0.5 U			0.5 U	
VINYL CHLORIDE		0.3 U			0.3 U	
Semivolatile Organics (ug/L)						
1,2,4,5-TETRACHLOROBENZENE		1.06 U			1.05 U	
1,2,4-TRICHLOROBENZENE		1.06 U			1.05 U	
1,2-DICHLOROBENZENE		1.06 U			1.05 U	
1,3-DICHLOROBENZENE		1.06 U			1.05 U	
1,4-DICHLOROBENZENE		1.06 U			1.05 U	
1,4-DIOXANE		1.06 UJ			1.05 UJ	
1,4-NAPHTHOQUINONE		1.06 U			1.05 U	
1,4-PHENYLENEDIAMINE		1.06 U			1.05 U	
1-NAPHTHYLAMINE		1.06 U			1.05 U	
2,2'-OXYBIS(1-CHLOROPROPANE)		1.06 UJ			1.05 UJ	
2,3,4,6-TETRACHLOROPHENOL		1.06 UR			1.05 U	
2,4,5-TRICHLOROPHENOL		1.06 UR			1.05 U	
2,4,6-TRICHLOROPHENOL		1.06 UR			1.05 U	
2,4-DICHLOROPHENOL		1.06 UR			1.05 U	
2,4-DIMETHYLPHENOL		1.06 UR			1.05 U	
2,4-DINITROPHENOL		1.06 UR			1.05 U	
2,6-DICHLOROPHENOL		1.06 UR			1.05 U	
2-ACETYLAMINOFLUORENE		1.06 UJ			1.05 UJ	
2-CHLORONAPHTHALENE		1.06 U			1.05 U	
2-CHLOROPHENOL		1.06 UR			1.05 U	
2-METHYLNAPHTHALENE		0.05 U			0.049 U	
2-METHYLPHENOL		1.06 UR			1.05 U	
2-NAPHTHYLAMINE		1.06 U			1.05 U	
2-NITROANILINE		1.06 U			1.05 U	
2-NITROPHENOL		1.06 UR			1.05 U	
2-PICOLINE		1.06 U			1.05 U	
3&4-METHYLPHENOL		1.06 UR			1.05 U	
3,3'-DICHLOROBENZIDINE		1.06 U			1.05 U	
3,3'-DIMETHYLBENZIDINE		1.06 UJ			1.05 UJ	
3-METHYLCHOLANTHRENE		1.06 U			1.05 U	
3-NITROANILINE		1.06 U			1.05 U	
4,6-DINITRO-2-METHYLPHENOL		1.06 UR			1.05 U	
4-AMINOBIPHENYL		1.06 U			1.05 U	
4-BROMOPHENYL PHENYL ETHER		1.06 U			1.05 U	
4-CHLORO-3-METHYLPHENOL		1.06 UR			1.05 U	
4-CHLOROANILINE		1.06 U			1.05 U	
4-CHLOROPHENYL PHENYL ETHER		1.06 U			1.05 U	
4-NITROANILINE		1.06 U			1.05 U	
4-NITROPHENOL		1.06 UR			1.05 UJ	
4-NITROQUINOLINE-1-OXIDE		1.06 UR			1.05 UR	
5-NITRO-O-TOLUIDINE		1.06 U			1.05 U	

APPEN[illegible]E G-2
RESULTS FOR CHEMICALS ANALYZED [illegible] SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	UPGRAD	UPGRAD	UPGRAD
STREAM ORDER	TURKEY CREEK	TURKEY CREEK	TURKEY CREEK			
LOCATION	15SW/SD002	15SW/SD015	15SW/SD015	15SW/SD003	15SW/SD014	15SW/SD014
SAMPLE NUMBER	15SW00201-F	15SW01501	15SW01501-F	15ST00301	15SW01401	15SW01401-F
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NOT FOUND	NORMAL	NORMAL
SAMPLE DEPTH	1/11/2005	1/11/2005	1/11/2005	1/12/2005	1/11/2005	1/11/2005
7,12-DIMETHYLBENZ(A)ANTHRACENE		1.06 U			1.05 U	
A;A-DIMETHYLPHENETHYLAMINE		1.06 U			1.05 U	
ACENAPHTHENE		0.05 U			0.049 U	
ACENAPHTHYLENE		0.05 U			0.049 U	
ACETOPHENONE		1.06 U			1.05 U	
ANILINE		1.06 U			1.05 U	
ANTHRACENE		0.05 U			0.049 U	
ARAMITE		1.06 U			1.05 U	
BENZO(A)ANTHRACENE		0.05 U			0.12	
BENZO(A)PYRENE		0.05 U			0.1	
BENZO(B)FLUORANTHENE		0.05 U			0.2	
BENZO(G,H,I)PERYLENE		0.05 U			0.11	
BENZO(K)FLUORANTHENE		0.05 U			0.1	
BENZYL ALCOHOL		1.06 U			1.05 U	
BIS(2-CHLOROETHOXY)METHANE		1.06 U			1.05 U	
BIS(2-CHLOROETHYL)ETHER		1.06 U			1.05 U	
BIS(2-ETHYLHEXYL)PHTHALATE		1.06 U			1.05 U	
BUTYL BENZYL PHTHALATE		1.06 U			1.05 U	
CHLOROBENZILATE		1.06 U			1.05 U	
CHRYSENE		0.05 U			0.18	
DI-N-BUTYL PHTHALATE		1.06 U			1.05 U	
DI-N-OCTYL PHTHALATE		1.06 U			1.05 U	
DIALLATE		1.06 U			1.05 U	
DIBENZO(A,H)ANTHRACENE		0.05 U			0.049 U	
DIBENZOFURAN		1.06 U			1.05 U	
DIETHYL PHTHALATE		1.06 U			1.05 U	
DIMETHYL PHTHALATE		1.06 U			1.05 U	
DIPHENYLAMINE		1.06 U			1.05 U	
ETHYL METHANE SULFONATE		1.06 U			1.05 U	
FLUORANTHENE		0.15			0.49	
FLUORENE		0.05 U			0.049 U	
HEXACHLOROBENZENE		1.06 UJ			1.05 UJ	
HEXACHLOROBUTADIENE		1.06 U			1.05 U	
HEXACHLOROCYCLOPENTADIENE		1.06 UJ			1.05 UJ	
HEXACHLOROETHANE		1.06 U			1.05 U	
HEXACHLOROPROPENE		1.06 U			1.05 U	
INDENO(1,2,3-CD)PYRENE		0.05 U			0.09 J	
ISODRIN		1.06 U			1.05 U	
ISOPHORONE		1.06 U			1.05 U	
ISOSAFROLE		1.06 U			1.05 U	
KEPONE		1.06 UJ			1.05 UJ	
METHAPYRILENE		1.06 UJ			1.05 UJ	
METHYL METHANE SULFONATE		1.06 U			1.05 U	
N-NITROSO-DI-N-BUTYLAMINE		1.06 U			1.05 U	
N-NITROSO-DI-N-PROPYLAMINE		1.06 U			1.05 U	
N-NITROSODIETHYLAMINE		1.06 U			1.05 U	
N-NITROSODIMETHYLAMINE		1.06 UJ			1.05 UJ	
N-NITROSODIPHENYLAMINE		1.06 U			1.05 U	
N-NITROSOMETHYLETHYLAMINE		1.06 U			1.05 U	

APPENDIX TABLE G-2
RESULTS FOR CHEMICALS ANALYZED IN ALL SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	UPGRAD	UPGRAD	UPGRAD
STREAM ORDER	TURKEY CREEK	TURKEY CREEK	TURKEY CREEK			
LOCATION	15SW/SD002	15SW/SD015	15SW/SD015	15SW/SD003	15SW/SD014	15SW/SD014
SAMPLE NUMBER	15SW00201-F	15SW01501	15SW01501-F	15ST00301	15SW01401	15SW01401-F
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NOT FOUND	NORMAL	NORMAL
SAMPLE DEPTH	1/11/2005	1/11/2005	1/11/2005	1/12/2005	1/11/2005	1/11/2005
N-NITROSOMORPHOLINE		1.06 U			1.05 U	
N-NITROSOPIPERIDINE		1.06 U			1.05 U	
N-NITROSOPYRROLIDINE		1.06 U			1.05 U	
NAPHTHALENE		0.05 U			0.049 U	
O,O,O-TRIETHYL PHOSPHOROTHIOATE		1.06 U			1.05 U	
O-TOLUIDINE		1.06 U			1.05 U	
P-(DIMETHYLAMINO)AZOBENZENE		1.06 U			1.05 U	
PENTACHLOROBENZENE		1.06 U			1.05 U	
PENTACHLOROETHANE		1.06 U			1.05 U	
PENTACHLORONITROBENZENE		1.06 U			1.05 U	
PHENACETIN		1.06 U			1.05 U	
PHENANTHRENE		0.09 J			0.32	
PHENOL		1.06 UR			1.05 U	
PRONAMIDE		1.06 U			1.05 U	
PYRENE		0.12			0.42	
PYRIDINE		1.06 UJ			1.05 UJ	
SAFROLE		1.06 U			1.05 U	
Pesticides PCBs (ug/L)						
4,4'-DDD		0.05 U			0.057 U	
4,4'-DDE		0.05 U			0.057 U	
4,4'-DDT		0.05 U			0.057 U	
ALDRIN		0.025 U			0.028 U	
ALPHA-BHC		0.025 U			0.028 U	
ALPHA-CHLORDANE		0.025 U			0.028 U	
AROCLOR-1016		0.252 U			0.285 U	
AROCLOR-1221		0.252 U			0.285 U	
AROCLOR-1232		0.252 U			0.285 U	
AROCLOR-1242		0.252 U			0.285 U	
AROCLOR-1248		0.252 U			0.285 U	
AROCLOR-1254		0.252 U			0.285 U	
AROCLOR-1260		0.252 U			0.285 U	
BETA-BHC		0.025 U			0.028 U	
DELTA-BHC		0.025 U			0.028 U	
DIELDRIN		0.05 U			0.057 U	
ENDOSULFAN I		0.025 U			0.028 U	
ENDOSULFAN II		0.05 U			0.057 U	
ENDOSULFAN SULFATE		0.05 U			0.057 U	
ENDRIN		0.05 U			0.057 U	
ENDRIN ALDEHYDE		0.05 U			0.057 U	
ENDRIN KETONE		0.05 U			0.057 U	
GAMMA-BHC (LINDANE)		0.025 U			0.028 U	
GAMMA-CHLORDANE		0.025 U			0.028 U	
HEPTACHLOR		0.025 U			0.028 U	
HEPTACHLOR EPOXIDE		0.025 U			0.028 U	
METHOXYCHLOR		0.252 U			0.285 U	
TOXAPHENE		2.52 U			2.85 U	
Herbicides (ug/L)						
2,4,5-T		0.04 U			0.04 U	
2,4,5-TP (SILVEX)		0.04 U			0.04 U	

APPEN[illegible]E G-2
RESULTS FOR CHEMICALS ANALYZED I[illegible] SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	UPGRAD	UPGRAD	UPGRAD
STREAM ORDER	TURKEY CREEK	TURKEY CREEK	TURKEY CREEK			
LOCATION	15SW/SD002	15SW/SD015	15SW/SD015	15SW/SD003	15SW/SD014	15SW/SD014
SAMPLE NUMBER	15SW00201-F	15SW01501	15SW01501-F	15ST00301	15SW01401	15SW01401-F
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NOT FOUND	NORMAL	NORMAL
SAMPLE DEPTH	1/11/2005	1/11/2005	1/11/2005	1/12/2005	1/11/2005	1/11/2005
2,4-D		0.04 U			0.04 U	
DINOSEB		0.04 U			0.04 U	
HEXACHLOROPHENE		0.025 U			0.025 U	
PENTACHLOROPHENOL		0.037 J			0.037 J	
Total Metals (ug/L)						
ALUMINUM		194 J			421 J	
ANTIMONY		0.48 U			0.35 U	
ARSENIC		0.29 U			0.38 U	
BARIUM		51 J			40.7 J	
BERYLLIUM		0.05 U			0.12 U	
CADMIUM		0.08 U			0.09 U	
CALCIUM		47800 J			40600 J	
CHROMIUM		0.43 U			0.71 U	
COBALT		0.58 U			1.2 U	
COPPER		1.7 J			1.5 J	
IRON		306 J			411 J	
LEAD		0.633 U			0.606 U	
MAGNESIUM		10800 J			9810 J	
MANGANESE		71.5			69	
MERCURY		0.041 U			0.033 U	
NICKEL		2.3 J			3.8 J	
POTASSIUM		1800 J			1610 J	
SELENIUM		0.25 U			0.17 U	
SILVER		0.028 UJ			0.04 U	

APPENDIX TABLE G-2
RESULTS FOR CHEMICALS ANALYZED IN ALL SURFACE WATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	UPGRAD	UPGRAD	UPGRAD
STREAM ORDER	TURKEY CREEK	TURKEY CREEK	TURKEY CREEK			
LOCATION	15SW/SD002	15SW/SD015	15SW/SD015	15SW/SD003	15SW/SD014	15SW/SD014
SAMPLE NUMBER	15SW00201-F	15SW01501	15SW01501-F	15ST00301	15SW01401	15SW01401-F
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NOT FOUND	NORMAL	NORMAL
SAMPLE DEPTH	1/11/2005	1/11/2005	1/11/2005	1/12/2005	1/11/2005	1/11/2005
SODIUM		21400 J			23000 J	
THALLIUM		0.08 U			0.1 U	
TIN		0.048 U			0.05 U	
VANADIUM		1.14 U			1.14 U	
ZINC		5.2 J			7.5 J	
Dissolved Metals (ug/L)						
ALUMINUM, FILTERED	2090		28.6 J			48.8 J
ANTIMONY, FILTERED	0.085 U		0.085 U			0.085 U
ARSENIC, FILTERED	1 J		0.09 U			0.06 U
BARIUM, FILTERED	46.6 J		50.5 J			33 J
BERYLLIUM, FILTERED	0.14 U		0.02 U			0.04 U
CADMIUM, FILTERED	0.19 U		0.05 U			0.05 U
CALCIUM, FILTERED	42800 J		46800 J			40400 J
CHROMIUM, FILTERED	4.1 J		0.44 U			0.43 U
COBALT, FILTERED	2.1		0.55 J			0.86 J
COPPER, FILTERED	5.2 J		1.2 J			1.2 J
IRON, FILTERED	2860 J		154 U			103 U
LEAD, FILTERED	3.1 J		0.204 U			0.192 U
MAGNESIUM, FILTERED	7630		10700			11000
MANGANESE, FILTERED	114		65.8			41.2
MERCURY, FILTERED	0.036 U		0.036 U			0.031 U
NICKEL, FILTERED	6.9 J		3.2 J			4.3 J
POTASSIUM, FILTERED	1630 J		1660 J			1670 J
SELENIUM, FILTERED	0.35 U		0.12 U			0.21 U
SILVER, FILTERED	0.05 U		0.028 UJ			0.028 UJ
SODIUM, FILTERED	19600 J		21500 J			23900 J
THALLIUM, FILTERED	0.13 U		0.1 U			0.07 U
TIN, FILTERED	0.56 U		0.09 U			0.18 U
VANADIUM, FILTERED	4.2		1.14 U			1.14 U
ZINC, FILTERED	42.7		3.1 J			3.7 J
Field Parameters						
DISSOLVED OXYGEN - METER (mg/L)		11.33			11	
OXIDATION REDUCTION POTENTIAL (MV)		3.4			55.3	
PH (S.U.)		7.93			7.77	
SPECIFIC CONDUCTANCE (MS/CM)		0.518			0.478	
TEMPERATURE (C)		9.84			9.88	
TURBIDITY (NTU)		19			39	

DOWNGRAD - Location is a downgradient location
UPGRAD - Location is a upgradient location.
NOT FOUND - Location was impacted by new construction and unable to be sampled.
Data qualifiers (e.g., U, J) are defined in section 3 of the text.
ug/L - micrograms per liter
mg/L - milligrams per liter
MV - millivolts
S.U. - standard units
MS/CM - milliSiemens per centimeter
C - Celsius
NTU - nephelometric turbidity units

APPENDIX TABLE G-3
RESULTS FOR CHEMICALS ANALYZED IN ALL SEDIMENT SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL
LOCATION	15SW/SD004	15SW/SD006	15SW/SD007	15SW/SD008	15SW/SD009	15SW/SD010	15SW/SD011
SAMPLE NUMBER	15SD0040006	15SD0060006	15SD0070006	15SD0080006	15SD0090006	15SD0100006	15SD0110006
SAMPLE CODE	NO SED	NORMAL	NOT FOUND	NOT FOUND	NORMAL	NO SED	NO SED
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/12/2005	1/12/2005	1/12/2005
Volatile Organics (ug/kg)							
1,1,1,2-TETRACHLOROETHANE		1.11 U			1.12 U		
1,1,1-TRICHLOROETHANE		1.11 U			1.12 U		
1,1,2,2-TETRACHLOROETHANE		1.11 U			1.12 U		
1,1,2-TRICHLOROETHANE		1.11 U			1.12 U		
1,1-DICHLOROETHANE		1.11 U			1.12 U		
1,1-DICHLOROETHENE		1.11 U			1.12 U		
1,2,3-TRICHLOROPROPANE		1.11 U			1.12 U		
1,2-DIBROMO-3-CHLOROPROPANE		1.11 U			1.12 U		
1,2-DIBROMOETHANE		1.11 U			1.12 U		
1,2-DICHLOROETHANE		1.11 U			1.12 U		
1,2-DICHLOROPROPANE		1.11 U			1.12 U		
2-BUTANONE		1.11 U			1.12 U		
2-HEXANONE		1.11 U			1.12 U		
3-CHLOROPROPENE		1.11 U			1.12 U		
4-METHYL-2-PENTANONE		1.11 U			1.12 UJ		
ACETONE		2 J			8 J		
ACETONITRILE		44.5 UR			44.8 UR		
ACROLEIN		1.11 UR			1.12 UR		
ACRYLONITRILE		1.11 U			1.12 U		
BENZENE		1.11 U			1.12 U		
BROMODICHLOROMETHANE		1.11 U			1.12 U		
BROMOFORM		1.11 U			1.12 U		
BROMOMETHANE		1.11 U			1.12 U		
CARBON DISULFIDE		1.11 U			1.12 U		
CARBON TETRACHLORIDE		1.11 U			1.12 U		
CHLOROBENZENE		1.11 U			1.12 U		
CHLORODIBROMOMETHANE		1.11 U			1.12 U		
CHLOROETHANE		1.11 U			1.12 U		
CHLOROFORM		1.11 U			1.12 U		
CHLOROMETHANE		1.11 U			1.12 U		
CHLOROPRENE		1.11 U			1.12 U		
CIS-1,2-DICHLOROETHENE		1.11 U			1.12 U		
CIS-1,3-DICHLOROPROPENE		1.11 U			1.12 U		
DIBROMOMETHANE		1.11 U			1.12 U		
DICHLORODIFLUOROMETHANE		1.11 U			1.12 U		
ETHYL METHACRYLATE		1.11 U			1.12 U		
ETHYLBENZENE		1.11 U			1.12 U		
ISOBUTANOL		44.5 UR			44.8 UR		
METHACRYLONITRILE		1.11 U			1.12 U		
METHYL IODIDE		1.11 U			1.12 U		
METHYL METHACRYLATE		1.11 U			1.12 U		
METHYL TERT-BUTYL ETHER		1.11 U			1.12 U		

APPENDIX TABLE G-3
RESULTS FOR CHEMICALS ANALYZED IN ALL SEDIMENT SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL
LOCATION	15SW/SD004	15SW/SD006	15SW/SD007	15SW/SD008	15SW/SD009	15SW/SD010	15SW/SD011
SAMPLE NUMBER	15SD0040006	15SD0060006	15SD0070006	15SD0080006	15SD0090006	15SD0100006	15SD0110006
SAMPLE CODE	NO SED	NORMAL	NOT FOUND	NOT FOUND	NORMAL	NO SED	NO SED
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/12/2005	1/12/2005	1/12/2005
METHYLENE CHLORIDE		1.11 UJ			1.12 UJ		
PROPIONITRILE		44.5 UR			44.8 UR		
STYRENE		1.11 U			1.12 U		
TETRACHLOROETHENE		1.11 U			1.12 U		
TOLUENE		1.11 U			1.12 U		
TOTAL XYLENES		1.11 U			1.12 U		
TRANS-1,2-DICHLOROETHENE		1.11 U			1.12 U		
TRANS-1,3-DICHLOROPROPENE		1.11 U			1.12 U		
TRANS-1,4-DICHLORO-2-BUTENE		1.11 U			1.12 U		
TRICHLOROETHENE		1.11 U			1.12 U		
TRICHLOROFLUOROMETHANE		1.11 U			1.12 U		
VINYL ACETATE		1.11 UJ			1.12 U		
VINYL CHLORIDE		1.11 U			1.12 U		
Semivolatile Organics (ug/kg)							
1,2,4,5-TETRACHLOROBENZENE		80.4 U			82.6 U		
1,2,4-TRICHLOROBENZENE		80.4 U			82.6 U		
1,2-DICHLOROBENZENE		80.4 U			82.6 U		
1,3-DICHLOROBENZENE		80.4 U			82.6 U		
1,4-DICHLOROBENZENE		80.4 U			82.6 U		
1,4-DIOXANE		120 U			123 U		
1,4-NAPHTHOQUINONE		80.4 U			82.6 U		
1,4-PHENYLENEDIAMINE		80.4 U			82.6 U		
1-NAPHTHYLAMINE		80.4 U			82.6 U		
2,2'-OXYBIS(1-CHLOROPROPANE)		80.4 U			82.6 U		
2,3,4,6-TETRACHLOROPHENOL		80.4 U			82.6 U		
2,4,5-TRICHLOROPHENOL		80.4 U			82.6 U		
2,4,6-TRICHLOROPHENOL		80.4 U			82.6 U		
2,4-DICHLOROPHENOL		80.4 U			82.6 U		
2,4-DIMETHYLPHENOL		80.4 U			82.6 U		
2,4-DINITROPHENOL		80.4 UJ			82.6 UJ		
2,6-DICHLOROPHENOL		80.4 U			82.6 U		
2-ACETYLAMINOFLUORENE		80.4 U			82.6 U		
2-CHLORONAPHTHALENE		80.4 U			82.6 U		
2-CHLOROPHENOL		80.4 U			82.6 U		
2-METHYLNAPHTHALENE		47			16.3 U		
2-METHYLPHENOL		80.4 U			82.6 U		
2-NAPHTHYLAMINE		80.4 U			82.6 U		
2-NITROANILINE		80.4 U			82.6 U		
2-NITROPHENOL		80.4 U			82.6 U		
2-PICOLINE		80.4 U			82.6 U		
3&4-METHYLPHENOL		80.4 U			82.6 U		
3,3'-DICHLOROBENZIDINE		80.4 U			82.6 U		
3,3'-DIMETHYLBENZIDINE		80.4 U			82.6 U		

APPENDIX TABLE G-3
RESULTS FOR CHEMICALS ANALYZED IN ALL SEDIMENT SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL
LOCATION	15SW/SD004	15SW/SD006	15SW/SD007	15SW/SD008	15SW/SD009	15SW/SD010	15SW/SD011
SAMPLE NUMBER	15SD0040006	15SD0060006	15SD0070006	15SD0080006	15SD0090006	15SD0100006	15SD0110006
SAMPLE CODE	NO SED	NORMAL	NOT FOUND	NOT FOUND	NORMAL	NO SED	NO SED
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/12/2005	1/12/2005	1/12/2005
3-METHYLCHOLANTHRENE		80.4 U			82.6 U		
3-NITROANILINE		80.4 U			82.6 U		
4,6-DINITRO-2-METHYLPHENOL		80.4 U			82.6 U		
4-AMINOBIPHENYL		80.4 U			82.6 U		
4-BROMOPHENYL PHENYL ETHER		80.4 U			82.6 U		
4-CHLORO-3-METHYLPHENOL		80.4 U			82.6 U		
4-CHLOROANILINE		80.4 U			82.6 U		
4-CHLOROPHENYL PHENYL ETHER		80.4 U			82.6 U		
4-NITROANILINE		80.4 U			82.6 U		
4-NITROPHENOL		80.4 UJ			82.6 UJ		
4-NITROQUINOLINE-1-OXIDE		80.4 UR			82.6 UR		
5-NITRO-O-TOLUIDINE		80.4 U			82.6 U		
7,12-DIMETHYLBENZ(A)ANTHRACENE		80.4 U			82.6 U		
A,A-DIMETHYLPHENETHYLAMINE		80.4 U			82.6 U		
ACENAPHTHENE		560			18 J		
ACENAPHTHYLENE		15.8 U			16.3 U		
ACETOPHENONE		80.4 U			82.6 U		
ANILINE		80.4 U			82.6 U		
ANTHRACENE		1300			25 J		
ARAMITE		80.4 U			82.6 U		
BENZO(A)ANTHRACENE		3300			100 J		
BENZO(A)PYRENE		3700 J			120 J		
BENZO(B)FLUORANTHENE		4300 J			150 J		
BENZO(G,H,I)PERYLENE		3800 J			160 J		
BENZO(K)FLUORANTHENE		1900 J			89 J		
BENZYL ALCOHOL		80.4 U			82.6 U		
BIS(2-CHLOROETHOXY)METHANE		80.4 U			82.6 U		
BIS(2-CHLOROETHYL)ETHER		80.4 U			82.6 U		
BIS(2-ETHYLHEXYL)PHTHALATE		270 J			280 J		
BUTYL BENZYL PHTHALATE		80.4 U			82.6 U		
CHLOROBENZILATE		80.4 U			82.6 U		
CHRYSENE		4100			160 J		
DI-N-BUTYL PHTHALATE		80.4 U			82.6 U		
DI-N-OCTYL PHTHALATE		80.4 U			82.6 U		
DIALLATE		80.4 U			82.6 U		
DIBENZO(A,H)ANTHRACENE		700 J			16.3 UJ		
DIBENZOFURAN		420			82.6 U		
DIETHYL PHTHALATE		80.4 U			82.6 U		
DIMETHYL PHTHALATE		80.4 U			82.6 U		
DIPHENYLAMINE		80.4 U			82.6 U		
ETHYL METHANE SULFONATE		80.4 U			82.6 U		
FLUORANTHENE		12000			340		
FLUORENE		820			20 J		

APPENDIX TABLE G-3
RESULTS FOR CHEMICALS ANALYZED IN ALL SEDIMENT SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL
LOCATION	15SW/SD004	15SW/SD006	15SW/SD007	15SW/SD008	15SW/SD009	15SW/SD010	15SW/SD011
SAMPLE NUMBER	15SD0040006	15SD0060006	15SD0070006	15SD0080006	15SD0090006	15SD0100006	15SD0110006
SAMPLE CODE	NO SED	NORMAL	NOT FOUND	NOT FOUND	NORMAL	NO SED	NO SED
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/12/2005	1/12/2005	1/12/2005
HEXACHLOROBENZENE		80.4 U			82.6 U		
HEXACHLOROBUTADIENE		80.4 U			82.6 U		
HEXACHLOROCYCLOPENTADIENE		80.4 UJ			82.6 UJ		
HEXACHLOROETHANE		80.4 U			82.6 U		
HEXACHLOROPROPENE		80.4 U			82.6 U		
INDENO(1,2,3-CD)PYRENE		3100 J			120 J		
ISODRIN		80.4 U			82.6 U		
ISOPHORONE		80.4 U			82.6 U		
ISOSAFROLE		80.4 U			82.6 U		
KEPONE		80.4 UJ			82.6 UJ		
METHAPYRILENE		80.4 U			82.6 U		
METHYL METHANE SULFONATE		80.4 U			82.6 U		
N-NITROSO-DI-N-BUTYLAMINE		80.4 U			82.6 U		
N-NITROSO-DI-N-PROPYLAMINE		80.4 U			82.6 U		
N-NITROSODIETHYLAMINE		80.4 U			82.6 U		
N-NITROSODIMETHYLAMINE		80.4 UJ			82.6 UJ		
N-NITROSODIPHENYLAMINE		80.4 U			82.6 U		
N-NITROSOMETHYLETHYLAMINE		80.4 U			82.6 U		
N-NITROSOMORPHOLINE		80.4 U			82.6 U		
N-NITROSOPIPERIDINE		80.4 U			82.6 U		
N-NITROSOPYRROLIDINE		80.4 U			82.6 U		
NAPHTHALENE		140			16.3 U		
O,O,O-TRIETHYL PHOSPHOROTHIOATE		80.4 U			82.6 U		
O-TOLUIDINE		80.4 U			82.6 U		
P-(DIMETHYLAMINO)AZOBENZENE		80.4 U			82.6 U		
PENTACHLOROBENZENE		80.4 U			82.6 U		
PENTACHLOROETHANE		80.4 U			82.6 U		
PENTACHLORONITROBENZENE		80.4 U			82.6 U		
PHENACETIN		80.4 U			82.6 U		
PHENANTHRENE		9100			250		
PHENOL		80.4 U			82.6 U		
PRONAMIDE		80.4 U			82.6 U		
PYRENE		16000 J			340 J		
PYRIDINE		80.4 U			82.6 U		
SAFROLE		80.4 U			82.6 U		
Pesticides PCBs (ug/kg)							
4,4'-DDD		1.62 U			1.7 J		
4,4'-DDE		1.62 U			1.66 U		
4,4'-DDT		4.9			6.2		
ALDRIN		0.78 U			0.801 U		
ALPHA-BHC		0.78 U			0.801 U		
ALPHA-CHLORDANE		0.78 U			0.801 U		
AROCLOR-1016		10.8 U			11.1 U		

APPENDIX TABLE G-3
RESULTS FOR CHEMICALS ANALYZED IN ALL SEDIMENT SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL
LOCATION	15SW/SD004	15SW/SD006	15SW/SD007	15SW/SD008	15SW/SD009	15SW/SD010	15SW/SD011
SAMPLE NUMBER	15SD0040006	15SD0060006	15SD0070006	15SD0080006	15SD0090006	15SD0100006	15SD0110006
SAMPLE CODE	NO SED	NORMAL	NOT FOUND	NOT FOUND	NORMAL	NO SED	NO SED
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/12/2005	1/12/2005	1/12/2005
AROCLOR-1221		10.8 U			11.1 U		
AROCLOR-1232		10.8 U			11.1 U		
AROCLOR-1242		10.8 U			11.1 U		
AROCLOR-1248		10.8 U			11.1 U		
AROCLOR-1254		10.8 U			11.1 U		
AROCLOR-1260		10.8 U			11.1 U		
BETA-BHC		0.78 U			0.801 U		
DELTA-BHC		0.78 U			0.801 U		
DIELDRIN		1.62 U			1.66 U		
ENDOSULFAN I		0.78 U			0.801 U		
ENDOSULFAN II		1.62 U			1.66 U		
ENDOSULFAN SULFATE		1.62 U			1.66 U		
ENDRIN		1.62 U			1.66 U		
ENDRIN ALDEHYDE		1.62 U			1.66 U		
ENDRIN KETONE		1.62 U			1.66 U		
GAMMA-BHC (LINDANE)		0.78 U			0.801 U		
GAMMA-CHLORDANE		0.78 U			0.801 U		
HEPTACHLOR		0.78 U			0.801 U		
HEPTACHLOR EPOXIDE		0.78 U			0.801 U		
METHOXYCHLOR		7.8 U			8.01 U		
TOXAPHENE		20.4 U			21 U		
Herbicides (ug/kg)							
2,4,5-T		1.62 U			1.66 U		
2,4,5-TP (SILVEX)		1.62 U			1.66 U		
2,4-D		1.62 U			1.66 U		
DINOSEB		1.62 U			1.66 U		
HEXACHLOROPHENE		1.02 U			1.05 U		
PENTACHLOROPHENOL		0.54 U			4.9 J		
Inorganics (mg/kg)							
ALUMINUM		6850 J			4010 J		
ANTIMONY		0.45 U			0.29 U		
ARSENIC		4.9 J			3.6 J		
BARIUM		60.4 J			23.5 J		
BERYLLIUM		0.32 U			0.18 U		
CADMIUM		0.42 J			0.63 J		
CALCIUM		88000 J			129000 J		
CHROMIUM		14.1 J			39.6 J		
COBALT		8 J			3.8 J		
COPPER		12.2 J			8.4 J		
IRON		11800 J			9670 J		
LEAD		39.7 J			133 J		
MAGNESIUM		9260 J			14500 J		
MANGANESE		1050 J			323 J		

APPENDIX TABLE G-3
RESULTS FOR CHEMICALS ANALYZED IN ALL SEDIMENT SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL	SEWER & OUTFALL
LOCATION	15SW/SD004	15SW/SD006	15SW/SD007	15SW/SD008	15SW/SD009	15SW/SD010	15SW/SD011
SAMPLE NUMBER	15SD0040006	15SD0060006	15SD0070006	15SD0080006	15SD0090006	15SD0100006	15SD0110006
SAMPLE CODE	NO SED	NORMAL	NOT FOUND	NOT FOUND	NORMAL	NO SED	NO SED
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/12/2005	1/12/2005	1/12/2005
MERCURY		0.085 J			0.015 J		
NICKEL		10.2 J			9.2 J		
POTASSIUM		850 J			589 J		
SELENIUM		0.27 U			0.13 U		
SILVER		0.05 U			0.047 U		
SODIUM		108 U			117 J		
THALLIUM		0.08 U			0.05 U		
TIN		0.35 U			0.33 U		
VANADIUM		17 J			13.5 J		
ZINC		56.5			163		
Miscellaneous Parameters (%)							
CYANIDE (mg/kg)							
PERCENT SILT/CLAY							
SIEVE 1"							
SIEVE 1-1/2"							
SIEVE 2"							
SIEVE 3"							
SIEVE 3/4"							
SIEVE 3/8"							
SIEVE NO. 004							
SIEVE NO. 010							
SIEVE NO. 020							
SIEVE NO. 040							
SIEVE NO. 060							
SIEVE NO. 140							
SIEVE NO. 200							
TOTAL ORGANIC CARBON (mg/kg)							

APPENDIX G-3
RESULTS FOR CHEMICALS ANALYZED IN ALL SEDIMENT SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER & OUTFALL	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2
LOCATION	15SW/SD012	15SW/SD005	15SW/SD005	15SW/SD013	15SW/SD015	15SW/SD016	15SW/SD017	15SW/SD018	15SW/SD019
SAMPLE NUMBER	15SD0120006	15SD0050006	15SD0050006-D	15SD0130006	15SD0150006	15SD0160006	15SD0170006	15SD0180006	15SD0190006
SAMPLE CODE	NOT FOUND	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE	1/12/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/9/2005	1/9/2005
Volatile Organics (ug/kg)									
1,1,1,2-TETRACHLOROETHANE		1.13 UJ	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
1,1,1-TRICHLOROETHANE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
1,1,2,2-TETRACHLOROETHANE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
1,1,2-TRICHLOROETHANE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
1,1-DICHLOROETHANE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
1,1-DICHLOROETHENE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
1,2,3-TRICHLOROPROPANE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
1,2-DIBROMO-3-CHLOROPROPANE		1.13 UJ	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
1,2-DIBROMOETHANE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
1,2-DICHLOROETHANE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
1,2-DICHLOROPROPANE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
2-BUTANONE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
2-HEXANONE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
3-CHLOROPROPENE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
4-METHYL-2-PENTANONE		1.13 UJ	1.02 UJ	1.1 UJ	1.14 UJ	0.948 UJ	1.13 UJ	1.54 U	1.3 U
ACETONE		1.13 UJ	1.02 UJ	1.1 UJ	1.14 UJ	0.948 UJ	1.13 UJ	2 U	1.3 U
ACETONITRILE		45.3 UR	40.6 UR	43.9 UR	45.7 UR	37.9 UR	45.1 UR	61.7 UR	51.9 UR
ACROLEIN		1.13 UR	1.02 UR	1.1 UR	1.14 UR	0.948 UR	1.13 UR	1.54 UR	1.3 UR
ACRYLONITRILE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
BENZENE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
BROMODICHLOROMETHANE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
BROMOFORM		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
BROMOMETHANE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
CARBON DISULFIDE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
CARBON TETRACHLORIDE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
CHLOROBENZENE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
CHLORODIBROMOMETHANE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
CHLOROETHANE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
CHLOROFORM		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
CHLOROMETHANE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
CHLOROPRENE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
CIS-1,2-DICHLOROETHENE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
CIS-1,3-DICHLOROPROPENE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
DIBROMOMETHANE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
DICHLORODIFLUOROMETHANE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
ETHYL METHACRYLATE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
ETHYLBENZENE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
ISOBUTANOL		45.3 UR	40.6 UR	43.9 UR	45.7 UR	37.9 UR	45.1 UR	61.7 UR	51.9 UR
METHACRYLONITRILE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
METHYL IODIDE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
METHYL METHACRYLATE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
METHYL TERT-BUTYL ETHER		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U

APPENDIX TABLE G-3
RESULTS FOR CHEMICALS ANALYZED IN ALL SEDIMENT SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER & OUTFALL	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2
LOCATION	15SW/SD012	15SW/SD005	15SW/SD005	15SW/SD013	15SW/SD015	15SW/SD016	15SW/SD017	15SW/SD018	15SW/SD019
SAMPLE NUMBER	15SD0120006	15SD0050006	15SD0050006-D	15SD0130006	15SD0150006	15SD0160006	15SD0170006	15SD0180006	15SD0190006
SAMPLE CODE	NOT FOUND	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE	1/12/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/9/2005	1/9/2005
METHYLENE CHLORIDE		1.13 UJ	1.02 UJ	1.1 UJ	1.14 UJ	0.948 UJ	1.13 UJ	6 U	5 U
PROPIONITRILE		45.3 UR	40.6 UR	43.9 UR	45.7 UR	37.9 UR	45.1 UR	61.7 UR	51.9 UR
STYRENE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
TETRACHLOROETHENE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
TOLUENE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
TOTAL XYLENES		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
TRANS-1,2-DICHLOROETHENE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
TRANS-1,3-DICHLOROPROPENE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
TRANS-1,4-DICHLORO-2-BUTENE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
TRICHLOROETHENE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
TRICHLOROFLUOROMETHANE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
VINYL ACETATE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
VINYL CHLORIDE		1.13 U	1.02 U	1.1 U	1.14 U	0.948 U	1.13 U	1.54 U	1.3 U
Semivolatile Organics (ug/kg)									
1,2,4,5-TETRACHLOROBENZENE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
1,2,4-TRICHLOROBENZENE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
1,2-DICHLOROBENZENE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
1,3-DICHLOROBENZENE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
1,4-DICHLOROBENZENE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
1,4-DIOXANE		115 U	116 U	127 U	132 U	118 U	117 U	168 UJ	132 UJ
1,4-NAPHTHOQUINONE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
1,4-PHENYLENEDIAMINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
1-NAPHTHYLAMINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
2,2'-OXYBIS(1-CHLOROPROPANE)		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
2,3,4,6-TETRACHLOROPHENOL		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
2,4,5-TRICHLOROPHENOL		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
2,4,6-TRICHLOROPHENOL		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
2,4-DICHLOROPHENOL		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
2,4-DIMETHYLPHENOL		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
2,4-DINITROPHENOL		77.4 UJ	77.5 UJ	85.4 UJ	88.7 UJ	78.8 UJ	78.5 UJ	112 U	88.6 U
2,6-DICHLOROPHENOL		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
2-ACETYLAMINOFLUORENE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
2-CHLORONAPHTHALENE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
2-CHLOROPHENOL		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
2-METHYLNAPHTHALENE		4 J	5 J	10 J	100	15.5 U	15.5 U	9 J	4.37 U
2-METHYLPHENOL		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
2-NAPHTHYLAMINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
2-NITROANILINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
2-NITROPHENOL		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
2-PICOLINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
3&4-METHYLPHENOL		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
3,3'-DICHLOROBENZIDINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
3,3'-DIMETHYLBENZIDINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 UJ	88.6 UJ

APPENDIX G-3
RESULTS FOR CHEMICALS ANALYZED IN ALL SEDIMENT SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER & OUTFALL	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2
LOCATION	15SW/SD012	15SW/SD005	15SW/SD005	15SW/SD013	15SW/SD015	15SW/SD016	15SW/SD017	15SW/SD018	15SW/SD019
SAMPLE NUMBER	15SD0120006	15SD0050006	15SD0050006-D	15SD0130006	15SD0150006	15SD0160006	15SD0170006	15SD0180006	15SD0190006
SAMPLE CODE	NOT FOUND	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE	1/12/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/9/2005	1/9/2005
3-METHYLCHOLANTHRENE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
3-NITROANILINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
4,6-DINITRO-2-METHYLPHENOL		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
4-AMINOBIPHENYL		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
4-BROMOPHENYL PHENYL ETHER		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
4-CHLORO-3-METHYLPHENOL		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
4-CHLOROANILINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
4-CHLOROPHENYL PHENYL ETHER		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
4-NITROANILINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
4-NITROPHENOL		77.4 UJ	77.5 UJ	85.4 UJ	88.7 UJ	78.8 UJ	78.5 UJ	112 U	88.6 U
4-NITROQUINOLINE-1-OXIDE		77.4 UR	77.5 UR	85.4 UR	88.7 UR	78.8 UR	78.5 UR	112 UR	88.6 UR
5-NITRO-O-TOLUIDINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
7,12-DIMETHYLBENZ(A)ANTHRACENE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
A,A-DIMETHYLPHENETHYLAMINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
ACENAPHTHENE		6 J	9	110	850	120	170	160	4.37 U
ACENAPHTHYLENE		3.81 U	3.82 U	30	8.74 U	15.5 U	15.5 U	48	4.37 U
ACETOPHENONE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 UJ	88.6 UJ
ANILINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
ANTHRACENE		18	22	220	1800	310	420	290	4.37 U
ARAMITE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
BENZO(A)ANTHRACENE		61	84 J	610	3200	960	1300	810	13
BENZO(A)PYRENE		77	110 J	640	2800	1100	1300	830	15
BENZO(B)FLUORANTHENE		94	130 J	650	2900	1000	1400	1000	18
BENZO(G,H,I)PERYLENE		120	140 J	910	2400	1200	1600	800	16
BENZO(K)FLUORANTHENE		56	67 J	500	1600	680	760	430	11
BENZYL ALCOHOL		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
BIS(2-CHLOROETHOXY)METHANE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
BIS(2-CHLOROETHYL)ETHER		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
BIS(2-ETHYLHEXYL)PHTHALATE		270 J	240 J	130 J	88.7 U	160 J	130 J	112 U	88.6 U
BUTYL BENZYL PHTHALATE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
CHLOROBENZILATE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
CHRYSENE		110	130 J	760	3600	1200	1500	990	14
DI-N-BUTYL PHTHALATE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	220 J
DI-N-OCTYL PHTHALATE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
DIALLATE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
DIBENZO(A,H)ANTHRACENE		3.81 U	3.82 UJ	180	610	230	280	170	4.37 U
DIBENZOFURAN		77.4 U	77.5 U	85.4 U	88.7 U	110 J	89 J	130 J	88.6 U
DIETHYL PHTHALATE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
DIMETHYL PHTHALATE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
DIPHENYLAMINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
ETHYL METHANE SULFONATE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
FLUORANTHENE		190	200	1200	7700	2800	3400	1800	25
FLUORENE		8	14	91	800	160	210	110	4.37 U

APPENDIX TABLE G-3
RESULTS FOR CHEMICALS ANALYZED IN ALL SEDIMENT SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER & OUTFALL	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2
LOCATION	15SW/SD012	15SW/SD005	15SW/SD005	15SW/SD013	15SW/SD015	15SW/SD016	15SW/SD017	15SW/SD018	15SW/SD019
SAMPLE NUMBER	15SD0120006	15SD0050006	15SD0050006-D	15SD0130006	15SD0150006	15SD0160006	15SD0170006	15SD0180006	15SD0190006
SAMPLE CODE	NOT FOUND	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE	1/12/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/9/2005	1/9/2005
HEXACHLOROBENZENE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 UJ	88.6 UJ
HEXACHLOROBUTADIENE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
HEXACHLOROCYCLOPENTADIENE		77.4 UR	77.5 UJ	85.4 UJ	88.7 UJ	78.8 UJ	78.5 UJ	112 UJ	88.6 UJ
HEXACHLOROETHANE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
HEXACHLOROPROPENE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
INDENO(1,2,3-CD)PYRENE		90	110 J	730	2200	1000	1300	690	15
ISODRIN		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
ISOPHORONE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
ISOSAFROLE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
KEPONE		77.4 UJ	77.5 UJ	85.4 UJ	88.7 UJ	78.8 UJ	78.5 UJ	112 UJ	88.6 UJ
METHAPYRILENE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 UJ	88.6 UJ
METHYL METHANE SULFONATE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
N-NITROSO-DI-N-BUTYLAMINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
N-NITROSO-DI-N-PROPYLAMINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
N-NITROSODIETHYLAMINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
N-NITROSODIMETHYLAMINE		77.4 UJ	77.5 UJ	85.4 UJ	88.7 UJ	78.8 UJ	78.5 UJ	112 UJ	88.6 UJ
N-NITROSODIPHENYLAMINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
N-NITROSOMETHYLETHYLAMINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 UJ	88.6 UJ
N-NITROSOMORPHOLINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
N-NITROSOPIPERIDINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
N-NITROSOPYRROLIDINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
NAPHTHALENE		5 J	6 J	20	370	30 J	52	19	4.37 U
O,O,O-TRIETHYL PHOSPHOROTHIOATE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
O-TOLUIDINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
P-(DIMETHYLAMINO)AZOBENZENE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
PENTACHLOROBENZENE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
PENTACHLOROETHANE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
PENTACHLORONITROBENZENE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
PHENACETIN		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
PHENANTHRENE		140	170	1100	8100	2500	3200	1600	18
PHENOL		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
PRONAMIDE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
PYRENE		170	310 J	1200	9900 J	2800	3400	2700 J	35 J
PYRIDINE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 UJ	88.6 UJ
SAFROLE		77.4 U	77.5 U	85.4 U	88.7 U	78.8 U	78.5 U	112 U	88.6 U
Pesticides PCBs (ug/kg)									
4,4'-DDD		1.56 J	1.56 U	26	7.5	1.59 U	1.58 U	35	4.9
4,4'-DDE		2.5 J	1.56 U	76	16	1.59 U	1.58 U	24 J	2.5 J
4,4'-DDT		2.3 J	1.56 J	40	12	2.4 J	2.2 J	100	2.1 J
ALDRIN		0.751 U	0.752 U	0.828 U	0.861 U	0.765 U	0.762 U	1.09 U	0.86 U
ALPHA-BHC		0.751 U	0.752 U	0.828 U	0.861 U	0.765 U	0.762 U	1.09 U	0.86 U
ALPHA-CHLORDANE		0.751 U	0.752 U	7.4	31	0.765 U	0.762 U	1.09 U	0.86 U
AROCLOR-1016		10.4 U	10.4 U	11.5 U	11.9 U	10.6 U	10.6 U	15.1 U	11.9 U

APPENDIX G-3
RESULTS FOR CHEMICALS ANALYZED IN ALL SEDIMENT SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER & OUTFALL	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2
LOCATION	15SW/SD012	15SW/SD005	15SW/SD005	15SW/SD013	15SW/SD015	15SW/SD016	15SW/SD017	15SW/SD018	15SW/SD019
SAMPLE NUMBER	15SD0120006	15SD0050006	15SD0050006-D	15SD0130006	15SD0150006	15SD0160006	15SD0170006	15SD0180006	15SD0190006
SAMPLE CODE	NOT FOUND	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE	1/12/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/9/2005	1/9/2005
AROCLOR-1221		10.4 U	10.4 U	11.5 U	11.9 U	10.6 U	10.6 U	15.1 U	11.9 U
AROCLOR-1232		10.4 U	10.4 U	11.5 U	11.9 U	10.6 U	10.6 U	15.1 U	11.9 U
AROCLOR-1242		10.4 U	10.4 U	11.5 U	11.9 U	10.6 U	10.6 U	15.1 U	11.9 U
AROCLOR-1248		10.4 U	10.4 U	11.5 U	11.9 U	10.6 U	10.6 U	15.1 U	11.9 U
AROCLOR-1254		10.4 U	10.4 U	11.5 U	11.9 U	10.6 U	10.6 U	15.1 U	11.9 U
AROCLOR-1260		10.4 U	10.4 U	11.5 U	330	10.6 U	10.6 U	15.1 U	11.9 U
BETA-BHC		0.751 U	0.752 U	0.828 U	0.861 U	0.765 U	0.762 U	1.09 U	0.86 U
DELTA-BHC		0.751 U	0.752 U	0.828 U	0.861 U	0.765 U	0.762 U	1.09 U	0.86 U
DIELDRIN		1.56 U	1.56 U	1.72 U	1.79 U	1.59 U	1.58 U	2.27 U	1.79 U
ENDOSULFAN I		0.751 U	0.752 U	0.828 U	0.861 U	0.765 U	0.762 U	1.09 U	0.86 U
ENDOSULFAN II		1.56 U	1.56 U	1.72 U	1.79 U	1.59 U	1.58 U	2.27 U	1.79 U
ENDOSULFAN SULFATE		1.56 U	1.56 U	1.72 U	1.79 U	1.59 U	1.58 U	2.27 U	1.79 U
ENDRIN		1.56 U	1.56 U	1.72 U	1.79 U	1.59 U	1.58 U	2.27 U	1.79 U
ENDRIN ALDEHYDE		1.56 U	1.56 U	1.72 U	1.79 U	1.59 U	1.58 U	2.27 U	1.79 U
ENDRIN KETONE		1.56 U	1.56 U	1.72 U	1.79 U	1.59 U	1.58 U	2.27 U	1.79 U
GAMMA-BHC (LINDANE)		0.751 U	0.752 U	0.828 U	0.861 U	0.765 U	0.762 U	1.09 U	0.86 U
GAMMA-CHLORDANE		0.751 U	0.752 U	6 J	28	0.765 U	0.762 U	1.09 U	0.86 U
HEPTACHLOR		0.751 U	0.752 U	0.828 U	0.861 U	0.765 U	0.762 U	1.09 U	0.86 U
HEPTACHLOR EPOXIDE		0.751 U	0.752 U	0.828 U	0.861 U	0.765 U	0.762 U	1.09 U	0.86 U
METHOXYCHLOR		7.51 U	7.52 U	8.28 U	8.61 U	7.65 U	7.62 U	10.9 U	8.6 U
TOXAPHENE		19.6 U	19.7 U	21.7 U	22.5 U	20 U	19.9 U	28.5 U	22.5 U
Herbicides (ug/kg)									
2,4,5-T		1.56 U	1.56 U	1.72 U	6.8 J	1.59 U	1.58 U	2.27 U	1.79 U
2,4,5-TP (SILVEX)		1.56 U	1.56 U	1.72 U	1.79 U	1.59 U	1.58 U	2.27 U	1.79 U
2,4-D		1.56 U	1.56 U	1.72 U	1.79 U	1.59 U	1.58 U	2.27 U	1.79 U
DINOSEB		1.56 U	1.56 U	1.72 U	1.79 U	1.59 U	1.58 U	2.27 U	1.79 U
HEXACHLOROPHENE		0.982 U	0.984 U	1.08 U	1.13 U	1 U	0.996 U	1.43 U	1.12 U
PENTACHLOROPHENOL		2.3	2.8 J	3.2 J	1.9 J	1.5 J	1.6 J	0.755 U	0.595 U
Inorganics (mg/kg)									
ALUMINUM		3760 J	4600 J	12000 J	13000 J	6190 J	7020 J	17700 J	17200 J
ANTIMONY		0.19 U	0.23 U	1 U	1.2 U	0.31 U	0.39 U	0.45 U	0.74 U
ARSENIC		3.9 J	4 J	7.7 J	10.9 J	8 J	5.7 J	10.5 J	33.8 J
BARIUM		24.8 J	62.8 J	77.7 J	131 J	52.8 J	49 J	125 J	85.9 J
BERYLLIUM		0.19 U	0.25 U	0.56 J	1.2 J	0.48 J	0.38 J	0.74 J	1 J
CADMIUM		0.39 J	0.38 J	0.56 J	0.48 J	0.27 U	0.28 U	0.44 J	0.33 J
CALCIUM		110000 J	89200 J	49300 J	13600 J	98900 J	62600 J	2800 J	1610 J
CHROMIUM		10.4 J	7.8 J	20.8 J	30.4 J	17.2 J	17 J	23.6 J	70.1 J
COBALT		4.6 J	4.6 J	8.2 J	21.6 J	13.5 J	12.9 J	16.9 J	14.6 J
COPPER		4.9 J	5 J	17.8 J	16.7 J	7.2 J	8.2 J	13.5 J	12 J
IRON		11700 J	9610 J	18100 J	31800 J	21000 J	19500 J	23100 J	74200 J
LEAD		8.9 J	7.5 J	30.7 J	32 J	14.2 J	11.5 J	19 J	20.8 J
MAGNESIUM		17400 J	12800 J	4270 J	2240 J	17200 J	8510 J	1800 J	1280 J
MANGANESE		543 J	799 J	548 J	1150 J	1090 J	938 J	1990 J	1360 J

APPENDIX TABLE G-3
RESULTS FOR CHEMICALS ANALYZED IN ALL SEDIMENT SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	SEWER & OUTFALL	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2
LOCATION	15SW/SD012	15SW/SD005	15SW/SD005	15SW/SD013	15SW/SD015	15SW/SD016	15SW/SD017	15SW/SD018	15SW/SD019	
SAMPLE NUMBER	15SD0120006	15SD0050006	15SD0050006-D	15SD0130006	15SD0150006	15SD0160006	15SD0170006	15SD0180006	15SD0190006	
SAMPLE CODE	NOT FOUND	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	
SAMPLE DATE	1/12/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/11/2005	1/9/2005	1/9/2005	
MERCURY		0.012 J	0.022 J	0.026 J	0.083 J	0.01 J	0.02 J	0.052 J	0.033 J	
NICKEL		8.6 J	7.7 J	15 J	32.9 J	19.1 J	16.6 J	14.4 J	17.4 J	
POTASSIUM		564 J	595 J	1260 J	1700 J	886 J	777 J	1530 J	1070 J	
SELENIUM		0.13 U	0.23 U	0.3 J	0.47 J	0.32 J	0.32 J	0.58 J	0.8 J	
SILVER		0.042 U	0.07 U	0.046 U	0.05 U	0.044 U	0.045 U	0.08 U	0.055 U	
SODIUM		123 J	100 U	83.4 U	86.6 U	111 J	93 U	146 U	85.5 U	
THALLIUM		0.04 U	0.08 U	0.13 U	0.19 U	0.11 U	0.07 U	0.3 J	0.24 J	
TIN		0.2 U	0.21 U	0.59 U	10.2 J	0.095 U	0.15 U	0.62 U	0.5 U	
VANADIUM		12.3 J	10 J	23.8 J	26.8 J	20.3 J	18.4 J	39.1 J	83.6 J	
ZINC		42.5	39.1	81.3	88.8	39.5	43.9	48.4 J	46.1 J	
Miscellaneous Parameters (%)										
CYANIDE (mg/kg)		0.289 U	0.289 U							
PERCENT SILT/CLAY										
SIEVE 1"										
SIEVE 1-1/2"										
SIEVE 2"										
SIEVE 3"										
SIEVE 3/4"										
SIEVE 3/8"										
SIEVE NO. 004										
SIEVE NO. 010										
SIEVE NO. 020										
SIEVE NO. 040										
SIEVE NO. 060										
SIEVE NO. 140										
SIEVE NO. 200										
TOTAL ORGANIC CARBON (mg/kg)										

APPENDIX G-3
RESULTS FOR CHEMICALS ANALYZED IN ALL SEDIMENT SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	UPGRAD	UPGRAD	UPGRAD
STREAM ORDER	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-3	TRIB 15-3	TRIB 15-3	TRIB 15-3	TRIB 15-3			UPGRAD
LOCATION	15SW/SD023	15SW/SD024	15SW/SD025	15SW/SD001	15SW/SD002	15SW/SD020	15SW/SD021	15SW/SD022	15SW/SD003	15SW/SD014	15SW/SD026
SAMPLE NUMBER	15SD0230006	15SD0240006	15SD0250006	15SD0010006	15SD0020006	15SD0200006	15SD0210006	15SD0220006	15SD0030006	15SD0140006	15SD0260006
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NOT FOUND	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE	6/7/2005	6/7/2005	6/7/2005	1/11/2005	1/11/2005	6/7/2005	6/7/2005	6/7/2005	1/11/2005	1/11/2005	6/7/2005
Volatile Organics (ug/kg)											
1,1,1,2-TETRACHLOROETHANE				1.11 U	1.03					1.25 U	
1,1,1-TRICHLOROETHANE				1.11 U	1.03 U					1.25 U	
1,1,2,2-TETRACHLOROETHANE				1.11 U	1.03 U					1.25 U	
1,1,2-TRICHLOROETHANE				1.11 U	1.03 U					1.25 U	
1,1-DICHLOROETHANE				1.11 U	1.03 U					1.25 U	
1,1-DICHLOROETHENE				1.11 U	1.03 U					1.25 U	
1,2,3-TRICHLOROPROPANE				1.11 U	1.03 U					1.25 U	
1,2-DIBROMO-3-CHLOROPROPANE				1.11 U	1.03 U					1.25 U	
1,2-DIBROMOETHANE				1.11 U	1.03 U					1.25 U	
1,2-DICHLOROETHANE				1.11 U	1.03 U					1.25 U	
1,2-DICHLOROPROPANE				1.11 U	1.03 U					1.25 U	
2-BUTANONE				1.11 U	1.03 U					1.25 U	
2-HEXANONE				1.11 U	1.03 U					1.25 U	
3-CHLOROPROPENE				1.11 U	1.03 U					1.25 U	
4-METHYL-2-PENTANONE				1.11 UJ	1.03 UJ					1.25 UJ	
ACETONE				1.11 UJ	2 J					1.25 UJ	
ACETONITRILE				44.4 UR	41.3 UR					50.1 UR	
ACROLEIN				1.11 UR	1.03 UR					1.25 UR	
ACRYLONITRILE				1.11 U	1.03 U					1.25 U	
BENZENE				1.11 U	1.03 U					1.25 U	
BROMODICHLOROMETHANE				1.11 U	1.03 U					1.25 U	
BROMOFORM				1.11 U	1.03 U					1.25 U	
BROMOMETHANE				1.11 U	1.03 U					1.25 U	
CARBON DISULFIDE				1.11 U	1.03 U					1.25 U	
CARBON TETRACHLORIDE				1.11 U	1.03 U					1.25 U	
CHLOROBENZENE				1.11 U	1.03 U					1.25 U	
CHLORODIBROMOMETHANE				1.11 U	1.03 U					1.25 U	
CHLOROETHANE				1.11 U	1.03 U					1.25 U	
CHLOROFORM				1.11 U	1.03 U					1.25 U	
CHLOROMETHANE				1.11 U	1.03 U					1.25 U	
CHLOROPRENE				1.11 U	1.03 U					1.25 U	
CIS-1,2-DICHLOROETHENE				1.11 U	1.03 U					1.25 U	
CIS-1,3-DICHLOROPROPENE				1.11 U	1.03 U					1.25 U	
DIBROMOMETHANE				1.11 U	1.03 U					1.25 U	
DICHLORODIFLUOROMETHANE				1.11 U	1.03 U					1.25 U	
ETHYL METHACRYLATE				1.11 U	1.03 U					1.25 U	
ETHYLBENZENE				1.11 U	1.03 U					1.25 U	
ISOBUTANOL				44.4 UR	41.3 UR					50.1 UR	
METHACRYLONITRILE				1.11 U	1.03 U					1.25 U	
METHYL IODIDE				1.11 U	1.03 U					1.25 U	
METHYL METHACRYLATE				1.11 U	1.03 U					1.25 U	
METHYL TERT-BUTYL ETHER				1.11 U	1.03 U					1.25 U	

APPENDIX TABLE G-3
RESULTS FOR CHEMICALS ANALYZED IN ALL SEDIMENT SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	UPGRAD	UPGRAD	UPGRAD
STREAM ORDER	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-3	TRIB 15-3	TRIB 15-3	TRIB 15-3	TRIB 15-3			UPGRAD
LOCATION	15SW/SD023	15SW/SD024	15SW/SD025	15SW/SD001	15SW/SD002	15SW/SD020	15SW/SD021	15SW/SD022	15SW/SD003	15SW/SD014	15SW/SD026
SAMPLE NUMBER	15SD0230006	15SD0240006	15SD0250006	15SD0010006	15SD0020006	15SD0200006	15SD0210006	15SD0220006	15SD0030006	15SD0140006	15SD0260006
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NOT FOUND	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE	6/7/2005	6/7/2005	6/7/2005	1/11/2005	1/11/2005	6/7/2005	6/7/2005	6/7/2005	1/11/2005	1/11/2005	6/7/2005
METHYLENE CHLORIDE				1.11 UJ	1.03 UJ					1.25 UJ	
PROPIONITRILE				44.4 UR	41.3 UR					50.1 UR	
STYRENE				1.11 U	1.03 U					1.25 U	
TETRACHLOROETHENE				1.11 U	1.03 U					1.25 U	
TOLUENE				1.11 U	1.03 U					1.25 U	
TOTAL XYLENES				1.11 U	1.03 U					1.25 U	
TRANS-1,2-DICHLOROETHENE				1.11 U	1.03 U					1.25 U	
TRANS-1,3-DICHLOROPROPENE				1.11 U	1.03 U					1.25 U	
TRANS-1,4-DICHLORO-2-BUTENE				1.11 U	1.03 U					1.25 U	
TRICHLOROETHENE				1.11 U	1.03 U					1.25 U	
TRICHLOROFLUOROMETHANE				1.11 U	1.03 U					1.25 U	
VINYL ACETATE				1.11 U	1.03 U					1.25 U	
VINYL CHLORIDE				1.11 U	1.03 U					1.25 U	
Semivolatile Organics (ug/kg)											
1,2,4,5-TETRACHLOROBENZENE				83.2 U	84.4 U					85.7 U	
1,2,4-TRICHLOROBENZENE				83.2 U	84.4 U					85.7 U	
1,2-DICHLOROBENZENE				83.2 U	84.4 U					85.7 U	
1,3-DICHLOROBENZENE				83.2 U	84.4 U					85.7 U	
1,4-DICHLOROBENZENE				83.2 U	84.4 U					85.7 U	
1,4-DIOXANE				124 U	126 U					128 U	
1,4-NAPHTHOQUINONE				83.2 U	84.4 U					85.7 U	
1,4-PHENYLENEDIAMINE				83.2 U	84.4 U					85.7 U	
1-NAPHTHYLAMINE				83.2 U	84.4 U					85.7 U	
2,2'-OXYBIS(1-CHLOROPROPANE)				83.2 U	84.4 U					85.7 U	
2,3,4,6-TETRACHLOROPHENOL				83.2 U	84.4 U					85.7 U	
2,4,5-TRICHLOROPHENOL				83.2 U	84.4 U					85.7 U	
2,4,6-TRICHLOROPHENOL				83.2 U	84.4 U					85.7 U	
2,4-DICHLOROPHENOL				83.2 U	84.4 U					85.7 U	
2,4-DIMETHYLPHENOL				83.2 U	84.4 U					85.7 U	
2,4-DINITROPHENOL				83.2 UJ	84.4 UJ					85.7 UJ	
2,6-DICHLOROPHENOL				83.2 U	84.4 U					85.7 U	
2-ACETYLAMINOFLUORENE				83.2 U	84.4 U					85.7 U	
2-CHLORONAPHTHALENE				83.2 U	84.4 U					85.7 U	
2-CHLOROPHENOL				83.2 U	84.4 U					85.7 U	
2-METHYLNAPHTHALENE	10 J	19 J	28 J	18	14	10 J	11 J	8 J		5 J	4.1 U
2-METHYLPHENOL				83.2 U	84.4 U					85.7 U	
2-NAPHTHYLAMINE				83.2 U	84.4 U					85.7 U	
2-NITROANILINE				83.2 U	84.4 U					85.7 U	
2-NITROPHENOL				83.2 U	84.4 U					85.7 U	
2-PICOLINE				83.2 U	84.4 U					85.7 U	
3&4-METHYLPHENOL				83.2 U	84.4 U					85.7 U	
3,3'-DICHLOROBENZIDINE				83.2 U	84.4 U					85.7 U	
3,3'-DIMETHYLBENZIDINE				83.2 U	84.4 U					85.7 U	

APPENDIX G-3
RESULTS FOR CHEMICALS ANALYZED IN ALL SEDIMENT SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	UPGRAD	UPGRAD	UPGRAD
STREAM ORDER	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-3	TRIB 15-3	TRIB 15-3	TRIB 15-3	TRIB 15-3			UPGRAD
LOCATION	15SW/SD023	15SW/SD024	15SW/SD025	15SW/SD001	15SW/SD002	15SW/SD020	15SW/SD021	15SW/SD022	15SW/SD003	15SW/SD014	15SW/SD026
SAMPLE NUMBER	15SD0230006	15SD0240006	15SD0250006	15SD0010006	15SD0020006	15SD0200006	15SD0210006	15SD0220006	15SD0030006	15SD0140006	15SD0260006
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NOT FOUND	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE	6/7/2005	6/7/2005	6/7/2005	1/11/2005	1/11/2005	6/7/2005	6/7/2005	6/7/2005	1/11/2005	1/11/2005	6/7/2005
3-METHYLCHOLANTHRENE				83.2 U	84.4 U					85.7 U	
3-NITROANILINE				83.2 U	84.4 U					85.7 U	
4,6-DINITRO-2-METHYLPHENOL				83.2 U	84.4 U					85.7 U	
4-AMINOBIPHENYL				83.2 U	84.4 U					85.7 U	
4-BROMOPHENYL PHENYL ETHER				83.2 U	84.4 U					85.7 U	
4-CHLORO-3-METHYLPHENOL				83.2 U	84.4 U					85.7 U	
4-CHLOROANILINE				83.2 U	84.4 U					85.7 U	
4-CHLOROPHENYL PHENYL ETHER				83.2 U	84.4 U					85.7 U	
4-NITROANILINE				83.2 U	84.4 U					85.7 U	
4-NITROPHENOL				83.2 UJ	84.4 UJ					85.7 UJ	
4-NITROQUINOLINE-1-OXIDE				83.2 UR	84.4 UR					85.7 UR	
5-NITRO-O-TOLUIDINE				83.2 U	84.4 U					85.7 U	
7,12-DIMETHYLBENZ(A)ANTHRACENE				83.2 U	84.4 U					85.7 U	
A,A-DIMETHYLPHENETHYLAMINE				83.2 U	84.4 U					85.7 U	
ACENAPHTHENE	120 J	280 J	200 J	120	14	63 J	63 J	110 J		27	36
ACENAPHTHYLENE	4.08 U	6 J	6 J	16 J	9	6 J	3.93 U	6 J		4.22 U	4.1 U
ACETOPHENONE				83.2 U	110 J					85.7 U	
ANILINE				83.2 U	84.4 U					85.7 U	
ANTHRACENE	320 J	810 J	200 J	280	41	170 J	150 J	270 J		71	89
ARAMITE				83.2 U	84.4 U					85.7 U	
BENZO(A)ANTHRACENE	860 J	3700 J	580 J	740 J	150	530 J	450 J	960 J		270	330
BENZO(A)PYRENE	1000 J	4500 J	590 J	810 J	200	640 J	540 J	1200 J		330	390
BENZO(B)FLUORANTHENE	1300 J	6000 J	730 J	900 J	280	710 J	720 J	1200 J		340	440
BENZO(G,H,I)PERYLENE	970 J	3200 J	460 J	1000 J	300	540 J	520 J	1100 J		400	200
BENZO(K)FLUORANTHENE	440 J	2000 J	330 J	420 J	130	450 J	220 J	760 J		190	310
BENZYL ALCOHOL				83.2 U	84.4 U					85.7 U	
BIS(2-CHLOROETHOXY)METHANE				83.2 U	84.4 U					85.7 U	
BIS(2-CHLOROETHYL)ETHER				83.2 U	84.4 U					85.7 U	
BIS(2-ETHYLHEXYL)PHTHALATE				83.2 U	84.4 U					85.7 U	
BUTYL BENZYL PHTHALATE				83.2 U	84.4 U					85.7 U	
CHLOROBENZILATE				83.2 U	84.4 U					85.7 U	
CHRYSENE	1100 J	4500 J	650 J	880 J	300	650 J	570 J	1200 J		350	390
DI-N-BUTYL PHTHALATE				83.2 U	84.4 U					85.7 U	
DI-N-OCTYL PHTHALATE				83.2 U	84.4 U					85.7 U	
DIALLATE				83.2 U	84.4 U					85.7 U	
DIBENZO(A,H)ANTHRACENE	180 J	620 J	110 J	190 J	48	83 J	96 J	200 J		65	38
DIBENZOFURAN				83.2 U	84.4 U					85.7 U	
DIETHYL PHTHALATE				83.2 U	84.4 U					85.7 U	
DIMETHYL PHTHALATE				83.2 U	84.4 U					85.7 U	
DIPHENYLAMINE				83.2 U	84.4 U					85.7 U	
ETHYL METHANE SULFONATE				83.2 U	84.4 U					85.7 U	
FLUORANTHENE	1700 J	9800 J	960 J	1700	510	1300 J	950 J	2000 J		720	1000
FLUORENE	160 J	380 J	120 J	130	17	84 J	78 J	150 J		34	47

APPENDIX TABLE G-3
RESULTS FOR CHEMICALS ANALYZED IN ALL SEDIMENT SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	UPGRAD	UPGRAD	UPGRAD
STREAM ORDER	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-3	TRIB 15-3	TRIB 15-3	TRIB 15-3	TRIB 15-3			UPGRAD
LOCATION	15SW/SD023	15SW/SD024	15SW/SD025	15SW/SD001	15SW/SD002	15SW/SD020	15SW/SD021	15SW/SD022	15SW/SD003	15SW/SD014	15SW/SD026
SAMPLE NUMBER	15SD0230006	15SD0240006	15SD0250006	15SD0010006	15SD0020006	15SD0200006	15SD0210006	15SD0220006	15SD0030006	15SD0140006	15SD0260006
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NOT FOUND	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE	6/7/2005	6/7/2005	6/7/2005	1/11/2005	1/11/2005	6/7/2005	6/7/2005	6/7/2005	1/11/2005	1/11/2005	6/7/2005
HEXACHLOROBENZENE				83.2 U	84.4 U					85.7 U	
HEXACHLOROBUTADIENE				83.2 U	84.4 U					85.7 U	
HEXACHLOROCYCLOPENTADIENE				83.2 UJ	84.4 UJ					85.7 UJ	
HEXACHLOROETHANE				83.2 U	84.4 U					85.7 U	
HEXACHLOROPROPENE				83.2 U	84.4 U					85.7 U	
INDENO(1,2,3-CD)PYRENE	770 J	2700 J	430 J	800 J	220	440 J	400 J	870 J		310	180
ISODRIN				83.2 U	84.4 U					85.7 U	
ISOPHORONE				83.2 U	84.4 U					85.7 U	
ISOSAFROLE				83.2 U	84.4 U					85.7 U	
KEPONE				83.2 UJ	84.4 UJ					85.7 UJ	
METHAPYRILENE				83.2 U	84.4 U					85.7 U	
METHYL METHANE SULFONATE				83.2 U	84.4 U					85.7 U	
N-NITROSO-DI-N-BUTYLAMINE				83.2 U	84.4 U					85.7 U	
N-NITROSO-DI-N-PROPYLAMINE				83.2 U	84.4 U					85.7 U	
N-NITROSODIETHYLAMINE				83.2 U	84.4 U					85.7 U	
N-NITROSODIMETHYLAMINE				83.2 UJ	84.4 UJ					85.7 UJ	
N-NITROSODIPHENYLAMINE				83.2 U	84.4 U					85.7 U	
N-NITROSOMETHYLETHYLAMINE				83.2 U	84.4 U					85.7 U	
N-NITROSOMORPHOLINE				83.2 U	84.4 U					85.7 U	
N-NITROSOPIPERIDINE				83.2 U	84.4 U					85.7 U	
N-NITROSOPYRROLIDINE				83.2 U	84.4 U					85.7 U	
NAPHTHALENE	25 J	61 J	120 J	33	16	15 J	25 J	24 J		10	8 J
O,O,O-TRIETHYL PHOSPHOROTHIOATE				83.2 U	84.4 U					85.7 U	
O-TOLUIDINE				83.2 U	84.4 U					85.7 U	
P-(DIMETHYLAMINO)AZOBENZENE				83.2 U	84.4 U					85.7 U	
PENTACHLOROBENZENE				83.2 U	84.4 U					85.7 U	
PENTACHLOROETHANE				83.2 U	84.4 U					85.7 U	
PENTACHLORONITROBENZENE				83.2 U	84.4 U					85.7 U	
PHENACETIN				83.2 U	84.4 U					85.7 U	
PHENANTHRENE	2000 J	7800 J	1100 J	1800	570	1100 J	970 J	2100 J		560	630
PHENOL				83.2 U	84.4 U					85.7 U	
PRONAMIDE				83.2 U	84.4 U					85.7 U	
PYRENE	4600 J	18000 J	1900 J	2100 J	530	2200 J	2000 J	4800 J		690	960
PYRIDINE				83.2 U	84.4 U					85.7 U	
SAFROLE				83.2 U	84.4 U					85.7 U	
Pesticides PCBs (ug/kg)											
4,4'-DDD				7.6 J	1.9 J					1.73 U	
4,4'-DDE				21	1.7 U					1.73 U	
4,4'-DDT				16 J	2.5 J					4.2	
ALDRIN				0.807 U	0.819 U					0.831 U	
ALPHA-BHC				0.807 U	0.819 U					0.831 U	
ALPHA-CHLORDANE				5.3	0.819 U					0.831 U	
AROCLOR-1016				11.2 U	11.3 U					11.5 U	

APPEND[illegible]LE G-3
RESULTS FOR CHEMICALS ANALYZ[illegible]ALL SEDIMENT SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	UPGRAD	UPGRAD	UPGRAD
STREAM ORDER	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-3	TRIB 15-3	TRIB 15-3	TRIB 15-3	TRIB 15-3			UPGRAD
LOCATION	15SW/SD023	15SW/SD024	15SW/SD025	15SW/SD001	15SW/SD002	15SW/SD020	15SW/SD021	15SW/SD022	15SW/SD003	15SW/SD014	15SW/SD026
SAMPLE NUMBER	15SD0230006	15SD0240006	15SD0250006	15SD0010006	15SD0020006	15SD0200006	15SD0210006	15SD0220006	15SD0030006	15SD0140006	15SD0260006
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NOT FOUND	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE	6/7/2005	6/7/2005	6/7/2005	1/11/2005	1/11/2005	6/7/2005	6/7/2005	6/7/2005	1/11/2005	1/11/2005	6/7/2005
AROCLOR-1221				11.2 U	11.3 U					11.5 U	
AROCLOR-1232				11.2 U	11.3 U					11.5 U	
AROCLOR-1242				11.2 U	11.3 U					11.5 U	
AROCLOR-1248				11.2 U	11.3 U					11.5 U	
AROCLOR-1254				230 J	54 J					11.5 U	
AROCLOR-1260				11.2 U	11.3 U					11.5 U	
BETA-BHC				0.807 U	0.819 U					0.831 U	
DELTA-BHC				0.807 U	0.819 U					0.831 U	
DIELDRIN				1.68 U	1.7 U					1.73 U	
ENDOSULFAN I				0.807 U	0.819 U					0.831 U	
ENDOSULFAN II				1.68 U	1.7 U					1.73 U	
ENDOSULFAN SULFATE				1.68 U	1.7 U					1.73 U	
ENDRIN				1.68 U	1.7 U					1.73 U	
ENDRIN ALDEHYDE				1.68 U	1.7 U					1.73 U	
ENDRIN KETONE				1.68 U	1.7 U					1.73 U	
GAMMA-BHC (LINDANE)				0.807 U	0.819 U					0.831 U	
GAMMA-CHLORDANE				4 J	0.819 U					0.831 U	
HEPTACHLOR				0.807 U	0.819 U					0.831 U	
HEPTACHLOR EPOXIDE				0.807 U	0.819 U					0.831 U	
METHOXYCHLOR				8.07 U	8.19 U					8.31 U	
TOXAPHENE				21.1 U	21.4 U					21.7 U	
Herbicides (ug/kg)											
2,4,5-T				1.68 U	5.7 J					1.73 U	
2,4,5-TP (SILVEX)				1.68 U	1.7 U					1.73 U	
2,4-D				1.68 U	1.7 U					1.73 U	
DINOSEB				1.68 U	1.7 U					1.73 U	
HEXACHLOROPHENE				1.06 U	1.07 U					1.09 U	
PENTACHLOROPHENOL				2.4 J	1.6 J					1.5 J	
Inorganics (mg/kg)											
ALUMINUM	6480 J	8190 J		11300 J	8610 J	9010 J		9470 J		14400 J	10100 J
ANTIMONY	0.26 U	0.27 U		0.64 U	0.35 U	0.74 J		1.4 J		1.1 U	0.59 J
ARSENIC	5.2 J	5 J		10 J	6.9 J	9.2 J		7 J		20.9 J	7.9 J
BARIUM	50.5 J	69.8 J		87.7 J	58.5 J	87.2 J		69.2 J		128 J	109 J
BERYLLIUM	0.71 J	0.34 J		0.91 J	0.68 J	0.94 J		0.61 J		1.8 J	0.86 J
CADMIUM	0.18 J	0.18 J		0.44 J	0.3 U	0.2 J		0.16 J		0.65 J	0.2 J
CALCIUM	119000 J	97800 J		34900 J	19100 J	30900 J		25300 J		4910 J	3800 J
CHROMIUM	14.1 J	14.7 J		26.9 J	17.8 J	27.2 J		18.3 J		46.1 J	29.1 J
COBALT	14.5 J	9.7 J		36.1 J	13.6 J	23 J		18.4 J		85.9 J	37.1 J
COPPER	6 J	10.1 J		12.7 J	10.4 J	11.6 J		10.3 J		17.3 J	10.7 J
IRON	16100 J	15400 J		29000 J	21700 J	31000 J		23300 J		61000 J	28200 J
LEAD	12.6 J	15.9 J		29.3 J	14.6 J	18 J		18.2 J		35 J	24.7 J
MAGNESIUM	13500 J	9760 J		4660 J	2980 J	4950 J		3120 J		1780 J	1210 J
MANGANESE	1220 J	883 J		1940 J	703 J	1450 J		1160 J		5160 J	2160 J

APPENDIX TABLE G-3
RESULTS FOR CHEMICALS ANALYZED IN ALL SEDIMENT SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	UPGRAD	UPGRAD	UPGRAD
STREAM ORDER	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-1/15-2	TRIB 15-3	TRIB 15-3	TRIB 15-3	TRIB 15-3	TRIB 15-3			UPGRAD
LOCATION	15SW/SD023	15SW/SD024	15SW/SD025	15SW/SD001	15SW/SD002	15SW/SD020	15SW/SD021	15SW/SD022	15SW/SD003	15SW/SD014	15SW/SD026
SAMPLE NUMBER	15SD0230006	15SD0240006	15SD0250006	15SD0010006	15SD0020006	15SD0200006	15SD0210006	15SD0220006	15SD0030006	15SD0140006	15SD0260006
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NOT FOUND	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE	6/7/2005	6/7/2005	6/7/2005	1/11/2005	1/11/2005	6/7/2005	6/7/2005	6/7/2005	1/11/2005	1/11/2005	6/7/2005
MERCURY	0.007 UJ	0.008 UJ		0.022 J	0.014 J	0.007 UJ		0.028 J		0.035 J	0.007 UJ
NICKEL	21.8 J	13.7 J		35.4 J	21.4 J	24.1 J		18.6 J		64.5 J	30.3 J
POTASSIUM	966	990		1470 J	1200 J	981		1170		1440 J	993
SELENIUM	0.21 J	0.19 J		0.58 J	0.38 J	0.41 J		0.33 J		0.96 J	0.37 J
SILVER	0.043 U	0.048 U		0.05 U	0.047 U	0.048 U		0.046 U		0.046 U	0.047 U
SODIUM	243 J	110 J		95 U	91.2 U	202 J		20.7 J		98.2 U	3.58 U
THALLIUM	0.1 J	0.12 J		0.15 U	0.13 U	0.14 J		0.15 J		0.23 U	0.22 J
TIN	0.47 U	0.42 U		0.25 U	0.28 U	0.46 U		0.47 U		0.36 U	0.43 U
VANADIUM	15.2 J	18.7 J		26.5 J	17.4 J	28.9 J		21.5 J		42.4 J	24.6 J
ZINC	42.6 J	45.4 J		76.1	58.7	51.2 J		48.6 J		161	57.8 J
Miscellaneous Parameters (%)											
CYANIDE (mg/kg)				0.311 U	0.315 U						
PERCENT SILT/CLAY	3	18				8		28			20
SIEVE 1"	0	0				0		0			0
SIEVE 1-1/2"	0	0				0		0			0
SIEVE 2"	0	0				0		0			0
SIEVE 3"	0	0				0		0			0
SIEVE 3/4"	5	0				2		0			2
SIEVE 3/8"	23	4				6		1			1
SIEVE NO. 004	15	2				8		1			1
SIEVE NO. 010	20	5				16		4			4
SIEVE NO. 020	16	17				19		6			9
SIEVE NO. 040	10	30				18		12			9
SIEVE NO. 060	4	11				10		10			12
SIEVE NO. 140	3	10				10		26			30
SIEVE NO. 200	1	4				4		12			12
TOTAL ORGANIC CARBON (mg/kg)	16000 J	10000 J				10000 J		17000 J			9200 J

DOWNGRAD - downgradient well
UPGRAD - upgradient well
NO SED - Location was a catch basin where sediment was not found.
NOT FOUND - Area was inmpacted by new construction and no longer available for sediment collection.
Data qualifiers (e.g., U, J) are defined in section 3 of the text.
ug/kg - micrograms per kilogram
mg/kg - milligrams per kilogram

APPENDIX TABLE G-4
RESULTS FOR CHEMICALS ANALYZED IN WELL GROUNDWATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION [1]	15TW001	15TW002	15TW002	15TW003	15TW003	15TW004	15TW004	15TW005	15TW005
SAMPLE NUMBER	15GWTW001	15GWTW002	15GWTW002-F	15GWTW003	15GWTW003-F	15GWTW004	15GWTW004-F	15GWTW005	15GWTW005-F
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	1/8/2005	1/8/2005	1/8/2005	1/8/2005	1/8/2005	1/8/2005	1/8/2005	1/5/2005	1/5/2005
Volatile Organics (ug/L)									
1,1,1,2-TETRACHLOROETHANE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
1,1,1-TRICHLOROETHANE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
1,1,2,2-TETRACHLOROETHANE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
1,1,2-TRICHLOROETHANE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
1,1-DICHLOROETHANE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
1,1-DICHLOROETHENE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
1,2,3-TRICHLOROPROPANE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
1,2-DIBROMO-3-CHLOROPROPANE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
1,2-DIBROMOETHANE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
1,2-DICHLOROETHANE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
1,2-DICHLOROPROPANE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
2-BUTANONE	0.5 U	0.5 U		0.5 U		0.5 U		0.5 U	
2-HEXANONE	0.5 U	0.5 U		0.5 U		0.5 U		0.5 U	
3-CHLOROPROPENE	0.5 U	0.5 U		0.5 U		0.5 U		0.5 U	
4-METHYL-2-PENTANONE	0.5 U	0.5 U		0.5 U		0.5 U		0.5 U	
ACETONE	0.5 UJ	0.5 UJ		0.5 UJ		2.5 J		1.6 U	
ACETONITRILE	20 UR	20 UR		20 UR		20 UR		20 UR	
ACROLEIN	0.5 UR	0.5 UR		0.5 UR		0.5 UR		0.5 UR	
ACRYLONITRILE	0.5 U	0.5 U		0.5 U		0.5 U		0.5 U	
BENZENE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
BROMODICHLOROMETHANE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
BROMOFORM	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
BROMOMETHANE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
CARBON DISULFIDE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
CARBON TETRACHLORIDE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
CHLOROBENZENE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
CHLORODIBROMOMETHANE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
CHLOROETHANE	0.5 U	0.5 U		0.5 U		0.5 U		0.5 U	
CHLOROFORM	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
CHLOROMETHANE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
CHLOROPRENE	0.5 U	0.5 U		0.5 U		0.5 U		0.5 U	
CIS-1,2-DICHLOROETHENE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
CIS-1,3-DICHLOROPROPENE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
DIBROMOMETHANE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
DICHLORODIFLUOROMETHANE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
ETHYL METHACRYLATE	0.5 UJ	0.5 UJ		0.5 UJ		0.5 UJ		0.5 U	
ETHYLBENZENE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
ISOBUTANOL	20 UR	20 UR		20 UR		20 UR		20 UR	
METHACRYLONITRILE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
METHYL IODIDE	0.5 U	0.5 U		0.5 U		0.5 U		0.5 U	
METHYL METHACRYLATE	0.5 U	0.5 U		0.5 U		0.5 U		0.5 U	
METHYL TERT-BUTYL ETHER	0.5 U	0.5 U		0.5 U		0.5 U		0.5 U	
METHYLENE CHLORIDE	0.3 UJ	0.3 UJ		0.3 UJ		0.3 UJ		0.3 UJ	
PROPIONITRILE	20 UR	20 UR		20 UR		20 UR		20 UR	
STYRENE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	

APPENDIX TABLE G-4
RESULTS FOR CHEMICALS ANALYZED IN ALL GROUNDWATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION [1] SAMPLE NUMBER SAMPLE CODE SAMPLE DATE	15TW001 15GWTW001 NORMAL 1/8/2005	15TW002 15GWTW002 NORMAL 1/8/2005	15TW002 15GWTW002-F NORMAL 1/8/2005	15TW003 15GWTW003 NORMAL 1/8/2005	15TW003 15GWTW003-F NORMAL 1/8/2005	15TW004 15GWTW004 NORMAL 1/8/2005	15TW004 15GWTW004-F NORMAL 1/8/2005	15TW005 15GWTW005 NORMAL 1/5/2005	15TW005 15GWTW005-F NORMAL 1/5/2005
TETRACHLOROETHENE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
TOLUENE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
TOTAL XYLENES	1.5	0.3 U		0.3 U		0.3 U		0.3 U	
TRANS-1,2-DICHLOROETHENE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
TRANS-1,3-DICHLOROPROPENE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
TRANS-1,4-DICHLORO-2-BUTENE	0.5 U	0.5 U		0.5 U		0.5 U		0.5 U	
TRICHLOROETHENE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
TRICHLOROFLUOROMETHANE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
VINYL ACETATE	0.5 U	0.5 U		0.5 U		0.5 U		0.5 U	
VINYL CHLORIDE	0.3 U	0.3 U		0.3 U		0.3 U		0.3 U	
Semivolatile Organics (ug/L)									
1,2,4,5-TETRACHLOROBENZENE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
1,2,4-TRICHLOROBENZENE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
1,2-DICHLOROBENZENE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
1,3-DICHLOROBENZENE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
1,4-DICHLOROBENZENE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
1,4-DIOXANE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
1,4-NAPHTHOQUINONE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
1,4-PHENYLENEDIAMINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
1-NAPHTHYLAMINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
2,2'-OXYBIS(1-CHLOROPROPANE)	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
2,3,4,6-TETRACHLOROPHENOL	1.04 U	1.05 U		10.5 UR		1 U		1.11 U	
2,4,5-TRICHLOROPHENOL	1.04 U	1.05 U		10.5 UR		1 U		1.11 U	
2,4,6-TRICHLOROPHENOL	1.04 U	1.05 U		10.5 UR		1 U		1.11 U	
2,4-DICHLOROPHENOL	1.04 U	1.05 U		10.5 UR		1 U		1.11 U	
2,4-DIMETHYLPHENOL	1.04 U	1.05 U		10.5 UR		1 U		1.11 U	
2,4-DINITROPHENOL	1.04 UJ	1.05 UR		10.5 UR		1 UJ		1.11 UJ	
2,6-DICHLOROPHENOL	1.04 U	1.05 U		10.5 UR		1 U		1.11 U	
2-ACETYLAMINOFLUORENE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
2-CHLORONAPHTHALENE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
2-CHLOROPHENOL	1.04 U	1.05 U		10.5 UR		1 U		1.11 U	
2-METHYLNAPHTHALENE	5.17	0.049 U		0.054 U		0.052 U		0.048 U	
2-METHYLPHENOL	1.04 U	1.05 U		10.5 UR		1 U		1.11 U	
2-NAPHTHYLAMINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
2-NITROANILINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
2-NITROPHENOL	1.04 U	1.05 U		10.5 UR		1 U		1.11 U	
2-PICOLINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
3&4-METHYLPHENOL	10	1.05 U		10.5 UR		1 U		1.11 U	
3,3'-DICHLOROBENZIDINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
3,3'-DIMETHYLBENZIDINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
3-METHYLCHOLANTHRENE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
3-NITROANILINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
4,6-DINITRO-2-METHYLPHENOL	1.04 U	1.05 U		10.5 UR		1 U		1.11 U	
4-AMINOBIPHENYL	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
4-BROMOPHENYL PHENYL ETHER	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
4-CHLORO-3-METHYLPHENOL	1.04 U	1.05 U		10.5 UR		1 U		1.11 U	

APPENDIX TABLE G-4
RESULTS FOR CHEMICALS ANALYZED IN ALL GROUNDWATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION [1]	15TW001	15TW002	15TW002	15TW003	15TW003	15TW004	15TW004	15TW005	15TW005
SAMPLE NUMBER	15GWTW001	15GWTW002	15GWTW002-F	15GWTW003	15GWTW003-F	15GWTW004	15GWTW004-F	15GWTW005	15GWTW005-F
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	1/8/2005	1/8/2005	1/8/2005	1/8/2005	1/8/2005	1/8/2005	1/8/2005	1/5/2005	1/5/2005
4-CHLOROANILINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
4-CHLOROPHENYL PHENYL ETHER	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
4-NITROANILINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
4-NITROPHENOL	1.04 UJ	1.05 UJ		10.5 UR		1 UJ		1.11 UJ	
4-NITROQUINOLINE-1-OXIDE	1.04 UR	1.05 UR		10.5 UR		1 UR		1.11 UR	
5-NITRO-O-TOLUIDINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
7,12-DIMETHYLBENZ(A)ANTHRACENE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
A,A-DIMETHYLPHENETHYLAMINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
ACENAPHTHENE	9.91	0.049 U		0.054 U		0.052 U		0.048 U	
ACENAPHTHYLENE	0.31	0.049 U		0.054 U		0.052 U		0.048 U	
ACETOPHENONE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
ANILINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
ANTHRACENE	0.75	0.049 U		0.054 U		0.052 U		0.11	
ARAMITE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
BENZO(A)ANTHRACENE	0.07 J	0.049 U		0.054 U		0.052 U		0.048 U	
BENZO(A)PYRENE	0.053 U	0.049 U		0.054 U		0.052 U		0.048 U	
BENZO(B)FLUORANTHENE	0.053 U	0.049 U		0.054 U		0.052 U		0.048 U	
BENZO(G,H,I)PERYLENE	0.053 U	0.049 U		0.054 U		0.052 U		0.048 U	
BENZO(K)FLUORANTHENE	0.053 U	0.049 U		0.054 U		0.052 U		0.048 U	
BENZYL ALCOHOL	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
BIS(2-CHLOROETHOXY)METHANE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
BIS(2-CHLOROETHYL)ETHER	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
BIS(2-ETHYLHEXYL)PHTHALATE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
BUTYL BENZYL PHTHALATE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
CHLOROBENZILATE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
CHRYSENE	0.053 U	0.049 U		0.054 U		0.052 U		0.048 U	
DI-N-BUTYL PHTHALATE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
DI-N-OCTYL PHTHALATE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
DIALLATE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
DIBENZO(A,H)ANTHRACENE	0.053 U	0.049 U		0.054 U		0.052 U		0.048 U	
DIBENZOFURAN	5 J	1.05 U		10.5 U		1 U		1.11 U	
DIETHYL PHTHALATE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
DIMETHYL PHTHALATE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
DIPHENYLAMINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
ETHYL METHANE SULFONATE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
FLUORANTHENE	0.75	0.049 U		0.054 U		0.052 U		0.06 J	
FLUORENE	4.73	0.049 U		0.054 U		0.052 U		0.048 U	
HEXACHLOROBENZENE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
HEXACHLOROBUTADIENE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
HEXACHLOROCYCLOPENTADIENE	1.04 UJ	1.05 UJ		10.5 UJ		1 UJ		1.11 UJ	
HEXACHLOROETHANE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
HEXACHLOROPROPENE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
INDENO(1,2,3-CD)PYRENE	0.053 U	0.049 U		0.054 U		0.052 U		0.048 U	
ISODRIN	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
ISOPHORONE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
ISOSAFROLE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	

APPENDIX TABLE G-4
RESULTS FOR CHEMICALS ANALYZED IN ALL GROUNDWATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION [1] SAMPLE NUMBER SAMPLE CODE SAMPLE DATE	15TW001 15GWTW001 NORMAL 1/8/2005	15TW002 15GWTW002 NORMAL 1/8/2005	15TW002 15GWTW002-F NORMAL 1/8/2005	15TW003 15GWTW003 NORMAL 1/8/2005	15TW003 15GWTW003-F NORMAL 1/8/2005	15TW004 15GWTW004 NORMAL 1/8/2005	15TW004 15GWTW004-F NORMAL 1/8/2005	15TW005 15GWTW005 NORMAL 1/5/2005	15TW005 15GWTW005-F NORMAL 1/5/2005
KEPONE	1.04 UJ	1.05 UJ		10.5 UJ		1 UJ		1.11 UJ	
METHAPYRILENE	1.04 UJ	1.05 UJ		10.5 UJ		1 UJ		1.11 UJ	
METHYL METHANE SULFONATE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
N-NITROSO-DI-N-BUTYLAMINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
N-NITROSO-DI-N-PROPYLAMINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
N-NITROSODIETHYLAMINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
N-NITROSODIMETHYLAMINE	1.04 UJ	1.05 UJ		10.5 UJ		1 UJ		1.11 UJ	
N-NITROSODIPHENYLAMINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
N-NITROSOMETHYLETHYLAMINE	1.04 UJ	1.05 UJ		10.5 UJ		1 UJ		1.11 UJ	
N-NITROSOMORPHOLINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
N-NITROSOPIPERIDINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
N-NITROSOPYRROLIDINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
NAPHTHALENE	20.6	0.049 U		0.054 U		0.052 U		0.048 U	
O,O,O-TRIETHYL PHOSPHOROTHIOATE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
O-TOLUIDINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
P-(DIMETHYLAMINO)AZOBENZENE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
PENTACHLOROBENZENE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
PENTACHLOROETHANE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
PENTACHLORONITROBENZENE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
PHENACETIN	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
PHENANTHRENE	3.21	0.049 U		0.054 U		0.052 U		0.048 U	
PHENOL	1.04 U	1.05 U		10.5 UR		1 U		1.11 U	
PRONAMIDE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
PYRENE	0.67	0.049 U		0.054 U		0.052 U		0.06 J	
PYRIDINE	1.04 U	1.05 U		10.5 U		1 U		1.11 U	
SAFROLE	1.04 U	1.05 U		10.5 U		1 J		1.11 U	
Pesticides PCBs (ug/L)									
4,4'-DDD						0.1 U		0.053 UJ	
4,4'-DDE						0.1 U		0.053 U	
4,4'-DDT						0.1 U		0.053 U	
ALDRIN						0.05 U		0.026 UJ	
ALPHA-BHC						0.05 U		0.026 U	
ALPHA-CHLORDANE						0.05 U		0.026 U	
AROCLOR-1016	0.27 U	0.265 U		0.258 U		0.5 U		0.262 U	
AROCLOR-1221	0.27 U	0.265 U		0.258 U		0.5 U		0.262 U	
AROCLOR-1232	0.27 U	0.265 U		0.258 U		0.5 U		0.262 U	
AROCLOR-1242	0.27 U	0.265 U		0.258 U		0.5 U		0.262 U	
AROCLOR-1248	0.27 U	0.265 U		0.258 U		0.5 U		0.262 U	
AROCLOR-1254	0.27 U	0.265 U		0.258 U		0.5 U		0.262 U	
AROCLOR-1260	0.27 U	0.265 U		0.258 U		0.5 U		0.262 U	
BETA-BHC						0.05 U		0.026 U	
DELTA-BHC						0.05 U		0.026 UJ	
DIELDRIN						0.1 U		0.053 UJ	
ENDOSULFAN I						0.05 U		0.026 UJ	
ENDOSULFAN II						0.1 U		0.053 UJ	
ENDOSULFAN SULFATE						0.1 U		0.053 U	

APPENDIX TABLE G-4
RESULTS FOR CHEMICALS ANALYZED IN SOIL GROUNDWATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION [1]	15TW001	15TW002	15TW002	15TW003	15TW003	15TW004	15TW004	15TW005	15TW005
SAMPLE NUMBER	15GWTW001	15GWTW002	15GWTW002-F	15GWTW003	15GWTW003-F	15GWTW004	15GWTW004-F	15GWTW005	15GWTW005-F
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	1/8/2005	1/8/2005	1/8/2005	1/8/2005	1/8/2005	1/8/2005	1/8/2005	1/5/2005	1/5/2005
ENDRIN						0.1 U		0.053 UJ	
ENDRIN ALDEHYDE						0.1 U		0.053 U	
ENDRIN KETONE						0.1 U		0.053 U	
GAMMA-BHC (LINDANE)						0.05 U		0.026 UJ	
GAMMA-CHLORDANE						0.05 U		0.026 U	
HEPTACHLOR						0.05 U		0.026 UJ	
HEPTACHLOR EPOXIDE						0.05 U		0.026 U	
METHOXYCHLOR						0.5 U		0.262 U	
TOXAPHENE						5 U		2.62 U	
Herbicides (ug/L)									
2,4,5-T						0.04 U		0.04 U	
2,4,5-TP (SILVEX)						0.04 U		0.04 U	
2,4-D						0.04 U		0.04 U	
DINOSEB						0.04 U		0.04 U	
HEXACHLOROPHENE						0.025 U		0.025 U	
PENTACHLOROPHENOL						0.013 U		0.027 J	
Total Metals (ug/L)									
ALUMINUM	81.9 U	446 J		1410 J		21100 J		7210 J	
ANTIMONY	0.37 U	0.95 U		0.085 U		0.16 U		6.3 J	
ARSENIC	0.74 U	0.45 U		9.6 J		10.4 J		6.3 J	
BARIUM	46.3 J	74 J		96.2 J		174 J		224 J	
BERYLLIUM	0.02 U	0.03 U		0.05 U		0.81 J		0.47 J	
CADMIUM	0.08 U	0.11 U		0.09 U		0.26 U		1.1 J	
CALCIUM	57300 J	63600 J		74500 J		34100 J		169000 J	
CHROMIUM	0.19 U	1.4 J		1.5 J		27.4 J		10 J	
COBALT	0.44 J	1.2		108		9.4		10.7 J	
COPPER	0.39 U	2 J		1.2 J		20 J		19.7 J	
IRON	918 J	1080 J		148000 J		30000 J		10900 J	
LEAD	0.227 U	5.7 J		1.2 J		26.4 J		34.9 J	
MAGNESIUM	7060 J	8510 J		96000 J		8310 J		28900 J	
MANGANESE	285 J	694 J		16900 J		335 J		631 J	
MERCURY	0.03 U	0.039 J		0.03 U		0.081 J		0.06 J	
NICKEL	0.65 J	2		38		17.3		21.8 J	
POTASSIUM	588 J	1630 J		1940 J		4930 J		4840 J	
SELENIUM	0.97 J	0.46 U		0.094 U		0.36 U		0.93 J	
SILVER	0.028 U	0.03 U		0.028 U		0.15 U		0.1 U	
SODIUM	1730 J	6960 J		77700 J		1720 J		2650 J	
THALLIUM	0.043 U	0.05 U		0.043 U		0.2 U		0.16 J	
TIN	0.048 U	0.15 U		0.048 U		0.53 U		0.88 J	
VANADIUM	1.14 U	1.2 J		2.6		36.4		19.6 J	
ZINC	5.7 U	8.8 U		8.5 U		58.9 J		91 J	
Dissolved Metals (ug/L)									
ALUMINUM, FILTERED			8.6 U		54.7 U		8.6 U		8.6 U
ANTIMONY, FILTERED			0.96 U		0.09 U		0.26 U		10.4 J
ARSENIC, FILTERED			0.32 U		10.4 J		2 J		0.36 J
BARIUM, FILTERED			68.5 J		87.6 J		50.8 J		133 J

APPENDIX TABLE G-4
RESULTS FOR CHEMICALS ANALYZED IN ALL GROUNDWATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION [1]	15TW001	15TW002	15TW002	15TW003	15TW003	15TW004	15TW004	15TW005	15TW005
SAMPLE NUMBER	15GWTW001	15GWTW002	15GWTW002-F	15GWTW003	15GWTW003-F	15GWTW004	15GWTW004-F	15GWTW005	15GWTW005-F
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	1/8/2005	1/8/2005	1/8/2005	1/8/2005	1/8/2005	1/8/2005	1/8/2005	1/5/2005	1/5/2005
BERYLLIUM, FILTERED			0.02 U		0.03 U		0.02 U		0.02 UJ
CADMIUM, FILTERED			0.06 J		0.04 J		0.04 J		0.32 U
CALCIUM, FILTERED			62600		68600		24600		176000
CHROMIUM, FILTERED			0.67 U		0.42 U		0.42 U		0.94 U
COBALT, FILTERED			1 J		92 J		1.6 J		0.43 J
COPPER, FILTERED			1.5 J		1.4 J		0.44 J		3 J
IRON, FILTERED			611 J		122000 J		2100 J		861 J
LEAD, FILTERED			0.192 J		0.186 J		0.069 U		0.14 U
MAGNESIUM, FILTERED			8460 J		92400 J		7020 J		28100 J
MANGANESE, FILTERED			760 J		14400 J		81.9 J		5.2 J
MERCURY, FILTERED			0.053 U		0.061 U		0.042 U		0.03 U
NICKEL, FILTERED			4.7 J		39 J		2.2 J		9.8 J
POTASSIUM, FILTERED			1470 J		1490 J		3370 J		5240 J
SELENIUM, FILTERED			0.75 J		1.1 J		0.7 U		0.73 J
SILVER, FILTERED			0.028 U		0.028 U		0.028 U		0.028 U
SODIUM, FILTERED			7330 J		70500 J		1830 J		3690 J
THALLIUM, FILTERED			0.07 J		0.05 J		0.043 U		0.043 U
TIN, FILTERED			0.16 U		0.87 J		0.13 U		0.13 U
VANADIUM, FILTERED			1.14 U		1.14 U		1.14 U		1.14 U
ZINC, FILTERED			3.8 J		3.9 J		1.4 U		2.6 U
Field Parameters									
DISSOLVED OXYGEN - METER (mg/L)	11.51	8.52		0.31		6.62		10.59	
OXIDATION REDUCTION POTENTIAL (MV)	-79.4	46		-65.3		118.7		32.2	
PH (S.U.)	7.45	7.56		6.13		6.92		8.21	
SPECIFIC CONDUCTANCE (MS/CM)	0.413	0.438		1.258		0.167		1.181	
TEMPERATURE (C)	6.53	7.35		9.51		10.76		7.86	
TURBIDITY (NTU)	9.8	13		33		650		1000 >	

APPENDIX LE G-4
RESULTS FOR CHEMICALS ANALYZED IN GROUNDWATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION [1] SAMPLE NUMBER SAMPLE CODE SAMPLE DATE	15TW006 15GWTW006 ORIG 1/7/2005	15TW006 15GWTW006-D DUP 1/7/2005	15TW007 15GWTW007 NORMAL 1/7/2005	15TW007 15GWTW007-F NORMAL 1/7/2005	15TW008 15GWTW008 NORMAL 1/7/2005	15TW008 15GWTW008-F NORMAL 1/7/2005
Volatile Organics (ug/L)						
1,1,1,2-TETRACHLOROETHANE	0.3 U	0.3 U	0.3 U		0.3 U	
1,1,1-TRICHLOROETHANE	0.3 U	0.3 U	0.3 U		0.3 U	
1,1,2,2-TETRACHLOROETHANE	0.3 U	0.3 U	0.3 U		0.3 U	
1,1,2-TRICHLOROETHANE	0.3 U	0.3 U	0.3 U		0.3 U	
1,1-DICHLOROETHANE	0.3 U	0.3 U	0.3 U		0.3 U	
1,1-DICHLOROETHENE	0.3 U	0.3 U	0.3 U		0.3 U	
1,2,3-TRICHLOROPROPANE	0.3 U	0.3 U	0.3 U		0.3 U	
1,2-DIBROMO-3-CHLOROPROPANE	0.3 U	0.3 U	0.3 U		0.3 U	
1,2-DIBROMOETHANE	0.3 U	0.3 U	0.3 U		0.3 U	
1,2-DICHLOROETHANE	0.3 U	0.3 U	0.3 U		0.3 U	
1,2-DICHLOROPROPANE	0.3 U	0.3 U	0.3 U		0.3 U	
2-BUTANONE	0.5 U	0.5 U	0.5 U		0.5 U	
2-HEXANONE	0.5 U	0.5 U	0.5 U		0.5 U	
3-CHLOROPROPENE	0.5 U	0.5 U	0.5 U		0.5 U	
4-METHYL-2-PENTANONE	0.5 U	0.5 U	0.5 U		0.5 U	
ACETONE	0.5 UJ	0.5 UJ	1.2 U		0.5 UJ	
ACETONITRILE	20 UR	20 UR	20 UR		20 UR	
ACROLEIN	0.5 UR	0.5 UR	0.5 UR		0.5 UR	
ACRYLONITRILE	0.5 U	0.5 U	0.5 U		0.5 U	
BENZENE	0.3 U	0.3 U	0.3 U		0.3 U	
BROMODICHLOROMETHANE	0.3 U	0.3 U	0.3 U		0.3 U	
BROMOFORM	0.3 U	0.3 U	0.3 U		0.3 U	
BROMOMETHANE	0.3 U	0.3 U	0.3 U		0.3 U	
CARBON DISULFIDE	0.3 U	0.3 U	0.3 U		0.3 U	
CARBON TETRACHLORIDE	0.3 U	0.3 U	0.3 U		0.3 U	
CHLOROBENZENE	0.3 U	0.3 U	0.3 U		0.3 U	
CHLORODIBROMOMETHANE	0.3 U	0.3 U	0.3 U		0.3 U	
CHLOROETHANE	0.5 U	0.5 U	0.5 U		0.5 U	
CHLOROFORM	0.3 U	0.3 U	0.3 U		0.3 U	
CHLOROMETHANE	0.3 U	0.3 U	0.3 U		0.3 U	
CHLOROPRENE	0.5 U	0.5 U	0.5 U		0.5 U	
CIS-1,2-DICHLOROETHENE	0.3 U	0.3 U	0.3 U		0.3 U	
CIS-1,3-DICHLOROPROPENE	0.3 U	0.3 U	0.3 U		0.3 U	
DIBROMOMETHANE	0.3 U	0.3 U	0.3 U		0.3 U	
DICHLORODIFLUOROMETHANE	0.3 U	0.3 U	0.3 U		0.3 UJ	
ETHYL METHACRYLATE	0.5 U	0.5 U	0.5 U		0.5 U	
ETHYLBENZENE	0.3 U	0.3 U	0.3 U		0.3 U	
ISOBUTANOL	20 UR	20 UR	20 UR		20 UR	
METHACRYLONITRILE	0.3 U	0.3 U	0.3 U		0.3 U	
METHYL IODIDE	0.5 U	0.5 U	0.5 U		0.5 U	
METHYL METHACRYLATE	0.5 U	0.5 U	0.5 U		0.5 U	
METHYL TERT-BUTYL ETHER	0.5 U	0.5 U	0.5 U		0.5 U	
METHYLENE CHLORIDE	0.3 UJ	0.3 UJ	0.3 UJ		0.3 UJ	
PROPIONITRILE	20 UR	20 UR	20 UR		20 UR	
STYRENE	0.3 U	0.3 U	0.3 U		0.3 U	

APPENDIX TABLE G-4
RESULTS FOR CHEMICALS ANALYZED IN ALL GROUNDWATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION [1] SAMPLE NUMBER SAMPLE CODE SAMPLE DATE	15TW006 15GWTW006 ORIG 1/7/2005	15TW006 15GWTW006-D DUP 1/7/2005	15TW007 15GWTW007 NORMAL 1/7/2005	15TW007 15GWTW007-F NORMAL 1/7/2005	15TW008 15GWTW008 NORMAL 1/7/2005	15TW008 15GWTW008-F NORMAL 1/7/2005
TETRACHLOROETHENE	0.3 U	0.3 U	0.3 U		0.3 U	
TOLUENE	0.3 U	0.3 U	0.3 U		0.3 U	
TOTAL XYLENES	0.3 U	0.3 U	0.3 U		0.3 U	
TRANS-1,2-DICHLOROETHENE	0.3 U	0.3 U	0.3 U		0.3 U	
TRANS-1,3-DICHLOROPROPENE	0.3 U	0.3 U	0.3 U		0.3 U	
TRANS-1,4-DICHLORO-2-BUTENE	0.5 U	0.5 U	0.5 U		0.5 U	
TRICHLOROETHENE	0.3 U	0.3 U	0.3 U		0.3 U	
TRICHLOROFLUOROMETHANE	0.3 U	0.3 U	0.3 U		0.3 U	
VINYL ACETATE	0.5 U	0.5 U	0.5 U		0.5 U	
VINYL CHLORIDE	0.3 U	0.3 U	0.3 U		0.3 U	
Semivolatile Organics (ug/L)						
1,2,4,5-TETRACHLOROBENZENE	0.96 U	1.06 U	0.96 U		0.96 U	
1,2,4-TRICHLOROBENZENE	0.96 U	1.06 U	0.96 U		0.96 U	
1,2-DICHLOROBENZENE	0.96 U	1.06 U	0.96 U		0.96 U	
1,3-DICHLOROBENZENE	0.96 U	1.06 U	0.96 U		0.96 U	
1,4-DICHLOROBENZENE	0.96 U	1.06 U	0.96 U		0.96 U	
1,4-DIOXANE	0.96 UJ	1.06 UJ	0.96 UJ		0.96 UJ	
1,4-NAPHTHOQUINONE	0.96 U	1.06 U	0.96 U		0.96 U	
1,4-PHENYLENEDIAMINE	0.96 U	1.06 U	0.96 U		0.96 U	
1-NAPHTHYLAMINE	0.96 U	1.06 U	0.96 U		0.96 U	
2,2'-OXYBIS(1-CHLOROPROPANE)	0.96 U	1.06 U	0.96 U		0.96 U	
2,3,4,6-TETRACHLOROPHENOL	0.96 U	1.06 U	0.96 U		0.96 U	
2,4,5-TRICHLOROPHENOL	0.96 U	1.06 U	0.96 U		0.96 U	
2,4,6-TRICHLOROPHENOL	0.96 U	1.06 U	0.96 U		0.96 U	
2,4-DICHLOROPHENOL	0.96 U	1.06 U	0.96 U		0.96 U	
2,4-DIMETHYLPHENOL	0.96 U	1.06 U	0.96 U		0.96 U	
2,4-DINITROPHENOL	0.96 UJ	1.06 UJ	0.96 UJ		0.96 UJ	
2,6-DICHLOROPHENOL	0.96 U	1.06 U	0.96 U		0.96 U	
2-ACETYLAMINOFLUORENE	0.96 UJ	1.06 UJ	0.96 UJ		0.96 UJ	
2-CHLORONAPHTHALENE	0.96 U	1.06 U	0.96 U		0.96 U	
2-CHLOROPHENOL	0.96 U	1.06 U	0.96 U		0.96 U	
2-METHYLNAPHTHALENE	0.048 U	0.052 U	0.048 U		0.048 U	
2-METHYLPHENOL	0.96 U	1.06 U	0.96 U		0.96 U	
2-NAPHTHYLAMINE	0.96 U	1.06 U	0.96 U		0.96 U	
2-NITROANILINE	0.96 U	1.06 U	0.96 U		0.96 U	
2-NITROPHENOL	0.96 UJ	1.06 U	0.96 U		0.96 U	
2-PICOLINE	0.96 U	1.06 U	0.96 U		0.96 U	
3&4-METHYLPHENOL	0.96 UJ	1.06 U	1 J		0.96 U	
3,3'-DICHLOROBENZIDINE	0.96 UR	1.06 U	0.96 U		0.96 U	
3,3'-DIMETHYLBENZIDINE	0.96 U	1.06 U	0.96 U		0.96 U	
3-METHYLCHOLANTHRENE	0.96 U	1.06 U	0.96 U		0.96 U	
3-NITROANILINE	0.96 U	1.06 U	0.96 U		0.96 U	
4,6-DINITRO-2-METHYLPHENOL	0.96 U	1.06 U	0.96 U		0.96 U	
4-AMINOBIPHENYL	0.96 U	1.06 U	0.96 U		0.96 U	
4-BROMOPHENYL PHENYL ETHER	0.96 U	1.06 U	0.96 U		0.96 U	
4-CHLORO-3-METHYLPHENOL	0.96 U	1.06 U	0.96 U		0.96 U	

APPENDIX LE G-4
RESULTS FOR CHEMICALS ANALYZED IN GROUNDWATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION [1]	15TW006	15TW006	15TW007	15TW007	15TW008	15TW008
SAMPLE NUMBER	15GWTW006	15GWTW006-D	15GWTW007	15GWTW007-F	15GWTW008	15GWTW008-F
SAMPLE CODE	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	1/7/2005	1/7/2005	1/7/2005	1/7/2005	1/7/2005	1/7/2005
4-CHLOROANILINE	0.96 U	1.06 U	0.96 U		0.96 U	
4-CHLOROPHENYL PHENYL ETHER	0.96 U	1.06 U	0.96 U		0.96 U	
4-NITROANILINE	0.96 U	1.06 U	0.96 U		0.96 U	
4-NITROPHENOL	0.96 U	1.06 U	0.96 U		0.96 U	
4-NITROQUINOLINE-1-OXIDE	0.96 UR	1.06 UR	0.96 UR		0.96 UR	
5-NITRO-O-TOLUIDINE	0.96 U	1.06 U	0.96 U		0.96 U	
7,12-DIMETHYLBENZ(A)ANTHRACENE	0.96 U	1.06 U	0.96 U		0.96 U	
A,A-DIMETHYLPHENETHYLAMINE	0.96 UJ	1.06 UJ	0.96 UJ		0.96 UJ	
ACENAPHTHENE	0.048 U	0.052 U	0.048 U		0.048 U	
ACENAPHTHYLENE	0.048 U	0.052 U	0.048 U		0.048 U	
ACETOPHENONE	0.96 U	1.06 U	0.96 U		0.96 U	
ANILINE	0.96 U	1.06 U	0.96 U		0.96 U	
ANTHRACENE	0.048 U	0.052 U	0.048 U		0.048 U	
ARAMITE	0.96 U	1.06 U	0.96 U		0.96 U	
BENZO(A)ANTHRACENE	0.048 U	0.052 U	0.048 U		0.048 U	
BENZO(A)PYRENE	0.048 U	0.052 U	0.048 U		0.048 U	
BENZO(B)FLUORANTHENE	0.048 U	0.052 U	0.048 U		0.048 U	
BENZO(G,H,I)PERYLENE	0.048 U	0.052 U	0.048 U		0.048 U	
BENZO(K)FLUORANTHENE	0.048 U	0.052 U	0.048 U		0.048 U	
BENZYL ALCOHOL	0.96 U	1.06 U	0.96 U		0.96 U	
BIS(2-CHLOROETHOXY)METHANE	0.96 U	1.06 U	0.96 U		0.96 U	
BIS(2-CHLOROETHYL)ETHER	0.96 U	1.06 U	0.96 U		0.96 U	
BIS(2-ETHYLHEXYL)PHTHALATE	0.96 U	1.06 UJ	0.96 UJ		0.96 UJ	
BUTYL BENZYL PHTHALATE	0.96 U	1.06 U	0.96 U		0.96 U	
CHLOROBENZILATE	0.96 U	1.06 U	0.96 U		0.96 U	
CHRYSENE	0.048 U	0.052 U	0.048 U		0.048 U	
DI-N-BUTYL PHTHALATE	0.96 U	1.06 U	0.96 U		0.96 U	
DI-N-OCTYL PHTHALATE	0.96 U	1.06 U	0.96 U		0.96 U	
DIALLATE	0.96 U	1.06 U	0.96 U		0.96 U	
DIBENZO(A,H)ANTHRACENE	0.048 U	0.052 U	0.048 U		0.048 U	
DIBENZOFURAN	0.96 U	1.06 U	0.96 U		0.96 U	
DIETHYL PHTHALATE	0.96 U	1.06 U	0.96 U		0.96 U	
DIMETHYL PHTHALATE	0.96 U	1.06 U	0.96 U		0.96 U	
DIPHENYLAMINE	0.96 U	1.06 U	0.96 U		0.96 U	
ETHYL METHANE SULFONATE	0.96 U	1.06 U	0.96 U		0.96 U	
FLUORANTHENE	0.048 U	0.052 U	0.048 U		0.048 U	
FLUORENE	0.048 U	0.052 U	0.048 U		0.048 U	
HEXACHLOROBENZENE	0.96 UJ	1.06 UJ	0.96 UJ		0.96 UJ	
HEXACHLOROBUTADIENE	0.96 U	1.06 U	0.96 U		0.96 U	
HEXACHLOROCYCLOPENTADIENE	0.96 UJ	1.06 UJ	0.96 UJ		0.96 UJ	
HEXACHLOROETHANE	0.96 U	1.06 U	0.96 U		0.96 U	
HEXACHLOROPROPENE	0.96 U	1.06 U	0.96 U		0.96 U	
INDENO(1,2,3-CD)PYRENE	0.048 U	0.052 U	0.048 U		0.048 U	
ISODRIN	0.96 U	1.06 U	0.96 U		0.96 U	
ISOPHORONE	0.96 U	1.06 U	0.96 U		0.96 U	
ISOSAFROLE	0.96 U	1.06 U	0.96 U		0.96 U	

APPENDIX TABLE G-4
RESULTS FOR CHEMICALS ANALYZED IN ALL GROUNDWATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION [1] SAMPLE NUMBER SAMPLE CODE SAMPLE DATE	15TW006 15GWTW006 ORIG 1/7/2005	15TW006 15GWTW006-D DUP 1/7/2005	15TW007 15GWTW007 NORMAL 1/7/2005	15TW007 15GWTW007-F NORMAL 1/7/2005	15TW008 15GWTW008 NORMAL 1/7/2005	15TW008 15GWTW008-F NORMAL 1/7/2005
KEPONE	0.96 UJ	1.06 UJ	0.96 UJ		0.96 UJ	
METHAPYRILENE	0.96 UJ	1.06 UJ	0.96 UJ		0.96 UJ	
METHYL METHANE SULFONATE	0.96 U	1.06 U	0.96 U		0.96 U	
N-NITROSO-DI-N-BUTYLAMINE	0.96 U	1.06 U	0.96 U		0.96 U	
N-NITROSO-DI-N-PROPYLAMINE	0.96 U	1.06 U	0.96 U		0.96 U	
N-NITROSODIETHYLAMINE	0.96 U	1.06 U	0.96 U		0.96 U	
N-NITROSODIMETHYLAMINE	0.96 U	1.06 U	0.96 U		0.96 U	
N-NITROSODIPHENYLAMINE	0.96 U	1.06 U	0.96 U		0.96 U	
N-NITROSOMETHYLETHYLAMINE	0.96 UJ	1.06 UJ	0.96 UJ		0.96 UJ	
N-NITROSOMORPHOLINE	0.96 U	1.06 U	0.96 U		0.96 U	
N-NITROSOPIPERIDINE	0.96 U	1.06 U	0.96 U		0.96 U	
N-NITROSOPYRROLIDINE	0.96 U	1.06 U	0.96 U		0.96 U	
NAPHTHALENE	0.048 U	0.052 U	0.048 U		0.048 U	
O,O,O-TRIETHYL PHOSPHOROTHIOATE	0.96 U	1.06 U	0.96 U		0.96 U	
O-TOLUIDINE	0.96 U	1.06 U	0.96 U		0.96 U	
P-(DIMETHYLAMINO)AZOBENZENE	0.96 U	1.06 U	0.96 U		0.96 U	
PENTACHLOROBENZENE	0.96 U	1.06 U	0.96 U		0.96 U	
PENTACHLOROETHANE	0.96 U	1.06 U	0.96 U		0.96 U	
PENTACHLORONITROBENZENE	0.96 U	1.06 U	0.96 U		0.96 U	
PHENACETIN	0.96 U	1.06 U	0.96 U		0.96 U	
PHENANTHRENE	0.048 U	0.052 U	0.048 U		0.048 U	
PHENOL	0.96 U	1.06 U	0.96 U		0.96 U	
PRONAMIDE	0.96 U	1.06 U	0.96 U		0.96 U	
PYRENE	0.048 U	0.052 U	0.55		0.048 U	
PYRIDINE	0.96 UJ	1.06 UJ	0.96 UJ		0.96 UJ	
SAFROLE	0.96 U	1.06 U	0.96 U		0.96 U	
Pesticides PCBs (ug/L)						
4,4'-DDD	0.048 UJ	0.051 UJ	0.048 UJ		0.049 UJ	
4,4'-DDE	0.048 U	0.051 U	0.048 U		0.049 U	
4,4'-DDT	0.048 U	0.051 U	0.048 U		0.049 U	
ALDRIN	0.024 UJ	0.026 UJ	0.024 UJ		0.024 UJ	
ALPHA-BHC	0.024 U	0.026 U	0.024 U		0.024 U	
ALPHA-CHLORDANE	0.024 U	0.026 U	0.024 U		0.024 U	
AROCLOR-1016	0.24 U	0.255 U	0.242 U		0.245 U	
AROCLOR-1221	0.24 U	0.255 U	0.242 U		0.245 U	
AROCLOR-1232	0.24 U	0.255 U	0.242 U		0.245 U	
AROCLOR-1242	0.24 U	0.255 U	0.242 U		0.245 U	
AROCLOR-1248	0.24 U	0.255 U	0.242 U		0.245 U	
AROCLOR-1254	0.24 U	0.255 U	0.242 U		0.245 U	
AROCLOR-1260	0.24 U	0.255 U	0.242 U		0.245 U	
BETA-BHC	0.024 U	0.026 U	0.024 U		0.024 U	
DELTA-BHC	0.024 UJ	0.026 UJ	0.024 UJ		0.024 UJ	
DIELDRIN	0.048 UJ	0.051 UJ	0.048 UJ		0.049 UJ	
ENDOSULFAN I	0.024 UJ	0.026 UJ	0.024 UJ		0.024 UJ	
ENDOSULFAN II	0.048 UJ	0.051 UJ	0.048 UJ		0.049 UJ	
ENDOSULFAN SULFATE	0.048 U	0.051 U	0.048 U		0.049 U	

APPENDIX TABLE G-4
RESULTS FOR CHEMICALS ANALYZED IN FIELD GROUNDWATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION [1] SAMPLE NUMBER SAMPLE CODE SAMPLE DATE	15TW006 15GWTW006 ORIG 1/7/2005	15TW006 15GWTW006-D DUP 1/7/2005	15TW007 15GWTW007 NORMAL 1/7/2005	15TW007 15GWTW007-F NORMAL 1/7/2005	15TW008 15GWTW008 NORMAL 1/7/2005	15TW008 15GWTW008-F NORMAL 1/7/2005
ENDRIN	0.048 UJ	0.051 UJ	0.048 UJ		0.049 UJ	
ENDRIN ALDEHYDE	0.048 U	0.051 U	0.048 U		0.049 U	
ENDRIN KETONE	0.048 U	0.051 U	0.048 U		0.049 U	
GAMMA-BHC (LINDANE)	0.024 UJ	0.026 UJ	0.024 UJ		0.024 UJ	
GAMMA-CHLORDANE	0.024 U	0.026 U	0.024 U		0.024 U	
HEPTACHLOR	0.024 UJ	0.026 UJ	0.024 UJ		0.024 UJ	
HEPTACHLOR EPOXIDE	0.024 U	0.026 U	0.024 U		0.024 U	
METHOXYCHLOR	0.24 U	0.255 U	0.242 U		0.245 U	
TOXAPHENE	2.4 U	2.55 U	2.42 U		2.45 U	
Herbicides (ug/L)						
2,4,5-T	0.04 U	0.04 U	0.04 U		0.04 U	
2,4,5-TP (SILVEX)	0.06 J	0.04 U	0.04 U		0.04 U	
2,4-D	0.04 U	0.04 U	0.04 U		0.04 U	
DINOSEB	0.04 UR	0.04 U	0.04 U		0.04 U	
HEXACHLOROPHENE	0.025 U	0.025 U	0.025 U		0.025 U	
PENTACHLOROPHENOL	0.013 U	0.013 U	0.013 U		0.013 U	
Total Metals (ug/L)						
ALUMINUM	28.8 U	40.4 U	8020 J		3300 J	
ANTIMONY	0.25 U	0.15 U	0.4 U		0.13 U	
ARSENIC	2.5 J	2.5 J	5.2 J		1.5 J	
BARIUM	431 J	455 J	89.9 J		77.3 J	
BERYLLIUM	0.02 UJ	0.02 UJ	0.18 U		0.1 U	
CADMIUM	0.17 U	0.13 U	0.61 U		0.82 U	
CALCIUM	74400 J	75300 J	61100 J		68600 J	
CHROMIUM	0.89 U	0.86 U	8.9 J		3.9 J	
COBALT	41.4 J	41.4 J	4.6 J		4.9 J	
COPPER	0.94 J	0.96 J	10.2 J		4 J	
IRON	103000 J	102000 J	19600 J		5580 J	
LEAD	0.11 U	0.13 U	7.5 J		2.4 J	
MAGNESIUM	28000 J	29400 J	18700 J		16700 J	
MANGANESE	14700 J	13900 J	898 J		869 J	
MERCURY	0.03 UJ	0.03 UJ	0.039 J		0.03 UJ	
NICKEL	6.3 J	6.8 J	13.1 J		7.7 J	
POTASSIUM	4410 J	4670 J	2960 J		1160 J	
SELENIUM	2.3	2.5	0.61 J		0.52 J	
SILVER	0.09 U	0.08 U	0.1 U		0.07 U	
SODIUM	32600 J	34200 J	20200 J		14200 J	
THALLIUM	0.043 U	0.043 U	0.13 J		0.1 J	
TIN	0.26 U	0.21 U	0.68 J		0.52 U	
VANADIUM	1.14 U	1.14 U	17.8 J		8.2 J	
ZINC	3.5 U	2 U	30.2 J		25.5 J	
Dissolved Metals (ug/L)						
ALUMINUM, FILTERED				18.7 U		8.6 U
ANTIMONY, FILTERED				0.085 U		0.1 U
ARSENIC, FILTERED				3.6 J		0.18 U
BARIUM, FILTERED				54.8 J		61.8 J

APPENDIX TABLE G-4
RESULTS FOR CHEMICALS ANALYZED IN ALL GROUNDWATER SAMPLES, ROUND 1
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

LOCATION (1) SAMPLE NUMBER SAMPLE CODE SAMPLE DATE	15TW006 15GWTW006 ORIG 1/7/2005	15TW006 15GWTW006-D DUP 1/7/2005	15TW007 15GWTW007 NORMAL 1/7/2005	15TW007 15GWTW007-F NORMAL 1/7/2005	15TW008 15GWTW008 NORMAL 1/7/2005	15TW008 15GWTW008-F NORMAL 1/7/2005
BERYLLIUM, FILTERED				0.02 UJ		0.02 UJ
CADMIUM, FILTERED				0.35 U		0.12 U
CALCIUM, FILTERED				66800		76700
CHROMIUM, FILTERED				0.81 U		1 U
COBALT, FILTERED				1.4 J		3.6 J
COPPER, FILTERED				0.75 J		1.2 J
IRON, FILTERED				11600 J		1010 J
LEAD, FILTERED				0.15 J		0.07 U
MAGNESIUM, FILTERED				19900 J		22500 J
MANGANESE, FILTERED				959 J		860 J
MERCURY, FILTERED				0.03 U		0.03 U
NICKEL, FILTERED				4.2 J		5.2 J
POTASSIUM, FILTERED				2150 J		914 J
SELENIUM, FILTERED				0.39 J		0.48 J
SILVER, FILTERED				0.028 U		0.028 U
SODIUM, FILTERED				23800 J		19400 J
THALLIUM, FILTERED				0.043 U		0.043 U
TIN, FILTERED				0.15 U		0.13 U
VANADIUM, FILTERED				1.14 U		1.14 U
ZINC, FILTERED				2.6 U		2.9 U
Field Parameters						
DISSOLVED OXYGEN - METER (mg/L)	0.38		0.61		1.42	
OXIDATION REDUCTION POTENTIAL (MV)	-120.3		-103.2		72.1	
PH (S.U.)	6.55		6.81		6.5	
SPECIFIC CONDUCTANCE (MS/CM)	0.844		0.695		0.618	
TEMPERATURE (C)	13.21		11.09		5.75	
TURBIDITY (NTU)	2		550		290	

(1) - All locations are downgradient, no upgradient locations could be identified.
Data qualifiers (e.g., U, J) are defined in section 3 of the text.
HHRA - human health risk assessment
ug/L - micrograms per liter
mg/L - milligrams per liter
MV - millivolts
S.U. - standard units
MS/CM - milliSiemens per centimeter
C - Celsius
NTU - nephelometric turbidity units
NA - No applicable criteria

APPENDIX H

ANALYTICAL DATA QUALITY REVIEW

APPENDIX H. DATA QUALITY REVIEW AND DATA REDUCTION METHODS

This appendix contains a description of the data review processes used to determine whether analytical laboratory data were of acceptable technical quality for use in decision making. The review began with data validation, which is a comparison of data quality indicators (DQIs) against prescribed acceptance criteria. The DQIs used are measures to assess the bias and precision of the analytical calibrations and sample analyses. The output of this review was a set of alphabetic flags such as "U," "J," "R," or combinations thereof, that may have been assigned to individual results based on the validation effort. These flags were used to infer the general quality of the data. The data validation was followed by a summary of quantitative data quality measures to provide the user with a more quantitative estimate of any bias or imprecision associated with the data. Also evaluated were the measures of data completeness, sensitivity, comparability and representativeness.

Sections H.1 and H.2 provide an overview of the data validation process, Section H.3 presents an evaluation of the data quality beyond data validation. Appendix G contains a printout of all qualified and unqualified data and the applicable qualifier flags.

H.1 DATA VALIDATION PROCESS

Data were generated for this RFI report in one round. Field analytical data and sampling location coordinates were reviewed both in the field and after completing the field event to assure data users that the results and sampling location coordinates were accurate. Calibration logs and QC check sample results were reviewed for accuracy. In addition, field data were reviewed for comparability among sampling locations and consistency with theoretical expectations. For example, low pH values would not be expected if alkalinity values were high. These evaluations were based, in part, on professional judgment. Well stabilization parameters were required to represent stable sampling conditions (manifested as reproducible measurements) prior to sample collection but were not required to compare well to field test kit results.

All of the TtNUS results from analytical laboratory samples were validated by TtNUS according to several specifications. Assignment of data qualification flags by TtNUS conformed to U.S. EPA Region 5 Standard Operating Procedures for Validation of Contract Laboratory Program Organic Data (U.S. EPA, 1993c); to Region 5 Standard Operating Procedures for Validation of Contract Laboratory Program Inorganic Data (U.S. EPA, 1993d); to the U.S. EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (U.S. EPA, 1994a); and to U.S. EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (U.S. EPA, 1994b) to the greatest extent practicable for non-contract laboratory program data.

Data validation specifications require that various data qualifiers be assigned when a deficiency is detected or when a result is less than its detection limit. If no qualifier is assigned to a result that has been validated, the data user is assured that no technical deficiencies were identified during validation. The qualification flags used are defined below:

U – Indicates that the chemical was not detected at the numerical detection limit (sample-specific detection limit) noted. Non-detected results from the laboratory are reported in this manner. This qualifier is also added to a positive result (reported by the laboratory) if the detected concentration is determined to be attributable to contamination introduced during field sampling or laboratory analysis.

UJ – Indicates that the chemical was not detected; however, the detection limit (sample-specific detection limit) is considered to be estimated based on problems encountered during laboratory analysis. The associated numerical detection limit is regarded as inaccurate or imprecise.

J – Indicates that the chemical was detected; however, the associated numerical result is not a precise representation of the concentration that is actually present in the sample. The laboratory reported concentration is considered to be an estimate of the true concentration.

UR – Indicates that the chemical may or may not be present. The non-detected analytical result reported by the laboratory is considered to be unreliable and unusable. This qualifier is applied in cases of gross technical deficiencies (i.e., holding times missed by a factor of two times the specified time limit, severe calibration non-compliances, and extremely low analyte recoveries).

R – Indicates that the chemical may or may not be present. The positive analytical result reported by the laboratory is considered to be unreliable and unusable. This qualifier is applied in cases of gross technical deficiencies.

BU - Indicates that the associated organic chemical was detected in the affected sample as well as the associated laboratory method blank, but has been qualified as non-detected because the concentration was less than the blank level after adjustment for uncertainties (i.e., the blank action level) per the validation guidelines.

BJ - Indicates that the associated organic chemical was detected in the affected sample as well as the associated method blank and rather than being considered a non-detect, is considered to be an estimate because the concentration is in excess of the blank action level. The use of "B" qualifiers is a U.S. EPA Region 5-specific requirement.

> - Indicates that the true value is probably greater than the reported value. This "qualifier flag" is used to identify reported values that exceed the calibration range of field measurements but could not be re-analyzed for various reasons. This qualifier is used for field data only.

The preceding data qualifiers may be categorized as indicative of major or minor problems. Major problems are defined as deficiencies that result in the rejection of data and qualification with UR or R data validation qualifiers. These data are not used for risk assessment decision making purposes unless they are used in a qualitative way and the use is justified and documented. Minor problems are defined as deficiencies resulting in the estimation of data, and qualification with U, J, B, BJ, BU, and UJ data validation qualifiers. Estimated analytical results are considered to be suitable for all decision-making purposes unless the data use requirements are very stringent and the qualifier indicates a deficiency that is incompatible with the intended data use. It is noteworthy that a U qualifier does not necessarily indicate that a data deficiency exists because all non-detect values are flagged with the U qualifier regardless of whether a quality deficiency has been detected.

H.2 DATA VALIDATION OUTPUTS

After data were validated, a list was developed of non-conformities requiring data qualifier flags that were used to alert the data user to inaccurate or imprecise data. For situations in which several QC criteria were out of specification, the data validator made professional judgements and or comments on the validity of the overall data package. The reviewer then prepared a technical memorandum presenting qualification of the data, if necessary, and the rationale for making such qualifications. The net result was a data package that had been carefully reviewed for its adherence to prescribed technical requirements. Validators incorporated data qualifiers into the electronic database and submitted the information to the data management group. A complete printout of the data with validation flags is presented in Appendix G. Pertinent quality estimates are summarized in a more quantitative format in the following section.

H.3 GENERAL DATA QUALITY REVIEW

DQIs are parameters that are monitored to help establish the quality of data generated during an investigation. Some of the DQIs are generated from analysis of field samples (e.g., field duplicates) and some are generated from the analysis of laboratory samples (e.g., laboratory duplicates and matrix spikes). Individually, field and laboratory DQIs provide measures of the performance of the respective investigative operations (field or laboratory). During data validation, individual QC results were evaluated. If individual QC results were acceptable, no validation flag was assigned to an analytical result, otherwise a flag indicating the type of QC deficiency was assigned to the result. The data quality review provided in this section, which was implemented after the data validation process was completed, is not designed to

identify data that are acceptable or unacceptable according to data QC criteria. Instead, it is designed to provide an overall quantitative measure of analytical performance not provided by data validation. These quantitative evaluations are frequently analyte-specific. They reflect, for example, biases associated with the quantification of particular analytes in a particular sample matrix. Many of the summary tables referenced in the sections below reflect this and the data user must be aware that even chemicals in the same analytical fraction (e.g. VOCs) may exhibit different data quality. Taken together, the DQIs provide a measure of overall analytical performance.

At the same time that the December, 2004/January, 2005 samples were collected at SWMU 15, samples were also collected at NSWC Crane SWMUs 8, 18, 19, and 20. More than 90 percent of the QC samples were from SWMUs 8 and 15, therefore most of the QC data and statistics are from SMWUs 8 and 15. The sample matrices of these SWMUs (i.e., 8, 15, 18, 19, and 20) are similar enough that similar performance is expected, regardless of the SWMU from which the samples were taken. Therefore, samples of similar matrix from these SWMUs may have been grouped together for analysis. This is a benefit when compiling accuracy and precision statistics because a more robust estimate of these characteristics is obtained when using larger data sets. Generally speaking, all aqueous samples are expected to yield similar laboratory performance; and soil and sediment samples are expected to yield similar laboratory performance. Because data sets were combined, data quality may be presented and discussed below for the combined data sets.

The data for the SWMU 15 were of generally acceptable quality. Comparability, Representativeness, and sensitivity, in particular, were satisfactory although any samples that were scheduled for collection and not collected must be considered data voids relative to the sampling and analysis plan. Data quality exceptions are summarized briefly immediately below for each round of sampling. After the brief summary, a more detailed data quality analyses is presented. Hexachlorophene and pentachlorophenol are not herbicides but these compounds were analyzed by an herbicide analytical method to obtain lower detection limits than could be obtained with the normally used SVOC analytical method. Therefore, thee compounds are discussed as herbicides in the following text.

Overall Sample and Data Comparability , Completeness, and Representativeness

The intended sample collection and data analysis methods were used, therefore comparability of this data to previously collected data (from the Interim Measures) should not be a concern.

Sample collection deviated somewhat from the proposed sampling strategy. If a sample was not collected, it was usually because the intended sampling location no longer existed, there was no surface water at or near the intended sampling location, or because refusal was encountered during installation of

a soil boring. The lack of data from the planned locations as well as locations where data have been rejected for quality reasons should be considered when interpreting the results of the investigation. Samples that were not collected because of new construction are of no consequence to the project. The new construction has redistributed soils. Furthermore, the area that was reconstructed now drains to areas that were sampled so the samples that were collected represent the accumulation of contaminations from the area of new construction and downgradient areas. In some cases, unscheduled samples were collected. These samples may have been collected because the field crew noticed something of interest that could have been contamination or because a scheduled sample could not be collected and the unscheduled sample was designed to supplant the originally scheduled sample.

All samples appear to be representative of the intended environmental matrix. Lack of data where samples could not be collected or where data have been rejected, however, should be considered when evaluating representativeness of the areas or volumes of environmental media that were characterized. Inability to achieve target detection limits or RBTLs in several cases should also be considered (See Section H.3.2). In addition, disparities between total and dissolved metal concentrations must be considered when interpreting the data (See Section H3.6).

The various DQIs are discussed in detail below. In addition to the DQIs discussed below, temperature blanks that accompanied each cooler containing samples were used to assess whether the samples had been stored at the appropriate temperature during shipping. All temperature blanks were less than or equal to 4°C, indicating no deficiencies with regard to shipping temperature.

Whereas, individual analytes may have exhibited quality problems for particular sample batches and QC type (e.g., MS or LCS), overall data quality was acceptable for the intended uses (i.e., completion of the RFI, including human health and ecological risk assessments). Each section below addresses data quality in more detail for a particular DQI for samples of a given matrix (solid or aqueous) and analytical fraction (e.g., metals or VOCs).

Some dissolved metals concentrations exceeded total metals concentrations in the same sample. This is common when concentrations are near detection limits or when random measurement uncertainties cause the dissolved metals concentration to be slightly (e.g., 30 percent) greater than the total metals concentrations. Nickel results exhibited the most frequent and greatest percentage deviation in this regard but the deviations all occurred for results that were within approximately 5 times the maximum non-detect concentration. No discrepancies significant enough to indicate a data quality problem were identified.

Herbicides

The sample collection completeness goal of 90 percent was achieved for soil and groundwater but not surface water and sediment. Failure to attain the completeness goal for surface water and sediment was a result of the intended sampling locations having been disrupted or rendered missing by new construction. Hence, the samples could not be collected as intended. The hexachlorophene and pentachlorophenol results exhibit a severe to moderate low bias (approximately 20 to 62 percent recoveries in MS and MSD) in solid and aqueous. Performance was slightly better for the aqueous samples. Precision for pentachlorophenol was erratic in aqueous samples.

Semivolatile Organic Compounds (SVOCs), Including Polycyclic Aromatic hydrocarbons (PAHs)

Results for 19 different SVOCs were rejected in various matrices. Not all of the compounds were rejected in every matrix or sample. Minimum and maximum non-detect values exceeded the risk-based target levels for several analytes but the nominal detection and reporting limits were typically achieved. This indicates that the failure to achieve the RBTLs is not an analytical deficiency. Recoveries in LCSs and MSs, and MSDs were generally biased low in solid and aqueous matrices. The parameters exhibiting the worst recoveries were 2,4-Dimethylphenol; 2,4-dinitrophenol; 2-nitrophenol; 3,3'-dichlorobenzidine; 4,6-dinitro-2-methylphenol; 4-chloroaniline; 4-nitrophenol; and hexachlorocyclopentadiene. The results rejected for soil and sediment samples were limited to the 2,4-dimethylhenol, 3,3'-dichlorobenzidine, 4-chloroaniline, 4-nitroquinoline-1-oxide, hexachlorocyclopentadiene and kepone. For aqueous samples, the rejections were for 3,3'-dichlorobenzidine, phenol, chlorinated and nitrated phenols, and 4-nitroquinoline-1-oxide. Calibration non-compliances usually occur for target compounds that have poor analytical responses and these cases were no exceptions. Overall, the semivolatile compounds, including PAHs, generally show a slight to moderate low bias in solid matrices, with results for compounds identified above having been rejected in some samples. In soils, a high degree of uncertainty exists for 4-chloroaniline but uncertainty for other compounds is not indicated even though low matrix spikes were observed for compounds other than 4-chloroaniline.

Total Metals and Cyanide

Some metal percent recoveries (bias indicators) were unusually high or low for a few isolated samples but the extreme recoveries were typically associated with cases where the spiked amount of analyte was significantly less than the native analyte concentration in the unspiked sample. The mean percent recovery data indicate that metal results, overall, exhibit no bias or a slight to moderate high bias. Barium was an exception with a mean recovery in matrix spikes of 159.2 percent, or a +60 percent bias. More detail is provided in Section H.3.3. Several soil and sediment RPD results exceeded the reference point of 50 percent. The laboratory precision appeared to be comparable to or better than field duplicate

precision, as expected. This indicates that the greater proportion of uncertainty is associated with natural sample heterogeneity. Many of the RPD values that exceeded the reference ranges (30 percent for aqueous and 50 percent for solid matrices) were caused by results being comparable to detection limits. In this concentration range the relative uncertainty is greater than at higher concentrations. Nevertheless, several metals exhibited some high RPD values (e.g., greater than 100 percent) and sporadically high or low bias indicators that represents an occasional large degree of heterogeneity or infiltration of laboratory contamination. Section H.3.4 provides more detail.

Pesticides and PCBs

No significant analytical problems were detected with these analytes except for a slight low bias in endrin aldehyde results for solid and liquid matrices.

Grain Size and Total Organic Carbon (TOC)

All TOC results were generated as planned and completeness was 100 percent. No significant analytical problems were detected for this analyte.

VOCs

The compounds acetonitrile, acrolein, dichlorodifluoromethane, isobutanol, and propionitrile constitute all of the results rejected for the volatile analyses across all matrices. The data were rejected because these compounds yield poor analytical responses. This is a systematic problem that occurs for one or more of these compounds in the majority of the samples analyzed from the Mine Fill A. These chemicals are of minor significance to the project. Mean recoveries averaged about 70% across all analytes in solid MSs/MSDs and about 100% across all analytes in aqueous MSs/MSDs. Individual recoveries spanned a larger range and were indicative of a slight to moderate low bias in solid samples but no significant bias in aqueous samples. Precision was generally acceptable with some exceptions associated with particular soil samples (see Section H.3.4).

H.3.1 Completeness

Completeness is a measure of the number of valid samples or measurements that are available relative to the number of samples or measurements that were intended to be generated. For this project, completeness was measured on three different bases: samples collected, field measurements, and laboratory measurements.

- Sample collection completeness was a measure of the usable samples collected as compared to those intended to be collected.
- Field measurement completeness was a measure of the usable field measurements made relative to those intended to be made.
- Laboratory measurement completeness was a measure of the amount of usable, valid laboratory measurements per matrix obtained for each target analyte.

Usable, valid samples (or results) were those judged, after data assessment, to represent the sampling populations and to have not been disqualified for use through data validation or additional data review. The total number of samples (or results) planned to be collected or generated are those listed in the SWMU 15 QAPP (TtNUS, 2004). Completeness was determined using the following equation:

$$\%C = \frac{V}{T} \times 100$$

where %C = percent completeness
V = number of samples (or results) determined to be valid
T = total number of planned samples (or results)

H.3.1.1 Sample Collection Completeness

Table H-1 compares the samples collected and analyzed to the samples proposed for collection and analyzed. The tallies are presented for each analytical fraction and in some cases for individual parameters. The numerators represent samples for which results were generated; the denominators represent total numbers of samples that should have been analyzed, based on the QAPP (TtNUS, 2004). Discretionary samples were not included in the estimates of total planned samples. Discretionary samples included the samples located in the landfill area that were designated for collection only if debris was visible in the soil cores. No debris was evident so no samples were collected. Similarly, the total

numbers of samples do not include samples designated for analyses only if surface soil samples indicated a need to analyzed deeper soils. These samples were designated as extract and hold "E&H" in the QAPP (TtNUS, 2004). Although not designated as "E&H", subsurface soil samples from boring 15SB62 also were E&H samples. Samples not collected because the intended sampling location did not exist were included in the totals, although the fact that the sampling location was not present is not necessarily viewed as a deficiency. This approach was taken to alert data users to the absence of samples that might have been collectable under different circumstances. If, however, an intended sample could not be collected because of encountering refusal in a soil boring it was excluded from the total number of samples. Encountering refusal was taken as an indication that bedrock had been encountered and no soil is present below the deepest sample collected. Samples that were filtered because turbidity exceeded 10 nephelometric turbidity units (NTUs) were included in the collected samples tally. The 90 percent sample completeness goal was met for all analytical fractions in soil and groundwater samples and for grain size and total organic carbon in surface water and sediment samples. It was not met for total metals, dissolved metals (surface water only), cyanide (Sediment only), herbicides, pesticides, SVOCs (including PAHs), VOCs, or PCBs in surface water or in sediment. Unscheduled pesticide and herbicide analyses were performed on sample 15SW00901 and are included in the tallies of Table H-1. Unscheduled sample collections and samples that could not be collected are discussed in the field report (Section 2.0 of the RFI report text) with explanations for the observed deviations from the QAPP.

The locations (15SW/SD003, 15SW/SD007, 15SW/SD008, and 15SW/SD012) that could not be sampled for surface water and sediment are in an area of new construction. This area was reconfigured between the time of QAPP development and sampling. The original sampling locations were no longer present and were either covered by asphalt or other new construction. However, that area now drains to the locations where samples were collected. Therefore, not having collected the samples does not represent a negative impact to the project. The samples that were collectable represent an accumulation of contaminants from the area of new construction, which includes runoff from parking lots. Therefore, there is no negative impact to the project because of not having collected samples from the area of new construction.

H.3.1.2 Field Measurement Completeness

The percent completeness for field measurements, including well stabilization measurements, was 100.

H.3.1.3 Laboratory Measurement Completeness

Under ideal conditions, the laboratory completeness objective would be 100 percent. That is, 100 percent of all results would be valid for all samples analyzed. However, samples can be rendered unusable during shipping and preparation (e.g., bottles broken or extracts accidentally destroyed) or analysis (e.g.,

loss of instrument sensitivity, strong matrix effects). Some results are rejected because of serious quality deficiencies. Laboratory completeness objective was 90 percent. This objective was satisfied for each analytical fraction, however, the analytical fraction typically comprises many analytes. Therefore, it is possible to meet this objective while the number of valid results per analyte may not meet this objective.

Several analytical results were rejected. The same organic compounds were consistently rejected in several samples across multiple matrices, although not all results for these parameters were necessarily rejected in each matrix (See Table H-3). The matrix below summarizes whether a particular compound was rejected in aqueous or solid matrices. An "X" indicates that at least one result for a parameter was rejected in the indicated matrix.

Parameter	Aqueous	Solid
2,3,4,6-TETRACHLOROPHENOL	X	
2,4,5-TRICHLOROPHENOL	X	
2,4,6-TRICHLOROPHENOL	X	
2,4-DICHLOROPHENOL	X	
2,4-DIMETHYLPHENOL	X	X
2,4-DINITROPHENOL	X	
2,6-DICHLOROPHENOL	X	
2-CHLOROPHENOL	X	
2-METHYLPHENOL	X	
2-NITROPHENOL	X	
3&4-METHYLPHENOL	X	
3,3'-DICHLOROBENZIDINE		X
4,6-DINITRO-2-METHYLPHENOL	X	
4-CHLORO-3-METHYLPHENOL	X	
4-CHLOROANILINE		X
4-NITROPHENOL	X	
4-NITROQUINOLINE-1-OXIDE	X	X
ACETONITRILE	X	X
ACROLEIN	X	X
DICHLORODIFLUOROMETHANE		X
DINOSEB	X	
HEXACHLOROCYCLOPENTADIENE		X
ISOBUTANOL	X	X
KEPONE		X
PHENOL	X	
PROPIONITRILE	X	X

Perhaps aside from the phenols, the compounds tabulated above are not of particular importance to this project and therefore represent little negative impact to the project by having been rejected. Overall, relatively few rejections were identified compared to the number of results generated. Furthermore, the completeness goal was met for all analytes in all matrices (soil, surface water, storm sewer water, sediment, and groundwater) and for all analytical fractions, despite the rejections. Table H-3 lists all

rejected results and the reasons for rejection. The matrix below shows the total number of results the number of rejections, and the percent of results rejected for aqueous and solid matrices.

			SVOC			VOC		
Fraction	Parameter	Matrix	Results	Rejections	Percent Rejected	Results	Rejections	Percent Rejected
SVOC	2,3,4,6-TETRACHLOROPHENOL	Aqueous	25	3	12.0			
	2,4,5-TRICHLOROPHENOL	Aqueous	25	3	12.0			
	2,4,6-TRICHLOROPHENOL	Aqueous	25	3	12.0			
	2,4-DICHLOROPHENOL	Aqueous	25	3	12.0			
	2,4-DIMETHYLPHENOL	Aqueous	25	3	12.0			
	2,4-DINITROPHENOL	Aqueous	25	4	16.0			
	2,6-DICHLOROPHENOL	Aqueous	25	3	12.0			
	2-CHLOROPHENOL	Aqueous	25	3	12.0			
	2-METHYLPHENOL	Aqueous	25	3	12.0			
	2-NITROPHENOL	Aqueous	25	3	12.0			
	3&4-METHYLPHENOL	Aqueous	25	3	12.0			
	4,6-DINITRO-2-METHYLPHENOL	Aqueous	25	3	12.0			
	4-CHLORO-3-METHYLPHENOL	Aqueous	25	3	12.0			
	4-NITROPHENOL	Aqueous	25	3	12.0			
	4-NITROQUINOLINE-1-OXIDE	Aqueous	25	25	100			
		Solid	75	75	100			
		Solid	75	20	26.7			
	PHENOL	Aqueous	25	3	12.0			
VOC	ACETONITRILE	Aqueous				25	25	100
		Solid				100	100	100
	ACROLEIN	Aqueous				25	25	100
		Solid				100	100	100
	DICHLORODIFLUOROMETHANE	Solid				100	17	17.0
	ISOBUTANOL	Aqueous				25	25	100
		Solid				100	100	100
	PROPIONITRILE	Aqueous				25	25	100
		Solid				100	100	100

This tabulation shows that although results for several parameters were rejected, most rejection percentages for a matrix type (i.e., aqueous or solid) are not much greater than 10% for about half of the rejected parameters. Nevertheless, rejections for individual matrices must be considered as data voids.

H.3.2 Sensitivity

Tables H-4, H-5, H-6, H-7 display a comparison of the observed minimum and maximum non-detect values during laboratory analyses to the target laboratory reporting limits contained in Table 1-5 of the SWMU 15 QAPP (TtNUS, 2004) for soils, surface water, storm sewer and outfall water, sediments , and ground water, respectively.

At the outset of the project, it was known that the concentrations of several chemicals could not be measured at concentrations that were as low as the RBTLs; however, the analytical methods selected are standard methods used throughout the environmental industry. Development of methods with greater sensitivity was not practicable nor was it required for the chemicals of primary interest (e.g., PAHS, pesticides, and other potentially site-related parameters such as metals). Yellow (or gray, if printed in black and white) highlight in the tables indicates those parameters for which at least one non-detect value exceeded the RBTL or the laboratory TV or RL. Although many analytical fractions had at least one such exceedance, most nondetected results were less than the target limits and in many cases, non-detect values that exceeded the target limits were within two or three times the limit.

To understand the impact of not having achieved RBTLs, it is important to understand the convention used for reporting non-detect values. Concentrations of organic analytes that were less than their MDLs were reported as the threshold value (not the MDL) followed by a "U" qualifier. The threshold values were generally less than typical laboratory reporting limits, but were typically greater than MDLs. This convention was used in response to the need to try to measure concentrations as low as the RBTLs, when practicable. If a measured organic analyte concentration exceeded the MDL but was less than the reporting limit, the reported concentration was the measured concentration followed by a "J" qualifier. The "J" qualifier signified that the reported concentration had a high degree of uncertainty even though there was a high level of confidence that the analyte had been detected in the sample. Concentrations less than the TV for inorganic chemicals were reported as the TV with a "U" qualifier. Inorganic chemical concentrations between the TV and RL were reported with no qualifier. Concentrations of organic and inorganic chemicals that exceeded reporting limits were not qualified unless a data quality deficiency was identified. These reporting conventions are summarized below:

Analyte Non-Detect Reporting

Measured Concentration	Reported Concentration	Qualifier*
<MDL	TV (inorganics)	U
<TV	TV (organics)	U
>MDL and <RL	Measured concentration (organics)	J
>TV and <RL	Measured concentration (inorganics)	No qualifier
>RL	Measured concentration	No qualifier

Tables H-4 through H-7 show the nominal TVs and the minimum and maximum non-detect values for each analyte in particular matrices (one table per matrix). The nominal TVs represent TVs as estimated by the laboratory without any adjustments for sample-specific conditions such as moisture content or

sample dilutions. In some cases (e.g., when samples are diluted), the nominal TV may be less than the RBTL whereas the actual non-detect value exceeds the RBTL.

The elevated detection limits that were incurred are viewed to be the consequence of uncontrollable, sample-specific factors and reflect normal laboratory performance. They did not prevent the use of the data for decision making, however, the inability to achieve RBTLs must be considered when using the data for risk screening and risk assessment. It is also important to understand that the RBTLs may have changed between the time the QAPP was written and this report was generated. The risk assessments are conducted on the most recent risk-based values but the data quality was assessed relative to limits that were in effect at the time the project was planned.

H.3.3 Laboratory Accuracy

Accuracy is the degree of agreement between an observed value and an accepted reference value. Accuracy measurements are designed to detect biases resulting from sample handling and analysis. This parameter is assessed by measuring spiked samples (e.g., MSs) or well-characterized samples of certified analyte concentrations (e.g., LCSs) and by measuring blanks.

Accuracy requirements for field measurements are typically ensured through control over the sample collection and handling and through routine instrument calibration. Field accuracies were monitored through the use of blanks to detect cross-contamination and by monitoring adherence to procedures that prevent sample contamination or degradation. Source water blanks were collected from analyte-free water and potable water sources to assess the water sources used for decontaminating sampling equipment. Equipment rinsate blanks were collected for this investigation to assess cross-contamination via sample collection equipment. These blanks were obtained under representative field conditions by collecting the rinse water generated by running analyte-free water through sample collection equipment after decontamination and before use. Rinsate blanks were obtained for each type of sampling equipment for each day that the sampling equipment was decontaminated. Where pre-cleaned, dedicated sampling equipment was used, one rinsate blank was collected as a "batch blank". Rinsate blanks were analyzed for the same chemical constituents as the associated environmental samples.

Accuracy in the laboratory is measured through the comparison of a spiked sample or LCS result to a known or calculated value and is expressed as a percent recovery (%R). It was also assessed by monitoring the analytical recovery of select surrogate compounds added to samples that are analyzed by organic chromatographic methods. LCSs were used to assess the accuracy of laboratory operations with minimal sample matrix effects. MS and surrogate compound analyses measure the combined accuracy effects of the sample matrix, sample preparation, and sample measurement. Spiking concentrations equaled or approximated the default concentrations detailed in the applicable sample preparation or

analysis SOPs. LCS and MS analyses were performed at a frequency of one per 20 associated samples of like matrix as required by the SWMU 15 QAPP (TtNUS, 2004). Laboratory accuracy was assessed by comparing calculated %R values to accuracy control limits specified in the SWMUs 8 and 15 QAPP (TtNUS, 2004).

Percent recovery is calculated using the following equation:

$$\%R = \frac{Ss - So}{S} \times 100$$

where %R = percent recovery
Ss = result of spiked sample
So = result of non-spiked sample
S = concentration of spiked amount.

Absence of bias is represented as a recovery of 100 percent. Mean recovery values less than 100 percent indicate a low bias, and recovery values greater than 100 percent indicate a high bias. Because measurement uncertainty exists in all bias estimates, a bias is not considered to be significant unless it falls outside the range of 100 percent ± 25 percent. The more extreme the bias value, the more significant the bias.

Accuracy data are compiled in Tables H-8 (solid samples) and H-9 (aqueous samples). The minimum, average, and maximum percent recovery values are presented in the table for each parameter. In addition, the number of QCs represented by these statistics is provided. This count of QC values provides some insight into the magnitude of effect caused by any values that are outside the 75 to 125 percent target range. Percent recoveries that are invalid because the native sample concentration was more than four times the spike amount are excluded from the table. Data qualifiers assigned during data validation because of non-compliant bias indicators are presented in Appendix G.

Herbicides in Soil and Sediment

Mean recoveries for hexachlorophene were well below the reference range of 75 to 125 percent. The individual hexachlorophene recoveries ranged from 19 to 58 percent recoveries in MSs and MSDs in solid samples. Generally, the analytical performance for this compound was precise but with moderate to severe low bias in solid matrices. Individual MS and MSD recoveries ranged from 20 to 88 percent in solid matrices. The low end of this range represents a severe low bias but fortunately, this degree of bias was rather limited in scope.

Herbicides in Surface Water

The hexachlorophene recoveries exhibit a moderate to severe low bias (approximately 24 to 52 percent recoveries in MS/MSD) in aqueous samples. In general, analytical performance was poor but comparable to the performance in the solid matrices. An individual pentachlorophenol recovery was 19 percent but mean recoveries were would have been close to 100 percent if this single value were neglected.

Pesticides and PCBs in Soil and Sediment

Mean LCS recoveries for all pesticides except endrin aldehyde were within the 70 to 125 percent reference range for pesticides and PCBs. The mean endrin aldehyde recovery (72.3 percent) was slightly less than the low limit of 75 percent and represents a minor deviation.

With one exception, all mean recoveries in MS and MSDs were greater than 70 percent but several were less than 75%. This represents a very slight low bias. The exception was endrin aldehyde, which had a mean recovery of 53.8 in MSs and 50.8 in MSDs. This represents a moderate low bias. Except for endrin aldehyde, individual recoveries in MSs and MSDs did not drop below 58 percent. The lowest endrin aldehyde MS and MSD recoveries were 36 and 37 percent, respectively.

In summary, there is no significant bias for pesticide results except for a moderately low bias associated with endrin aldehyde concentrations. The degree of bias may be sensitive to concentration level.

Pesticides and PCBs in Groundwater and Surface Water

The mean groundwater and surface water LCS, MS, and MSD percent recoveries across all sample groups ranged from 71.4 to 115.5 percent for all pesticides and PCBs (Table H-9). This narrow recovery range represents a narrow range that is slightly less than the low end of the reference range (75 to 125 percent). Few individual recoveries were outside the 75 to 125 percent reference range (See Table H-9). The two notable exceptions were endrin aldehyde (individual recoveries ranging from 63 to 70 percent) and the surrogate compound, tetrachloro-meta-xylene (individual recoveries ranging from 55 to 76 percent). These exceptions, however, are minor. This indicates that there was no significant laboratory bias associated with the pesticide analysis process, except for a slight low bias for endrin aldehyde. The degree of bias may be sensitive to concentration level.

Semivolatile Organic Compounds (Including PAHs) in Soil and Sediment

The majority of semivolatile compound mean LCS, MS, and MSD recoveries were within the expected ranges (Table H-8) or were moderately outside the range on the low side. The compounds 3,3'-

dichlorobenzidine, 4-chloroaniline, and hexachlorocyclopentadiene were particularly notable exceptions with markedly low mean recoveries as compared to the rest of the group. For example, the recoveries of 4-chloroaniline in 10 MSs ranged from 0 to 24 percent and in MSDs ranged from 5 to 27 percent. The following chemicals had at least one individual recovery less than 20 percent (number of values less than 20 percent is shown in parentheses): 2,4-dimethylphenol (2 MSs and 2 MSDs), 3&4 methylphenol (1 MS), 3,3'-dichlorobenzidine (5 MSs and 5 MSDs), 4-chloroaniline (7 MSs and 7 MSDs), hexachlorocyclopentadiene (3 MSs and 3 MSDs). The analytes with the greatest number of individual low MS and MSD recoveries are the same three compounds with low mean recoveries. This performance is typical of SVOCs on soil and sediment and does not represent a significant analytical deficiency because the affected compounds are not of particular importance for this project. Several results were rejected because of the low recoveries (See Table H-3).

In summary, the semivolatile compounds generally show a slight to moderate low bias with some exceptions (See Table H-8). the following compounds exhibited a severe low bias: 3,3'-dichlorobenzidene, 4-chloroaniline, and hexachlorocyclopentadiene. The other compounds specifically identified above also exhibited very low biases in some solid matrix samples.

Semivolatile Organic Compounds (Including PAHs) in Ground Water and Surface Water

Percent recoveries for LCSs, MSs, and MSDs were generally higher for aqueous samples than for solid samples. Mean recoveries ranged from 24.3 to 112 percent across these samples with similar performance in all three types of samples (LCSs, MSs, and MSDs). The minimum individual MS recovery across all compounds and samples was 0 percent. This occurred for 2,4-dinitrophenol, 2-nitrophenol, 3,3-dichlorobenzidine, 4,6-dinitro-2-methylphenol, and 4-nitrophenol. The surrogate compound, 2-fluorophenol, also exhibited a very low individual recovery value of 6 percent in one of three MSs. The other MS and MSD recoveries were 33 percent to 55 percent for this compound. Several results were rejected because of poor spike recoveries or calibration non-compliances (see Table H-3). Overall, the SVOC data indicate a moderate low bias for most compounds in aqueous samples. Results for 2,4-dinitrophenol, 2-nitrophenol, 3,3-dichlorobenzidine, 4,6-dinitro-2-methylphenol, and 4-nitrophenol exhibit a moderate to severe low bias whereas most other SVOC compounds exhibit no bias or a slight to moderate low bias (See Table H-9).

Total Metals in Soil and Sediment

If a matrix spike did not increase the native sample concentration by at least 25 percent, the spike was considered to be invalid and is not discussed in this section. It was also removed from calculations of percent recovery statistics presented in Tables H-8 and H-9. In some cases, it was not clear by how much the matrix spike increased the native sample concentration because the spike amounts are not

reported on a per sample basis and many samples naturally contain detectable levels of metals. In those cases, the result was retained.

The mean soil and sediment LCS percent recoveries across all Round 1 and 2 sample groups ranged from 96.8 to 106.4 percent (Table H-8). The narrow LCS recovery range nearly that was nearly centered on the theoretically perfect value of 100 percent indicates that there was no significant laboratory bias associated with the metals analysis process.

Whereas the LCS recoveries were acceptable and precise, the soil and sediment sample matrix recoveries were more erratic. Barium (337 percent), copper (244.6 percent), lead (233.4 percent), magnesium (-32 and 222.4 percent), vanadium (181.3 percent), and zinc (188.3 percent), in particular, exhibited some exceptionally poor recoveries for individual matrix spikes. Individual barium and magnesium recoveries were generally erratic. There is no explanation for the erratic barium recoveries. Magnesium is not discussed further because it has little significance as an environmental contaminant. Individual copper recoveries ranged from 73.9 to 110.3 after excluding the single high value (244.6 percent). The single high value is therefore viewed to be an anomaly and not representative of typical copper recoveries. Lead recoveries ranged from and 93.9 to 114.7 percent, after excluding the single low value (41.2 percent) and the single high value (233.5 percent). After excluding the single low value (34.2 percent) and the single high value (181.3 percent), vanadium recoveries ranged from 70.2 to 101.2 percent. Thus, analytical performance for lead and vanadium analyses appears to be stable but with a potential for an occasional high bias. After excluding two high values (186.9 and 188.3 percent), the zinc recoveries ranged from 77.8 to 120.5, indicating an overall slight high bias with a tendency toward high recoveries. There is no explanation for the negative magnesium recovery.

In general, the worst recovery values (those that are furthest outside the 75 to 125 percent range) appear to represent a high bias. It is believed that a slight high bias may exist for zinc, but no significance is expected for other metals. This assertion is made, in part, based on the recovery values for aqueous samples where matrix effects are less severe. The aqueous percent recoveries are discussed below.

On average, no significant bias was exhibited for metal concentrations in soils and sediments, except for barium and manganese. Barium had a mean recovery of 159.2 percent and manganese had a mean recovery of 152.2 percent. Review of Table H-8, however, indicates that only one manganese MS sample was considered to be valid. Recoveries for nine other MS samples were excluded from the table because the spike amount did not increase the native sample concentrations by at least 25 percent. The remaining recovery represents a borderline case whereby the spike amount was only slightly greater than that needed to increase the native sample concentration by 25 percent. Therefore, the 152.2 percent recovery is not considered to be indicative of manganese recoveries for normal sample results. The

barium bias is considered to be real (all but three individual recoveries were greater than 74 percent with several greater than 150 percent).

Total and Dissolved Metals in Ground Water and Surface Water

If a matrix spike did not increase the native sample concentration by at least 25 percent, the spike was considered to be invalid and is not discussed in this section.

The mean groundwater and surface water LCS, MS, and MSD percent recoveries across all sample groups ranged from 78.6 to 111.3 percent for all metals (Table H-9). This narrow recovery range is within the 75 to 125 reference range. In addition, few individual recoveries were outside the 75 to 125 percent reference range (See Table H-9). This indicates that there was no significant laboratory bias associated with the metals analysis process.

Grain Size and Total Organic Carbon in Sediment

These parameters were measured in five of the seven samples collected for toxicity testing (See Table 2-3). No data quality problems were identified, although no duplicate samples were analyzed and no spiking was done to measure recoverability of TOC. Spiking can not be done for sieving. All sieve fractions add up to 100% and TOC results are fairly consistent across the measured locations. Results are also consistent with what is expected of sediment samples. No more detail is provided in this data quality review section for these parameters.

Volatile Organic Compounds in Soil

Mean LCS recoveries were within the 75 to 125 percent reference range. The lowest individual volatile compound LCS recovery was 66 percent (acetone) an the highest was 154 percent (carbon disulfide) This represents a relatively narrow range and an in control analytical process.

In MSs and MSDs, the recovery range was 51.7 to 121.0 percent across all analytes. This is a relatively narrow range. The overall mean recovery for solid samples across all analytes was 78.4 percent and for MSDs it was 67.0 percent. The individual recoveries spanned a wider range (18 to 327 percent). All but 10 individual recoveries were less than 170 percent across all analytes (2897 percent recovery values). Furthermore, the very high values were associated with a single sample, 19SS0070002MS, indicating that the matrix effects particular to that sample or poor analytical performance associated with that sample was occurring. Otherwise, the recoveries indicate no bias to a moderate bias, depending on the analyte (See Table H-8).

Volatile Organic Compounds in Groundwater and Surface Water

With one notable exception, mean and individual recoveries for LCSs, MSs, and MSDs were generally within the 75 to 125 percent reference range. The notable exception was bromomethane, which had mean recoveries for LCSs, MSs, and MSDs ranging from 118.3 to 132.7 percent. This indicates a slight high bias for bromomethane, however, bromomethane is not a compound of particular importance for this project which limits the significance of this bias. All other exceptions were of minor significance (See Table H-9). Therefore, no significant bias is indicated for VOCs in aqueous samples.

H.3.4 Laboratory Precision

Precision is a measure of the degree to which two or more measurements are in agreement and describes the reproducibility of measurements of the same parameter for samples analyzed under similar conditions.

Precision for chemical parameters is expressed as a Relative Percent Difference (RPD), which is defined as the ratio of the difference to the mean for the two values being evaluated. RPDs, typically expressed as percentages, are used to evaluate both field and laboratory duplicate precision and are calculated as follows:

$$RPD = \frac{|V1 - V2|}{(V1 + V2)/2} \times 100$$

where RPD = relative percent difference
V1, V2 = two results obtained by analyzing duplicate samples

The precision estimates obtained from duplicate field samples encompass the combined uncertainty associated with sample collection, homogenization, splitting, handling, laboratory and field storage (as applicable), preparation for analysis, and analysis. In contrast, precision estimates obtained from analyzing duplicate laboratory samples incorporate only homogenization, subsampling, preparation for analysis, laboratory storage (if applicable), and analysis uncertainties.

Field duplicates for SWMU 15 soils and sediments were collected as a single sample that was sampled in duplicate for VOCs, then homogenized, split into two portions, and placed into separate sample bottles for the non-VOC analyses. Each sample bottle was assigned a unique nomenclature so as to be "blind" to the laboratory. Field duplicates were collected during a single act of sampling and were analyzed for

chemical constituents to measure the precision of the sampling and analysis program, as well as the natural sample heterogeneity.

Field duplicates were to be collected at a rate of one per 20 environmental samples. The number of duplicates collected was greater than these frequencies because the analytical suite is not identical for all samples. The number of duplicates collected corresponds to the number of samples collected for a particular analytical fraction. The number of duplicates per samples collected for all analytical fractions met the 5 percent frequency criterion specified in the SWMU 15 QAPP (TtNUS, 2004).

Laboratory precision QC samples [i.e., laboratory duplicates for inorganic chemicals and LCS/LCSD and matrix spike (MS) / matrix spike duplicate (MSD) samples for organic chemicals] were scheduled to be analyzed at a rate of one QC sample per 20 environmental samples. This 5 percent rate as specified in the SWMU 15 QAPP (TtNUS, 2004) was achieved for aqueous, soil, sediment, and seep samples.

Laboratory duplicates are usually analyzed during the metals and miscellaneous analyses as a check on the precision of the analyses. For organic compounds analyzed by chromatography, laboratory duplicates are commonly supplanted with MSDs because the organic compounds do not occur naturally in samples and precision can not be estimated from non-detect values.

During the RFI, laboratory precision was assessed by comparing calculated RPD values from duplicate samples to precision control limits specified in the SWMU 15 QAPP (TtNUS, 2004).

RPD values greater than 50 percent for solid matrices and 30 percent for aqueous matrices are occasionally observed. In addition, values of this magnitude are often small compared to the concentration variability observed across site samples. This characteristic is important because it indicates that the uncertainty associated with decision making is often most affected by the overall site data variability and not as much by the local variability at any one location. Nevertheless, Tables H-10 through H-12 represent all exceedances of these reference points (aqueous 30% and solid 50%) for laboratory duplicates, field duplicates, LCS/LCSD, and MS/MSD RPDs. Field and laboratory precision values that did not exceed the reference points are not included in the discussions below. The table includes minimum, average, and maximum RPD values for each parameter that had at least one exceedance of the reference point (30 percent for aqueous samples; 50 percent for solid samples). The values that exceed these reference pints are highlighted.

Herbicides in Soil and Sediment

All herbicide concentrations in field duplicate samples were either less than threshold values which precluded the evaluation of RPD values, or the RPD values were within the reference range of 0 to 30 percent. This indicates that there were no particular precision problems identified for herbicide analyses.

Herbicides in Surface Water and Ground Water

One of five hexachlorophene precision estimates (31.0 percent RPD) exceeded the target range of 0 to 30 percent in the surface water samples. One of five pentachlorophenol precision estimates (132.0 percent RPD) exceeded the 0 to 30 percent in the surface water samples. The lone RPD exceedance for pentachlorophenol also caused the mean RPD (36.4 percent RPD) to exceed the 0 to 30 percent target range. Generally, the analytical performance for these compounds was acceptably precise. Because these compounds were not detected in any samples, there are no field precision measures for hexachlorophene and pentachlorophenol.

One sample exceeded the 0 to 30 percent RPD criteria for 2,4,5-TP (Silvex). However, because all herbicide concentrations in field duplicate samples were either less than threshold values which precluded the evaluation of RPD values, or the RPD values were within the reference range of 0 to 30 percent. This indicates that there were no particular precision problems identified for herbicide analyses.

Miscellaneous Parameters in All Media

Cyanide was analyzed in sediments only. The RPD for cyanide was within the reference ranges. This is an indication that the cyanide data was acceptable.

Pesticides and PCBs in Soil and Sediment

All pesticide concentrations in duplicate samples were either less than threshold values which precluded the evaluation of RPD values, or the RPD values were within the reference range of 0 to 30 percent. This indicates that there were no particular precision problems identified for pesticide analyses.

Pesticides and PCBs in Groundwater and Surface Water

All pesticide concentrations in duplicate samples were either less than threshold values which precluded the evaluation of RPD values, or the RPD values were within the reference range of 0 to 30 percent. This indicates that there were no particular precision problems identified for pesticide analyses.

Semivolatiles (Including PAHs) in Soil and Sediment

RPDs for many different target compounds in MS/MSDs exceeded the 50 percent reference point (Table H-12). However, the mean RPD values are generally less than 25 percent, indicating that the majority of RPD values are within the target range. The exceedances were therefore evidently not widespread and do not indicate the existence of widespread precision problems. Instead, they indicate that precision is generally acceptable for soil sample SVOC analyses. The 4-chloroaniline RPD for samples 15SS0620002 and 08SD0070006, the 3,3'-dichlorobenzidine RPD for samples 19SS0070006 and 15SB0100206, and the hexachlorocyclopentadiene RPD for samples 15SB0480206 and 15SB0450206 (MSDs) had a RPDs of 200. These compounds have poor analytical response and had a 0 percent recovery in either the MS or MSD, see Section H.3.3. These compounds are not likely to be detected at Mine Fill A. The possibility for a typical to slightly greater than typical level of uncertainty exists for the SVOC compounds listed on Table H-12. Hexachlorocyclopentadiene, 4-chloroaniline, and 3,3'-dichlorobenzidine results are viewed to be especially uncertain.

Five field duplicate pairs had RPDs that exceeded the 50 percent reference point (Table H-10). Thirty of the forty results in exceedance of the reference point were due to all positive PAH results in the duplicate pairs of samples 15SB0060206 and 15SB0280206 exceeding 50 percent RPD. It is possible that these two samples were affected by a "hot spot" due to the heterogeneity of soil samples. However, while sample heterogeneity has an effect on precision in soil samples, there is also a perceived moderate uncertainty in the field duplicate precision.

Semivolatiles (Including PAHs) Surface Water

Several (20) SVOC compounds had RPDs in excess of the 30 percent reference point ranging from 31% to 200% in the MS/MSD samples. Out of 27 total results that exceeded the reference point, twelve were in sample 15SW00601 and twelve were in sample 15GWTW006. This is indicative of a matrix effect in individual samples and not an analytical deficiency at the laboratory.

Total Metals in Soil and Sediment

RPDs for many different target compounds in laboratory duplicates exceeded the 50 percent reference point (Table H-12). However, the mean RPD values are generally less than 25 percent, indicating that the majority of RPD values are within the target range. As expected, several metals also exceeded the field duplicate RPD range. The observed exceedances do not appear to be unusual and are interpreted to represent natural sample heterogeneity. A typical level of uncertainty was demonstrated for metals in sediment and soil replicate samples, however, the potential for occasional erratic results must be considered as evident from the matrix spike results.

Total and Dissolved Metals in Ground Water and Surface Water

Comparatively few RPD values for groundwater and surface water samples exceeded the reference range of 0 to 30 percent (Tables H-10 and H-11). One result for aluminum was reported with an RPD of 200%. This was likely due to turbidity because the result was in a filtered sample and the associated un-filtered sample was acceptable. In addition, several of the RPD results in excess of the 30 percent reference point were caused by results that were reported at or below the laboratory's reporting limit.

In general, the degree of heterogeneity observed for total and dissolved metals in aqueous samples appears to be normal.

Volatiles in Soil and Sediment

Several (21) VOC compounds had RPDs in excess of the 50 percent reference point ranging from 51% to 119% in the MS/MSD samples. However, the mean RPDs for all compounds were less than the 50% reference point with the highest (vinyl chloride) being 40%. In addition, out of 34 total results that exceeded the reference point, nineteen were in sample 08SB0120206 and twelve were in sample 19SS0070002. This is indicative of a matrix effect or poor performance associated with individual samples and not an analytical deficiency at the laboratory. An additional factor that accounts for increased RPDs is the heterogeneous nature of soil samples.

Volatiles in Groundwater and Surface Water

All volatile concentrations in duplicate samples were either less than threshold values which precluded the evaluation of RPD values, or the RPD values were within the reference range of 0 to 30 percent. This indicates that there were no particular precision problems identified for volatile analyses.

H.3.5 Comparability

Comparability is defined as the confidence with which one data set can be compared with another (e.g., among sampling points and among sampling events). Comparability was achieved by using standardized sampling and analysis methods, as well as standardized data reporting formats. Comparability of field data was ensured by following the SWMU 15 QAPP (TtNUS, 2004). Comparability of laboratory measurements was achieved primarily through the use and documentation of standard sampling and analytical methods. Results were reported in units that ensured comparability with previous data and with current state and federal standards and guidelines. Comparability of laboratory measurements was assessed primarily

through the use of QC samples and through adherence to the QA plan. No comparability problems were detected.

The laboratory analyzed various QC samples along with the environmental samples to allow data users to assess the quality of the data. Tables H-13 through H-16 show the rates of data qualification that resulted from application of the data validation process for aqueous and solid samples, respectively. The numerical qualification rates presented in the table represent the percentage of data qualified as indicated for the indicated reason. An example using an excerpt form Table H-13 is the best way to explain how to interpret the table:

Parameter	Code	Validation Qualifier					
		BJ	BU	J	U	UJ	UR
ALUMINUM	A	0.0	0.0	72.9	0.0	0.0	0.0
	AF	0.0	0.0	23.7	0.0	0.0	0.0
	AG	0.0	0.0	3.4	0.0	0.0	0.0

The 72.9 in the "J" Validation Qualifier column indicates that 72.9 percent of the J-qualified data for aluminum were qualified that way because of reasons "A" (Code = A). The 23.7 in the J-qualifier column indicates that 23.7 percent of the J-qualified data were qualified that way for reasons "A" and "F" (Code AF), and the 3.4 in the J-qualifier column indicates that 3.4 percent of the J-qualified data were qualified that way for reasons "A" and "G" (Code AG). The Codes are defined at the bottom of the table. The sum of these percentages is 100, which indicates that all of the J-qualified aluminum data were qualified that way for these three reasons.

All other values in the table are to be interpreted in a similar manner. Quantitative summaries of accuracy and precision are provided in Sections H.3.3 and H.3.4. Inability to achieve target detection limits or RBTLs in several cases should also be considered (See Section H.3.2).

H.3.6 Representativeness

Representativeness is an expression of the degree to which data accurately and precisely depict the actual characteristics of a population or environmental condition existing at an individual sampling point and is contingent on a good design for the sampling program. Ideally, for each environmental medium investigated, there would be two general populations - site and background. The site population(s) is the portion of a medium potentially contaminated as a result of site operations. Sampling of the site population was designed to directly support the project objectives of determining the nature and extent of contamination and evaluating human and ecological risks. The background population is that portion of a

medium that is similar to the site population but expected or known not to be contaminated through site operations. A background population is a point of reference for understanding whether or not site chemical concentrations represent site-related contamination. For mobile media (sediment, surface water and ground water) the term upgradient, rather than background, is generally used to refer to locations unaffected by site operations. Background and upgradient data were not available for groundwater but they were available for soil, surface water, and sediment.

Data were collected from the locations specified in the SWMU 15 QAPP (TtNUS, 2004) with only minor modifications that reflect uncertainty in marking the locations in the field. The SWMU 15 QAPP (TtNUS, 2004) and the use of standardized sampling, sample handling, sample analysis, and data reporting procedures were designed so that the final data would be accurate representations of actual site conditions. It is believed that all reported data are adequately representative of site conditions with exceptions as noted below.

Theoretically, dissolved analyte concentration can not exceed the total metal concentration. Allowing for uncertainties in collecting, storing, preparing, and analyzing a sample, it is reasonable to expect that a dissolved metal concentration could be reported to be as much as 30% greater than the total metal concentration without cause for concern. This "rule of thumb," however does not apply if results are near the non-detect levels because of the greater analytical uncertainties in that concentration range. If the total and dissolved metals results are significantly greater than detection limits, an exceedance of 30% difference is an indication of a potential data quality problem. Some of the SWMU 15 dissolved metal results exceeded this range, however, this generally occurred when the results were near the detection limits. Nickel and copper results were affected the most in this regard. Therefore, the discrepancies between dissolved and total metals do not appear to reflect any significant data quality problems. Total and dissolved metal concentrations are provided in the tables of Section 3.0.

References for Appendix H

TtNUS, 2004. Quality Assurance Project Plan for RCRA Facility Investigation at Building 106 Pond (SWMU 8) Roads and Grounds Area (SWMU 15) and Environmental Indicator Investigation for SWMU 18 (Load and Fill Area Buildings), SWMU 19 (Pyrotechnic Test Area), SWMU 20 (Crane Army Ammunition Activity Quality Assurance/Quality Control Test Area); and the Old Gun Tub Storage Lot, September.

U.S. EPA, 1993c. U.S. EPA Region 5 Standard Operating Procedures for Validation of Contract Laboratory Program Organic Data;

U.S. EPA, 1993d. Region 5 Standard Operating Procedures for Validation of Contract Laboratory Program Inorganic Data;

U.S. EPA, 1994a. U.S. EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review;

U.S. EPA, 1994b. U.S. EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review

List of acronyms, Appendix H

%R Percent recovery
DQI Data quality indicator
LCS Laboratory control sample
MDL Method detection limit
MS Matrix Spike
MSD Matrix spike duplicate
NTS Nephelometric turbidity unit
PAH Polycyclic aromatic hydrocarbon
PCB Polychlorinated biphenyl
QAPP Quality assurance project plan
QC Quality control
RBTL Risk-based target level
RFI Resource Conservation and Recovery Act Facility investigation
RL Laboratory reporting limit
RPD Relative percent difference
SVOC Semivolatile organic compound

SWMU Solid Waste Management Unit

TOC Total organic carbon

TtNUS Tetra Tech NUS, Inc.

TV Threshold value

VOC Volatile organic compound

TABLE H-1

PERCENT COMPLETE FOR SAMPLES COLLECTED
SWMU 15 (ROADS AND GROUNDS)
NSWC CRANE,
CRANE, INDIANA

Analytical Fraction	SOIL [1] (collected/ proposed)[2]	SW (collected/ proposed)[2,3]	SD (collected/ proposed)[2]	GW (collected/ proposed)[2]
Grain Size	NA	NA	5/5 (100%)	NA
Herbicides	72/72 (100%)	14/17 (82%)	12/18 (67%)	5/5 (100%)
Metals, Total	87/87 (100%)	15/19 (79%)	17/24 (71%)	8/8 (100%)
Metals, Filtered [4]	NA	15/19 (79%)	NA	6/6 (100%)
Cyanide	NA	NA	3/5 (60%)	8/8 (100%)
Semivolatiles except PAHs	93/93 (100%)	15/19 (79%)	19/26 (73%)	8/8 (100%)
8260 Volatile Organic Compounds	83/83 (100%)	15/19 (79%)	12/19 (63%)	8/8 (100%)
Polycyclic Aromatic Hydrocarbons	93/93 (100%)	15/19 (79%)	12/19 (63%)	8/8 (100%)
Polychlorinated Biphenyls	51/51 (100%)	15/19 (79%)	12/19 (63%)	8/8 (100%)
Pesticides	58/58 (100%)	14/17 (82%)	12/18 (67%)	5/5 (100%)
Totla Organic Carbon	NA	NA	5/5 (100%)	NA

1 Includes both surface and subsurface soil samples. Samples not collected because of refusal are not represented in the tallies. See Section H.3.1.1 text for explanation of highlighted values.

2 Samples that were to be collected under prescribed conditions (e.g., if surface soil PAH concentrations were significant or debris was observed in soil cores in the landfill area) are not represented in these tallies if they were not collected.

3 Includes samples that could not be collected due to insufficient water at or near the specified sampling location (2 locations were affected in this manner).

4 Some aqueous samples were filtered to allow for determining whether or not the observed metals concentrations were associated with turbidity.

SD - Sediment samples
GW - Ground water samples
SW - Surface water samples
NA - Not applicable

TABLE H-2

PERCENT COMPLETE FOR ANALYTICAL FRACTIONS
SWMU 15 (ROADS AND GROUNDS)
NSWC CRANE,
CRANE, INDIANA

Fraction	SOIL				SEDIMENT			
	Non-Rejects	Rejects	Total	Pct Complete	Non-Rejects	Rejects	Total	Pct Complete
CYANIDE	NA	NA	NA	NA	**4**	**0**	**4**	**100**
FIELD PARAMETERS	NA	NA	NA	NA	NA	NA	NA	NA
GRAIN SIZE	NA	NA	NA	NA	5	0	5	100.0
HERB	282	0	282	100.0	78	0	78	100.0
METALS, DISSOLVED	NA	NA	NA	NA	NA	NA	NA	NA
METALS, TOTAL	1410	0	1410	100.0	312	0	312	100.0
MISCELLANEOUS	NA	NA	NA	NA	4	0	4	100.0
PEST/PCB	1015	0	1015	100.0	364	0	364	100.0
SVOC	6662	91	6753	98.7	1377	14	1391	99.0
TOTAL ORGANIC CARBON	NA	NA	NA	NA	5	0	5	100.0
VOC	4420	365	4785	92.4	663	52	715	92.7

Fraction	GROUNDWATER				SURFACE WATER			
	Non-Rejects	Rejects	Total	Pct Complete	Non-Rejects	Rejects	Total	Pct Complete
FIELD PARAMETERS	48	0	48	100.0	88	0	88	100.0
HERB	35	1	36	97.2	90	0	90	100.0
METALS, DISSOLVED	144	0	144	100.0	384	0	384	100.0
METALS, TOTAL	216	0	216	100.0	384	0	384	100.0
MISCELLANEOUS	NA	NA	NA	NA	NA	NA	NA	NA
PEST/PCB	189	0	189	100.0	84	0	427	100.0
SVOC	937	26	963	97.3	1665	47	1712	97.3
VOC	459	36	495	92.7	816	64	880	92.7

Tabulation is based on target compounds in normal field samples and field duplicates.

HERB = Herbicides
SVOC = Semivolatile organic compounds
VOC = Volatile organic compounds
PEST/PCB = Pesticides/polychlorinated biphenyls

TABLE H-3

REJECTED RESULTS FOR ALL SAMPLE MATRICES
SWMU 15 (ROADS AND GROUNDS)

Matrix	Sample	Fraction	Parameter	Reason for Rejection
SO	15SS0620002	SVOC	2,4-DIMETHYLPHENOL	D
SO	15SS0620002	SVOC	3,3'-DICHLOROBENZIDINE	D
SO	15SS0620002	SVOC	4-CHLOROANILINE	D
SO	15SS0010002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0020002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0030002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0040002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0050002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0060002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0070002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0080002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0090002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0100002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0110002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0120002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0130002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0190002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0200002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0210002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0220002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0230002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0240002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0250002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0260002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0270002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0280002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0290002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0300002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0310002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0320002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0330002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0340002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0350002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0360002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0370002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0380002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0390002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0400002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0410002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0420002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0430002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0440002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0450002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0460002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0470002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0480002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0490002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0620002	SVOC	4-NITROQUINOLINE-1-OXIDE	C

TABLE H-3

REJECTED RESULTS FOR ALL SAMPLE MATRICES
SWMU 15 (ROADS AND GROUNDS)

Matrix	Sample	Fraction	Parameter	Reason for Rejection
SO	15SS0620002-D	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SS0020002	SVOC	KEPONE	C
SO	15SS0030002	SVOC	KEPONE	C
SO	15SS0040002	SVOC	KEPONE	C
SO	15SS0050002	SVOC	KEPONE	C
SO	15SS0060002	SVOC	KEPONE	C
SO	15SS0190002	SVOC	KEPONE	C
SO	15SS0200002	SVOC	KEPONE	C
SO	15SS0210002	SVOC	KEPONE	C
SO	15SS0220002	SVOC	KEPONE	C
SO	15SS0230002	SVOC	KEPONE	C
SO	15SS0350002	SVOC	KEPONE	C
SO	15SS0390002	SVOC	KEPONE	C
SO	15SS0400002	SVOC	KEPONE	C
SO	15SS0420002	SVOC	KEPONE	C
SO	15SS0430002	SVOC	KEPONE	C
SO	15SS0440002	SVOC	KEPONE	C
SO	15SS0450002	SVOC	KEPONE	C
SO	15SS0460002	SVOC	KEPONE	C
SO	15SS0010002	VOC	ACETONITRILE	C
SO	15SS0020002	VOC	ACETONITRILE	C
SO	15SS0030002	VOC	ACETONITRILE	C
SO	15SS0040002	VOC	ACETONITRILE	C
SO	15SS0050002	VOC	ACETONITRILE	C
SO	15SS0060002	VOC	ACETONITRILE	C
SO	15SS0070002	VOC	ACETONITRILE	C
SO	15SS0080002	VOC	ACETONITRILE	C
SO	15SS0090002	VOC	ACETONITRILE	C
SO	15SS0100002	VOC	ACETONITRILE	C
SO	15SS0110002	VOC	ACETONITRILE	C
SO	15SS0120002	VOC	ACETONITRILE	C
SO	15SS0130002	VOC	ACETONITRILE	C
SO	15SS0190002	VOC	ACETONITRILE	C
SO	15SS0200002	VOC	ACETONITRILE	C
SO	15SS0210002	VOC	ACETONITRILE	C
SO	15SS0220002	VOC	ACETONITRILE	C
SO	15SS0230002	VOC	ACETONITRILE	C
SO	15SS0290002	VOC	ACETONITRILE	C
SO	15SS0300002	VOC	ACETONITRILE	C
SO	15SS0310002	VOC	ACETONITRILE	C
SO	15SS0320002	VOC	ACETONITRILE	C
SO	15SS0330002	VOC	ACETONITRILE	C
SO	15SS0340002	VOC	ACETONITRILE	C
SO	15SS0350002	VOC	ACETONITRILE	C
SO	15SS0360002	VOC	ACETONITRILE	C
SO	15SS0370002	VOC	ACETONITRILE	C
SO	15SS0380002	VOC	ACETONITRILE	C
SO	15SS0390002	VOC	ACETONITRILE	C

TABLE H-3

REJECTED RESULTS FOR ALL SAMPLE MATRICES
SWMU 15 (ROADS AND GROUNDS)

Matrix	Sample	Fraction	Parameter	Reason for Rejection
SO	15SS0400002	VOC	ACETONITRILE	C
SO	15SS0410002	VOC	ACETONITRILE	C
SO	15SS0420002	VOC	ACETONITRILE	C
SO	15SS0430002	VOC	ACETONITRILE	C
SO	15SS0440002	VOC	ACETONITRILE	C
SO	15SS0450002	VOC	ACETONITRILE	C
SO	15SS0460002	VOC	ACETONITRILE	C
SO	15SS0470002	VOC	ACETONITRILE	C
SO	15SS0480002	VOC	ACETONITRILE	C
SO	15SS0490002	VOC	ACETONITRILE	C
SO	15SS0620002	VOC	ACETONITRILE	C
SO	15SS0620002-D	VOC	ACETONITRILE	C
SO	15SS0010002	VOC	ACROLEIN	C
SO	15SS0020002	VOC	ACROLEIN	C
SO	15SS0030002	VOC	ACROLEIN	C
SO	15SS0040002	VOC	ACROLEIN	C
SO	15SS0050002	VOC	ACROLEIN	C
SO	15SS0060002	VOC	ACROLEIN	C
SO	15SS0070002	VOC	ACROLEIN	C
SO	15SS0080002	VOC	ACROLEIN	C
SO	15SS0090002	VOC	ACROLEIN	C
SO	15SS0100002	VOC	ACROLEIN	C
SO	15SS0110002	VOC	ACROLEIN	C
SO	15SS0120002	VOC	ACROLEIN	C
SO	15SS0130002	VOC	ACROLEIN	C
SO	15SS0190002	VOC	ACROLEIN	C
SO	15SS0200002	VOC	ACROLEIN	C
SO	15SS0210002	VOC	ACROLEIN	C
SO	15SS0220002	VOC	ACROLEIN	C
SO	15SS0230002	VOC	ACROLEIN	C
SO	15SS0290002	VOC	ACROLEIN	C
SO	15SS0300002	VOC	ACROLEIN	C
SO	15SS0310002	VOC	ACROLEIN	C
SO	15SS0320002	VOC	ACROLEIN	C
SO	15SS0330002	VOC	ACROLEIN	C
SO	15SS0340002	VOC	ACROLEIN	C
SO	15SS0350002	VOC	ACROLEIN	C
SO	15SS0360002	VOC	ACROLEIN	C
SO	15SS0370002	VOC	ACROLEIN	C
SO	15SS0380002	VOC	ACROLEIN	C
SO	15SS0390002	VOC	ACROLEIN	C
SO	15SS0400002	VOC	ACROLEIN	C
SO	15SS0410002	VOC	ACROLEIN	C
SO	15SS0420002	VOC	ACROLEIN	C
SO	15SS0430002	VOC	ACROLEIN	C
SO	15SS0440002	VOC	ACROLEIN	C
SO	15SS0450002	VOC	ACROLEIN	C
SO	15SS0460002	VOC	ACROLEIN	C

TABLE H-3

REJECTED RESULTS FOR ALL SAMPLE MATRICES
SWMU 15 (ROADS AND GROUNDS)

Matrix	Sample	Fraction	Parameter	Reason for Rejection
SO	15SS0470002	VOC	ACROLEIN	C
SO	15SS0480002	VOC	ACROLEIN	C
SO	15SS0490002	VOC	ACROLEIN	C
SO	15SS0620002	VOC	ACROLEIN	C
SO	15SS0620002-D	VOC	ACROLEIN	C
SO	15SS0010002	VOC	DICHLORODIFLUOROMETHANE	C
SO	15SS0030002	VOC	DICHLORODIFLUOROMETHANE	C
SO	15SS0040002	VOC	DICHLORODIFLUOROMETHANE	C
SO	15SS0470002	VOC	DICHLORODIFLUOROMETHANE	C
SO	15SS0480002	VOC	DICHLORODIFLUOROMETHANE	C
SO	15SS0010002	VOC	ISOBUTANOL	C
SO	15SS0020002	VOC	ISOBUTANOL	C
SO	15SS0030002	VOC	ISOBUTANOL	C
SO	15SS0040002	VOC	ISOBUTANOL	C
SO	15SS0050002	VOC	ISOBUTANOL	C
SO	15SS0060002	VOC	ISOBUTANOL	C
SO	15SS0070002	VOC	ISOBUTANOL	C
SO	15SS0080002	VOC	ISOBUTANOL	C
SO	15SS0090002	VOC	ISOBUTANOL	C
SO	15SS0100002	VOC	ISOBUTANOL	C
SO	15SS0110002	VOC	ISOBUTANOL	C
SO	15SS0120002	VOC	ISOBUTANOL	C
SO	15SS0130002	VOC	ISOBUTANOL	C
SO	15SS0190002	VOC	ISOBUTANOL	C
SO	15SS0200002	VOC	ISOBUTANOL	C
SO	15SS0210002	VOC	ISOBUTANOL	C
SO	15SS0220002	VOC	ISOBUTANOL	C
SO	15SS0230002	VOC	ISOBUTANOL	C
SO	15SS0290002	VOC	ISOBUTANOL	C
SO	15SS0300002	VOC	ISOBUTANOL	C
SO	15SS0310002	VOC	ISOBUTANOL	C
SO	15SS0320002	VOC	ISOBUTANOL	C
SO	15SS0330002	VOC	ISOBUTANOL	C
SO	15SS0340002	VOC	ISOBUTANOL	C
SO	15SS0350002	VOC	ISOBUTANOL	C
SO	15SS0360002	VOC	ISOBUTANOL	C
SO	15SS0370002	VOC	ISOBUTANOL	C
SO	15SS0380002	VOC	ISOBUTANOL	C
SO	15SS0390002	VOC	ISOBUTANOL	C
SO	15SS0400002	VOC	ISOBUTANOL	C
SO	15SS0410002	VOC	ISOBUTANOL	C
SO	15SS0420002	VOC	ISOBUTANOL	C
SO	15SS0430002	VOC	ISOBUTANOL	C
SO	15SS0440002	VOC	ISOBUTANOL	C
SO	15SS0450002	VOC	ISOBUTANOL	C
SO	15SS0460002	VOC	ISOBUTANOL	C
SO	15SS0470002	VOC	ISOBUTANOL	C
SO	15SS0480002	VOC	ISOBUTANOL	C

TABLE H-3

REJECTED RESULTS FOR ALL SAMPLE MATRICES
SWMU 15 (ROADS AND GROUNDS)

Matrix	Sample	Fraction	Parameter	Reason for Rejection
SO	15SS0490002	VOC	ISOBUTANOL	C
SO	15SS0620002	VOC	ISOBUTANOL	C
SO	15SS0620002-D	VOC	ISOBUTANOL	C
SO	15SS0010002	VOC	PROPIONITRILE	C
SO	15SS0020002	VOC	PROPIONITRILE	C
SO	15SS0030002	VOC	PROPIONITRILE	C
SO	15SS0040002	VOC	PROPIONITRILE	C
SO	15SS0050002	VOC	PROPIONITRILE	C
SO	15SS0060002	VOC	PROPIONITRILE	C
SO	15SS0070002	VOC	PROPIONITRILE	C
SO	15SS0080002	VOC	PROPIONITRILE	C
SO	15SS0090002	VOC	PROPIONITRILE	C
SO	15SS0100002	VOC	PROPIONITRILE	C
SO	15SS0110002	VOC	PROPIONITRILE	C
SO	15SS0120002	VOC	PROPIONITRILE	C
SO	15SS0130002	VOC	PROPIONITRILE	C
SO	15SS0190002	VOC	PROPIONITRILE	C
SO	15SS0200002	VOC	PROPIONITRILE	C
SO	15SS0210002	VOC	PROPIONITRILE	C
SO	15SS0220002	VOC	PROPIONITRILE	C
SO	15SS0230002	VOC	PROPIONITRILE	C
SO	15SS0290002	VOC	PROPIONITRILE	C
SO	15SS0300002	VOC	PROPIONITRILE	C
SO	15SS0310002	VOC	PROPIONITRILE	C
SO	15SS0320002	VOC	PROPIONITRILE	C
SO	15SS0330002	VOC	PROPIONITRILE	C
SO	15SS0340002	VOC	PROPIONITRILE	C
SO	15SS0350002	VOC	PROPIONITRILE	C
SO	15SS0360002	VOC	PROPIONITRILE	C
SO	15SS0370002	VOC	PROPIONITRILE	C
SO	15SS0380002	VOC	PROPIONITRILE	C
SO	15SS0390002	VOC	PROPIONITRILE	C
SO	15SS0400002	VOC	PROPIONITRILE	C
SO	15SS0410002	VOC	PROPIONITRILE	C
SO	15SS0420002	VOC	PROPIONITRILE	C
SO	15SS0430002	VOC	PROPIONITRILE	C
SO	15SS0440002	VOC	PROPIONITRILE	C
SO	15SS0450002	VOC	PROPIONITRILE	C
SO	15SS0460002	VOC	PROPIONITRILE	C
SO	15SS0470002	VOC	PROPIONITRILE	C
SO	15SS0480002	VOC	PROPIONITRILE	C
SO	15SS0490002	VOC	PROPIONITRILE	C
SO	15SS0620002	VOC	PROPIONITRILE	C
SO	15SS0620002-D	VOC	PROPIONITRILE	C
SO	15SB0100206	SVOC	3,3'-DICHLOROBENZIDINE	D
SO	15SB0230206	SVOC	4-CHLOROANILINE	D
SO	15SB0060206	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SB0060206-D	SVOC	4-NITROQUINOLINE-1-OXIDE	C

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REJECTED RESULTS FOR ALL SAMPLE MATRICES
SWMU 15 (ROADS AND GROUNDS)

Matrix	Sample	Fraction	Parameter	Reason for Rejection
SO	15SB0080206	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SB0080610	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SB0090206	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SB0090610	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SB0100206	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SB0100610	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SB0230206	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SB0230206-D	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SB0280206	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SB0280206-D	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SB0450206	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SB0460206	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SB0480206	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SB0480206-D	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SO	15SB0100206	SVOC	HEXACHLOROCYCLOPENTADIEN	D
SO	15SB0230206	SVOC	HEXACHLOROCYCLOPENTADIEN	C
SO	15SB0450206	SVOC	HEXACHLOROCYCLOPENTADIEN	D
SO	15SB0480206	SVOC	HEXACHLOROCYCLOPENTADIEN	D
SO	15SB0450206	SVOC	KEPONE	C
SO	15SB0460206	SVOC	KEPONE	C
SO	15SB0010206	VOC	ACETONITRILE	C
SO	15SB0020206	VOC	ACETONITRILE	C
SO	15SB0030206	VOC	ACETONITRILE	C
SO	15SB0040206	VOC	ACETONITRILE	C
SO	15SB0050206	VOC	ACETONITRILE	C
SO	15SB0060206	VOC	ACETONITRILE	C
SO	15SB0060206-D	VOC	ACETONITRILE	C
SO	15SB0070206	VOC	ACETONITRILE	C
SO	15SB0080206	VOC	ACETONITRILE	C
SO	15SB0080610	VOC	ACETONITRILE	C
SO	15SB0090206	VOC	ACETONITRILE	C
SO	15SB0090610	VOC	ACETONITRILE	C
SO	15SB0100206	VOC	ACETONITRILE	C
SO	15SB0100610	VOC	ACETONITRILE	C
SO	15SB0110206	VOC	ACETONITRILE	C
SO	15SB0120206	VOC	ACETONITRILE	C
SO	15SB0130206	VOC	ACETONITRILE	C
SO	15SB0190206	VOC	ACETONITRILE	C
SO	15SB0200206	VOC	ACETONITRILE	C
SO	15SB0210206	VOC	ACETONITRILE	C
SO	15SB0220206	VOC	ACETONITRILE	C
SO	15SB0230206	VOC	ACETONITRILE	C
SO	15SB0230206-D	VOC	ACETONITRILE	C
SO	15SB0290206	VOC	ACETONITRILE	C
SO	15SB0300206	VOC	ACETONITRILE	C
SO	15SB0310206	VOC	ACETONITRILE	C
SO	15SB0310610	VOC	ACETONITRILE	C
SO	15SB0311014	VOC	ACETONITRILE	C

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REJECTED RESULTS FOR ALL SAMPLE MATRICES
SWMU 15 (ROADS AND GROUNDS)

Matrix	Sample	Fraction	Parameter	Reason for Rejection
SO	15SB0320206	VOC	ACETONITRILE	C
SO	15SB0350206	VOC	ACETONITRILE	C
SO	15SB0370206	VOC	ACETONITRILE	C
SO	15SB0400206	VOC	ACETONITRILE	C
SO	15SB0420206	VOC	ACETONITRILE	C
SO	15SB0430206	VOC	ACETONITRILE	C
SO	15SB0440206	VOC	ACETONITRILE	C
SO	15SB0450206	VOC	ACETONITRILE	C
SO	15SB0450610	VOC	ACETONITRILE	C
SO	15SB0451012	VOC	ACETONITRILE	C
SO	15SB0460206	VOC	ACETONITRILE	C
SO	15SB0460610	VOC	ACETONITRILE	C
SO	15SB0461020	VOC	ACETONITRILE	C
SO	15SB0480206	VOC	ACETONITRILE	C
SO	15SB0480206-D	VOC	ACETONITRILE	C
SO	15SB0480610	VOC	ACETONITRILE	C
SO	15SB0481015	VOC	ACETONITRILE	C
SO	15SB0620206	VOC	ACETONITRILE	C
SO	15SB0010206	VOC	ACROLEIN	C
SO	15SB0020206	VOC	ACROLEIN	C
SO	15SB0030206	VOC	ACROLEIN	C
SO	15SB0040206	VOC	ACROLEIN	C
SO	15SB0050206	VOC	ACROLEIN	C
SO	15SB0060206	VOC	ACROLEIN	C
SO	15SB0060206-D	VOC	ACROLEIN	C
SO	15SB0070206	VOC	ACROLEIN	C
SO	15SB0080206	VOC	ACROLEIN	C
SO	15SB0080610	VOC	ACROLEIN	C
SO	15SB0090206	VOC	ACROLEIN	C
SO	15SB0090610	VOC	ACROLEIN	C
SO	15SB0100206	VOC	ACROLEIN	C
SO	15SB0100610	VOC	ACROLEIN	C
SO	15SB0110206	VOC	ACROLEIN	C
SO	15SB0120206	VOC	ACROLEIN	C
SO	15SB0130206	VOC	ACROLEIN	C
SO	15SB0190206	VOC	ACROLEIN	C
SO	15SB0200206	VOC	ACROLEIN	C
SO	15SB0210206	VOC	ACROLEIN	C
SO	15SB0220206	VOC	ACROLEIN	C
SO	15SB0230206	VOC	ACROLEIN	C
SO	15SB0230206-D	VOC	ACROLEIN	C
SO	15SB0290206	VOC	ACROLEIN	C
SO	15SB0300206	VOC	ACROLEIN	C
SO	15SB0310206	VOC	ACROLEIN	C
SO	15SB0310610	VOC	ACROLEIN	C
SO	15SB0311014	VOC	ACROLEIN	C
SO	15SB0320206	VOC	ACROLEIN	C
SO	15SB0350206	VOC	ACROLEIN	C

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REJECTED RESULTS FOR ALL SAMPLE MATRICES
SWMU 15 (ROADS AND GROUNDS)

Matrix	Sample	Fraction	Parameter	Reason for Rejection
SO	15SB0370206	VOC	ACROLEIN	C
SO	15SB0400206	VOC	ACROLEIN	C
SO	15SB0420206	VOC	ACROLEIN	C
SO	15SB0430206	VOC	ACROLEIN	C
SO	15SB0440206	VOC	ACROLEIN	C
SO	15SB0450206	VOC	ACROLEIN	C
SO	15SB0450610	VOC	ACROLEIN	C
SO	15SB0451012	VOC	ACROLEIN	C
SO	15SB0460206	VOC	ACROLEIN	C
SO	15SB0460610	VOC	ACROLEIN	C
SO	15SB0461020	VOC	ACROLEIN	C
SO	15SB0480206	VOC	ACROLEIN	C
SO	15SB0480206-D	VOC	ACROLEIN	C
SO	15SB0480610	VOC	ACROLEIN	C
SO	15SB0481015	VOC	ACROLEIN	C
SO	15SB0620206	VOC	ACROLEIN	C
SO	15SB0010206	VOC	DICHLORODIFLUOROMETHANE	C
SO	15SB0030206	VOC	DICHLORODIFLUOROMETHANE	C
SO	15SB0100610	VOC	DICHLORODIFLUOROMETHANE	C
SO	15SB0290206	VOC	DICHLORODIFLUOROMETHANE	C
SO	15SB0310206	VOC	DICHLORODIFLUOROMETHANE	C
SO	15SB0310610	VOC	DICHLORODIFLUOROMETHANE	C
SO	15SB0311014	VOC	DICHLORODIFLUOROMETHANE	C
SO	15SB0320206	VOC	DICHLORODIFLUOROMETHANE	C
SO	15SB0350206	VOC	DICHLORODIFLUOROMETHANE	C
SO	15SB0370206	VOC	DICHLORODIFLUOROMETHANE	C
SO	15SB0480206	VOC	DICHLORODIFLUOROMETHANE	C
SO	15SB0480610	VOC	DICHLORODIFLUOROMETHANE	C
SO	15SB0010206	VOC	ISOBUTANOL	C
SO	15SB0020206	VOC	ISOBUTANOL	C
SO	15SB0030206	VOC	ISOBUTANOL	C
SO	15SB0040206	VOC	ISOBUTANOL	C
SO	15SB0050206	VOC	ISOBUTANOL	C
SO	15SB0060206	VOC	ISOBUTANOL	C
SO	15SB0060206-D	VOC	ISOBUTANOL	C
SO	15SB0070206	VOC	ISOBUTANOL	C
SO	15SB0080206	VOC	ISOBUTANOL	C
SO	15SB0080610	VOC	ISOBUTANOL	C
SO	15SB0090206	VOC	ISOBUTANOL	C
SO	15SB0090610	VOC	ISOBUTANOL	C
SO	15SB0100206	VOC	ISOBUTANOL	C
SO	15SB0100610	VOC	ISOBUTANOL	C
SO	15SB0110206	VOC	ISOBUTANOL	C
SO	15SB0120206	VOC	ISOBUTANOL	C
SO	15SB0130206	VOC	ISOBUTANOL	C
SO	15SB0190206	VOC	ISOBUTANOL	C
SO	15SB0200206	VOC	ISOBUTANOL	C
SO	15SB0210206	VOC	ISOBUTANOL	C

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REJECTED RESULTS FOR ALL SAMPLE MATRICES
SWMU 15 (ROADS AND GROUNDS)

Matrix	Sample	Fraction	Parameter	Reason for Rejection
SO	15SB0220206	VOC	ISOBUTANOL	C
SO	15SB0230206	VOC	ISOBUTANOL	C
SO	15SB0230206-D	VOC	ISOBUTANOL	C
SO	15SB0290206	VOC	ISOBUTANOL	C
SO	15SB0300206	VOC	ISOBUTANOL	C
SO	15SB0310206	VOC	ISOBUTANOL	C
SO	15SB0310610	VOC	ISOBUTANOL	C
SO	15SB0311014	VOC	ISOBUTANOL	C
SO	15SB0320206	VOC	ISOBUTANOL	C
SO	15SB0350206	VOC	ISOBUTANOL	C
SO	15SB0370206	VOC	ISOBUTANOL	C
SO	15SB0400206	VOC	ISOBUTANOL	C
SO	15SB0420206	VOC	ISOBUTANOL	C
SO	15SB0430206	VOC	ISOBUTANOL	C
SO	15SB0440206	VOC	ISOBUTANOL	C
SO	15SB0450206	VOC	ISOBUTANOL	C
SO	15SB0450610	VOC	ISOBUTANOL	C
SO	15SB0451012	VOC	ISOBUTANOL	C
SO	15SB0460206	VOC	ISOBUTANOL	C
SO	15SB0460610	VOC	ISOBUTANOL	C
SO	15SB0461020	VOC	ISOBUTANOL	C
SO	15SB0480206	VOC	ISOBUTANOL	C
SO	15SB0480206-D	VOC	ISOBUTANOL	C
SO	15SB0480610	VOC	ISOBUTANOL	C
SO	15SB0481015	VOC	ISOBUTANOL	C
SO	15SB0620206	VOC	ISOBUTANOL	C
SO	15SB0010206	VOC	PROPIONITRILE	C
SO	15SB0020206	VOC	PROPIONITRILE	C
SO	15SB0030206	VOC	PROPIONITRILE	C
SO	15SB0040206	VOC	PROPIONITRILE	C
SO	15SB0050206	VOC	PROPIONITRILE	C
SO	15SB0060206	VOC	PROPIONITRILE	C
SO	15SB0060206-D	VOC	PROPIONITRILE	C
SO	15SB0070206	VOC	PROPIONITRILE	C
SO	15SB0080206	VOC	PROPIONITRILE	C
SO	15SB0080610	VOC	PROPIONITRILE	C
SO	15SB0090206	VOC	PROPIONITRILE	C
SO	15SB0090610	VOC	PROPIONITRILE	C
SO	15SB0100206	VOC	PROPIONITRILE	C
SO	15SB0100610	VOC	PROPIONITRILE	C
SO	15SB0110206	VOC	PROPIONITRILE	C
SO	15SB0120206	VOC	PROPIONITRILE	C
SO	15SB0130206	VOC	PROPIONITRILE	C
SO	15SB0190206	VOC	PROPIONITRILE	C
SO	15SB0200206	VOC	PROPIONITRILE	C
SO	15SB0210206	VOC	PROPIONITRILE	C
SO	15SB0220206	VOC	PROPIONITRILE	C
SO	15SB0230206	VOC	PROPIONITRILE	C

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REJECTED RESULTS FOR ALL SAMPLE MATRICES
SWMU 15 (ROADS AND GROUNDS)

Matrix	Sample	Fraction	Parameter	Reason for Rejection
SO	15SB0230206-D	VOC	PROPIONITRILE	C
SO	15SB0290206	VOC	PROPIONITRILE	C
SO	15SB0300206	VOC	PROPIONITRILE	C
SO	15SB0310206	VOC	PROPIONITRILE	C
SO	15SB0310610	VOC	PROPIONITRILE	C
SO	15SB0311014	VOC	PROPIONITRILE	C
SO	15SB0320206	VOC	PROPIONITRILE	C
SO	15SB0350206	VOC	PROPIONITRILE	C
SO	15SB0370206	VOC	PROPIONITRILE	C
SO	15SB0400206	VOC	PROPIONITRILE	C
SO	15SB0420206	VOC	PROPIONITRILE	C
SO	15SB0430206	VOC	PROPIONITRILE	C
SO	15SB0440206	VOC	PROPIONITRILE	C
SO	15SB0450206	VOC	PROPIONITRILE	C
SO	15SB0450610	VOC	PROPIONITRILE	C
SO	15SB0451012	VOC	PROPIONITRILE	C
SO	15SB0460206	VOC	PROPIONITRILE	C
SO	15SB0460610	VOC	PROPIONITRILE	C
SO	15SB0461020	VOC	PROPIONITRILE	C
SO	15SB0480206	VOC	PROPIONITRILE	C
SO	15SB0480206-D	VOC	PROPIONITRILE	C
SO	15SB0480610	VOC	PROPIONITRILE	C
SO	15SB0481015	VOC	PROPIONITRILE	C
SO	15SB0620206	VOC	PROPIONITRILE	C
SW	15SW01101	SVOC	2,3,4,6-TETRACHLOROPHENOL	R
SW	15SW01501	SVOC	2,3,4,6-TETRACHLOROPHENOL	R
SW	15SW01101	SVOC	2,4,5-TRICHLOROPHENOL	R
SW	15SW01501	SVOC	2,4,5-TRICHLOROPHENOL	R
SW	15SW01101	SVOC	2,4,6-TRICHLOROPHENOL	R
SW	15SW01501	SVOC	2,4,6-TRICHLOROPHENOL	R
SW	15SW01101	SVOC	2,4-DICHLOROPHENOL	R
SW	15SW01501	SVOC	2,4-DICHLOROPHENOL	R
SW	15SW01101	SVOC	2,4-DIMETHYLPHENOL	R
SW	15SW01501	SVOC	2,4-DIMETHYLPHENOL	R
SW	15SW01101	SVOC	2,4-DINITROPHENOL	R
SW	15SW01501	SVOC	2,4-DINITROPHENOL	R
SW	15SW01101	SVOC	2,6-DICHLOROPHENOL	R
SW	15SW01501	SVOC	2,6-DICHLOROPHENOL	R
SW	15SW01101	SVOC	2-CHLOROPHENOL	R
SW	15SW01501	SVOC	2-CHLOROPHENOL	R
SW	15SW01101	SVOC	2-METHYLPHENOL	R
SW	15SW01501	SVOC	2-METHYLPHENOL	R
SW	15SW01101	SVOC	2-NITROPHENOL	R
SW	15SW01501	SVOC	2-NITROPHENOL	R
SW	15SW01101	SVOC	3&4-METHYLPHENOL	R
SW	15SW01501	SVOC	3&4-METHYLPHENOL	R
SW	15SW00601	SVOC	3,3'-DICHLOROBENZIDINE	D
SW	15SW01101	SVOC	4,6-DINITRO-2-METHYLPHENOL	R

TABLE H-3

REJECTED RESULTS FOR ALL SAMPLE MATRICES
SWMU 15 (ROADS AND GROUNDS)

Matrix	Sample	Fraction	Parameter	Reason for Rejection
SW	15SW01501	SVOC	4,6-DINITRO-2-METHYLPHENOL	R
SW	15SW01101	SVOC	4-CHLORO-3-METHYLPHENOL	R
SW	15SW01501	SVOC	4-CHLORO-3-METHYLPHENOL	R
SW	15SW01101	SVOC	4-NITROPHENOL	R
SW	15SW01501	SVOC	4-NITROPHENOL	R
SW	15SW00401	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SW	15SW01001	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SW	15SW01101	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SW	15SW00101	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SW	15SW00201	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SW	15SW00501	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SW	15SW00601	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SW	15SW00601-D	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SW	15SW00901	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SW	15SW01301	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SW	15SW01401	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SW	15SW01501	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SW	15SW01601	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SW	15SW01701	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SW	15SW01801	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SW	15SW01901	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SW	15SW00401	VOC	ACETONITRILE	C
SW	15SW01001	VOC	ACETONITRILE	C
SW	15SW01101	VOC	ACETONITRILE	C
SW	15SW00101	VOC	ACETONITRILE	C
SW	15SW00201	VOC	ACETONITRILE	C
SW	15SW00501	VOC	ACETONITRILE	C
SW	15SW00601	VOC	ACETONITRILE	C
SW	15SW00601-D	VOC	ACETONITRILE	C
SW	15SW00901	VOC	ACETONITRILE	C
SW	15SW01301	VOC	ACETONITRILE	C
SW	15SW01401	VOC	ACETONITRILE	C
SW	15SW01501	VOC	ACETONITRILE	C
SW	15SW01601	VOC	ACETONITRILE	C
SW	15SW01701	VOC	ACETONITRILE	C
SW	15SW01801	VOC	ACETONITRILE	C
SW	15SW01901	VOC	ACETONITRILE	C
SW	15SW00401	VOC	ACROLEIN	C
SW	15SW01001	VOC	ACROLEIN	C
SW	15SW01101	VOC	ACROLEIN	C
SW	15SW00101	VOC	ACROLEIN	C
SW	15SW00201	VOC	ACROLEIN	C
SW	15SW00501	VOC	ACROLEIN	C
SW	15SW00601	VOC	ACROLEIN	C
SW	15SW00601-D	VOC	ACROLEIN	C
SW	15SW00901	VOC	ACROLEIN	C
SW	15SW01301	VOC	ACROLEIN	C
SW	15SW01401	VOC	ACROLEIN	C

TABLE H-3

REJECTED RESULTS FOR ALL SAMPLE MATRICES
SWMU 15 (ROADS AND GROUNDS)

Matrix	Sample	Fraction	Parameter	Reason for Rejection
SW	15SW01501	VOC	ACROLEIN	C
SW	15SW01601	VOC	ACROLEIN	C
SW	15SW01701	VOC	ACROLEIN	C
SW	15SW01801	VOC	ACROLEIN	C
SW	15SW01901	VOC	ACROLEIN	C
SW	15SW00401	VOC	ISOBUTANOL	C
SW	15SW01001	VOC	ISOBUTANOL	C
SW	15SW01101	VOC	ISOBUTANOL	C
SW	15SW00101	VOC	ISOBUTANOL	C
SW	15SW00201	VOC	ISOBUTANOL	C
SW	15SW00501	VOC	ISOBUTANOL	C
SW	15SW00601	VOC	ISOBUTANOL	C
SW	15SW00601-D	VOC	ISOBUTANOL	C
SW	15SW00901	VOC	ISOBUTANOL	C
SW	15SW01301	VOC	ISOBUTANOL	C
SW	15SW01401	VOC	ISOBUTANOL	C
SW	15SW01501	VOC	ISOBUTANOL	C
SW	15SW01601	VOC	ISOBUTANOL	C
SW	15SW01701	VOC	ISOBUTANOL	C
SW	15SW01801	VOC	ISOBUTANOL	C
SW	15SW01901	VOC	ISOBUTANOL	C
SW	15SW01101	SVOC	PHENOL	R
SW	15SW01501	SVOC	PHENOL	R
SW	15SW00401	VOC	PROPIONITRILE	C
SW	15SW01001	VOC	PROPIONITRILE	C
SW	15SW01101	VOC	PROPIONITRILE	C
SW	15SW00101	VOC	PROPIONITRILE	C
SW	15SW00201	VOC	PROPIONITRILE	C
SW	15SW00501	VOC	PROPIONITRILE	C
SW	15SW00601	VOC	PROPIONITRILE	C
SW	15SW00601-D	VOC	PROPIONITRILE	C
SW	15SW00901	VOC	PROPIONITRILE	C
SW	15SW01301	VOC	PROPIONITRILE	C
SW	15SW01401	VOC	PROPIONITRILE	C
SW	15SW01501	VOC	PROPIONITRILE	C
SW	15SW01601	VOC	PROPIONITRILE	C
SW	15SW01701	VOC	PROPIONITRILE	C
SW	15SW01801	VOC	PROPIONITRILE	C
SW	15SW01901	VOC	PROPIONITRILE	C
SD	15SD0010006	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SD	15SD0020006	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SD	15SD0050006	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SD	15SD0050006-D	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SD	15SD0060006	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SD	15SD0090006	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SD	15SD0130006	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SD	15SD0140006	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SD	15SD0150006	SVOC	4-NITROQUINOLINE-1-OXIDE	C

TABLE H-3

REJECTED RESULTS FOR ALL SAMPLE MATRICES
SWMU 15 (ROADS AND GROUNDS)

Matrix	Sample	Fraction	Parameter	Reason for Rejection
SD	15SD0160006	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SD	15SD0170006	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SD	15SD0180006	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SD	15SD0190006	SVOC	4-NITROQUINOLINE-1-OXIDE	C
SD	15SD0050006	SVOC	HEXACHLOROCYCLOPENTADIEN	D
SD	15SD0010006	VOC	ACETONITRILE	C
SD	15SD0020006	VOC	ACETONITRILE	C
SD	15SD0050006	VOC	ACETONITRILE	C
SD	15SD0050006-D	VOC	ACETONITRILE	C
SD	15SD0060006	VOC	ACETONITRILE	C
SD	15SD0090006	VOC	ACETONITRILE	C
SD	15SD0130006	VOC	ACETONITRILE	C
SD	15SD0140006	VOC	ACETONITRILE	C
SD	15SD0150006	VOC	ACETONITRILE	C
SD	15SD0160006	VOC	ACETONITRILE	C
SD	15SD0170006	VOC	ACETONITRILE	C
SD	15SD0180006	VOC	ACETONITRILE	C
SD	15SD0190006	VOC	ACETONITRILE	C
SD	15SD0010006	VOC	ACROLEIN	C
SD	15SD0020006	VOC	ACROLEIN	C
SD	15SD0050006	VOC	ACROLEIN	C
SD	15SD0050006-D	VOC	ACROLEIN	C
SD	15SD0060006	VOC	ACROLEIN	C
SD	15SD0090006	VOC	ACROLEIN	C
SD	15SD0130006	VOC	ACROLEIN	C
SD	15SD0140006	VOC	ACROLEIN	C
SD	15SD0150006	VOC	ACROLEIN	C
SD	15SD0160006	VOC	ACROLEIN	C
SD	15SD0170006	VOC	ACROLEIN	C
SD	15SD0180006	VOC	ACROLEIN	C
SD	15SD0190006	VOC	ACROLEIN	C
SD	15SD0010006	VOC	ISOBUTANOL	C
SD	15SD0020006	VOC	ISOBUTANOL	C
SD	15SD0050006	VOC	ISOBUTANOL	C
SD	15SD0050006-D	VOC	ISOBUTANOL	C
SD	15SD0060006	VOC	ISOBUTANOL	C
SD	15SD0090006	VOC	ISOBUTANOL	C
SD	15SD0130006	VOC	ISOBUTANOL	C
SD	15SD0140006	VOC	ISOBUTANOL	C
SD	15SD0150006	VOC	ISOBUTANOL	C
SD	15SD0160006	VOC	ISOBUTANOL	C
SD	15SD0170006	VOC	ISOBUTANOL	C
SD	15SD0180006	VOC	ISOBUTANOL	C
SD	15SD0190006	VOC	ISOBUTANOL	C
SD	15SD0010006	VOC	PROPIONITRILE	C
SD	15SD0020006	VOC	PROPIONITRILE	C
SD	15SD0050006	VOC	PROPIONITRILE	C
SD	15SD0050006-D	VOC	PROPIONITRILE	C

TABLE H-3

REJECTED RESULTS FOR ALL SAMPLE MATRICES
SWMU 15 (ROADS AND GROUNDS)

Matrix	Sample	Fraction	Parameter	Reason for Rejection
SD	15SD0060006	VOC	PROPIONITRILE	C
SD	15SD0090006	VOC	PROPIONITRILE	C
SD	15SD0130006	VOC	PROPIONITRILE	C
SD	15SD0140006	VOC	PROPIONITRILE	C
SD	15SD0150006	VOC	PROPIONITRILE	C
SD	15SD0160006	VOC	PROPIONITRILE	C
SD	15SD0170006	VOC	PROPIONITRILE	C
SD	15SD0180006	VOC	PROPIONITRILE	C
SD	15SD0190006	VOC	PROPIONITRILE	C
GW	15GWTW006	HERB	DINOSEB	D
GW	15GWTW003	SVOC	2,3,4,6-TETRACHLOROPHENOL	R
GW	15GWTW003	SVOC	2,4,5-TRICHLOROPHENOL	R
GW	15GWTW003	SVOC	2,4,6-TRICHLOROPHENOL	R
GW	15GWTW003	SVOC	2,4-DICHLOROPHENOL	R
GW	15GWTW003	SVOC	2,4-DIMETHYLPHENOL	R
GW	15GWTW002	SVOC	2,4-DINITROPHENOL	C
GW	15GWTW003	SVOC	2,4-DINITROPHENOL	R
GW	15GWTW003	SVOC	2,6-DICHLOROPHENOL	R
GW	15GWTW003	SVOC	2-CHLOROPHENOL	R
GW	15GWTW003	SVOC	2-METHYLPHENOL	R
GW	15GWTW003	SVOC	2-NITROPHENOL	R
GW	15GWTW003	SVOC	3&4-METHYLPHENOL	R
GW	15GWTW006	SVOC	3,3'-DICHLOROBENZIDINE	D
GW	15GWTW003	SVOC	4,6-DINITRO-2-METHYLPHENOL	R
GW	15GWTW003	SVOC	4-CHLORO-3-METHYLPHENOL	R
GW	15GWTW003	SVOC	4-NITROPHENOL	R
GW	15GWTW001	SVOC	4-NITROQUINOLINE-1-OXIDE	C
GW	15GWTW002	SVOC	4-NITROQUINOLINE-1-OXIDE	C
GW	15GWTW003	SVOC	4-NITROQUINOLINE-1-OXIDE	C
GW	15GWTW004	SVOC	4-NITROQUINOLINE-1-OXIDE	C
GW	15GWTW005	SVOC	4-NITROQUINOLINE-1-OXIDE	C
GW	15GWTW006	SVOC	4-NITROQUINOLINE-1-OXIDE	C
GW	15GWTW006-D	SVOC	4-NITROQUINOLINE-1-OXIDE	C
GW	15GWTW007	SVOC	4-NITROQUINOLINE-1-OXIDE	C
GW	15GWTW008	SVOC	4-NITROQUINOLINE-1-OXIDE	C
GW	15GWTW003	SVOC	PHENOL	C
GW	15GWTW001	VOC	ACETONITRILE	C
GW	15GWTW002	VOC	ACETONITRILE	C
GW	15GWTW003	VOC	ACETONITRILE	C
GW	15GWTW004	VOC	ACETONITRILE	C
GW	15GWTW005	VOC	ACETONITRILE	C
GW	15GWTW006	VOC	ACETONITRILE	C
GW	15GWTW006-D	VOC	ACETONITRILE	C
GW	15GWTW007	VOC	ACETONITRILE	C
GW	15GWTW008	VOC	ACETONITRILE	C
GW	15GWTW001	VOC	ACROLEIN	C
GW	15GWTW002	VOC	ACROLEIN	C
GW	15GWTW003	VOC	ACROLEIN	C

TABLE H-3

REJECTED RESULTS FOR ALL SAMPLE MATRICES
SWMU 15 (ROADS AND GROUNDS)

Matrix	Sample	Fraction	Parameter	Reason for Rejection
GW	15GWTW004	VOC	ACROLEIN	C
GW	15GWTW005	VOC	ACROLEIN	C
GW	15GWTW006	VOC	ACROLEIN	C
GW	15GWTW006-D	VOC	ACROLEIN	C
GW	15GWTW007	VOC	ACROLEIN	C
GW	15GWTW008	VOC	ACROLEIN	C
GW	15GWTW001	VOC	ISOBUTANOL	C
GW	15GWTW002	VOC	ISOBUTANOL	C
GW	15GWTW003	VOC	ISOBUTANOL	C
GW	15GWTW004	VOC	ISOBUTANOL	C
GW	15GWTW005	VOC	ISOBUTANOL	C
GW	15GWTW006	VOC	ISOBUTANOL	C
GW	15GWTW006-D	VOC	ISOBUTANOL	C
GW	15GWTW007	VOC	ISOBUTANOL	C
GW	15GWTW008	VOC	ISOBUTANOL	C
GW	15GWTW001	VOC	PROPIONITRILE	C
GW	15GWTW002	VOC	PROPIONITRILE	C
GW	15GWTW003	VOC	PROPIONITRILE	C
GW	15GWTW004	VOC	PROPIONITRILE	C
GW	15GWTW005	VOC	PROPIONITRILE	C
GW	15GWTW006	VOC	PROPIONITRILE	C
GW	15GWTW006-D	VOC	PROPIONITRILE	C
GW	15GWTW007	VOC	PROPIONITRILE	C
GW	15GWTW008	VOC	PROPIONITRILE	C

Table includes Field duplicate and Normal environmental sample types.

Only rejected data are shown; data with the following validation qualifiers are excluded: >, BJ, BU, J, U, UJ, (blank).

C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
D = MS/MSD Recovery Noncompliance
GW = Groundwater
HERB = Herbicides
R = Surrogates Recovery Noncompliance
SD = Sediment
SO = Soil
SVOC = Semivolatile organic compounds
SW = Surface water
VOC = Volatile organic compounds

TABL

SOIL MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE,
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
HERB	2,4,5-T	UG/KG	1.45	11.4	1.34	2.67	596
	2,4,5-TP (SILVEX)	UG/KG	1.45	11.4	1.34	2.67	109
	2,4-D	UG/KG	1.45	11.4	1.34	2.67	27.2
	DINOSEB	UG/KG	1.45	11.4	1.34	2.67	21.8
	HEXACHLOROPHENE	UG/KG	0.91	7.17	0.45	0.9	199
	PENTACHLOROPHENOL	UG/KG	0.482	3.8	0.85	1.7	119
Metals. Total	ANTIMONY	MG/KG	0.022	1.2	0.05	0.5	0.142
	BERYLLIUM	MG/KG	0.1	0.22	0.05	0.5	1.06
	CADMIUM	MG/KG	0.16	0.34	0.35	0.5	0.00222
	CALCIUM	MG/KG	301	5680	1.35	50	--[4]
	MERCURY	MG/KG	0.006	0.007	0.02	0.1	0.1
	SELENIUM	MG/KG	0.06	0.5	0.2	0.5	0.0276
	SILVER	MG/KG	0.041	0.35	0.05	0.5	4.04
	SODIUM	MG/KG	35.3	121	0.8	50	--[4]
	THALLIUM	MG/KG	0.06	0.49	0.05	0.5	0.0569
	TIN	MG/KG	0.21	1.2	0.05	5	7.62
	ZINC	MG/KG	64.7	64.7	0.25	5	6.62
SVOC	1,2,4,5-TETRACHLOROBENZENE	UG/KG	71.7	301	67	330	2020
	1,2,4-TRICHLOROBENZENE	UG/KG	71.7	301	67	330	11100
	1,2-DICHLOROBENZENE	UG/KG	71.7	301	67	330	2960
	1,3-DICHLOROBENZENE	UG/KG	71.7	301	67	330	200
	1,4-DICHLOROBENZENE	UG/KG	71.7	301	67	330	546
	1,4-DIOXANE	UG/KG	107	450	100	200	2050
	1,4-NAPHTHOQUINONE	UG/KG	71.7	301	67	330	1670
	1,4-PHENYLENEDIAMINE	UG/KG	71.7	301	67	670	6160
	1-NAPHTHYLAMINE	UG/KG	71.7	301	67	330	9340
	2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	71.7	301	67	330	27
	2,3,4,6-TETRACHLOROPHENOL	UG/KG	71.7	301	67	330	199
	2,4,5-TRICHLOROPHENOL	UG/KG	71.7	301	67	330	14100
	2,4,6-TRICHLOROPHENOL	UG/KG	71.7	301	67	330	70
	2,4-DICHLOROPHENOL	UG/KG	71.7	301	67	330	111000
	2,4-DIMETHYLPHENOL	UG/KG	71.7	301	67	330	10

TABLE H-4

SOIL MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE,
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	2,4-DINITROPHENOL	UG/KG	71.7	301	67	670	60.9
	2,6-DICHLOROPHENOL	UG/KG	71.7	301	67	330	1170
	2-ACETYLAMINOFLUORENE	UG/KG	71.7	301	67	330	596
	2-CHLORONAPHTHALENE	UG/KG	71.7	301	67	330	12.2
	2-CHLOROPHENOL	UG/KG	71.7	301	67	330	243
	2-METHYLNAPHTHALENE	UG/KG	3.63	111	0.25	6.7	3240
	2-METHYLPHENOL	UG/KG	71.7	301	67	330	40400
	2-NAPHTHYLAMINE	UG/KG	71.7	301	67	330	3030
	2-NITROANILINE	UG/KG	71.7	301	67	330	1700
	2-NITROPHENOL	UG/KG	71.7	301	67	330	1600
	2-PICOLINE	UG/KG	71.7	301	67	330	--[4]
	3&4-METHYLPHENOL	UG/KG	71.7	301	67	330	3,490
	3,3'-DICHLOROBENZIDINE	UG/KG	71.7	301	67	330	646
	3,3'-DIMETHYLBENZIDINE	UG/KG	71.7	301	67	330	53
	3-METHYLCHOLANTHRENE	UG/KG	71.7	301	67	330	77.9
	3-NITROANILINE	UG/KG	71.7	301	67	330	--[4]
	4,6-DINITRO-2-METHYLPHENOL	UG/KG	71.7	301	67	330	144
	4-AMINOBIPHENYL	UG/KG	71.7	301	67	330	3.05
	4-BROMOPHENYL PHENYL ETHER	UG/KG	71.7	301	67	330	--[4]
	4-CHLORO-3-METHYLPHENOL	UG/KG	71.7	301	67	330	7950
	4-CHLOROANILINE	UG/KG	71.7	301	67	330	1100
	4-CHLOROPHENYL PHENYL ETHER	UG/KG	71.7	301	67	330	--[4]
	4-NITROANILINE	UG/KG	71.7	301	67	330	--[4]
	4-NITROPHENOL	UG/KG	71.7	301	67	330	--[4]
	4-NITROQUINOLINE-1-OXIDE	UG/KG	71.7	301	67	330	122
	5-NITRO-O-TOLUIDINE	UG/KG	71.7	301	67	330	8730
	7,12-DIMETHYLBENZ(A)ANTHRACENE	UG/KG	71.7	301	67	330	16300
	A,A-DIMETHYLPHENETHYLAMINE	UG/KG	71.7	301	67	330	61000
	ACENAPHTHENE	UG/KG	3.63	111	0.25	6.7	130000
	ACENAPHTHYLENE	UG/KG	3.58	27.5	0.25	6.7	130000
	ACETOPHENONE	UG/KG	71.7	310	67	330	300000
	ANILINE	UG/KG	71.7	301	67	330	56.8

TABI

SOIL MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE,
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	ANTHRACENE	UG/KG	3.63	15.6	0.25	6.7	51000
	ARAMITE	UG/KG	71.7	301	67	330	19000
	BENZO(A)ANTHRACENE	UG/KG	3.63	15.6	0.25	6.7	620
	BENZO(A)PYRENE	UG/KG	3.63	27.5	0.25	6.7	62
	BENZO(B)FLUORANTHENE	UG/KG	3.63	27.5	0.25	6.7	620
	BENZO(G,H,I)PERYLENE	UG/KG	3.63	27.5	0.25	6.7	119000
	BENZO(K)FLUORANTHENE	UG/KG	3.63	27.5	0.25	6.7	380
	BENZYL ALCOHOL	UG/KG	71.7	301	67	330	48000
	BIS(2-CHLOROETHOXY)METHANE	UG/KG	71.7	301	67	330	302
	BIS(2-CHLOROETHYL)ETHER	UG/KG	71.7	301	67	670	0.7
	BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	71.7	301	67	330	925
	BUTYL BENZYL PHTHALATE	UG/KG	71.7	301	67	330	239
	CHLOROBENZILATE	UG/KG	71.7	301	67	330	1800
	CHRYSENE	UG/KG	3.63	14.1	0.25	6.7	4730
	DIALLATE	UG/KG	71.7	301	67	330	452
	DIBENZO(A,H)ANTHRACENE	UG/KG	3.59	111	0.25	6.7	62
	DIBENZOFURAN	UG/KG	71.7	301	67	330	4900
	DIETHYL PHTHALATE	UG/KG	71.7	301	67	330	24800
	DIMETHYL PHTHALATE	UG/KG	71.7	301	67	330	734000
	DI-N-BUTYL PHTHALATE	UG/KG	71.7	301	67	330	150
	DI-N-OCTYL PHTHALATE	UG/KG	71.7	301	67	330	709000
	DIPHENYLAMINE	UG/KG	71.7	301	67	330	1,010
	ETHYL METHANE SULFONATE	UG/KG	71.7	301	67	330	--[4]
	FLUORANTHENE	UG/KG	3.7	4.3	0.25	6.7	122000
	FLUORENE	UG/KG	3.63	111	0.25	6.7	122000
	HEXACHLOROBENZENE	UG/KG	71.7	301	67	330	199
	HEXACHLOROBUTADIENE	UG/KG	71.7	301	67	330	39.8
	HEXACHLOROCYCLOPENTADIENE	UG/KG	71.7	301	67	330	755
	HEXACHLOROETHANE	UG/KG	71.7	301	67	330	596
	HEXACHLOROPROPENE	UG/KG	71.7	301	67	330	--[4]
	INDENO(1,2,3-CD)PYRENE	UG/KG	3.63	27.5	0.25	6.7	620
	ISODRIN	UG/KG	71.7	301	67	330	3.32

TABLE H-4

SOIL MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS)[1,2]
NSWC CRANE,
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	ISOPHORONE	UG/KG	71.7	301	67	330	5300
	ISOSAFROLE	UG/KG	71.7	301	67	330	9940
	KEPONE	UG/KG	71.7	301	67	330	32.7
	METHAPYRILENE	UG/KG	71.7	301	67	330	2780
	METHYL METHANE SULFONATE	UG/KG	71.7	301	67	330	315
	NAPHTHALENE	UG/KG	3.63	111	0.25	6.7	99.4
	N-NITROSODIETHYLAMINE	UG/KG	71.7	301	67	330	3.2
	N-NITROSODIMETHYLAMINE	UG/KG	71.7	301	67	330	0.0321
	N-NITROSO-DI-N-BUTYLAMINE	UG/KG	71.7	301	67	330	240
	N-NITROSO-DI-N-PROPYLAMINE	UG/KG	71.7	301	67	330	69
	N-NITROSODIPHENYLAMINE	UG/KG	71.7	301	NA	NA	NA
	N-NITROSOMETHYLETHYLAMINE	UG/KG	71.7	301	67	330	0.0321
	N-NITROSOMORPHOLINE	UG/KG	71.7	301	67	330	--[4]
	N-NITROSOPIPERIDINE	UG/KG	71.7	301	67	330	6.65
	N-NITROSOPYRROLIDINE	UG/KG	71.7	301	67	330	12.6
	O,O,O-TRIETHYL PHOSPHOROTHIOATE	UG/KG	71.7	301	67	330	152
	O-TOLUIDINE	UG/KG	71.7	301	67	330	2000
	P-(DIMETHYLAMINO)AZOBENZENE	UG/KG	71.7	301	67	330	40
	PENTACHLOROBENZENE	UG/KG	71.7	301	67	330	497
	PENTACHLOROETHANE	UG/KG	71.7	301	67	330	--[4]
	PENTACHLORONITROBENZENE	UG/KG	71.7	301	67	330	1900
	PHENACETIN	UG/KG	71.7	301	67	330	11700
	PHENANTHRENE	UG/KG	3.7	4.3	0.25	6.7	13000
	PHENOL	UG/KG	71.7	301	67	330	56000
	PRONAMIDE	UG/KG	71.7	301	67	330	13.6
	PYRENE	UG/KG	3.7	4.3	0.25	6.7	78500
	PYRIDINE	UG/KG	71.7	301	67	330	1030
	SAFROLE	UG/KG	71.7	301	67	330	404
VOC	1,1,1,2-TETRACHLOROETHANE	UG/KG	0.796	1.48	1	3	53
	1,1,1-TRICHLOROETHANE	UG/KG	0.796	1.48	1	3	1900
	1,1,2,2-TETRACHLOROETHANE	UG/KG	0.796	1.48	1	3	7
	1,1,2-TRICHLOROETHANE	UG/KG	0.796	1.48	1	3	30

TABL

SOIL MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE,
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	1,1-DICHLOROETHANE	UG/KG	0.796	1.48	1	3	5600
	1,1-DICHLOROETHENE	UG/KG	0.796	1.48	1	3	58
	1,2,3-TRICHLOROPROPANE	UG/KG	0.796	1.48	1	3	5
	1,2-DIBROMO-3-CHLOROPROPANE	UG/KG	0.796	1.48	1	3	19
	1,2-DIBROMOETHANE	UG/KG	0.796	1.48	1	3	6.9
	1,2-DICHLOROETHANE	UG/KG	0.796	1.48	1	3	24
	1,2-DICHLOROPROPANE	UG/KG	0.796	1.48	1	3	30
	2-BUTANONE	UG/KG	0.8	1.48	1	10	35000
	2-HEXANONE	UG/KG	0.796	1.48	1	10	12600
	3-CHLOROPROPENE	UG/KG	0.796	1.48	1	10	13.4
	4-METHYL-2-PENTANONE	UG/KG	0.796	1.48	1	10	20000
	ACETONE	UG/KG	0.8	42	1	10	2500
	ACETONITRILE	UG/KG	31.8	59.4	40	80	1370
	ACROLEIN	UG/KG	0.796	1.48	1	10	0.27
	ACRYLONITRILE	UG/KG	0.796	1.48	1	10	23.9
	BENZENE	UG/KG	0.796	1.48	1	3	34
	BROMODICHLOROMETHANE	UG/KG	0.796	1.48	1	3	510
	BROMOFORM	UG/KG	0.796	1.48	1	3	15900
	BROMOMETHANE	UG/KG	0.796	1.48	1	3	235
	CARBON DISULFIDE	UG/KG	0.796	1.48	1	3	94.1
	CARBON TETRACHLORIDE	UG/KG	0.796	1.48	1	3	66
	CHLOROBENZENE	UG/KG	0.796	1.48	1	3	1300
	CHLORODIBROMOMETHANE	UG/KG	0.796	1.48	1	3	1,100
	CHLOROETHANE	UG/KG	0.796	1.48	1	3	650
	CHLOROFORM	UG/KG	0.796	1.48	1	3	470
	CHLOROMETHANE	UG/KG	0.796	1.48	1	3	1200
	CHLOROPRENE	UG/KG	0.796	1.48	NA	NA	NA
	CIS-1,2-DICHLOROETHENE	UG/KG	0.796	1.48	1	3	400
	CIS-1,3-DICHLOROPROPENE	UG/KG	0.796	1.48	1	3	780
	DIBROMOMETHANE	UG/KG	0.796	1.48	1	3	65000
	DICHLORODIFLUOROMETHANE	UG/KG	0.796	1.48	1	3	39500
	ETHYL METHACRYLATE	UG/KG	0.796	1.48	1	10	30000
	ETHYLBENZENE	UG/KG	0.796	1.48	1	3	5160

TABLE H-4

SOIL MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS)[1,2]
NSWC CRANE,
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	ISOBUTANOL	UG/KG	31.8	59.4	40	80	20800
	METHACRYLONITRILE	UG/KG	0.796	1.48	1	10	57
	METHYL IODIDE	UG/KG	0.796	1.48	1	10	1230
	METHYL METHACRYLATE	UG/KG	0.796	1.48	1	10	984000
	METHYL TERT-BUTYL ETHER	UG/KG	0.796	1.48	1	3	180
	METHYLENE CHLORIDE	UG/KG	0.891	10	1	3	23
	PROPIONITRILE	UG/KG	31.8	59.4	40	80	49.8
	STYRENE	UG/KG	0.796	1.48	1	3	3500
	TETRACHLOROETHENE	UG/KG	0.796	1.48	1	3	58
	TOLUENE	UG/KG	0.796	1.48	1	3	5450
	TOTAL XYLENES	UG/KG	0.796	1.48	1	3	10000
	TRANS-1,2-DICHLOROETHENE	UG/KG	0.796	1.48	1	3	680
	TRANS-1,3-DICHLOROPROPENE	UG/KG	0.796	1.48	1	3	780
	TRANS-1,4-DICHLORO-2-BUTENE	UG/KG	0.796	1.48	NA	NA	NA
	TRICHLOROETHENE	UG/KG	0.796	1.48	NA	NA	NA
	TRICHLOROFLUOROMETHANE	UG/KG	0.8	1.48	1	3	16400
	VINYL ACETATE	UG/KG	0.796	1.48	1	10	2300
	VINYL CHLORIDE	UG/KG	0.796	1.48	1	3	13
PEST/PCB	4,4'-DDD	UG/KG	1.51	1.75	1.65	3.3	758
	4,4'-DDE	UG/KG	1.51	1.75	1.65	3.3	596
	4,4'-DDT	UG/KG	1.51	1.75	1.65	3.3	3.5
	ALDRIN	UG/KG	0.729	0.843	0.85	1.7	3.32
	ALPHA-BHC	UG/KG	0.729	0.843	0.85	1.7	7.2
	ALPHA-CHLORDANE	UG/KG	0.729	0.843	0.85	1.7	224
	AROCLOR-1016	UG/KG	10.1	11.7	250	16.6	0.332
	AROCLOR-1221	UG/KG	10.1	11.7	250	16.6	0.332
	AROCLOR-1232	UG/KG	10.1	11.7	250	16.6	0.332
	AROCLOR-1242	UG/KG	10.1	11.7	250	16.6	0.332
	AROCLOR-1248	UG/KG	10.1	11.7	250	16.6	0.332
	AROCLOR-1254	UG/KG	10.1	11.7	250	16.6	0.332
	AROCLOR-1260	UG/KG	10.1	11.7	250	16.6	0.332
	BETA-BHC	UG/KG	0.729	0.843	0.85	1.7	3.98
	DELTA-BHC	UG/KG	0.729	0.843	0.85	1.7	90

TABI

SOIL MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE,
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	DIELDRIN	UG/KG	1.51	1.75	1.65	3.3	2.38
	ENDOSULFAN I	UG/KG	0.729	0.843	0.85	1.7	119
	ENDOSULFAN II	UG/KG	1.51	1.75	1.65	3.3	119
	ENDOSULFAN SULFATE	UG/KG	1.51	1.75	1.7	3.3	119
	ENDRIN	UG/KG	1.51	1.75	1.7	3.3	10.1
	ENDRIN ALDEHYDE	UG/KG	1.51	1.75	1.65	3.3	10.5
	ENDRIN KETONE	UG/KG	1.51	1.75	1.7	3.3	10.1
	GAMMA-BHC (LINDANE)	UG/KG	0.729	0.843	0.85	1.7	5
	GAMMA-CHLORDANE	UG/KG	0.729	0.843	0.85	1.7	224
	HEPTACHLOR	UG/KG	0.729	0.843	0.85	1.7	5.98
	HEPTACHLOR EPOXIDE	UG/KG	0.729	0.843	0.85	1.7	53
	METHOXYCHLOR	UG/KG	7.29	8.43	8.5	17	19.9
	TOXAPHENE	UG/KG	19.1	22	85	170	119

1 Only results with validation qualifiers that contain a "U" are tallied.
2 Highlighted values (yellow when reproduced in color and gray when reproduced in black and white) exceed laboratory RBTLs.
3 Risk-based target levels are taken from Table 1-5 of the SWMUs 8, 15, 18, 19, 20,and OGTSL QAPP (TtNUS, 2004) and are subject to change.
4 Risk-based target level is not provided because human health or ecological risk-based criteria were not available for this compound.

HERB = Herbicides
M = Metals, total
MG/KG = milligrams per kilogram
NA = Not applicable
PEST/PCB = Pesticides/polychlorinated biphenyls
SVOC = Semivolatile organic compounds
UG/KG = micrograms per kilogram
VOC = Volatile organic compounds

TABL[illegible]

SURFACE WATER MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE,
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
HERB	2,4,5-T	UG/L	0.04	0.04	0.04	0.08	360
	2,4,5-TP (SILVEX)	UG/L	0.04	0.04	0.04	0.08	30
	2,4-D	UG/L	0.04	0.04	0.04	0.08	220
	DINOSEB	UG/L	0.04	0.04	0.04	0.08	0.48
	HEXACHLOROPHENE	UG/L	0.025	0.025	0.013	0.027	0.228
	PENTACHLOROPHENOL	UG/L	0.013	0.013	0.25	0.5	0.56
Metasl, Total	ALUMINUM	UG/L	41.6	41.6	2.6	50	36000
	ANTIMONY	UG/L	0.19	0.59	0.1	1	6
	ARSENIC	UG/L	0.26	1.2	0.2	1	0.045
	BERYLLIUM	UG/L	0.02	0.2	0.1	1	3.6
	CADMIUM	UG/L	0.06	0.5	0.7	1	0.15
	CHROMIUM	UG/L	0.42	1	0.1	1	42
	COBALT	UG/L	0.16	1.2	0.1	1	24
	COPPER	UG/L	1.1	1.1	0.1	2	1.58
	IRON	UG/L	41	49.9	3.9	50	11000
	LEAD	UG/L	0.279	0.633	0.1	1	1.17
	MERCURY	UG/L	0.03	0.052	0.1	0.2	0.0013
	NICKEL	UG/L	0.88	0.88	0.1	1	730
	SELENIUM	UG/L	0.14	0.75	0.4	1	5
	SILVER	UG/L	0.028	0.21	0.1	1	0.12
	THALLIUM	UG/L	0.043	0.12	0.1	1	2
	TIN	UG/L	0.048	0.42	0.1	10	180
	VANADIUM	UG/L	1.14	1.14	0.1	2	12
	ZINC	UG/L	3.5	10.6	0.5	10	65.7
Metals, Dissolved	ALUMINUM	UG/L	8.35	10.6	2.6	50	36000
	ANTIMONY	UG/L	0.085	1.8	0.1	1	6
	ARSENIC	UG/L	0.047	0.33	0.2	1	0.045
	BERYLLIUM	UG/L	0.02	0.14	0.1	1	3.6

TABLE H-5

SURFACE WATER MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE,
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	CADMIUM	UG/L	0.039	0.33	0.7	1	0.15
	CHROMIUM	UG/L	0.32	1.3	0.1	1	42
	IRON	UG/L	103	210	3.9	50	11000
	LEAD	UG/L	0.069	0.486	0.1	1	1.17
	MERCURY	UG/L	0.03	0.22	0.1	0.2	0.0013
	SELENIUM	UG/L	0.12	0.55	0.4	1	5
	SILVER	UG/L	0.028	0.15	0.1	1	0.12
	THALLIUM	UG/L	0.043	0.13	0.1	1	2
	TIN	UG/L	0.048	0.56	0.1	10	180
	VANADIUM	UG/L	1.14	1.14	0.1	2	12
	ZINC	UG/L	3.4	3.4	0.5	10	65.7
SVOC	1,2,4,5-TETRACHLOROBENZENE	UG/L	0.952	1.06	1	5	3
	1,2,4-TRICHLOROBENZENE	UG/L	0.952	1.06	1	5	30
	1,2-DICHLOROBENZENE	UG/L	0.952	1.06	1	5	14
	1,3-DICHLOROBENZENE	UG/L	0.952	1.06	1	5	5.5
	1,4-DICHLOROBENZENE	UG/L	0.952	1.06	1	5	0.5
	1,4-DIOXANE	UG/L	0.952	1.06	50	100	6.1
	1,4-NAPHTHOQUINONE	UG/L	0.952	1.06	1	5	--[4]
	1,4-PHENYLENEDIAMINE	UG/L	0.952	1.06	1	10	6900
	1-NAPHTHYLAMINE	UG/L	0.952	1.06	1	5	--[4]
	2,2'-OXYBIS(1-CHLOROPROPANE)	UG/L	0.952	1.06	1	5	0.27
	2,3,4,6-TETRACHLOROPHENOL	UG/L	0.952	1.06	1	5	1.2
	2,4,5-TRICHLOROPHENOL	UG/L	0.952	1.06	1	5	3600
	2,4,6-TRICHLOROPHENOL	UG/L	0.952	1.06	1	5	0.96
	2,4-DICHLOROPHENOL	UG/L	0.952	1.06	1	5	11
	2,4-DIMETHYLPHENOL	UG/L	0.952	1.06	1	5	100
	2,4-DINITROPHENOL	UG/L	0.952	1.06	1	10	19
	2,6-DICHLOROPHENOL	UG/L	0.952	1.06	1	5	--[4]

TABL[illegible]5

SURFACE WATER MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE,
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	2-ACETYLAMINOFLUORENE	UG/L	0.952	1.06	1	5	535
	2-CHLORONAPHTHALENE	UG/L	0.952	1.06	1	5	0.396
	2-CHLOROPHENOL	UG/L	0.952	1.06	1	5	24
	2-METHYLNAPHTHALENE	UG/L	0.048	0.056	0.05	0.1	5
	2-METHYLPHENOL	UG/L	0.952	1.06	1	5	67
	2-NAPHTHYLAMINE	UG/L	0.952	1.06	1	5	--[4]
	2-NITROANILINE	UG/L	0.952	1.06	1	5	1
	2-NITROPHENOL	UG/L	0.952	1.06	1	5	--[4]
	2-PICOLINE	UG/L	0.952	1.06	1	5	--[4]
	3&4-METHYLPHENOL	UG/L	0.952	1.06	2.5	5	25
	3,3'-DICHLOROBENZIDINE	UG/L	0.952	1.06	1	5	0.15
	3,3'-DIMETHYLBENZIDINE	UG/L	0.952	1.06	1	5	0.0073
	3-METHYLCHOLANTHRENE	UG/L	0.952	1.06	1	5	0.0891
	3-NITROANILINE	UG/L	0.952	1.06	1	5	--[4]
	4,6-DINITRO-2-METHYLPHENOL	UG/L	0.952	1.06	1	5	23
	4-AMINOBIPHENYL	UG/L	0.952	1.06	1	5	--[4]
	4-BROMOPHENYL PHENYL ETHER	UG/L	0.952	1.06	1	5	1.5
	4-CHLORO-3-METHYLPHENOL	UG/L	0.952	1.06	1	5	34.8
	4-CHLOROANILINE	UG/L	0.952	1.06	1	5	150
	4-CHLOROPHENYL PHENYL ETHER	UG/L	0.952	1.06	1	5	--[4]
	4-NITROANILINE	UG/L	0.952	1.06	1	5	--[4]
	4-NITROPHENOL	UG/L	0.952	1.06	1	5	--[4]
	4-NITROQUINOLINE-1-OXIDE	UG/L	0.952	1.06	1	5	--[4]
	5-NITRO-O-TOLUIDINE	UG/L	0.952	1.06	1	5	2
	7,12-DIMETHYLBENZ(A)ANTHRACENE	UG/L	0.952	1.06	1	5	0.548
	A,A-DIMETHYLPHENETHYLAMINE	UG/L	0.952	1.06	1	5	36
	ACENAPHTHENE	UG/L	0.048	0.056	0.05	0.1	38

TABLE H-5

SURFACE WATER MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE,
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	ACENAPHTHYLENE	UG/L	0.048	0.056	0.05	0.1	370
	ACETOPHENONE	UG/L	0.952	1.06	1	5	--[4]
	ANILINE	UG/L	0.952	1.06	1	5	4.1
	ANTHRACENE	UG/L	0.048	0.056	0.05	0.1	0.035
	ARAMITE	UG/L	0.952	1.06	1	10	2.7
	BENZO(A)ANTHRACENE	UG/L	0.048	0.052	0.05	0.1	0.025
	BENZO(A)PYRENE	UG/L	0.048	0.052	0.05	0.1	0.0092
	BENZO(B)FLUORANTHENE	UG/L	0.048	0.052	0.05	0.1	0.092
	BENZO(G,H,I)PERYLENE	UG/L	0.048	0.052	0.05	0.1	0.26
	BENZO(K)FLUORANTHENE	UG/L	0.048	0.052	0.05	0.1	0.8
	BENZYL ALCOHOL	UG/L	0.952	1.06	1	5	8.6
	BIS(2-CHLOROETHOXY)METHANE	UG/L	0.952	1.06	1	5	--[4]
	BIS(2-CHLOROETHYL)ETHER	UG/L	0.952	1.06	0.9	5	0.0098
	BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	0.952	1.06	1	5	0.3
	BUTYL BENZYL PHTHALATE	UG/L	0.952	1.06	1	5	23
	CHLOROBENZILATE	UG/L	0.952	1.06	1	5	0.25
	CHRYSENE	UG/L	0.048	0.052	0.05	0.1	1.6
	DIALLATE	UG/L	0.952	1.06	1	5	1.1
	DIBENZO(A,H)ANTHRACENE	UG/L	0.048	0.056	0.05	0.1	0.0092
	DIBENZOFURAN	UG/L	0.952	1.06	1	5	4
	DIETHYL PHTHALATE	UG/L	0.952	1.06	1	5	110
	DIMETHYL PHTHALATE	UG/L	0.952	1.06	1	5	360000
	DI-N-BUTYL PHTHALATE	UG/L	0.952	1.06	1	5	9.7
	DI-N-OCTYL PHTHALATE	UG/L	0.952	1.06	1	5	20
	DIPHENYLAMINE	UG/L	0.952	1.06	1	5	412
	ETHYL METHANE SULFONATE	UG/L	0.952	1.06	1	5	--[4]
	FLUORANTHENE	UG/L	0.048	0.052	0.05	0.1	1.9
	FLUORENE	UG/L	0.048	0.056	0.05	0.1	19

TABL[illegible]5

SURFACE WATER MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE,
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	HEXACHLOROBENZENE	UG/L	0.952	1.06	1	5	0.0003
	HEXACHLOROBUTADIENE	UG/L	0.952	1.06	1	5	0.053
	HEXACHLOROCYCLOPENTADIENE	UG/L	0.952	1.06	1	5	50
	HEXACHLOROETHANE	UG/L	0.952	1.06	1	5	4.8
	HEXACHLOROPROPENE	UG/L	0.952	1.06	1	5	--[4]
	INDENO(1,2,3-CD)PYRENE	UG/L	0.048	0.052	0.05	0.1	0.022
	ISODRIN	UG/L	0.952	1.06	1	5	0.0309
	ISOPHORONE	UG/L	0.952	1.06	1	5	71
	ISOSAFROLE	UG/L	0.952	1.06	1	5	--[4]
	KEPONE	UG/L	0.952	1.06	1	5	0.0084
	METHAPYRILENE	UG/L	0.952	1.06	1	5	--[4]
	METHYL METHANE SULFONATE	UG/L	0.952	1.06	1	5	--[4]
	NAPHTHALENE	UG/L	0.048	0.056	0.05	0.1	6.2
	N-NITROSODIETHYLAMINE	UG/L	0.952	1.06	1	5	0.00045
	N-NITROSODIMETHYLAMINE	UG/L	0.952	1.06	1	5	0.0013
	N-NITROSO-DI-N-BUTYLAMINE	UG/L	0.952	1.06	1	5	0.002
	N-NITROSO-DI-N-PROPYLAMINE	UG/L	0.952	1.06	1	5	0.0096
	N-NITROSODIPHENYLAMINE	UG/L	0.952	1.06	NA	NA	NA
	N-NITROSOMETHYLETHYLAMINE	UG/L	0.952	1.06	1	5	0.0013
	N-NITROSOMORPHOLINE	UG/L	0.952	1.06	1	5	--[4]
	N-NITROSOPIPERIDINE	UG/L	0.952	1.06	1	5	--[4]
	N-NITROSOPYRROLIDINE	UG/L	0.952	1.06	1	5	0.032
	O,O,O-TRIETHYL PHOSPHOROTHIOATE	UG/L	0.952	1.06	2.5	5	0.0038
	O-TOLUIDINE	UG/L	0.952	1.06	1	5	0.28
	P-(DIMETHYLAMINO)AZOBENZENE	UG/L	0.952	1.06	1	5	1.65
	PENTACHLOROBENZENE	UG/L	0.952	1.06	1	5	0.019
	PENTACHLOROETHANE	UG/L	0.952	1.06	1	5	--[4]

TABLE H-5

SURFACE WATER MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE,
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	PENTACHLORONITROBENZENE	UG/L	0.952	1.06	1	5	0.26
	PHENACETIN	UG/L	0.952	1.06	1	5	--[4]
	PHENANTHRENE	UG/L	0.048	0.052	0.05	0.1	3.6
	PHENOL	UG/L	0.952	1.06	1	5	180
	PRONAMIDE	UG/L	0.952	1.06	1	5	2700
	PYRENE	UG/L	0.049	0.052	0.05	0.1	0.3
	PYRIDINE	UG/L	0.952	1.06	1	5	36
	SAFROLE	UG/L	0.952	1.06	1	5	--[4]
VOC	1,1,1,2-TETRACHLOROETHANE	UG/L	0.3	0.3	0.3	1	0.43
	1,1,1-TRICHLOROETHANE	UG/L	0.3	0.3	0.3	1	76
	1,1,2,2-TETRACHLOROETHANE	UG/L	0.3	0.3	0.3	1	0.055
	1,1,2-TRICHLOROETHANE	UG/L	0.3	0.3	0.3	1	0.2
	1,1-DICHLOROETHANE	UG/L	0.3	0.3	0.3	1	47
	1,1-DICHLOROETHENE	UG/L	0.3	0.3	0.3	1	7
	1,2,3-TRICHLOROPROPANE	UG/L	0.3	0.3	0.3	1	0.0056
	1,2-DIBROMO-3-CHLOROPROPANE	UG/L	0.3	0.3	0.3	1	0.0016
	1,2-DIBROMOETHANE	UG/L	0.3	0.3	0.3	1	0.00076
	1,2-DICHLOROETHANE	UG/L	0.3	0.3	0.3	1	0.12
	1,2-DICHLOROPROPANE	UG/L	0.3	0.3	0.3	1	0.16
	2-BUTANONE	UG/L	0.5	0.5	0.5	5	1900
	2-HEXANONE	UG/L	0.5	0.5	0.5	5	99
	3-CHLOROPROPENE	UG/L	0.5	0.5	0.5	5	1800
	4-METHYL-2-PENTANONE	UG/L	0.5	0.5	0.5	5	160
	ACETONE	UG/L	0.5	0.5	0.5	5	610
	ACETONITRILE	UG/L	20	20	20	40	100
	ACROLEIN	UG/L	0.5	0.5	0.5	5	0.042
	ACRYLONITRILE	UG/L	0.5	0.5	0.5	5	0.039
	BENZENE	UG/L	0.3	0.3	0.3	1	0.34

TABL

SURFACE WATER MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE,
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	BROMODICHLOROMETHANE	UG/L	0.3	0.3	0.3	1	0.18
	BROMOFORM	UG/L	0.3	0.3	0.3	1	8.5
	BROMOMETHANE	UG/L	0.3	0.3	0.3	1	8.7
	CARBON DISULFIDE	UG/L	0.3	0.3	0.3	1	15
	CARBON TETRACHLORIDE	UG/L	0.3	0.3	0.3	1	0.17
	CHLOROBENZENE	UG/L	0.3	0.3	0.3	1	47
	CHLORODIBROMOMETHANE	UG/L	0.3	0.3	0.3	1	0.13
	CHLOROETHANE	UG/L	0.5	0.5	0.3	1	4.6
	CHLOROFORM	UG/L	0.3	0.3	0.3	1	6.2
	CHLOROMETHANE	UG/L	0.3	0.3	0.3	1	1.5
	CHLOROPRENE	UG/L	0.5	0.5	NA	NA	NA
	CIS-1,2-DICHLOROETHENE	UG/L	0.3	0.3	0.3	1	61
	CIS-1,3-DICHLOROPROPENE	UG/L	0.3	0.3	0.3	1	0.4
	DIBROMOMETHANE	UG/L	0.3	0.3	0.3	1	61
	DICHLORODIFLUOROMETHANE	UG/L	0.3	0.3	0.3	1	390
	ETHYL METHACRYLATE	UG/L	0.5	0.5	0.5	5	550
	ETHYLBENZENE	UG/L	0.3	0.3	0.3	1	2.9
	ISOBUTANOL	UG/L	20	20	20	40	1800
	METHACRYLONITRILE	UG/L	0.3	0.3	0.5	5	1
	METHYL IODIDE	UG/L	0.5	0.5	0.5	5	--[4]
	METHYL METHACRYLATE	UG/L	0.5	0.5	0.5	5	1400
	METHYL TERT-BUTYL ETHER	UG/L	0.5	0.5	0.5	1	13
	METHYLENE CHLORIDE	UG/L	0.3	0.3	0.3	1	4.3
	PROPIONITRILE	UG/L	20	20	20	40	--[4]
	STYRENE	UG/L	0.3	0.3	0.3	1	32
	TETRACHLOROETHENE	UG/L	0.3	0.3	0.3	1	0.66
	TOLUENE	UG/L	0.3	0.3	0.3	1	253
	TOTAL XYLENES	UG/L	0.3	0.3	0.3	1	27

TABLE H-5

SURFACE WATER MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE,
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	TRANS-1,2-DICHLOROETHENE	UG/L	0.3	0.3	0.3	1	100
	TRANS-1,3-DICHLOROPROPENE	UG/L	0.3	0.3	0.3	1	0.4
	TRANS-1,4-DICHLORO-2-BUTENE	UG/L	0.5	0.5	NA	NA	NA
	TRICHLOROETHENE	UG/L	0.3	0.3	NA	NA	NA
	TRICHLOROFLUOROMETHANE	UG/L	0.3	0.3	0.3	1	1300
	VINYL ACETATE	UG/L	0.5	0.5	0.5	5	410
	VINYL CHLORIDE	UG/L	0.3	0.3	0.3	1	2
PEST/PCB	4,4'-DDD	UG/L	0.048	0.057	0.05	0.1	0.28
	4,4'-DDE	UG/L	0.048	0.057	0.05	0.1	4.5E-09
	4,4'-DDT	UG/L	0.048	0.057	0.05	0.1	1.1E-05
	ALDRIN	UG/L	0.024	0.028	0.025	0.05	0.004
	ALPHA-BHC	UG/L	0.024	0.028	0.025	0.05	0.011
	ALPHA-CHLORDANE	UG/L	0.024	0.028	0.025	0.05	0.0043
	AROCLOR-1016	UG/L	0.24	0.285	0.25	0.5	0.00012
	AROCLOR-1221	UG/L	0.24	0.285	0.25	0.5	0.00012
	AROCLOR-1232	UG/L	0.24	0.285	0.25	0.5	0.00012
	AROCLOR-1242	UG/L	0.24	0.285	0.25	0.5	0.00012
	AROCLOR-1248	UG/L	0.24	0.285	0.25	0.5	0.00012
	AROCLOR-1254	UG/L	0.24	0.285	0.25	0.5	0.00012
	AROCLOR-1260	UG/L	0.24	0.285	0.25	0.5	0.00012
	BETA-BHC	UG/L	0.024	0.028	0.025	0.05	0.037
	DELTA-BHC	UG/L	0.024	0.028	0.025	0.05	0.011
	DIELDRIN	UG/L	0.048	0.057	0.05	0.1	7.1E-05
	ENDOSULFAN I	UG/L	0.024	0.028	0.025	0.05	0.056
	ENDOSULFAN II	UG/L	0.048	0.057	0.05	0.1	0.056
	ENDOSULFAN SULFATE	UG/L	0.048	0.057	0.05	0.1	0.056
	ENDRIN	UG/L	0.048	0.057	0.05	0.1	0.036
	ENDRIN ALDEHYDE	UG/L	0.048	0.057	0.05	0.1	0.15

TABL[illegible]5

SURFACE WATER MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE,
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	ENDRIN KETONE	UG/L	0.048	0.057	0.05	0.1	0.036
	GAMMA-BHC (LINDANE)	UG/L	0.024	0.028	0.025	0.05	0.026
	GAMMA-CHLORDANE	UG/L	0.024	0.028	0.025	0.05	0.0043
	HEPTACHLOR	UG/L	0.024	0.028	0.025	0.05	0.0038
	HEPTACHLOR EPOXIDE	UG/L	0.024	0.028	0.025	0.05	0.0038
	METHOXYCHLOR	UG/L	0.24	0.285	0.25	0.5	0.019
	TOXAPHENE	UG/L	2.4	2.85	2.5	5	0.00014

1 Only results with validation qualifiers that contain a "U" are tallied.
2 Highlighted values (yellow when reproduced in color and gray when reproduced in black and white) exceed laboratory RBTLs.
3 Risk-based target levels are taken from Table 1-5 of the SWMUs 8, 15, 18, 19, 20,and OGTSL QAPP (TtNUS, 2004) and are subject to change.
4 Risk-based target level is not provided because human health or ecological risk-based criteria were not available for this compound.

HERB = Herbicides
M = Metals, total
MF = Metals, dissolved
NA = Not applicable
PEST/PCB = Pesticides/polychlorinated biphenyls
SVOC = Semivolatile organic compounds
UG/L = micrograms per Liter
VOC = Volatile organic compounds

TABL[illegible]6

SEDIMENT MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
HERB	2,4,5-T	UG/KG	1.56	2.27	1.34	2.67	58700
	2,4,5-TP (SILVEX)	UG/KG	1.56	2.27	1.34	2.67	675
	2,4-D	UG/KG	1.56	2.27	1.34	2.67	1273
	DINOSEB	UG/KG	1.56	2.27	1.34	2.67	14.5
	HEXACHLOROPHENE	UG/KG	0.982	1.43	0.45	0.9	18000
	PENTACHLOROPHENOL	UG/KG	0.54	0.755	0.85	1.7	3000
Metals, Total	ANTIMONY	MG/KG	0.19	1.2	0.05	0.5	31
	BERYLLIUM	MG/KG	0.18	0.32	0.05	0.5	150
	CADMIUM	MG/KG	0.27	0.3	0.35	0.5	0.99
	SELENIUM	MG/KG	0.13	0.27	0.2	0.5	390
	SILVER	MG/KG	0.042	0.08	0.05	0.5	0.5
	SODIUM	MG/KG	83.4	146	0.8	50	--[4]
	THALLIUM	MG/KG	0.04	0.23	0.05	0.5	5.2
	TIN	MG/KG	0.095	0.62	0.05	5	--
MISC	CYANIDE	MG/KG	0.289	0.315	NA	NA	NA
SVOC	1,2,4,5-TETRACHLOROBENZENE	UG/KG	77.4	112	67	330	1252
	1,2,4-TRICHLOROBENZENE	UG/KG	77.4	112	67	330	5062
	1,2-DICHLOROBENZENE	UG/KG	77.4	112	67	330	294
	1,3-DICHLOROBENZENE	UG/KG	77.4	112	67	330	1315
	1,4-DICHLOROBENZENE	UG/KG	77.4	112	67	330	318
	1,4-DIOXANE	UG/KG	115	168	100	200	119
	1,4-NAPHTHOQUINONE	UG/KG	77.4	112	67	330	--[4]
	1,4-PHENYLENEDIAMINE	UG/KG	77.4	112	67	670	12000000
	1-NAPHTHYLAMINE	UG/KG	77.4	112	67	330	--[4]
	2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	77.4	112	67	330	2900
	2,3,4,6-TETRACHLOROPHENOL	UG/KG	77.4	112	67	330	129
	2,4,5-TRICHLOROPHENOL	UG/KG	77.4	112	67	330	6100000

TABLE H-6

SEDIMENT MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	2,4,6-TRICHLOROPHENOL	UG/KG	77.4	112	67	330	208
	2,4-DICHLOROPHENOL	UG/KG	77.4	112	67	330	81.7
	2,4-DIMETHYLPHENOL	UG/KG	77.4	112	67	330	304
	2,4-DINITROPHENOL	UG/KG	77.4	112	67	670	6.21
	2,6-DICHLOROPHENOL	UG/KG	77.4	112	67	330	--[4]
	2-ACETYLAMINOFLUORENE	UG/KG	77.4	112	67	330	15.3
	2-CHLORONAPHTHALENE	UG/KG	77.4	112	67	330	417
	2-CHLOROPHENOL	UG/KG	77.4	112	67	330	31.9
	2-METHYLNAPHTHALENE	UG/KG	4.37	16.3	0.25	6.7	20.2
	2-METHYLPHENOL	UG/KG	77.4	112	67	330	55.4
	2-NAPHTHYLAMINE	UG/KG	77.4	112	67	330	--[4]
	2-NITROANILINE	UG/KG	77.4	112	67	330	1700
	2-NITROPHENOL	UG/KG	77.4	112	67	330	--[4]
	2-PICOLINE	UG/KG	77.4	112	67	330	--[4]
	3&4-METHYLPHENOL	UG/KG	77.4	112	67	330	52.4
	3,3'-DICHLOROBENZIDINE	UG/KG	77.4	112	67	330	127
	3,3'-DIMETHYLBENZIDINE	UG/KG	77.4	112	67	330	53
	3-METHYLCHOLANTHRENE	UG/KG	77.4	112	67	330	8190000
	3-NITROANILINE	UG/KG	77.4	112	67	330	--[4]
	4,6-DINITRO-2-METHYLPHENOL	UG/KG	77.4	112	67	330	104
	4-AMINOBIPHENYL	UG/KG	77.4	112	67	330	--[4]
	4-BROMOPHENYL PHENYL ETHER	UG/KG	77.4	112	67	330	1550
	4-CHLORO-3-METHYLPHENOL	UG/KG	77.4	112	67	330	388
	4-CHLOROANILINE	UG/KG	77.4	112	67	330	146
	4-CHLOROPHENYL PHENYL ETHER	UG/KG	77.4	112	67	330	--[4]
	4-NITROANILINE	UG/KG	77.4	112	67	330	--[4]

TABL[illegible]6

SEDIMENT MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	4-NITROPHENOL	UG/KG	77.4	112	67	330	--[4]
	4-NITROQUINOLINE-1-OXIDE	UG/KG	77.4	112	67	330	--[4]
	5-NITRO-O-TOLUIDINE	UG/KG	77.4	112	67	330	15000
	7,12-DIMETHYLBENZ(A)ANTHRACENE	UG/KG	77.4	112	67	330	66400
	A,A-DIMETHYLPHENETHYLAMINE	UG/KG	77.4	112	67	330	61000
	ACENAPHTHENE	UG/KG	4.37	4.37	0.25	6.7	6.71
	ACENAPHTHYLENE	UG/KG	3.81	16.3	0.25	6.7	5.87
	ACETOPHENONE	UG/KG	77.4	112	67	330	--[4]
	ANILINE	UG/KG	77.4	112	67	330	0.31
	ANTHRACENE	UG/KG	4.37	4.37	0.25	6.7	57.2
	ARAMITE	UG/KG	77.4	112	67	330	19000
	BENZYL ALCOHOL	UG/KG	77.4	112	67	330	1.04
	BIS(2-CHLOROETHOXY)METHANE	UG/KG	77.4	112	67	330	--[4]
	BIS(2-CHLOROETHYL)ETHER	UG/KG	77.4	112	67	670	210
	BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	83.2	112	67	330	182
	BUTYL BENZYL PHTHALATE	UG/KG	77.4	112	67	330	1970
	CHLOROBENZILATE	UG/KG	77.4	112	67	330	860
	DIALLATE	UG/KG	77.4	112	67	330	8000
	DIBENZO(A,H)ANTHRACENE	UG/KG	3.81	16.3	0.25	6.7	33
	DIBENZOFURAN	UG/KG	77.4	88.7	67	330	449
	DIETHYL PHTHALATE	UG/KG	77.4	112	67	330	295
	DIMETHYL PHTHALATE	UG/KG	77.4	112	67	330	1E+08
	DI-N-BUTYL PHTHALATE	UG/KG	77.4	112	67	330	1114
	DI-N-OCTYL PHTHALATE	UG/KG	77.4	112	67	330	40600
	DIPHENYLAMINE	UG/KG	77.4	112	67	330	34.6
	ETHYL METHANE SULFONATE	UG/KG	77.4	112	67	330	--[4]

TABLE H-6

SEDIMENT MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	FLUORENE	UG/KG	4.37	4.37	0.25	6.7	77.4
	HEXACHLOROBENZENE	UG/KG	77.4	112	67	330	20
	HEXACHLOROBUTADIENE	UG/KG	77.4	112	67	330	26.5
	HEXACHLOROCYCLOPENTADIENE	UG/KG	77.4	112	67	330	901
	HEXACHLOROETHANE	UG/KG	77.4	112	67	330	584
	HEXACHLOROPROPENE	UG/KG	77.4	112	67	330	--[4]
	ISODRIN	UG/KG	77.4	112	67	330	55.2
	ISOPHORONE	UG/KG	77.4	112	67	330	432
	ISOSAFROLE	UG/KG	77.4	112	67	330	--[4]
	KEPONE	UG/KG	77.4	112	67	330	3.31
	METHAPYRILENE	UG/KG	77.4	112	67	330	--[4]
	METHYL METHANE SULFONATE	UG/KG	77.4	112	67	330	--[4]
	NAPHTHALENE	UG/KG	4.37	16.3	0.25	6.7	176
	N-NITROSODIETHYLAMINE	UG/KG	77.4	112	67	330	3.2
	N-NITROSODIMETHYLAMINE	UG/KG	77.4	112	67	330	9.5
	N-NITROSO-DI-N-BUTYLAMINE	UG/KG	77.4	112	67	330	24
	N-NITROSO-DI-N-PROPYLAMINE	UG/KG	77.4	112	67	330	69
	N-NITROSODIPHENYLAMINE	UG/KG	77.4	112	NA	NA	NA
	N-NITROSOMETHYLETHYLAMINE	UG/KG	77.4	112	67	330	9.5
	N-NITROSOMORPHOLINE	UG/KG	77.4	112	67	330	--[4]
	N-NITROSOPIPERIDINE	UG/KG	77.4	112	67	330	--[4]
	N-NITROSOPYRROLIDINE	UG/KG	77.4	112	67	330	230
	O,O,O-TRIETHYL PHOSPHOROTHIOATE	UG/KG	77.4	112	67	330	2.47
	O-TOLUIDINE	UG/KG	77.4	112	67	330	2000
	P-(DIMETHYLAMINO)AZOBENZENE	UG/KG	77.4	112	67	330	318
	PENTACHLOROBENZENE	UG/KG	77.4	112	67	330	24

TABL[illegible]5

SEDIMENT MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS)[1,2]
NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	PENTACHLOROETHANE	UG/KG	77.4	112	67	330	--[4]
	PENTACHLORONITROBENZENE	UG/KG	77.4	112	67	330	1900
	PHENACETIN	UG/KG	77.4	112	67	330	--[4]
	PHENOL	UG/KG	77.4	112	67	330	49.1
	PRONAMIDE	UG/KG	77.4	112	67	330	4600000
	PYRIDINE	UG/KG	77.4	112	67	330	106
	SAFROLE	UG/KG	77.4	112	67	330	--[4]
VOC	1,1,1,2-TETRACHLOROETHANE	UG/KG	0.948	1.54	1	3	3200
	1,1,1-TRICHLOROETHANE	UG/KG	0.948	1.54	1	3	213
	1,1,2,2-TETRACHLOROETHANE	UG/KG	0.948	1.54	1	3	410
	1,1,2-TRICHLOROETHANE	UG/KG	0.948	1.54	1	3	730
	1,1-DICHLOROETHANE	UG/KG	0.948	1.54	1	3	0.575
	1,1-DICHLOROETHENE	UG/KG	0.948	1.54	1	3	19.4
	1,2,3-TRICHLOROPROPANE	UG/KG	0.948	1.54	1	3	5
	1,2-DIBROMO-3-CHLOROPROPANE	UG/KG	0.948	1.54	1	3	19
	1,2-DIBROMOETHANE	UG/KG	0.948	1.54	1	3	6.9
	1,2-DICHLOROETHANE	UG/KG	0.948	1.54	1	3	280
	1,2-DICHLOROPROPANE	UG/KG	0.948	1.54	1	3	333
	2-BUTANONE	UG/KG	0.948	1.54	1	10	42.4
	2-HEXANONE	UG/KG	0.948	1.54	1	10	58.2
	3-CHLOROPROPENE	UG/KG	0.948	1.54	1	10	3.00E+06
	4-METHYL-2-PENTANONE	UG/KG	0.948	1.54	1	10	25.1
	ACETONE	UG/KG	0.948	2	1	10	9.9
	ACETONITRILE	UG/KG	37.9	61.7	40	80	56
	ACROLEIN	UG/KG	0.948	1.54	1	10	0.00152
	ACRYLONITRILE	UG/KG	0.948	1.54	1	10	1.2
	BENZENE	UG/KG	0.948	1.54	1	3	142

TABLE H-6

SEDIMENT MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	BROMODICHLOROMETHANE	UG/KG	0.948	1.54	1	3	820
	BROMOFORM	UG/KG	0.948	1.54	1	3	492
	BROMOMETHANE	UG/KG	0.948	1.54	1	3	1.37
	CARBON DISULFIDE	UG/KG	0.948	1.54	1	3	23.9
	CARBON TETRACHLORIDE	UG/KG	0.948	1.54	1	3	250
	CHLOROBENZENE	UG/KG	0.948	1.54	1	3	291
	CHLORODIBROMOMETHANE	UG/KG	0.948	1.54	1	3	1100
	CHLOROETHANE	UG/KG	0.948	1.54	1	3	3000
	CHLOROFORM	UG/KG	0.948	1.54	1	3	121
	CHLOROMETHANE	UG/KG	0.948	1.54	1	3	1200
	CHLOROPRENE	UG/KG	0.948	1.54	NA	NA	NA
	CIS-1,2-DICHLOROETHENE	UG/KG	0.948	1.54	1	3	43000
	CIS-1,3-DICHLOROPROPENE	UG/KG	0.948	1.54	1	3	780
	DIBROMOMETHANE	UG/KG	0.948	1.54	1	3	67000
	DICHLORODIFLUOROMETHANE	UG/KG	0.948	1.54	1	3	94000
	ETHYL METHACRYLATE	UG/KG	0.948	1.54	1	10	140000
	ETHYLBENZENE	UG/KG	0.948	1.54	1	3	175
	ISOBUTANOL	UG/KG	37.9	61.7	40	80	13000000
	METHACRYLONITRILE	UG/KG	0.948	1.54	1	10	2100
	METHYL IODIDE	UG/KG	0.948	1.54	1	10	--[4]
	METHYL METHACRYLATE	UG/KG	0.948	1.54	1	10	168
	METHYL TERT-BUTYL ETHER	UG/KG	0.948	1.54	1	3	62000
	METHYLENE CHLORIDE	UG/KG	0.948	6	1	3	9100
	PROPIONITRILE	UG/KG	37.9	61.7	40	80	--[4]
	STYRENE	UG/KG	0.948	1.54	1	3	254
	TETRACHLOROETHENE	UG/KG	0.948	1.54	1	3	990
	TOLUENE	UG/KG	0.948	1.54	1	3	1220

TABLE 6

SEDIMENT MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	TOTAL XYLENES	UG/KG	0.948	1.54	1	3	433
	TRANS-1,2-DICHLOROETHENE	UG/KG	0.948	1.54	1	3	654
	TRANS-1,3-DICHLOROPROPENE	UG/KG	0.948	1.54	1	3	780
	TRANS-1,4-DICHLORO-2-BUTENE	UG/KG	0.948	1.54	NA	NA	NA
	TRICHLOROETHENE	UG/KG	0.948	1.54	NA	NA	NA
	TRICHLOROFLUOROMETHANE	UG/KG	0.948	1.54	1	3	390000
	VINYL ACETATE	UG/KG	0.948	1.54	1	10	430000
	VINYL CHLORIDE	UG/KG	0.948	1.54	1	3	202
PEST/PCB	4,4'-DDD	UG/KG	1.56	1.73	1.65	3.3	4.88
	4,4'-DDE	UG/KG	1.56	1.73	1.65	3.3	3.16
	ALDRIN	UG/KG	0.751	1.09	0.85	1.7	2
	ALPHA-BHC	UG/KG	0.751	1.09	0.85	1.7	6
	ALPHA-CHLORDANE	UG/KG	0.751	1.09	0.85	1.7	3.24
	AROCLOR-1016	UG/KG	10.4	15.1	250	16.6	59.8
	AROCLOR-1221	UG/KG	10.4	15.1	250	16.6	59.8
	AROCLOR-1232	UG/KG	10.4	15.1	250	16.6	59.8
	AROCLOR-1242	UG/KG	10.4	15.1	250	16.6	59.8
	AROCLOR-1248	UG/KG	10.4	15.1	250	16.6	59.8
	AROCLOR-1254	UG/KG	10.4	15.1	250	16.6	59.8
	AROCLOR-1260	UG/KG	10.4	15.1	250	16.6	59.8
	BETA-BHC	UG/KG	0.751	1.09	0.85	1.7	5
	DELTA-BHC	UG/KG	0.751	1.09	0.85	1.7	90
	DIELDRIN	UG/KG	1.56	2.27	1.65	3.3	1.9
	ENDOSULFAN I	UG/KG	0.751	1.09	0.85	1.7	3.26
	ENDOSULFAN II	UG/KG	1.56	2.27	1.65	3.3	1.94
	ENDOSULFAN SULFATE	UG/KG	1.56	2.27	1.7	3.3	3.26
	ENDRIN	UG/KG	1.56	2.27	1.7	3.3	2.22

TABLE H-6

SEDIMENT MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	ENDRIN ALDEHYDE	UG/KG	1.56	2.27	1.65	3.3	480
	ENDRIN KETONE	UG/KG	1.56	2.27	1.7	3.3	2.22
	GAMMA-BHC (LINDANE)	UG/KG	0.751	1.09	0.85	1.7	2.37
	GAMMA-CHLORDANE	UG/KG	0.751	1.09	0.85	1.7	3.24
	HEPTACHLOR	UG/KG	0.751	1.09	0.85	1.7	0.6
	HEPTACHLOR EPOXIDE	UG/KG	0.751	1.09	0.85	1.7	2.47
	METHOXYCHLOR	UG/KG	7.51	10.9	8.5	17	13.6
	TOXAPHENE	UG/KG	19.6	28.5	85	170	0.077

1 Only results with validation qualifiers that contain a "U" are tallied.
2 Highlighted values (yellow when reproduced in color and gray when reproduced in black and white) exceed laboratory RBTLs.
3 Risk-based target levels are taken from Table 1-5 of the SWMUs 8, 15, 18, 19, 20,and OGTSL QAPP (TtNUS, 2004) and are subject to change.
4 Risk-based target level is not provided because human health or ecological risk-based criteria were not available for this compound.

HERB = Herbicides
M = Metals, total
MG/KG = milligrams per kilogram
MISC = Miscellaneous parameters
NA = Not applicable
PEST/PCB = Pesticides/polychlorinated biphenyls
SVOC = Semivolatile organic compounds
UG/KG = micrograms per kilogram
VOC = Volatile organic compounds

TABL[illegible]

GROUNDWATER MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
HERB	2,4,5-T	UG/L	0.04	0.04	0.04	0.08	360
	2,4,5-TP (SILVEX)	UG/L	0.04	0.04	0.04	0.08	30
	2,4-D	UG/L	0.04	0.04	0.04	0.08	220
	DINOSEB	UG/L	0.04	0.04	0.04	0.08	0.48
	HEXACHLOROPHENE	UG/L	0.025	0.025	0.013	0.027	0.228
	PENTACHLOROPHENOL	UG/L	0.013	0.013	0.25	0.5	0.56
Metals, Total	ALUMINUM	UG/L	28.8	81.9	2.6	50	36000
	ANTIMONY	UG/L	0.085	0.95	0.1	1	6
	ARSENIC	UG/L	0.45	0.74	0.2	1	0.045
	BERYLLIUM	UG/L	0.02	0.18	0.1	1	3.6
	CADMIUM	UG/L	0.08	0.82	0.7	1	0.15
	CHROMIUM	UG/L	0.19	0.89	0.1	1	42
	COPPER	UG/L	0.39	0.39	0.1	2	1.58
	LEAD	UG/L	0.11	0.227	0.1	1	1.17
	MERCURY	UG/L	0.03	0.03	0.1	0.2	0.0013
	SELENIUM	UG/L	0.094	0.46	0.4	1	5
	SILVER	UG/L	0.028	0.15	0.1	1	0.12
	THALLIUM	UG/L	0.043	0.2	0.1	1	2
	TIN	UG/L	0.048	0.53	0.1	10	180
	VANADIUM	UG/L	1.14	1.14	0.1	2	12
	ZINC	UG/L	2	8.8	0.5	10	65.7
Metals, Dissolved	ALUMINUM	UG/L	8.6	54.7	2.6	50	36000
	ANTIMONY	UG/L	0.085	0.96	0.1	1	6
	ARSENIC	UG/L	0.18	0.32	0.2	1	0.045
	BERYLLIUM	UG/L	0.02	0.03	0.1	1	3.6
	CADMIUM	UG/L	0.12	0.35	0.7	1	0.15
	CHROMIUM	UG/L	0.42	1	0.1	1	42
	LEAD	UG/L	0.069	0.14	0.1	1	1.17
	MERCURY	UG/L	0.03	0.061	0.1	0.2	0.0013
	SELENIUM	UG/L	0.7	0.7	0.4	1	5
	SILVER	UG/L	0.028	0.028	0.1	1	0.12
	THALLIUM	UG/L	0.043	0.043	0.1	1	2

TABLE H-7

GROUNDWATER MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	TIN	UG/L	0.13	0.16	0.1	10	180
	VANADIUM	UG/L	1.14	1.14	0.1	2	12
	ZINC	UG/L	1.4	2.9	0.5	10	65.7
SVOC	1,2,4,5-TETRACHLOROBENZENE	UG/L	0.96	10.5	1	5	3
	1,2,4-TRICHLOROBENZENE	UG/L	0.96	10.5	1	5	30
	1,2-DICHLOROBENZENE	UG/L	0.96	10.5	1	5	14
	1,3-DICHLOROBENZENE	UG/L	0.96	10.5	1	5	5.5
	1,4-DICHLOROBENZENE	UG/L	0.96	10.5	1	5	0.5
	1,4-DIOXANE	UG/L	0.96	10.5	50	100	6.1
	1,4-NAPHTHOQUINONE	UG/L	0.96	10.5	1	5	--[4]
	1,4-PHENYLENEDIAMINE	UG/L	0.96	10.5	1	10	6900
	1-NAPHTHYLAMINE	UG/L	0.96	10.5	1	5	--[4]
	2,2'-OXYBIS(1-CHLOROPROPANE)	UG/L	0.96	10.5	1	5	0.27
	2,3,4,6-TETRACHLOROPHENOL	UG/L	0.96	10.5	1	5	1.2
	2,4,5-TRICHLOROPHENOL	UG/L	0.96	10.5	1	5	3600
	2,4,6-TRICHLOROPHENOL	UG/L	0.96	10.5	1	5	0.96
	2,4-DICHLOROPHENOL	UG/L	0.96	10.5	1	5	11
	2,4-DIMETHYLPHENOL	UG/L	0.96	10.5	1	5	100
	2,4-DINITROPHENOL	UG/L	0.96	10.5	1	10	19
	2,6-DICHLOROPHENOL	UG/L	0.96	10.5	1	5	--[4]
	2-ACETYLAMINOFLUORENE	UG/L	0.96	10.5	1	5	535
	2-CHLORONAPHTHALENE	UG/L	0.96	10.5	1	5	0.396
	2-CHLOROPHENOL	UG/L	0.96	10.5	1	5	24
	2-METHYLNAPHTHALENE	UG/L	0.048	0.054	0.05	0.1	5
	2-METHYLPHENOL	UG/L	0.96	10.5	1	5	67
	2-NAPHTHYLAMINE	UG/L	0.96	10.5	1	5	--[4]
	2-NITROANILINE	UG/L	0.96	10.5	1	5	1
	2-NITROPHENOL	UG/L	0.96	10.5	1	5	--[4]
	2-PICOLINE	UG/L	0.96	10.5	1	5	--[4]
	3&4-METHYLPHENOL	UG/L	0.96	10.5	2.5	5	25
	3,3'-DICHLOROBENZIDINE	UG/L	0.96	10.5	1	5	0.15

TABL[illegible]7

GROUNDWATER MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	3,3'-DIMETHYLBENZIDINE	UG/L	0.96	10.5	1	5	0.0073
	3-METHYLCHOLANTHRENE	UG/L	0.96	10.5	1	5	0.0891
	3-NITROANILINE	UG/L	0.96	10.5	1	5	--[4]
	4,6-DINITRO-2-METHYLPHENOL	UG/L	0.96	10.5	1	5	23
	4-AMINOBIPHENYL	UG/L	0.96	10.5	1	5	--[4]
	4-BROMOPHENYL PHENYL ETHER	UG/L	0.96	10.5	1	5	1.5
	4-CHLORO-3-METHYLPHENOL	UG/L	0.96	10.5	1	5	34.8
	4-CHLOROANILINE	UG/L	0.96	10.5	1	5	150
	4-CHLOROPHENYL PHENYL ETHER	UG/L	0.96	10.5	1	5	--[4]
	4-NITROANILINE	UG/L	0.96	10.5	1	5	--[4]
	4-NITROPHENOL	UG/L	0.96	10.5	1	5	--[4]
	4-NITROQUINOLINE-1-OXIDE	UG/L	0.96	10.5	1	5	--[4]
	5-NITRO-O-TOLUIDINE	UG/L	0.96	10.5	1	5	2
	7,12-DIMETHYLBENZ(A)ANTHRACENE	UG/L	0.96	10.5	1	5	0.548
	A,A-DIMETHYLPHENETHYLAMINE	UG/L	0.96	10.5	1	5	36
	ACENAPHTHENE	UG/L	0.048	0.054	0.05	0.1	38
	ACENAPHTHYLENE	UG/L	0.048	0.054	0.05	0.1	370
	ACETOPHENONE	UG/L	0.96	10.5	1	5	--[4]
	ANILINE	UG/L	0.96	10.5	1	5	4.1
	ANTHRACENE	UG/L	0.048	0.054	0.05	0.1	0.035
	ARAMITE	UG/L	0.96	10.5	1	10	2.7
	BENZO(A)ANTHRACENE	UG/L	0.048	0.054	0.05	0.1	0.025
	BENZO(A)PYRENE	UG/L	0.048	0.054	0.05	0.1	0.0092
	BENZO(B)FLUORANTHENE	UG/L	0.048	0.054	0.05	0.1	0.092
	BENZO(G,H,I)PERYLENE	UG/L	0.048	0.054	0.05	0.1	0.26
	BENZO(K)FLUORANTHENE	UG/L	0.048	0.054	0.05	0.1	0.8
	BENZYL ALCOHOL	UG/L	0.96	10.5	1	5	8.6
	BIS(2-CHLOROETHOXY)METHANE	UG/L	0.96	10.5	1	5	--[4]
	BIS(2-CHLOROETHYL)ETHER	UG/L	0.96	10.5	0.9	5	0.0098
	BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	0.96	10.5	1	5	0.3
	BUTYL BENZYL PHTHALATE	UG/L	0.96	10.5	1	5	23

TABLE H-7

GROUNDWATER MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	CHLOROBENZILATE	UG/L	0.96	10.5	1	5	0.25
	CHRYSENE	UG/L	0.048	0.054	0.05	0.1	1.6
	DIALLATE	UG/L	0.96	10.5	1	5	1.1
	DIBENZO(A,H)ANTHRACENE	UG/L	0.048	0.054	0.05	0.1	0.0092
	DIBENZOFURAN	UG/L	0.96	10.5	1	5	4
	DIETHYL PHTHALATE	UG/L	0.96	10.5	1	5	110
	DIMETHYL PHTHALATE	UG/L	0.96	10.5	1	5	360000
	DI-N-BUTYL PHTHALATE	UG/L	0.96	10.5	1	5	9.7
	DI-N-OCTYL PHTHALATE	UG/L	0.96	10.5	1	5	20
	DIPHENYLAMINE	UG/L	0.96	10.5	1	5	412
	ETHYL METHANE SULFONATE	UG/L	0.96	10.5	1	5	--[4]
	FLUORANTHENE	UG/L	0.048	0.054	0.05	0.1	1.9
	FLUORENE	UG/L	0.048	0.054	0.05	0.1	19
	HEXACHLOROBENZENE	UG/L	0.96	10.5	1	5	0.0003
	HEXACHLOROBUTADIENE	UG/L	0.96	10.5	1	5	0.053
	HEXACHLOROCYCLOPENTADIENE	UG/L	0.96	10.5	1	5	50
	HEXACHLOROETHANE	UG/L	0.96	10.5	1	5	4.8
	HEXACHLOROPROPENE	UG/L	0.96	10.5	1	5	--[4]
	INDENO(1,2,3-CD)PYRENE	UG/L	0.048	0.054	0.05	0.1	0.022
	ISODRIN	UG/L	0.96	10.5	1	5	0.0309
	ISOPHORONE	UG/L	0.96	10.5	1	5	71
	ISOSAFROLE	UG/L	0.96	10.5	1	5	--[4]
	KEPONE	UG/L	0.96	10.5	1	5	0.0084
	METHAPYRILENE	UG/L	0.96	10.5	1	5	--[4]
	METHYL METHANE SULFONATE	UG/L	0.96	10.5	1	5	--[4]
	NAPHTHALENE	UG/L	0.048	0.054	0.05	0.1	6.2
	N-NITROSODIETHYLAMINE	UG/L	0.96	10.5	1	5	0.00045
	N-NITROSODIMETHYLAMINE	UG/L	0.96	10.5	1	5	0.0013
	N-NITROSO-DI-N-BUTYLAMINE	UG/L	0.96	10.5	1	5	0.002
	N-NITROSO-DI-N-PROPYLAMINE	UG/L	0.96	10.5	1	5	0.0096
	N-NITROSODIPHENYLAMINE	UG/L	0.96	10.5	NA	NA	NA

TABL[illegible]

GROUNDWATER MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	N-NITROSOMETHYLETHYLAMINE	UG/L	0.96	10.5	1	5	0.0013
	N-NITROSOMORPHOLINE	UG/L	0.96	10.5	1	5	--[4]
	N-NITROSOPIPERIDINE	UG/L	0.96	10.5	1	5	--[4]
	N-NITROSOPYRROLIDINE	UG/L	0.96	10.5	1	5	0.032
	O,O,O-TRIETHYL PHOSPHOROTHIOATE	UG/L	0.96	10.5	2.5	5	0.0038
	O-TOLUIDINE	UG/L	0.96	10.5	1	5	0.28
	P-(DIMETHYLAMINO)AZOBENZENE	UG/L	0.96	10.5	1	5	1.65
	PENTACHLOROBENZENE	UG/L	0.96	10.5	1	5	0.019
	PENTACHLOROETHANE	UG/L	0.96	10.5	1	5	--[4]
	PENTACHLORONITROBENZENE	UG/L	0.96	10.5	1	5	0.26
	PHENACETIN	UG/L	0.96	10.5	1	5	--[4]
	PHENANTHRENE	UG/L	0.048	0.054	0.05	0.1	3.6
	PHENOL	UG/L	0.96	10.5	1	5	180
	PRONAMIDE	UG/L	0.96	10.5	1	5	2700
	PYRENE	UG/L	0.048	0.054	0.05	0.1	0.3
	PYRIDINE	UG/L	0.96	10.5	1	5	36
	SAFROLE	UG/L	0.96	10.5	1	5	--[4]
VOC	1,1,1,2-TETRACHLOROETHANE	UG/L	0.3	0.3	0.3	1	0.43
	1,1,1-TRICHLOROETHANE	UG/L	0.3	0.3	0.3	1	76
	1,1,2,2-TETRACHLOROETHANE	UG/L	0.3	0.3	0.3	1	0.055
	1,1,2-TRICHLOROETHANE	UG/L	0.3	0.3	0.3	1	0.2
	1,1-DICHLOROETHANE	UG/L	0.3	0.3	0.3	1	47
	1,1-DICHLOROETHENE	UG/L	0.3	0.3	0.3	1	7
	1,2,3-TRICHLOROPROPANE	UG/L	0.3	0.3	0.3	1	0.0056
	1,2-DIBROMO-3-CHLOROPROPANE	UG/L	0.3	0.3	0.3	1	0.0016
	1,2-DIBROMOETHANE	UG/L	0.3	0.3	0.3	1	0.00076
	1,2-DICHLOROETHANE	UG/L	0.3	0.3	0.3	1	0.12
	1,2-DICHLOROPROPANE	UG/L	0.3	0.3	0.3	1	0.16
	2-BUTANONE	UG/L	0.5	0.5	0.5	5	1900
	2-HEXANONE	UG/L	0.5	0.5	0.5	5	99
	3-CHLOROPROPENE	UG/L	0.5	0.5	0.5	5	1800

TABLE H-7

GROUNDWATER MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	4-METHYL-2-PENTANONE	UG/L	0.5	0.5	0.5	5	160
	ACETONE	UG/L	0.5	1.6	0.5	5	610
	ACETONITRILE	UG/L	20	20	20	40	100
	ACROLEIN	UG/L	0.5	0.5	0.5	5	0.042
	ACRYLONITRILE	UG/L	0.5	0.5	0.5	5	0.039
	BENZENE	UG/L	0.3	0.3	0.3	1	0.34
	BROMODICHLOROMETHANE	UG/L	0.3	0.3	0.3	1	0.18
	BROMOFORM	UG/L	0.3	0.3	0.3	1	8.5
	BROMOMETHANE	UG/L	0.3	0.3	0.3	1	8.7
	CARBON DISULFIDE	UG/L	0.3	0.3	0.3	1	15
	CARBON TETRACHLORIDE	UG/L	0.3	0.3	0.3	1	0.17
	CHLOROBENZENE	UG/L	0.3	0.3	0.3	1	47
	CHLORODIBROMOMETHANE	UG/L	0.3	0.3	0.3	1	0.13
	CHLOROETHANE	UG/L	0.5	0.5	0.3	1	4.6
	CHLOROFORM	UG/L	0.3	0.3	0.3	1	6.2
	CHLOROMETHANE	UG/L	0.3	0.3	0.3	1	1.5
	CHLOROPRENE	UG/L	0.5	0.5	NA	NA	NA
	CIS-1,2-DICHLOROETHENE	UG/L	0.3	0.3	0.3	1	61
	CIS-1,3-DICHLOROPROPENE	UG/L	0.3	0.3	0.3	1	0.4
	DIBROMOMETHANE	UG/L	0.3	0.3	0.3	1	61
	DICHLORODIFLUOROMETHANE	UG/L	0.3	0.3	0.3	1	390
	ETHYL METHACRYLATE	UG/L	0.5	0.5	0.5	5	550
	ETHYLBENZENE	UG/L	0.3	0.3	0.3	1	2.9
	ISOBUTANOL	UG/L	20	20	20	40	1800
	METHACRYLONITRILE	UG/L	0.3	0.3	0.5	5	1
	METHYL IODIDE	UG/L	0.5	0.5	0.5	5	--[4]
	METHYL METHACRYLATE	UG/L	0.5	0.5	0.5	5	1400
	METHYL TERT-BUTYL ETHER	UG/L	0.5	0.5	0.5	1	13
	METHYLENE CHLORIDE	UG/L	0.3	0.3	0.3	1	4.3
	PROPIONITRILE	UG/L	20	20	20	40	--[4]
	STYRENE	UG/L	0.3	0.3	0.3	1	32
	TETRACHLOROETHENE	UG/L	0.3	0.3	0.3	1	0.66

TABL[illegible]7

GROUNDWATER MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	TOLUENE	UG/L	0.3	0.3	0.3	1	253
	TOTAL XYLENES	UG/L	0.3	0.3	0.3	1	27
	TRANS-1,2-DICHLOROETHENE	UG/L	0.3	0.3	0.3	1	100
	TRANS-1,3-DICHLOROPROPENE	UG/L	0.3	0.3	0.3	1	0.4
	TRANS-1,4-DICHLORO-2-BUTENE	UG/L	0.5	0.5	NA	NA	NA
	TRICHLOROETHENE	UG/L	0.3	0.3	NA	NA	NA
	TRICHLOROFLUOROMETHANE	UG/L	0.3	0.3	0.3	1	1300
	VINYL ACETATE	UG/L	0.5	0.5	0.5	5	410
	VINYL CHLORIDE	UG/L	0.3	0.3	0.3	1	2
PEST/PCB	4,4'-DDD	UG/L	0.048	0.1	0.05	0.1	0.28
	4,4'-DDE	UG/L	0.048	0.1	0.05	0.1	4.51E-09
	4,4'-DDT	UG/L	0.048	0.1	0.05	0.1	0.000011
	ALDRIN	UG/L	0.024	0.05	0.025	0.05	0.004
	ALPHA-BHC	UG/L	0.024	0.05	0.025	0.05	0.011
	ALPHA-CHLORDANE	UG/L	0.024	0.05	0.025	0.05	0.0043
	AROCLOR-1016	UG/L	0.24	0.5	0.25	0.5	0.00012
	AROCLOR-1221	UG/L	0.24	0.5	0.25	0.5	0.00012
	AROCLOR-1232	UG/L	0.24	0.5	0.25	0.5	0.00012
	AROCLOR-1242	UG/L	0.24	0.5	0.25	0.5	0.00012
	AROCLOR-1248	UG/L	0.24	0.5	0.25	0.5	0.00012
	AROCLOR-1254	UG/L	0.24	0.5	0.25	0.5	0.00012
	AROCLOR-1260	UG/L	0.24	0.5	0.25	0.5	0.00012
	BETA-BHC	UG/L	0.024	0.05	0.025	0.05	0.037
	DELTA-BHC	UG/L	0.024	0.05	0.025	0.05	0.011
	DIELDRIN	UG/L	0.048	0.1	0.05	0.1	0.000071
	ENDOSULFAN I	UG/L	0.024	0.05	0.025	0.05	0.056
	ENDOSULFAN II	UG/L	0.048	0.1	0.05	0.1	0.056
	ENDOSULFAN SULFATE	UG/L	0.048	0.1	0.05	0.1	0.056
	ENDRIN	UG/L	0.048	0.1	0.05	0.1	0.036
	ENDRIN ALDEHYDE	UG/L	0.048	0.1	0.05	0.1	0.15
	ENDRIN KETONE	UG/L	0.048	0.1	0.05	0.1	0.036
	GAMMA-BHC (LINDANE)	UG/L	0.024	0.05	0.025	0.05	0.026

TABLE H-7

GROUNDWATER MINIMUM AND MAXIMUM NON-DETECT VALUES
SWMU 15 (ROADS AND GROUNDS) [1,2]
NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Units	Minimum Non-detect Concentration[2]	Maximum Non-detect Concentration[2]	Laboratory TV	Laboratory RL	Risk-Based Target Level[3]
	GAMMA-CHLORDANE	UG/L	0.024	0.05	0.025	0.05	0.0043
	HEPTACHLOR	UG/L	0.024	0.05	0.025	0.05	0.0038
	HEPTACHLOR EPOXIDE	UG/L	0.024	0.05	0.025	0.05	0.0038
	METHOXYCHLOR	UG/L	0.24	0.5	0.25	0.5	0.019
	TOXAPHENE	UG/L	2.4	5	2.5	5	0.00014

1 Only results with validation qualifiers that contain a "U" are tallied.
2 Highlighted values (yellow when reproduced in color and gray when reproduced in black and white) exceed laboratory RBTLs.
3 Risk-based target levels are taken from Table 1-5 of the SWMUs 8, 15, 18, 19, 20, and OGTSL QAPP (TtNUS, 2004) and are subject to change.
4 Risk-based target level is not provided because human health or ecological risk-based criteria were not available for this compound.

HERB = Herbicides
M = Metals, total
MF = Metals, dissolved
NA = Not applicable
PEST/PCB = Pesticides/polychlorinated biphenyls
SVOC = Semivolatile organic compounds
UG/L = micrograms per Liter
VOC = Volatile organic compounds

TABI

SOIL DATA PERCENT RECOVERY STATISTICS
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	LABORATORY CONTROL SAMPLE				MATRIX SPIKE				MATRIX SPIKE DUPLICATE			
		Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count
EXP	1,3,5-TRINITROBENZENE	102	103.5	106	4	100	100.0	100	4	100	103.3	106	4
	1,3-DINITROBENZENE	102	104.3	107	4	100	101.0	102	4	102	104.8	108	4
	2,4,6-TRINITROTOLUENE	101	102.3	104	4	98	98.5	100	4	99	102.3	105	4
	2,4-DINITROTOLUENE	97	99.0	102	4	68	86.3	96	4	64	87.8	102	4
	2,6-DINITROTOLUENE	101	103.3	106	4	64	85.0	101	4	61	86.5	107	4
	2-AMINO-4,6-DINITROTOLUENE	89	95.3	98	4	83	95.0	107	4	88	98.0	114	4
	2-NITROTOLUENE	102	102.8	105	4	100	101.5	104	4	104	106.0	108	4
	3,4-DINITROTOLUENE (SURR)	99	108.0	114	4	105	107.3	110	4	101	106.8	109	4
	3-NITROTOLUENE	103	104.0	106	4	100	102.0	105	4	103	105.3	108	4
	4-AMINO-2,6-DINITROTOLUENE	93	96.8	106	4	89	91.3	93	4	91	94.5	99	4
	4-NITROTOLUENE	106	106.8	109	4	103	105.0	108	4	105	108.0	111	4
	HMX	97	98.8	102	4	93	95.3	98	4	95	97.3	99	4
	NITROBENZENE	106	106.8	109	4	61	86.0	105	4	67	87.3	108	4
	RDX	99	100.3	102	4	80	89.5	96	4	81	89.5	96	4
	TETRYL	81	91.3	96	4	42	66.0	78	4	38	67.3	83	4
HERB	2,4,5-T	86	97.6	108	8	64	76.7	86	6	55	75.3	91	6
	2,4,5-TP (SILVEX)	93	104.0	114	8	65	80.3	95	6	57	78.7	97	6
	2,4-D	107	119.4	132	8	76	92.3	112	6	69	95.2	117	6
	2,4-DICHLOROPHENYLACETIC ACID (SURR)	112	125.8	140	13	71	154.10	288	10	85	153.8	293	10
	DINOSEB	70	75.3	81	8	36	45.8	58	6	33	42.5	57	6
	HEXACHLOROPHENE	48	60.4	82	13	20	35.1	51	10	19	37.1	58	10
	PENTACHLOROPHENOL	91	116.5	133	13	35	62.3	84	10	20	62.0	88	10
Metals, Total	ALUMINUM	88.3	101.9	107.8	9	93.4	118.7	140.8	3	--	--	--	--
	ANTIMONY	79.6	107.6	138.8	9	94.8	105.6	137.8	10	--	--	--	--
	ARSENIC	95.6	100.3	113.2	9	81.7	100.6	114.9	10	--	--	--	--
	BARIUM	85.2	99.3	108	9	36.8	159.2	397	10	--	--	--	--
	BERYLLIUM	98	104.0	117.2	9	85.8	101.3	118.1	10	--	--	--	--
	CADMIUM	95.6	101.6	116	9	92.9	99.8	113.3	10	--	--	--	--
	CALCIUM	88.8	101.6	108.1	9	52.2	83.3	104.4	7	--	--	--	--
	CHROMIUM	86.8	101.1	107.2	9	66.3	95.4	125.4	10	--	--	--	--
	COBALT	87.2	102.4	109.6	9	83.2	90.2	98	10	--	--	--	--
	COPPER	92.4	103.0	113.2	9	66.8	104.7	244.6	10	--	--	--	--
	IRON	89.2	102.1	110.1	9	--	--	--	--	--	--	--	--
	LEAD	91.2	100.8	108	9	41.2	110.5	233.4	10	--	--	--	--
	LITHIUM	102.8	102.8	102.8	1	103.6	103.6	103.6	1	--	--	--	--
	MAGNESIUM	88.1	101.9	108.8	9	32	107.1	222.4	10	--	--	--	--
	MANGANESE	88.8	100.7	106.4	9	152.2	152.2	152.2	1	--	--	--	--
	MERCURY	68.3	96.9	105.7	10	57.4	95.7	119.1	10	--	--	--	--
	NICKEL	90.4	106.9	142.4	9	68.4	96.4	119.3	10	--	--	--	--
	POTASSIUM	93.9	103.4	109.1	9	63.5	99.2	167.5	10	--	--	--	--
	SELENIUM	93.6	103.7	116.4	9	87.8	101.1	111.4	10	--	--	--	--

TABLE H-8

SOIL DATA PERCENT RECOVERY STATISTICS
SWMU 15 (ROADS AND GROUNDS)[1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	LABORATORY CONTROL SAMPLE				MATRIX SPIKE				MATRIX SPIKE DUPLICATE			
		Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count
	SILVER	89.6	98.4	105.6	9	86.8	93.7	101.2	10	--	--	--	--
	SODIUM	89.4	100.6	107.1	9	75.3	90.2	98.2	10	--	--	--	--
	STRONTIUM	96.8	96.8	96.8	1	89.5	89.5	89.5	1	--	--	--	--
	THALLIUM	98.4	107.2	120.8	9	91.3	105.4	114.7	10	--	--	--	--
	TIN	72.8	97.4	107.6	9	92	96.0	107.8	10	--	--	--	--
	VANADIUM	83.6	97.7	103.6	9	34.2	95.4	181.3	10	--	--	--	--
	ZINC	93.2	106.4	130	9	77.8	118.2	188.3	9	--	--	--	--
MISC	CYANIDE	90	94.0	98	2	82	82.0	82	1	80	80.0	80	1
	TOTAL ORGANIC CARBON	100	100.0	100	1	99	99.0	99	1	93	93.0	93	1
SVOC	1,2,4-TRICHLOROBENZENE	58	76.9	92	12	56	72.0	84	10	63	75.6	90	10
	1,2-DICHLOROBENZENE	58	77.0	92	12	58	71.3	87	10	52	71.8	86	10
	1,3-DICHLOROBENZENE	53	73.3	92	12	49	67.0	87	10	42	67.3	84	10
	1,4-DICHLOROBENZENE	55	73.8	85	12	53	66.5	83	10	45	67.6	82	10
	1-FLUORONAPHTHALENE (SURR)	0	66.4	86	13	37	60.8	90	12	41	61.0	78	12
	2,2'-OXYBIS(1-CHLOROPROPANE)	61	85.8	108	12	67	82.0	104	10	71	84.3	106	10
	2,4,5-TRICHLOROPHENOL	66	84.4	100	12	67	80.4	91	10	70	85.2	98	10
	2,4,6-TRIBROMOPHENOL (SURR)	70	86.5	101	12	42	81.8	101	10	38	85.9	106	10
	2,4,6-TRICHLOROPHENOL	64	82.9	100	12	48	77.4	95	10	54	82.0	100	10
	2,4-DICHLOROPHENOL	63	78.8	92	12	57	73.4	87	10	61	77.1	90	10
	2,4-DIMETHYLPHENOL	26	59.6	85	12	0	46.0	82	10	0	46.7	83	10
	2,4-DINITROPHENOL	17	52.6	71	12	22	54.4	73	10	22	58.4	86	10
	2-CHLORONAPHTHALENE	49	63.9	77	12	52	62.8	76	10	56	64.8	78	10
	2-CHLOROPHENOL	63	83.9	100	12	63	77.5	93	10	69	80.4	94	10
	2-FLUOROBIPHENYL (SURR)	53	66.3	80	12	51	66.4	82	10	55	69.2	85	10
	2-FLUOROPHENOL (SURR)	64	77.2	95	12	46	70.4	85	10	49	73.0	94	10
	2-METHYLNAPHTHALENE	0	54.7	66	13	35	54.4	72	12	41	57.3	68	12
	2-METHYLPHENOL	63	82.0	115	12	19	67.2	83	10	23	69.8	87	10
	2-NITROANILINE	65	85.0	100	12	68	82.0	94	10	66	86.8	101	10
	2-NITROPHENOL	54	76.7	85	12	60	72.7	85	10	66	76.8	89	10
	3&4-METHYLPHENOL	60	79.0	115	12	17	65.6	85	10	25	67.2	87	10
	3,3'-DICHLOROBENZIDINE	30	48.1	61	12	0	15.0	38	10	0	19.7	52	10
	3-NITROANILINE	43	64.9	77	12	24	40.5	54	10	32	47.3	67	10
	4,6-DINITRO-2-METHYLPHENOL	29	71.3	85	12	41	65.5	86	10	40	68.3	90	10
	4-BROMOPHENYL PHENYL ETHER	66	86.8	100	12	78	88.4	105	10	78	92.5	117	10
	4-CHLORO-3-METHYLPHENOL	65	89.2	115	12	70	81.3	93	10	69	86.1	101	10
	4-CHLOROANILINE	33	43.2	63	12	0	14.1	24	10	5	16.4	27	10
	4-CHLOROPHENYL PHENYL ETHER	75	90.7	100	12	74	85.3	96	10	71	88.6	101	10
	4-NITROANILINE	55	83.2	100	12	39	52.8	72	10	43	59.2	78	10
	4-NITROPHENOL	38	72.0	92	12	39	69.0	92	10	51	73.0	95	10
	ACENAPHTHENE	25	62.1	76	13	40	66.4	80	12	54	69.8	80	12
	ACENAPHTHYLENE	20	62.0	77	13	42	64.6	85	12	50	69.2	93	12

TAB

SOIL DATA PERCENT RECOVERY STATISTICS
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	LABORATORY CONTROL SAMPLE				MATRIX SPIKE				MATRIX SPIKE DUPLICATE			
		Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count
	ANTHRACENE	63	69.3	82	13	48	68.6	81	12	62	74.4	86	12
	BENZO(A)ANTHRACENE	59	70.8	84	13	46	69.0	84	12	38	75.8	122	12
	BENZO(A)PYRENE	57	67.1	78	13	46	64.5	78	12	46	75.6	163	12
	BENZO(B)FLUORANTHENE	54	65.2	74	13	44	62.5	86	12	37	71.8	151	12
	BENZO(G,H,I)PERYLENE	51	79.8	95	13	60	88.3	121	12	60	101.9	228	12
	BENZO(K)FLUORANTHENE	49	57.2	72	13	48	62.8	75	12	43	65.9	95	12
	BENZYL ALCOHOL	68	88.6	115	12	73	84.6	96	10	77	88.1	101	10
	BIS(2-CHLOROETHOXY)METHANE	48	62.3	72	12	51	59.3	68	10	54	61.9	72	10
	BIS(2-CHLOROETHYL)ETHER	65	83.2	100	12	64	78.6	95	10	74	81.2	92	10
	BIS(2-ETHYLHEXYL)PHTHALATE	55	89.8	123	12	73	101.9	132	10	74	107.8	145	10
	BUTYL BENZYL PHTHALATE	61	85.5	115	12	78	94.1	122	10	80	98.4	119	10
	CHRYSENE	63	73.6	84	13	50	70.8	86	12	46	79.1	133	12
	DIBENZO(A,H)ANTHRACENE	53	77.8	94	13	58	89.1	122	12	69	98.2	142	12
	DIBENZOFURAN	69	83.4	92	12	71	79.2	88	10	71	82.8	95	10
	DIETHYL PHTHALATE	65	90.3	115	12	72	83.2	95	10	68	86.7	99	10
	DIMETHYL PHTHALATE	67	80.8	92	12	70	78.1	86	10	67	82.1	96	10
	DI-N-BUTYL PHTHALATE	69	90.6	115	12	73	89.9	111	10	72	93.1	120	10
	DI-N-OCTYL PHTHALATE	74	100.0	162	12	77	102.7	149	10	79	108.1	161	10
	DIPHENYLAMINE	54	70.7	85	12	22	65.0	98	10	39	68.6	106	10
	FLUORANTHENE	55	71.1	82	13	36	68.6	148	12	26	73.3	142	12
	FLUORENE	43	62.2	73	13	43	65.5	80	12	61	70.7	81	12
	FLUORENE-D10 (SURR)	54	74.5	88	13	49	75.0	103	12	70	77.0	90	12
	HEXACHLOROBENZENE	76	96.1	115	12	84	97.9	111	10	88	102.5	119	10
	HEXACHLOROBUTADIENE	54	75.8	92	12	52	72.4	90	10	56	75.1	92	10
	HEXACHLOROCYCLOPENTADIENE	40	53.9	77	12	0	23.8	45	10	0	23.2	42	10
	HEXACHLOROETHANE	55	77.7	92	12	50	67.4	87	10	41	69.0	83	10
	INDENO(1,2,3-CD)PYRENE	52	78.5	93	13	60	85.4	111	12	64	98.5	198	12
	ISOPHORONE	45	62.3	92	12	45	61.6	92	10	45	63.5	95	10
	NAPHTHALENE	30	55.7	67	13	29	52.1	70	12	38	55.7	68	12
	NITROBENZENE-D5 (SURR)	54	71.5	86	12	50	68.3	81	10	57	72.4	85	10
	N-NITROSODIMETHYLAMINE	57	73.9	85	12	64	78.4	110	10	65	80.3	103	10
	N-NITROSO-DI-N-PROPYLAMINE	71	88.3	108	12	72	86.9	101	10	80	89.9	99	10
	PHENANTHRENE	61	70.8	84	13	50	72.8	87	12	64	77.0	86	12
	PHENOL	63	80.4	100	12	68	76.3	89	10	69	78.4	91	10
	PHENOL-D5 (SURR)	65	75.8	92	12	57	72.6	89	10	58	74.6	86	10
	PYRENE	55	74.6	120	13	52	79.0	112	12	48	90.7	186	12
	PYRENE-D10 (SURR)	66	85.9	132	13	67	88.8	133	12	68	96.3	144	12
	TERPHENYL-D14 (SURR)	62	81.7	98	12	61	85.4	108	10	73	94.8	118	10
VOC	1,1,1,2-TETRACHLOROETHANE	86	99.9	110	22	55	69.1	94	7	51	62.7	77	7
	1,1,1-TRICHLOROETHANE	84	99.5	116	22	73	93.7	170	7	43	74.6	92	7
	1,1,2,2-TETRACHLOROETHANE	76	102.0	116	22	41	69.4	89	7	43	63.0	77	7

TABLE H-8

SOIL DATA PERCENT RECOVERY STATISTICS
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	LABORATORY CONTROL SAMPLE				MATRIX SPIKE				MATRIX SPIKE DUPLICATE			
		Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count
	1,1,2-TRICHLOROETHANE	84	97.0	106	22	66	70.9	83	7	58	66.9	77	7
	1,1-DICHLOROETHANE	86	101.5	122	22	76	86.3	127	7	45	73.1	91	7
	1,1-DICHLOROETHENE	78	100.0	118	22	67	84.0	161	7	41	66.7	80	7
	1,2,3-TRICHLOROPROPANE	90	101.6	114	22	63	72.4	87	7	61	67.6	85	7
	1,2-DIBROMO-3-CHLOROPROPANE	74	91.3	112	22	43	56.3	72	7	41	53.6	65	7
	1,2-DIBROMOETHANE	84	100.8	110	22	57	68.0	77	7	58	64.6	75	7
	1,2-DICHLOROETHANE	86	99.5	118	22	67	85.6	129	7	56	75.1	107	7
	1,2-DICHLOROETHANE-D4 (SURR)	95	101.8	107	22	91	121.0	191	7	90	110.0	141	7
	1,2-DICHLOROPROPANE	86	100.2	116	22	70	79.1	107	7	48	69.0	82	7
	2-BUTANONE	72	93.5	122	22	47	66.3	84	7	52	62.3	75	7
	2-HEXANONE	88	106.6	128	22	30	56.6	78	7	36	56.3	76	7
	4-BROMOFLUOROBENZENE (SURR)	97	100.8	106	22	89	98.7	103	7	88	98.0	103	7
	4-METHYL-2-PENTANONE	86	107.0	138	22	55	78.3	105	7	64	77.6	80	7
	ACETONE	66	85.2	120	22	47	80.0	189	7	52	58.7	67	7
	BENZENE	82	96.9	112	22	63	74.3	96	7	41	65	79	7
	BROMODICHLOROMETHANE	76	89.3	102	22	57	71.1	109	7	43	62.0	88	7
	BROMOFORM	84	101.7	112	22	39	62.4	83	7	39	56.9	74	7
	BROMOMETHANE	84	99.4	118	22	41	94.1	274	7	38	57.7	73	7
	CARBON DISULFIDE	76	106.4	154	22	57	83.4	152	7	37	62.4	86	7
	CARBON TETRACHLORIDE	84	99.6	114	22	65	86.6	176	7	38	67.9	91	7
	CHLOROBENZENE	86	99.7	112	22	50	60.1	73	7	43	56.7	71	7
	CHLORODIBROMOMETHANE	80	96.5	106	22	49	63.9	82	7	50	59.1	76	7
	CHLOROETHANE	94	107.0	124	22	68	108.1	270	7	40	71.1	84	7
	CHLOROFORM	84	98.7	114	22	67	83.7	135	7	47	71.4	94	7
	CHLOROMETHANE	86	100.9	116	22	58	95.6	222	7	30	65.4	85	7
	CIS-1,2-DICHLOROETHENE	76	96.8	112	22	66	77.1	96	7	44	67.6	84	7
	CIS-1,3-DICHLOROPROPENE	86	103.5	118	22	37	59.0	77	7	38	53.9	66	7
	DIBROMOFLUOROMETHANE (SURR)	95	102.6	107	22	93	111.3	158	7	92	105.9	119	7
	DIBROMOMETHANE	84	100.8	116	22	71	84.0	130	7	62	75.3	97	7
	DICHLORODIFLUOROMETHANE	72	107.8	144	22	49	110.0	327	7	38	71.0	119	7
	ETHYLBENZENE	90	101.5	112	22	51	62.4	74	7	39	58.9	72	7
	METHYL TERT-BUTYL ETHER	71	88.4	108	22	45	68.5	88	7	45	62.8	83	7
	METHYLENE CHLORIDE	90	100.6	122	22	18	80.4	164	7	30	63.3	88	7
	STYRENE	92	103.5	112	22	45	54.9	74	7	39	52.7	70	7
	TETRACHLOROETHENE	74	89.2	102	22	46	57.7	79	7	35	51.7	64	7
	TOLUENE	84	97.5	110	22	55	64.7	74	7	41	61.0	71	7
	TOLUENE-D8 (SURR)	92	101.5	109	22	86	96.3	103	7	93	100.4	107	7
	TOTAL XYLENES	93	104.7	113	22	49	62.1	77	7	40	58.3	73	7
	TRANS-1,2-DICHLOROETHENE	78	96.8	112	22	65	74.3	105	7	38	64.7	79	7
	TRANS-1,3-DICHLOROPROPENE	86	101.7	114	22	38	56.0	72	7	38	53.3	67	7
	TRICHLOROETHENE	76	99.4	128	22	61	74.3	100	6	41	64.5	78	6

TABL

SOIL DATA PERCENT RECOVERY STATISTICS
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	LABORATORY CONTROL SAMPLE				MATRIX SPIKE				MATRIX SPIKE DUPLICATE			
		Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count
	TRICHLOROFLUOROMETHANE	80	92.5	116	22	53	86.7	216	7	28	57.9	80	7
	VINYL CHLORIDE	84	99.8	124	22	61	105.3	303	7	28	67.3	86	7
PEST/PCB	4,4'-DDD	85	101.3	118	6	84	94.8	117	4	80	86.0	91	4
	4,4'-DDE	83	99.0	113	6	72	90.3	113	4	72	82.3	89	4
	4,4'-DDT	84	100.0	116	6	73	89.8	109	4	70	82.3	88	4
	ALDRIN	74	87.8	105	6	70	75.8	81	4	68	70.8	73	4
	ALPHA-BHC	73	86.5	100	6	69	79.8	98	4	67	71.5	74	4
	ALPHA-CHLORDANE	78	90.2	106	6	81	84.8	90	4	75	76.5	77	4
	AROCLOR-1016	86	96.0	119	8	86	101.1	117	7	73	97.3	121	7
	AROCLOR-1260	91	101.6	118	8	92	106.6	124	7	76	101.6	125	7
	BETA-BHC	73	85.2	98	6	72	80.3	93	4	74	75.0	77	4
	DECACHLOROBIPHENYL (SURR)	75	91.4	111	14	63	89.6	124	11	63	86.5	113	11
	DELTA-BHC	78	84.8	93	6	67	77.5	88	4	65	73.8	79	4
	DIELDRIN	78	90.7	106	6	70	81.5	96	4	72	74.5	78	4
	ENDOSULFAN I	75	89.2	106	6	71	79.8	96	4	70	71.8	74	4
	ENDOSULFAN II	79	90.3	105	6	71	79.8	92	4	69	73.0	76	4
	ENDOSULFAN SULFATE	80	89.8	103	6	72	79.5	91	4	70	72.8	74	4
	ENDRIN	83	95.7	111	6	74	84.5	102	4	72	78.5	83	4
	ENDRIN ALDEHYDE	63	72.3	86	6	36	53.8	69	4	37	50.0	58	4
	ENDRIN KETONE	80	91.8	108	6	71	79.3	92	4	70	73.8	76	4
	GAMMA-BHC (LINDANE)	78	88.0	101	6	72	81.8	97	4	68	73.5	77	4
	GAMMA-CHLORDANE	73	86.0	101	6	68	79.0	90	4	70	73.5	78	4
	HEPTACHLOR	76	88.8	104	6	73	80.3	93	4	70	73.8	78	4
	HEPTACHLOR EPOXIDE	76	88.7	103	6	71	79.3	89	4	72	73.8	76	4
	METHOXYCHLOR	88	103.0	119	6	84	95.3	111	4	84	87.5	91	4
	TETRACHLORO-M-XYLENE (SURR)	70	84.3	103	14	61	83.3	112	11	58	76.2	105	11

1 Minimum values less than 75 percent and maximum values greater than 125 percent are highlighted.

EXP = Explosives
HERB = Herbicides
M = Metals, total
MISC = Miscellaneous parameters
SVOC = Semivolatile organic compounds
VOC = Volatile organic compounds
PEST/PCB = Pesticides/polychlorinated biphenyls

TABL

WATER DATA PERCENT RECOVERY STATISTICS
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	LABORATORY CONTROL SAMPLE				MATRIX SPIKE				MATRIX SPIKE DUPLICATE			
		Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count
EXP	1,3,5-TRINITROBENZENE	85	95.3	105	4	97	99.0	101	2	96	97.5	99	2
	1,3-DINITROBENZENE	87	96.5	107	4	98	100.5	103	2	97	98.5	100	2
	2,4,6-TRINITROTOLUENE	84	93.8	103	4	96	98.0	100	2	95	96.5	98	2
	2,4-DINITROTOLUENE	78	88.5	102	4	62	78.5	95	2	74	81.0	88	2
	2,6-DINITROTOLUENE	82	93.5	108	4	78	89.0	100	2	80	86.0	92	2
	2-AMINO-4,6-DINITROTOLUENE	84	94.5	108	4	95	97.5	100	2	93	94.5	96	2
	2-NITROTOLUENE	76	87.0	100	4	88	91.5	95	2	87	88.5	90	2
	3,4-DINITROTOLUENE (SURR)	96	104.5	120	4	110	111.5	113	2	104	104.5	105	2
	3-NITROTOLUENE	74	85.3	97	4	87	91.0	95	2	87	88.0	89	2
	4-AMINO-2,6-DINITROTOLUENE	81	92.3	108	4	93	95.0	97	2	91	92.5	94	2
	4-NITROTOLUENE	79	89.8	103	4	92	95.0	98	2	89	91.0	93	2
	HMX	90	94.8	98	4	96	96.5	97	2	99	100.5	102	2
	NITROBENZENE	88	96.3	105	4	86	94.5	103	2	78	87.5	97	2
	RDX	96	100.3	104	4	102	102.5	103	2	105	106.0	107	2
	TETRYL	81	91.5	105	4	90	92.5	95	2	89	90.0	91	2
HERB	2,4,5-T	74	79.3	84	4	69	76.5	85	4	70	78.3	86	4
	2,4,5-TP (SILVEX)	71	82.0	99	4	70	76.3	83	4	75	80.5	89	4
	2,4-D	92	99.0	107	4	84	95.5	110	4	83	100.0	109	4
	2,4-DICHLOROPHENYLACETIC ACID (SURR)	84	98.4	116	5	90	101.8	121	5	91	97.8	108	5
	DINOSEB	59	63.0	72	4	0	47.8	70	4	0	49.5	67	4
	HEXACHLOROPHENE	33	40.4	47	5	24	38.4	52	5	28	37.6	44	5
	PENTACHLOROPHENOL	78	89.0	105	5	19	75.8	110	5	70	81.8	96	5
Metals, Total	ALUMINUM	95.6	103.1	106.6	4	96.1	99.5	109.1	4	--	--	--	--
	ANTIMONY	93.2	97.8	101.5	4	88.8	98.1	104.3	4	--	--	--	--
	ARSENIC	85.3	93.1	109.4	4	90.7	102.0	115.8	4	--	--	--	--
	BARIUM	102.5	106.2	111.2	4	87.5	95.5	101	3	--	--	--	--
	BERYLLIUM	89.3	97.1	106	4	72.8	97.4	112.7	4	--	--	--	--
	CADMIUM	94.1	100.0	107.1	4	90.9	101.1	111.9	4	--	--	--	--
	CALCIUM	100.2	111.3	316	4	109.8	109.8	109.8	1	--	--	--	--
	CHROMIUM	100.4	101.8	103.3	4	93.9	100.4	109.7	4	--	--	--	--
	COBALT	102.1	104.7	108.5	4	97.8	104.0	111.6	4	--	--	--	--
	COPPER	103	104.9	105.7	4	97.9	101.8	109.8	4	--	--	--	--
	IRON	103.4	105.6	110.3	4	95	100.5	108	3	--	--	--	--
	LEAD	94.4	104.5	108.6	4	99.6	106.7	113.5	4	--	--	--	--
	MAGNESIUM	96.4	103.4	107.1	4	96.4	103.6	110.7	2	--	--	--	--
	MANGANESE	101.7	106.4	113.9	4	94	100.5	106.9	2	--	--	--	--
	MERCURY	98	101.3	105.4	4	48.3	85.2	105.4	4	--	--	--	--
	NICKEL	102	105.0	108.4	4	96.3	102.9	111.2	4	--	--	--	--
	POTASSIUM	95.1	101.4	105.4	4	94.8	100.7	109.4	4	--	--	--	--
	SELENIUM	90.5	96.8	114.3	4	89.6	101.0	119.9	4	--	--	--	--
	SILVER	99.1	102.4	107.5	4	56.1	78.6	106	4	--	--	--	--
	SODIUM	98.3	106.8	113.1	4	94.1	101.1	108.1	2	--	--	--	--
	THALLIUM	95.6	103.3	109.7	4	98.8	111.1	125	4	--	--	--	--
	TIN	97.7	102.3	109.3	4	91.5	98.6	106.1	4	--	--	--	--
	VANADIUM	98.9	102.7	109.1	4	97.8	103.3	109	4	--	--	--	--

TABLE H-9

WATER DATA PERCENT RECOVERY STATISTICS
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	LABORATORY CONTROL SAMPLE				MATRIX SPIKE				MATRIX SPIKE DUPLICATE			
		Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count
	ZINC	86.3	93.4	98.4	4	84.4	93.1	103	4	--	--	--	--
Metals, Dissolved	ALUMINUM	102.9	103.8	104.7	2	96.1	101.7	109.9	3	--	--	--	--
	ANTIMONY	98.2	101.4	104.6	2	95.9	103.1	108.4	3	--	--	--	--
	ARSENIC	95.1	97.1	99	2	97.3	99.3	103.2	3	--	--	--	--
	BARIUM	106.6	109.0	111.4	2	103.7	110.2	116.9	3	--	--	--	--
	BERYLLIUM	101.1	101.8	102.4	2	70.4	87.3	97.8	3	--	--	--	--
	CADMIUM	101	103.3	105.5	2	97.6	100.1	102.5	3	--	--	--	--
	CALCIUM	106.3	107.4	108.4	2	--	--	--	--	--	--	--	--
	CHROMIUM	107.6	107.9	108.2	2	90.4	105.3	119.1	3	--	--	--	--
	COBALT	107.1	107.5	107.8	2	103	111.2	116.2	3	--	--	--	--
	COPPER	105.8	106.6	107.4	2	102.2	104.0	106.8	3	--	--	--	--
	IRON	107.8	109.7	111.5	2	107.7	118.7	126.8	3	--	--	--	--
	LEAD	111.5	113.1	114.6	2	107.4	111.4	118.2	3	--	--	--	--
	MAGNESIUM	102.8	105.1	107.4	2	109.4	114.0	118.6	2	--	--	--	--
	MANGANESE	107.9	109.7	111.4	2	107.7	112.0	116.3	2	--	--	--	--
	MERCURY	101.9	102.7	103.4	2	98.2	98.5	98.7	2	--	--	--	--
	NICKEL	103.4	104.6	105.7	2	100.7	107.1	110.5	3	--	--	--	--
	POTASSIUM	100.8	101.5	102.2	2	98.6	107.3	124.3	3	--	--	--	--
	SELENIUM	94.6	95.0	95.3	2	94.3	95.3	96.8	3	--	--	--	--
	SILVER	103.2	103.2	103.2	2	60	88.0	102.5	3	--	--	--	--
	SODIUM	104.1	105.3	106.5	2	97.6	100.7	103.8	2	--	--	--	--
	THALLIUM	113.3	114.4	115.5	2	109.1	113.3	118.9	3	--	--	--	--
	TIN	103.9	106.4	108.9	2	104.3	106.6	107.9	3	--	--	--	--
	VANADIUM	107.2	108.8	110.4	2	109.8	117.5	122.6	3	--	--	--	--
	ZINC	97.2	97.5	97.7	2	92.2	95.8	98.2	3	--	--	--	--
MISC	TOTAL ORGANIC CARBON	106	106.0	106	1	--	--	--	--	--	--	--	--
SVOC	1,2,4-TRICHLOROBENZENE	50	64.0	75	5	45	50.7	58	3	48	51.7	55	3
	1,2-DICHLOROBENZENE	46	61.2	70	5	49	53.0	60	3	46	52.3	59	3
	1,3-DICHLOROBENZENE	38	56.4	65	5	48	50.7	56	3	43	50.7	61	3
	1,4-DICHLOROBENZENE	42	57.4	70	5	47	50.3	55	3	43	49.7	56	3
	1-FLUORONAPHTHALENE (SURR)	52	55.0	59	4	49	54.0	59	3	52	58.3	66	3
	2,2'-OXYBIS(1-CHLOROPROPANE)	80	94.0	105	5	82	90.3	96	3	88	91.7	98	3
	2,4,5-TRICHLOROPHENOL	65	78.0	90	5	24	44.0	77	3	42	65.7	82	3
	2,4,6-TRIBROMOPHENOL (SURR)	77	90.0	100	5	37	59.3	92	3	66	84.7	95	3
	2,4,6-TRICHLOROPHENOL	65	76.0	90	5	20	43.3	74	3	45	67.0	79	3
	2,4-DICHLOROPHENOL	60	71.0	80	5	23	44.7	72	3	48	64.0	73	3
	2,4-DIMETHYLPHENOL	50	69.0	90	5	63	73.7	87	3	59	76.7	89	3
	2,4-DINITROPHENOL	34	51.4	65	5	0	25.0	61	3	16	29.0	53	3
	2-CHLORONAPHTHALENE	55	64.0	70	5	54	57.3	62	3	56	60.7	63	3
	2-CHLOROPHENOL	50	73.0	90	5	25	51.0	71	3	59	68.0	79	3
	2-FLUOROBIPHENYL (SURR)	65	68.6	71	5	55	60.3	65	3	61	62.7	66	3
	2-FLUOROPHENOL (SURR)	22	51.6	70	5	6	28.0	43	3	33	42.7	55	3
	2-METHYLNAPHTHALENE	44	51.3	58	4	42	44.7	50	3	42	44.7	50	3
	2-METHYLPHENOL	65	81.0	95	5	63	74.0	80	3	77	78.0	79	3
	2-NITROANILINE	75	88.0	95	5	70	77.7	85	3	73	82.0	88	3

TABL

WATER DATA PERCENT RECOVERY STATISTICS
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	LABORATORY CONTROL SAMPLE				MATRIX SPIKE				MATRIX SPIKE DUPLICATE			
		Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count
	2-NITROPHENOL	55	74.0	90	5	0	32.0	80	3	21	47.3	67	3
	3&4-METHYLPHENOL	75	85.0	100	5	57	70.7	80	3	75	78.3	80	3
	3,3-DICHLOROBENZIDINE	9	54.8	80	5	27	40.7	81	3	0	38.7	77	3
	3-NITROANILINE	50	75.0	100	5	55	71.0	87	3	67	72.7	82	3
	4,6-DINITRO-2-METHYLPHENOL	60	70.0	95	5	0	26.0	67	3	12	34.3	74	3
	4-BROMOPHENYL PHENYL ETHER	80	94.0	105	5	86	97.0	105	3	88	98.3	104	3
	4-CHLORO-3-METHYLPHENOL	75	84.0	95	5	60	67.0	72	3	70	76.7	82	3
	4-CHLOROANILINE	35	57.8	75	5	46	55.3	62	3	43	57.7	74	3
	4-CHLOROPHENYL PHENYL ETHER	75	90.0	100	5	76	87.7	97	3	79	91.3	100	3
	4-NITROANILINE	60	79.0	105	5	46	67.7	81	3	54	69.7	84	3
	4-NITROPHENOL	50	61.0	75	5	0	19.3	58	3	0	38.7	65	3
	ACENAPHTHENE	57	61.5	68	4	50	55.7	67	3	50	55.7	67	3
	ACENAPHTHYLENE	57	61.3	72	4	58	61.0	67	3	58	63.7	75	3
	ANTHRACENE	58	65.8	73	4	67	72.3	83	3	67	67.7	69	3
	BENZO(A)ANTHRACENE	73	74.8	77	4	67	80.7	108	3	67	68.3	71	3
	BENZO(A)PYRENE	54	61.3	70	4	58	72.0	100	3	55	60.0	67	3
	BENZO(B)FLUORANTHENE	68	75.8	83	4	67	91.7	125	3	67	73.3	78	3
	BENZO(G,H,I)PERYLENE	64	82.5	100	4	58	75.0	100	3	58	71.0	83	3
	BENZO(K)FLUORANTHENE	63	72.8	78	4	67	80.7	100	3	67	72.7	76	3
	BENZYL ALCOHOL	75	90.0	110	5	80	83.0	86	3	82	88.0	94	3
	BIS(2-CHLOROETHOXY)METHANE	41	63.2	75	5	58	62.3	68	3	63	65.3	68	3
	BIS(2-CHLOROETHYL)ETHER	70	86.0	100	5	82	88.3	94	3	84	89.3	94	3
	BIS(2-ETHYLHEXYL)PHTHALATE	70	94.0	115	5	93	112.0	122	3	91	110.0	121	3
	BUTYL BENZYL PHTHALATE	65	85.0	100	5	75	87.3	94	3	73	88.3	98	3
	CHRYSENE	76	80.5	83	4	67	83.3	108	3	67	70.0	75	3
	DIBENZO(A,H)ANTHRACENE	63	80.3	92	4	58	69.3	83	3	67	77.7	83	3
	DIBENZOFURAN	80	85.0	90	5	77	81.7	89	3	81	85.7	88	3
	DIETHYL PHTHALATE	70	89.0	105	5	70	87.0	97	3	73	87.7	98	3
	DIMETHYL PHTHALATE	75	85.0	95	5	71	80.3	88	3	74	82.3	88	3
	DI-N-BUTYL PHTHALATE	70	96.0	115	5	69	94.7	111	3	70	97.0	111	3
	DI-N-OCTYL PHTHALATE	75	97.0	120	5	84	103.7	118	3	84	104.0	115	3
	DIPHENYLAMINE	49	73.8	90	5	58	78.3	90	3	60	76.0	84	3
	FLUORANTHENE	68	79.3	83	4	67	97.3	150	3	65	66.3	67	3
	FLUORENE	58	63.5	70	4	67	72.3	83	3	58	66.7	75	3
	FLUORENE-D10 (SURR)	64	70.0	75	4	74	79.0	84	3	77	84.0	96	3
	HEXACHLOROBENZENE	90	109.0	125	5	96	110.3	120	3	93	108.7	118	3
	HEXACHLOROBUTADIENE	45	57.0	65	5	43	45.0	49	3	39	44.3	52	3
	HEXACHLOROCYCLOPENTADIENE	22	30.6	44	5	22	24.3	29	3	22	26.0	30	3
	HEXACHLOROETHANE	44	59.8	70	5	47	48.7	51	3	44	48.7	56	3
	INDENO(1,2,3-CD)PYRENE	61	77.0	83	4	58	72.3	92	3	67	74.7	83	3
	ISOPHORONE	55	70.0	90	5	44	58.3	79	3	50	62.0	82	3
	NAPHTHALENE	48	53.3	60	4	42	50.0	58	3	42	47.3	58	3
	NITROBENZENE-D5 (SURR)	71	78.4	83	5	59	67.0	73	3	64	69.3	76	3
	N-NITROSODIMETHYLAMINE	75	89.0	100	5	73	82.0	92	3	76	87.3	96	3
	N-NITROSO-DI-N-PROPYLAMINE	95	96.0	100	5	75	85.3	95	3	81	89.3	97	3

TABLE H-9

WATER DATA PERCENT RECOVERY STATISTICS
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	LABORATORY CONTROL SAMPLE				MATRIX SPIKE				MATRIX SPIKE DUPLICATE			
		Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count
	PHENANTHRENE	69	74.8	79	4	67	97.3	150	3	69	73.0	75	3
	PHENOL	50	70.0	80	5	37	55.3	70	3	65	67.7	71	3
	PHENOL-D5 (SURR)	47	68.2	82	5	35	56.0	73	3	63	67.7	75	3
	PYRENE	72	83.8	100	4	75	111.0	175	3	72	82.3	92	3
	PYRENE-D10 (SURR)	70	88.0	100	4	86	97.7	116	3	89	101.7	120	3
	TERPHENYL-D14 (SURR)	79	88.2	102	5	78	80.0	82	3	68	76.0	83	3
VOC	1,1,1,2-TETRACHLOROETHANE	90	99.3	104	6	98	99.7	102	3	98	98.7	99	3
	1,1,1-TRICHLOROETHANE	90	101.3	112	6	101	103.7	106	3	100	101.7	103	3
	1,1,2,2-TETRACHLOROETHANE	90	98.3	104	6	105	106.3	109	3	104	106.3	109	3
	1,1,2-TRICHLOROETHANE	88	97.3	106	6	99	101.3	105	3	97	101.3	105	3
	1,1-DICHLOROETHANE	90	101.0	108	6	104	107.7	114	3	103	105.3	108	3
	1,1-DICHLOROETHENE	76	94.0	104	6	94	99.7	108	3	93	99.7	110	3
	1,2,3-TRICHLOROPROPANE	86	96.3	102	6	99	100.0	102	3	100	100.7	102	3
	1,2-DIBROMO-3-CHLOROPROPANE	86	98.0	104	6	93	96.7	101	3	97	99.7	105	3
	1,2-DIBROMOETHANE	90	98.7	104	6	99	101.3	103	3	100	101.7	104	3
	1,2-DICHLOROETHANE	94	98.3	102	6	102	105.0	110	3	100	103.3	107	3
	1,2-DICHLOROETHANE-D4 (SURR)	81	93.3	99	6	88	96.0	101	3	89	95.7	100	3
	1,2-DICHLOROPROPANE	96	101.0	110	6	105	108.0	111	3	104	107.0	110	3
	2-BUTANONE	76	91.3	114	6	92	99.0	110	3	89	98.7	115	3
	2-HEXANONE	80	96.7	106	6	94	101.0	110	3	95	101.3	111	3
	4-BROMOFLUOROBENZENE (SURR)	89	95.8	98	6	94	96.7	100	3	97	97.3	98	3
	4-METHYL-2-PENTANONE	84	103.0	118	6	108	112.0	119	3	110	115.0	124	3
	ACETONE	66	82.0	110	6	72	84.0	107	3	72	89.0	121	3
	BENZENE	90	97.7	104	6	100	104.7	109	3	96	101.7	105	3
	BROMODICHLOROMETHANE	88	92.0	96	6	95	96.7	99	3	94	95.3	97	3
	BROMOFORM	80	93.0	102	6	88	91.0	95	3	86	91.3	98	3
	BROMOMETHANE	94	118.3	160	6	101	132.7	163	3	99	126.0	147	3
	CARBON DISULFIDE	84	97.3	102	6	88	98.0	108	3	83	95.7	105	3
	CARBON TETRACHLORIDE	94	101.3	112	6	101	104.3	109	3	100	101.3	103	3
	CHLOROBENZENE	88	95.7	102	6	97	98.3	100	3	96	97.3	100	3
	CHLORODIBROMOMETHANE	90	95.7	102	6	97	99.3	102	3	97	99.3	101	3
	CHLOROETHANE	94	102.0	110	6	104	110.0	118	3	100	105.3	110	3
	CHLOROFORM	92	99.7	106	6	103	105.7	110	3	100	103.7	108	3
	CHLOROMETHANE	82	96.3	118	6	96	107.7	128	3	93	104.0	119	3
	CIS-1,2-DICHLOROETHENE	92	100.3	108	6	99	104.3	108	3	99	103.3	108	3
	CIS-1,3-DICHLOROPROPENE	98	107.3	116	6	102	106.7	110	3	102	107.0	111	3
	DIBROMOFLUOROMETHANE (SURR)	91	96.8	101	6	95	97.7	100	3	95	97.3	99	3
	DIBROMOMETHANE	96	102.3	110	6	102	107.0	110	3	101	106.3	113	3
	DICHLORODIFLUOROMETHANE	94	117.7	158	6	97	120.3	142	3	97	120.7	147	3
	ETHYLBENZENE	90	97.7	106	6	101	102.7	105	3	96	99.7	104	3
	METHYL TERT-BUTYL ETHER	84.1	99.0	104	6	100	101.3	102	3	101	103.3	105	3
	METHYLENE CHLORIDE	88	96.7	102	6	96	101.0	108	3	97	100.7	106	3
	STYRENE	98	103.7	108	6	106	109.3	112	3	106	107.3	109	3
	TETRACHLOROETHENE	80	87.3	92	6	85	87.0	89	3	85	85.7	87	3
	TOLUENE	88	96.3	106	6	99	100.7	103	3	96	98.3	102	3

TABL

WATER DATA PERCENT RECOVERY STATISTICS
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	LABORATORY CONTROL SAMPLE				MATRIX SPIKE				MATRIX SPIKE DUPLICATE			
		Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count
	TOLUENE-D8 (SURR)	91	95.5	99	6	95	96.3	98	3	93	96.0	99	3
	TOTAL XYLENES	93	102.2	113	6	101	104.7	111	3	99	102.7	110	3
	TRANS-1,2-DICHLOROETHENE	84	95.7	106	6	96	100.0	106	3	94	99.0	103	3
	TRANS-1,3-DICHLOROPROPENE	96	101.3	106	6	100	100.3	101	3	99	99.7	100	3
	TRICHLOROETHENE	90	100.3	106	6	99	100.7	102	3	98	100.0	102	3
	TRICHLOROFLUOROMETHANE	92	99.3	108	6	90	100.3	112	3	90	98.3	108	3
	VINYL CHLORIDE	98	106.0	122	6	102	111.7	126	3	103	109.7	121	3
PEST/PCB	4,4'-DDD	105	112.8	127	4	111	114.5	118	2	105	115.5	126	2
	4,4'-DDE	108	114.3	122	4	111	112.0	113	2	106	111.0	116	2
	4,4'-DDT	105	114.5	120	4	104	111.5	119	2	112	112.0	112	2
	ALDRIN	90	93.8	103	4	88	93.0	98	2	84	88.5	93	2
	ALPHA-BHC	96	100.5	103	4	95	96.5	98	2	90	95.5	101	2
	ALPHA-CHLORDANE	101	105.8	110	4	96	97.0	98	2	95	97.5	100	2
	AROCLOR-1016	89	94.0	99	4	91	93.3	97	3	90	94.7	100	3
	AROCLOR-1260	97	105.0	119	4	95	101.3	112	3	96	103.7	118	3
	BETA-BHC	94	99.5	102	4	82	87.0	92	2	85	91.5	98	2
	DECACHLOROBIPHENYL (SURR)	85	94.4	114	8	78	83.0	91	5	80	82.2	86	5
	DELTA-BHC	90	96.5	102	4	87	90.5	94	2	87	90.5	94	2
	DIELDRIN	108	111.3	114	4	102	103.0	104	2	101	104.5	108	2
	ENDOSULFAN I	105	108.8	112	4	101	102.5	104	2	100	102.0	104	2
	ENDOSULFAN II	105	111.8	116	4	103	103.0	103	2	101	105.0	109	2
	ENDOSULFAN SULFATE	102	107.5	110	4	98	99.0	100	2	96	101.0	106	2
	ENDRIN	112	116.8	122	4	107	109.0	111	2	106	109.5	113	2
	ENDRIN ALDEHYDE	86	89.0	95	4	63	66.5	70	2	61	71.0	81	2
	ENDRIN KETONE	106	111.0	113	4	105	105.5	106	2	99	105.0	111	2
	GAMMA-BHC (LINDANE)	99	104.3	107	4	100	100.5	101	2	96	98.5	101	2
	GAMMA-CHLORDANE	101	105.3	109	4	96	98.5	101	2	97	98.5	100	2
	HEPTACHLOR	93	96.5	103	4	89	94.5	100	2	88	90.5	93	2
	HEPTACHLOR EPOXIDE	104	108.3	111	4	100	101.0	102	2	100	103.5	107	2
	METHOXYCHLOR	109	113.0	121	4	111	115.0	119	2	111	115.0	119	2
	TETRACHLORO-M-XYLENE (SURR)	60	71.6	81	8	55	65.6	76	5	55	61.4	66	5

1 Minimum values less than 75 percent and maximum values greater than 125 percent are highlighted. Compounds with severe low bias are also highlighted.

HERB = Herbicides
M = Metals, total
MF = Metals, dissolved
MISC = Miscellaneous parameters
SVOC = Semivolatile organic compounds
VOC = Volatile organic compounds

TAB[illegible]-10

FIELD DUPLICATE PRECISION SUMMARY
SWMU 15 (ROADS AND GROUNDS)

NSWC CRANE
CRANE, INDIANA

Fraction	Sample	Parameter	GROUND WATER RPD > 30%	SEDIMENT RPD > 50%	SOIL RPD > 50%	SURFACE WATER RPD > 30%
HERB	15GWTW006	2,4,5-TP (SILVEX)	40.0	--	--	--
Metals, Total	15GWTW006	ALUMINUM	33.5	--	--	--
		ANTIMONY	50.0	--	--	--
		ZINC	154.5	--	--	--
	15SB0060206	BARIUM	--	--	70.0	--
		CADMIUM	--	--	63.0	--
		CALCIUM	--	--	106.0	--
		LEAD	--	--	50.2	--
		MANGANESE	--	--	68.1	--
		SELENIUM	--	--	62.3	--
		SILVER	--	--	52.0	--
		THALLIUM	--	--	52.6	--
	15SB0140206	ALUMINUM	--	--	62.9	--
		ANTIMONY	--	--	84.3	--
		BERYLLIUM	--	--	54.5	--
		IRON	--	--	91.8	--
		MAGNESIUM	--	--	80.8	--
		THALLIUM	--	--	70.0	--
	15SB0480206	ANTIMONY	--	--	73.7	--
		ARSENIC	--	--	94.1	--
		CALCIUM	--	--	81.4	--
		COBALT	--	--	63.5	--
		MANGANESE	--	--	91.5	--
		MERCURY	--	--	75.0	--
	15SD0050006	BARIUM	--	86.8	--	--
		MERCURY	--	58.8	--	--
		SELENIUM	--	55.6	--	--
		SILVER	--	50.0	--	--
		THALLIUM	--	66.7	--	--
	15SS0620002	ANTIMONY	--	--	54.5	--
	15SW00601	ANTIMONY	--	--	--	91.4
		BERYLLIUM	--	--	--	147.8

TABLE H-10

FIELD DUPLICATE PRECISION SUMMARY
SWMU 15 (ROADS AND GROUNDS)

NSWC CRANE
CRANE, INDIANA

		CADMIUM	--	--	--	91.9
		SILVER	--	--	--	152.9
		THALLIUM	--	--	--	140.0
		TIN	--	--	--	128.4
Metals, Dissolved	15SW00601-F	ANTIMONY	--	--	--	139.8
		ARSENIC	--	--	--	56.4
		CADMIUM	--	--	--	42.4
		IRON	--	--	--	52.4
		LEAD	--	--	--	84.0
		SILVER	--	--	--	137.1
SVOC	15SB0060206	2-METHYLNAPHTHALENE	--	--	72.7	--
		ANTHRACENE	--	--	94.7	--
		BENZO(A)ANTHRACENE	--	--	100.0	--
		BENZO(A)PYRENE	--	--	95.1	--
		BENZO(B)FLUORANTHENE	--	--	118.8	--
		BENZO(G,H,I)PERYLENE	--	--	103.4	--
		BENZO(K)FLUORANTHENE	--	--	72.7	--
		CHRYSENE	--	--	98.9	--
		DIBENZO(A,H)ANTHRACENE	--	--	100.2	--
		FLUORANTHENE	--	--	105.1	--
		INDENO(1,2,3-CD)PYRENE	--	--	110.2	--
		NAPHTHALENE	--	--	73.7	--
		PHENANTHRENE	--	--	98.1	--
		PYRENE	--	--	107.7	--
	15SB0230206	BIS(2-ETHYLHEXYL)PHTHALATE	--	--	197.5	--
		PHENANTHRENE	--	--	79.1	--
	15SB0280206	2-METHYLNAPHTHALENE	--	--	100.0	--
		ACENAPHTHENE	--	--	110.2	--
		ANTHRACENE	--	--	126.4	--
		BENZO(A)ANTHRACENE	--	--	133.3	--
		BENZO(A)PYRENE	--	--	122.1	--
		BENZO(B)FLUORANTHENE	--	--	110.1	--
		BENZO(G,H,I)PERYLENE	--	--	101.9	--
		BENZO(K)FLUORANTHENE	--	--	144.0	--
		CHRYSENE	--	--	122.1	--

TABL[illegible]0

FIELD DUPLICATE PRECISION SUMMARY
SWMU 15 (ROADS AND GROUNDS)

NSWC CRANE
CRANE, INDIANA

		DIBENZO(A,H)ANTHRACENE	--	--	158.5	--
		FLUORANTHENE	--	--	127.0	--
		FLUORENE	--	--	117.2	--
		INDENO(1,2,3-CD)PYRENE	--	--	100.9	--
		NAPHTHALENE	--	--	90.9	--
		PHENANTHRENE	--	--	126.4	--
		PYRENE	--	--	145.1	--
	15SB0480206	BENZO(A)ANTHRACENE	--	--	72.3	--
		BENZO(A)PYRENE	--	--	72.3	--
		BENZO(B)FLUORANTHENE	--	--	90.9	--
		CHRYSENE	--	--	82.4	--
		FLUORANTHENE	--	--	110.4	--
		PHENANTHRENE	--	--	127.3	--
	15SD0050006	FLUORENE	--	54.5	--	--
		PYRENE	--	58.3	--	--
	15SW00601	ANTHRACENE	--	--	--	35.3
		BENZO(K)FLUORANTHENE	--	--	--	41.7
VOC	15SB0060206	2-BUTANONE	--	--	75.3	--
		ACETONE	--	--	60.9	--
	15SB0230206	2-BUTANONE	--	--	100.0	--
		ACETONE	--	--	97.4	--
		METHYLENE CHLORIDE	--	--	182.7	--
		TRICHLOROFLUOROMETHANE	--	--	71.3	--
	15SB0480206	CARBON DISULFIDE	--	--	64.9	--
	15SS0620002	ACETONE	--	--	58.9	--
HERB = Herbicides						
M = Metals, total						
MF = Metals, dissolved						
RPD = Relative percent difference						
SVOC = Semivolatile organic compounds						
VOC = Volatile organic compounds						

TABL[illegible]1

WATER DATA RELATIVE PERCENT DIFFERENCE STATISTICS
SWMU 15 (ROADS AND GROUNDS) (1)

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	units	LABORATORY DUPLICATE				MATRIX SPIKE DUPLICATE			
			Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count
HERB	HEXACHLOROPHENE	UG/L	--	--	--	--	2	13.4	31	5
	PENTACHLOROPHENOL	UG/L	--	--	--	--	0	36.4	132	5
Metals, Total	ALUMINUM	UG/L	2.1	12.9	30.8	4	--	--	--	--
	ANTIMONY	UG/L	4	36.8	74.1	4	--	--	--	--
	BARIUM	UG/L	3.1	24.3	58.3	3	--	--	--	--
	CADMIUM	UG/L	0	25.3	62.7	4	--	--	--	--
	CALCIUM	UG/L	1.1	153.4	105.7	2	--	--	--	--
	COPPER	UG/L	0.4	17.7	65.6	4	--	--	--	--
	LEAD	UG/L	0.6	10.2	35.6	4	--	--	--	--
	MANGANESE	UG/L	39	51.4	63.7	2	--	--	--	--
	NICKEL	UG/L	4.8	19.4	58.6	4	--	--	--	--
	SILVER	UG/L	0	22.6	90.4	4	--	--	--	--
	TIN	UG/L	0	28.4	62.1	4	--	--	--	--
Metals, Dissolved	ALUMINUM	UG/L	0	66.7	200	3	--	--	--	--
	ARSENIC	UG/L	5.8	23.0	36.6	3	--	--	--	--
	CADMIUM	UG/L	29.2	45.9	67.2	3	--	--	--	--
	CHROMIUM	UG/L	4.9	42.0	86.2	3	--	--	--	--
	LEAD	UG/L	27.2	36.3	47.6	3	--	--	--	--
	ZINC	UG/L	2.9	29.4	52.6	3	--	--	--	--
SVOC	2,4,5-TRICHLOROPHENOL	UG/L	--	--	--	--	5	48.0	109	3
	2,4,6-TRICHLOROPHENOL	UG/L	--	--	--	--	4	48.3	119	3
	2,4-DICHLOROPHENOL	UG/L	--	--	--	--	1	41.3	102	3
	2,4-DINITROPHENOL	UG/L	--	--	--	--	109	141.7	200	3
	2-CHLOROPHENOL	UG/L	--	--	--	--	3	34.7	90	3
	2-NITROPHENOL	UG/L	--	--	--	--	39	120.7	200	3
	3&4-METHYLPHENOL	UG/L	--	--	--	--	0	11.3	34	3
	3,3'-DICHLOROBENZIDINE	UG/L	--	--	--	--	5	114.7	200	3
	4,6-DINITRO-2-METHYLPHENOL	UG/L	--	--	--	--	119	155.7	200	3

TABLE H-11

WATER DATA RELATIVE PERCENT DIFFERENCE STATISTICS
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	units	LABORATORY DUPLICATE				MATRIX SPIKE DUPLICATE			
			Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count
	4-CHLORO-3-METHYLPHENOL	UG/L	--	--	--	--	1	13.3	31	3
	4-NITROPHENOL	UG/L	--	--	--	--	0	71.0	200	3
	BENZO(A)ANTHRACENE	UG/L	--	--	--	--	0	13.7	41	3
	BENZO(A)PYRENE	UG/L	--	--	--	--	0	24.0	58	3
	BENZO(B)FLUORANTHENE	UG/L	--	--	--	--	11	26.0	46	3
	BENZO(G,H,I)PERYLENE	UG/L	--	--	--	--	0	18.0	33	3
	CHRYSENE	UG/L	--	--	--	--	11	22.3	45	3
	FLUORANTHENE	UG/L	--	--	--	--	0	30.0	79	3
	PHENANTHRENE	UG/L	--	--	--	--	0	28.3	74	3
	PHENOL	UG/L	--	--	--	--	1	23.0	58	3
	PYRENE	UG/L	--	--	--	--	10	34.3	83	3

1 Relative Percent Difference values that exceed 30 percent are highlighted.

HERB = Herbicides
MG/L = milligrams per Liter
SVOC = Semivolatile organic compounds
UG/L = micrograms per Liter

TABL[illegible]2

SOIL DATA RELATIVE PERCENT DIFFERENCE STATISTICS
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	units	LABORATORY DUPLICATE				MATRIX SPIKE DUPLICATE			
			Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count
Metals, Total	ANTIMONY	MG/KG	2.2	21.8	61.4	10	--	--	--	--
	ARSENIC	MG/KG	1.0	32.7	96.3	10	--	--	--	--
	CADMIUM	MG/KG	2.3	17.4	54.1	10	--	--	--	--
	CALCIUM	MG/KG	1.3	17.2	58.2	7	--	--	--	--
	CHROMIUM	MG/KG	0.9	26.1	95.3	10	--	--	--	--
	COPPER	MG/KG	0.5	19.0	77.8	10	--	--	--	--
	LEAD	MG/KG	1.0	30.9	176.0	10	--	--	--	--
	MERCURY	MG/KG	0.0	17.1	69.7	10	--	--	--	--
	NICKEL	MG/KG	0.6	15.2	50.7	10	--	--	--	--
	SELENIUM	MG/KG	1.1	22.4	59.6	10	--	--	--	--
	SILVER	MG/KG	4.8	33.1	92.6	10	--	--	--	--
	THALLIUM	MG/KG	0.7	17.2	63.2	10	--	--	--	--
	TIN	MG/KG	0.3	24.8	98.6	10	--	--	--	--
	VANADIUM	MG/KG	0.0	19.6	74.8	10	--	--	--	--
	ZINC	MG/KG	0.1	18.6	67.8	9	--	--	--	--
SVOC	2-METHYLNAPHTHALENE	UG/KG	--	--	--	--	2.0	14.5	51.0	12
	3,3'-DICHLOROBENZIDINE	UG/KG	--	--	--	--	0.0	50.9	200.0	10
	4-CHLOROANILINE	UG/KG	--	--	--	--	5.0	54.1	200.0	10
	ACENAPHTHENE	UG/KG	--	--	--	--	0.0	11.0	57.0	12
	ACENAPHTHYLENE	UG/KG	--	--	--	--	0.0	10.4	55.0	12
	BENZO(A)PYRENE	UG/KG	--	--	--	--	0.0	17.1	71.0	12
	BENZO(B)FLUORANTHENE	UG/KG	--	--	--	--	0.0	16.0	55.0	12
	BENZO(G,H,I)PERYLENE	UG/KG	--	--	--	--	0.0	15.0	64.0	12
	DIBENZO(A,H)ANTHRACENE	UG/KG	--	--	--	--	3.0	15.0	53.0	12
	DIPHENYLAMINE	UG/KG	--	--	--	--	0.0	8.8	56.0	10
	FLUORENE	UG/KG	--	--	--	--	0.0	11.1	55.0	12
	HEXACHLOROCYCLOPENTADIENE	UG/KG	--	--	--	--	0.0	44.5	200.0	10
	INDENO(1,2,3-CD)PYRENE	UG/KG	--	--	--	--	0.0	13.8	65.0	12
	NAPHTHALENE	UG/KG	--	--	--	--	2.0	15.2	54.0	12
VOC	1,1,1-TRICHLOROETHANE	UG/KG	--	--	--	--	1.0	22.9	60.0	7

TABLE H-12

SOIL DATA RELATIVE PERCENT DIFFERENCE STATISTICS
SWMU 15 (ROADS AND GROUNDS) (1)

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	units	LABORATORY DUPLICATE				MATRIX SPIKE DUPLICATE			
			Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count
	1,1-DICHLOROETHANE	UG/KG	--	--	--	--	1.0	18.1	51.0	7
	1,1-DICHLOROETHENE	UG/KG	--	--	--	--	0.0	22.4	67.0	7
	ACETONE	UG/KG	--	--	--	--	2.0	28.3	98.0	7
	BENZENE	UG/KG	--	--	--	--	1.0	16.1	55.0	7
	BROMOMETHANE	UG/KG	--	--	--	--	1.0	34.0	119.0	7
	CARBON DISULFIDE	UG/KG	--	--	--	--	0.0	26.1	74.0	7
	CARBON TETRACHLORIDE	UG/KG	--	--	--	--	3.0	22.7	69.0	7
	CHLOROETHANE	UG/KG	--	--	--	--	0.0	36.1	105.0	7
	CHLOROMETHANE	UG/KG	--	--	--	--	2.0	38.6	94.0	7
	CIS-1,2-DICHLOROETHENE	UG/KG	--	--	--	--	3.0	15.0	52.0	7
	DICHLORODIFLUOROMETHANE	UG/KG	--	--	--	--	3.0	36.1	93.0	7
	ETHYLBENZENE	UG/KG	--	--	--	--	2.0	14.1	57.0	7
	METHYLENE CHLORIDE	UG/KG	--	--	--	--	3.0	27.9	60.0	7
	TETRACHLOROETHENE	UG/KG	--	--	--	--	2.0	18.6	61.0	7
	TOLUENE	UG/KG	--	--	--	--	2.0	12.6	54.0	7
	TOTAL XYLENES	UG/KG	--	--	--	--	2.0	13.9	55.0	7
	TRANS-1,2-DICHLOROETHENE	UG/KG	--	--	--	--	0.0	17.3	62.0	7
	TRICHLOROETHENE	UG/KG	--	--	--	--	1.0	18.7	56.0	6
	TRICHLOROFLUOROMETHANE	UG/KG	--	--	--	--	1.0	39.1	92.0	7
	VINYL CHLORIDE	UG/KG	--	--	--	--	3.0	40.0	112.0	7

1 Relative Percent Difference values that exceed 50 percent are highlighted.

MG/KG = milligrams per kilogram
SVOC = Semivolatile organic compounds
UG/KG = micrograms per kilogram
VOC = Volatile organic compounds

TABLE H-13

SOIL DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Qual Code	Validation Qualifier					
			BJ	BU	J	U	UJ	UR
HERB	2,4,5-T	H	0.0	0.0	0.0	0.0	100.0	0.0
	2,4,5-TP (SILVEX)	H	0.0	0.0	0.0	0.0	100.0	0.0
	2,4-D	H	0.0	0.0	0.0	0.0	100.0	0.0
	DINOSEB	H	0.0	0.0	0.0	0.0	100.0	0.0
	HEXACHLOROPHENE	H	0.0	0.0	0.0	0.0	100.0	0.0
	PENTACHLOROPHENOL	H	0.0	0.0	0.0	0.0	100.0	0.0
		R	0.0	0.0	100.0	0.0	0.0	0.0
Metals, Total	ALUMINUM	A	0.0	0.0	72.9	0.0	0.0	0.0
		AF	0.0	0.0	23.7	0.0	0.0	0.0
		AG	0.0	0.0	3.4	0.0	0.0	0.0
	ANTIMONY	A	0.0	0.0	0.0	100.0	0.0	0.0
		AF	0.0	0.0	50.0	0.0	0.0	0.0
		AK	0.0	0.0	50.0	0.0	0.0	0.0
	ARSENIC	A	0.0	0.0	35.6	0.0	0.0	0.0
		AF	0.0	0.0	61.0	0.0	0.0	0.0
		AG	0.0	0.0	3.4	0.0	0.0	0.0
	BARIUM	A	0.0	0.0	37.3	0.0	0.0	0.0
		AD	0.0	0.0	6.8	0.0	0.0	0.0
		ADG	0.0	0.0	3.4	0.0	0.0	0.0
		ADI	0.0	0.0	28.8	0.0	0.0	0.0
		DF	0.0	0.0	23.7	0.0	0.0	0.0
	BERYLLIUM	A	0.0	0.0	71.4	100.0	0.0	0.0
		AG	0.0	0.0	7.1	0.0	0.0	0.0
		AP	0.0	0.0	7.1	0.0	0.0	0.0
		I	0.0	0.0	7.1	0.0	0.0	0.0
		P	0.0	0.0	7.1	0.0	0.0	0.0
	CADMIUM	A	0.0	0.0	23.5	100.0	0.0	0.0
		AP	0.0	0.0	19.6	0.0	0.0	0.0
		P	0.0	0.0	56.9	0.0	0.0	0.0
	CALCIUM	A	0.0	0.0	0.0	100.0	0.0	0.0
		ADF	0.0	0.0	7.1	0.0	0.0	0.0
		ADFG	0.0	0.0	1.8	0.0	0.0	0.0
		ADI	0.0	0.0	25.0	0.0	0.0	0.0
		AFG	0.0	0.0	3.6	0.0	0.0	0.0
		AI	0.0	0.0	62.5	0.0	0.0	0.0
	CHROMIUM	A	0.0	0.0	28.8	0.0	0.0	0.0
		AD	0.0	0.0	10.2	0.0	0.0	0.0
		ADI	0.0	0.0	8.5	0.0	0.0	0.0
		AF	0.0	0.0	20.3	0.0	0.0	0.0
		AFK	0.0	0.0	8.5	0.0	0.0	0.0
		AI	0.0	0.0	23.7	0.0	0.0	0.0
	COBALT	A	0.0	0.0	28.8	0.0	0.0	0.0
		AFI	0.0	0.0	10.2	0.0	0.0	0.0
		AI	0.0	0.0	8.5	0.0	0.0	0.0
		G	0.0	0.0	3.4	0.0	0.0	0.0
		I	0.0	0.0	49.2	0.0	0.0	0.0
	COPPER	A	0.0	0.0	64.4	0.0	0.0	0.0
		AD	0.0	0.0	3.4	0.0	0.0	0.0
		ADI	0.0	0.0	8.5	0.0	0.0	0.0
		AF	0.0	0.0	1.7	0.0	0.0	0.0
		AFI	0.0	0.0	22.0	0.0	0.0	0.0

TABLE H-13

SOIL DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Qual Code	Validation Qualifier					
			BJ	BU	J	U	UJ	UR
	IRON	A	0.0	0.0	66.1	0.0	0.0	0.0
		AF	0.0	0.0	30.5	0.0	0.0	0.0
		AFG	0.0	0.0	3.4	0.0	0.0	0.0
	LEAD	A	0.0	0.0	3.4	0.0	0.0	0.0
		AD	0.0	0.0	6.8	0.0	0.0	0.0
		ADFI	0.0	0.0	8.5	0.0	0.0	0.0
		ADG	0.0	0.0	3.4	0.0	0.0	0.0
		AF	0.0	0.0	23.7	0.0	0.0	0.0
		AFI	0.0	0.0	20.3	0.0	0.0	0.0
		AFIK	0.0	0.0	8.5	0.0	0.0	0.0
		AI	0.0	0.0	25.4	0.0	0.0	0.0
	MAGNESIUM	A	0.0	0.0	27.1	0.0	0.0	0.0
		AC	0.0	0.0	1.7	0.0	0.0	0.0
		ADF	0.0	0.0	30.5	0.0	0.0	0.0
		ADFG	0.0	0.0	3.4	0.0	0.0	0.0
		ADI	0.0	0.0	8.5	0.0	0.0	0.0
		DI	0.0	0.0	3.4	0.0	0.0	0.0
		I	0.0	0.0	25.4	0.0	0.0	0.0
	MANGANESE	A	0.0	0.0	75.6	0.0	0.0	0.0
		AFG	0.0	0.0	4.4	0.0	0.0	0.0
		AG	0.0	0.0	4.4	0.0	0.0	0.0
		AK	0.0	0.0	15.6	0.0	0.0	0.0
	MERCURY	P	0.0	0.0	100.0	0.0	0.0	0.0
	NICKEL	A	0.0	0.0	57.6	0.0	0.0	0.0
		ADF	0.0	0.0	10.2	0.0	0.0	0.0
		AEIK	0.0	0.0	8.5	0.0	0.0	0.0
		AF	0.0	0.0	23.7	0.0	0.0	0.0
	POTASSIUM	A	0.0	0.0	28.8	0.0	0.0	0.0
		ADFI	0.0	0.0	23.7	0.0	0.0	0.0
		ADI	0.0	0.0	18.6	0.0	0.0	0.0
		AI	0.0	0.0	28.8	0.0	0.0	0.0
	SELENIUM	A	0.0	0.0	10.0	100.0	0.0	0.0
		AP	0.0	0.0	35.0	0.0	0.0	0.0
		P	0.0	0.0	55.0	0.0	0.0	0.0
	SILVER	A	0.0	0.0	0.0	100.0	0.0	0.0
		P	0.0	0.0	100.0	0.0	0.0	0.0
	SODIUM	A	0.0	0.0	100.0	100.0	0.0	0.0
	THALLIUM	A	0.0	0.0	0.0	100.0	0.0	0.0
		ACEP	0.0	0.0	81.0	0.0	0.0	0.0
		ACIP	0.0	0.0	19.0	0.0	0.0	0.0
	TIN	A	0.0	0.0	0.0	100.0	0.0	0.0
		AIP	0.0	0.0	16.7	0.0	0.0	0.0
		P	0.0	0.0	83.3	0.0	0.0	0.0
	VANADIUM	A	0.0	0.0	54.8	0.0	0.0	0.0
		ADI	0.0	0.0	11.9	0.0	0.0	0.0
		DFI	0.0	0.0	33.3	0.0	0.0	0.0
	ZINC	A	0.0	0.0	9.8	100.0	0.0	0.0
		ADI	0.0	0.0	3.9	0.0	0.0	0.0
		ADIK	0.0	0.0	5.9	0.0	0.0	0.0
		AI	0.0	0.0	2.0	0.0	0.0	0.0
		AIK	0.0	0.0	31.4	0.0	0.0	0.0

TABLE H-13

SOIL DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Qual Code	Validation Qualifier					
			BJ	BU	J	U	UJ	UR
		DF	0.0	0.0	27.5	0.0	0.0	0.0
		K	0.0	0.0	19.6	0.0	0.0	0.0
SVOC	1,4-PHENYLENEDIAMINE	C	0.0	0.0	0.0	0.0	100.0	0.0
	2,2'-OXYBIS(1-CHLOROPROPANE)	C	0.0	0.0	0.0	0.0	100.0	0.0
	2,4-DIMETHYLPHENOL	D	0.0	0.0	0.0	0.0	0.0	100.0
	2,4-DINITROPHENOL	C	0.0	0.0	0.0	0.0	100.0	0.0
	2-ACETYLAMINOFLUORENE	C	0.0	0.0	0.0	0.0	73.3	0.0
		CN	0.0	0.0	0.0	0.0	26.7	0.0
	2-CHLORONAPHTHALENE	D	0.0	0.0	0.0	0.0	100.0	0.0
	2-METHYLNAPHTHALENE	E	0.0	0.0	11.8	0.0	100.0	0.0
		EP	0.0	0.0	5.9	0.0	0.0	0.0
		ER	0.0	0.0	5.9	0.0	0.0	0.0
		G	0.0	0.0	5.9	0.0	0.0	0.0
		GP	0.0	0.0	11.8	0.0	0.0	0.0
		P	0.0	0.0	58.8	0.0	0.0	0.0
	2-METHYLPHENOL	D	0.0	0.0	0.0	0.0	100.0	0.0
	3&4-METHYLPHENOL	D	0.0	0.0	0.0	0.0	100.0	0.0
	3,3'-DICHLOROBENZIDINE	D	0.0	0.0	0.0	0.0	0.0	100.0
		N	0.0	0.0	0.0	0.0	100.0	0.0
	3,3'-DIMETHYLBENZIDINE	C	0.0	0.0	0.0	0.0	87.9	0.0
		CN	0.0	0.0	0.0	0.0	12.1	0.0
	4,6-DINITRO-2-METHYLPHENOL	N	0.0	0.0	0.0	0.0	100.0	0.0
	4-AMINOBIPHENYL	N	0.0	0.0	0.0	0.0	100.0	0.0
	4-BROMOPHENYL PHENYL ETHER	N	0.0	0.0	0.0	0.0	100.0	0.0
	4-CHLOROANILINE	D	0.0	0.0	0.0	0.0	0.0	100.0
	4-NITROQUINOLINE-1-OXIDE	C	0.0	0.0	0.0	0.0	0.0	100.0
	A,A-DIMETHYLPHENETHYLAMINE	C	0.0	0.0	0.0	0.0	100.0	0.0
	ACENAPHTHENE	E	0.0	0.0	0.0	0.0	100.0	0.0
		ER	0.0	0.0	14.3	0.0	0.0	0.0
		G	0.0	0.0	14.3	0.0	0.0	0.0
		P	0.0	0.0	71.4	0.0	0.0	0.0
	ACENAPHTHYLENE	E	0.0	0.0	0.0	0.0	100.0	0.0
		EP	0.0	0.0	42.9	0.0	0.0	0.0
		ER	0.0	0.0	14.3	0.0	0.0	0.0
		P	0.0	0.0	42.9	0.0	0.0	0.0
	ACETOPHENONE	A	0.0	0.0	0.0	100.0	0.0	0.0
		P	0.0	0.0	100.0	0.0	0.0	0.0
	ANTHRACENE	G	0.0	0.0	13.3	0.0	0.0	0.0
		GP	0.0	0.0	6.7	0.0	0.0	0.0
		P	0.0	0.0	73.3	0.0	0.0	0.0
		R	0.0	0.0	6.7	0.0	0.0	0.0
	ARAMITE	N	0.0	0.0	0.0	0.0	100.0	0.0
	BENZO(A)ANTHRACENE	E	0.0	0.0	11.8	0.0	57.1	0.0
		EG	0.0	0.0	11.8	0.0	0.0	0.0
		G	0.0	0.0	5.9	0.0	0.0	0.0
		N	0.0	0.0	29.4	0.0	42.9	0.0
		P	0.0	0.0	35.3	0.0	0.0	0.0
		R	0.0	0.0	5.9	0.0	0.0	0.0
	BENZO(A)PYRENE	G	0.0	0.0	37.5	0.0	0.0	0.0
		N	0.0	0.0	37.5	0.0	100.0	0.0
		P	0.0	0.0	12.5	0.0	0.0	0.0

TABLE H-13

SOIL DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Qual Code	Validation Qualifier					
			BJ	BU	J	U	UJ	UR
		R	0.0	0.0	12.5	0.0	0.0	0.0
	BENZO(B)FLUORANTHENE	G	0.0	0.0	37.5	0.0	0.0	0.0
		N	0.0	0.0	37.5	0.0	100.0	0.0
		P	0.0	0.0	12.5	0.0	0.0	0.0
		R	0.0	0.0	12.5	0.0	0.0	0.0
	BENZO(G,H,I)PERYLENE	G	0.0	0.0	37.5	0.0	0.0	0.0
		N	0.0	0.0	37.5	0.0	100.0	0.0
		P	0.0	0.0	12.5	0.0	0.0	0.0
		R	0.0	0.0	12.5	0.0	0.0	0.0
	BENZO(K)FLUORANTHENE	G	0.0	0.0	33.3	0.0	0.0	0.0
		N	0.0	0.0	33.3	0.0	100.0	0.0
		P	0.0	0.0	22.2	0.0	0.0	0.0
		R	0.0	0.0	11.1	0.0	0.0	0.0
	BIS(2-ETHYLHEXYL)PHTHALATE	G	0.0	0.0	0.0	0.0	33.3	0.0
		GH	0.0	0.0	8.3	0.0	0.0	0.0
		N	0.0	0.0	0.0	0.0	66.7	0.0
		NP	0.0	0.0	16.7	0.0	0.0	0.0
		P	0.0	0.0	75.0	0.0	0.0	0.0
	BUTYL BENZYL PHTHALATE	N	0.0	0.0	0.0	0.0	100.0	0.0
	CHLOROBENZILATE	N	0.0	0.0	0.0	0.0	100.0	0.0
	CHRYSENE	G	0.0	0.0	23.1	0.0	0.0	0.0
		N	0.0	0.0	38.5	0.0	100.0	0.0
		P	0.0	0.0	30.8	0.0	0.0	0.0
		R	0.0	0.0	7.7	0.0	0.0	0.0
	DIALLATE	N	0.0	0.0	0.0	0.0	100.0	0.0
	DIBENZO(A,H)ANTHRACENE	G	0.0	0.0	33.3	0.0	22.2	0.0
		N	0.0	0.0	0.0	0.0	77.8	0.0
		P	0.0	0.0	33.3	0.0	0.0	0.0
		R	0.0	0.0	33.3	0.0	0.0	0.0
	DIBENZOFURAN	P	0.0	0.0	100.0	0.0	0.0	0.0
	DI-N-BUTYL PHTHALATE	N	0.0	0.0	0.0	0.0	100.0	0.0
		P	0.0	0.0	87.5	0.0	0.0	0.0
		PE	0.0	0.0	12.5	0.0	0.0	0.0
	DI-N-OCTYL PHTHALATE	E	0.0	0.0	100.0	0.0	0.0	0.0
	DIPHENYLAMINE	N	0.0	0.0	0.0	0.0	100.0	0.0
	FLUORANTHENE	G	0.0	0.0	25.0	0.0	0.0	0.0
		P	0.0	0.0	66.7	0.0	0.0	0.0
		R	0.0	0.0	8.3	0.0	0.0	0.0
	FLUORENE	E	0.0	0.0	0.0	0.0	100.0	0.0
		ER	0.0	0.0	10.0	0.0	0.0	0.0
		P	0.0	0.0	90.0	0.0	0.0	0.0
	HEXACHLOROBENZENE	C	0.0	0.0	0.0	0.0	85.7	0.0
		N	0.0	0.0	0.0	0.0	14.3	0.0
	HEXACHLOROCYCLOPENTADIENE	C	0.0	0.0	0.0	0.0	100.0	25.0
		D	0.0	0.0	0.0	0.0	0.0	75.0
	INDENO(1,2,3-CD)PYRENE	G	0.0	0.0	37.5	0.0	0.0	0.0
		N	0.0	0.0	37.5	0.0	100.0	0.0
		P	0.0	0.0	12.5	0.0	0.0	0.0
		R	0.0	0.0	12.5	0.0	0.0	0.0
	ISODRIN	N	0.0	0.0	0.0	0.0	100.0	0.0
	ISOPHORONE	DE	0.0	0.0	0.0	0.0	50.0	0.0

TABLE H-13

SOIL DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Qual Code	Validation Qualifier					
			BJ	BU	J	U	UJ	UR
		E	0.0	0.0	0.0	0.0	50.0	0.0
	KEPONE	C	0.0	0.0	0.0	0.0	90.5	100.0
		CN	0.0	0.0	0.0	0.0	9.5	0.0
	METHAPYRILENE	C	0.0	0.0	0.0	0.0	98.3	0.0
		CN	0.0	0.0	0.0	0.0	1.7	0.0
	NAPHTHALENE	E	0.0	0.0	7.7	0.0	100.0	0.0
		EP	0.0	0.0	15.4	0.0	0.0	0.0
		ER	0.0	0.0	7.7	0.0	0.0	0.0
		G	0.0	0.0	15.4	0.0	0.0	0.0
		GP	0.0	0.0	7.7	0.0	0.0	0.0
		P	0.0	0.0	46.2	0.0	0.0	0.0
	N-NITROSODIMETHYLAMINE	C	0.0	0.0	0.0	0.0	100.0	0.0
	N-NITROSO-DI-N-PROPYLAMINE	C	0.0	0.0	0.0	0.0	100.0	0.0
	N-NITROSODIPHENYLAMINE	N	0.0	0.0	0.0	0.0	100.0	0.0
	N-NITROSOMORPHOLINE	C	0.0	0.0	0.0	0.0	100.0	0.0
	N-NITROSOPIPERIDINE	C	0.0	0.0	0.0	0.0	100.0	0.0
	N-NITROSOPYRROLIDINE	C	0.0	0.0	0.0	0.0	100.0	0.0
	P-(DIMETHYLAMINO)AZOBENZENE	N	0.0	0.0	0.0	0.0	100.0	0.0
	PENTACHLORONITROBENZENE	N	0.0	0.0	0.0	0.0	100.0	0.0
	PHENACETIN	N	0.0	0.0	0.0	0.0	100.0	0.0
	PHENANTHRENE	G	0.0	0.0	37.5	0.0	0.0	0.0
		GP	0.0	0.0	6.3	0.0	0.0	0.0
		P	0.0	0.0	50.0	0.0	0.0	0.0
		R	0.0	0.0	6.3	0.0	0.0	0.0
	PRONAMIDE	N	0.0	0.0	0.0	0.0	100.0	0.0
	PYRENE	G	0.0	0.0	20.0	0.0	0.0	0.0
		N	0.0	0.0	40.0	0.0	100.0	0.0
		NP	0.0	0.0	6.7	0.0	0.0	0.0
		P	0.0	0.0	26.7	0.0	0.0	0.0
		R	0.0	0.0	6.7	0.0	0.0	0.0
VOC	1,1,1,2-TETRACHLOROETHANE	N	0.0	0.0	0.0	0.0	100.0	0.0
	1,1,1-TRICHLOROETHANE	N	0.0	0.0	0.0	0.0	100.0	0.0
	1,1,2,2-TETRACHLOROETHANE	N	0.0	0.0	0.0	0.0	100.0	0.0
	1,1,2-TRICHLOROETHANE	N	0.0	0.0	0.0	0.0	100.0	0.0
	1,1-DICHLOROETHANE	N	0.0	0.0	0.0	0.0	100.0	0.0
	1,1-DICHLOROETHENE	N	0.0	0.0	0.0	0.0	100.0	0.0
	1,2,3-TRICHLOROPROPANE	N	0.0	0.0	0.0	0.0	100.0	0.0
	1,2-DIBROMO-3-CHLOROPROPANE	D	0.0	0.0	0.0	0.0	50.0	0.0
		N	0.0	0.0	0.0	0.0	50.0	0.0
	1,2-DIBROMOETHANE	N	0.0	0.0	0.0	0.0	100.0	0.0
	1,2-DICHLOROETHANE	N	0.0	0.0	0.0	0.0	100.0	0.0
	1,2-DICHLOROPROPANE	N	0.0	0.0	0.0	0.0	100.0	0.0
	2-BUTANONE	A	0.0	0.0	3.6	0.0	0.0	0.0
		AP	0.0	0.0	25.0	0.0	0.0	0.0
		N	0.0	0.0	0.0	0.0	100.0	0.0
		P	0.0	0.0	71.4	0.0	0.0	0.0
	2-HEXANONE	N	0.0	0.0	0.0	0.0	100.0	0.0
		P	0.0	0.0	100.0	0.0	0.0	0.0
	3-CHLOROPROPENE	N	0.0	0.0	0.0	0.0	100.0	0.0
	4-METHYL-2-PENTANONE	N	0.0	0.0	0.0	0.0	100.0	0.0
	ACETONE	A	100.0	100.0	0.0	100.0	0.0	0.0

TABLE H-13

SOIL DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Qual Code	Validation Qualifier					
			BJ	BU	J	U	UJ	UR
		AC	0.0	0.0	60.0	0.0	0.0	0.0
		ACE	0.0	0.0	8.0	0.0	0.0	0.0
		ACG	0.0	0.0	8.0	0.0	0.0	0.0
		ACP	0.0	0.0	24.0	0.0	0.0	0.0
		C	0.0	0.0	0.0	0.0	100.0	0.0
	ACETONITRILE	C	0.0	0.0	0.0	0.0	0.0	100.0
	ACROLEIN	C	0.0	0.0	0.0	0.0	0.0	100.0
	ACRYLONITRILE	N	0.0	0.0	0.0	0.0	100.0	0.0
	BENZENE	N	0.0	0.0	0.0	0.0	100.0	0.0
	BROMODICHLOROMETHANE	N	0.0	0.0	0.0	0.0	100.0	0.0
	BROMOFORM	N	0.0	0.0	0.0	0.0	100.0	0.0
	BROMOMETHANE	N	0.0	0.0	0.0	0.0	100.0	0.0
	CARBON DISULFIDE	C	0.0	0.0	0.0	0.0	91.7	0.0
		N	0.0	0.0	0.0	0.0	8.3	0.0
		P	0.0	0.0	100.0	0.0	0.0	0.0
	CARBON TETRACHLORIDE	N	0.0	0.0	0.0	0.0	100.0	0.0
	CHLOROBENZENE	N	0.0	0.0	0.0	0.0	100.0	0.0
	CHLORODIBROMOMETHANE	N	0.0	0.0	0.0	0.0	100.0	0.0
	CHLOROETHANE	N	0.0	0.0	0.0	0.0	100.0	0.0
	CHLOROFORM	N	0.0	0.0	0.0	0.0	100.0	0.0
	CHLOROMETHANE	N	0.0	0.0	0.0	0.0	100.0	0.0
	CHLOROPRENE	N	0.0	0.0	0.0	0.0	100.0	0.0
	CIS-1,2-DICHLOROETHENE	N	0.0	0.0	0.0	0.0	100.0	0.0
		P	0.0	0.0	100.0	0.0	0.0	0.0
	CIS-1,3-DICHLOROPROPENE	N	0.0	0.0	0.0	0.0	100.0	0.0
	DIBROMOMETHANE	N	0.0	0.0	0.0	0.0	100.0	0.0
	DICHLORODIFLUOROMETHANE	A	0.0	0.0	0.0	0.0	7.1	0.0
		C	0.0	0.0	0.0	0.0	85.7	100.0
		N	0.0	0.0	0.0	0.0	7.1	0.0
	ETHYL METHACRYLATE	N	0.0	0.0	0.0	0.0	100.0	0.0
	ETHYLBENZENE	N	0.0	0.0	0.0	0.0	100.0	0.0
	ISOBUTANOL	C	0.0	0.0	0.0	0.0	0.0	100.0
	METHACRYLONITRILE	N	0.0	0.0	0.0	0.0	100.0	0.0
	METHYL IODIDE	N	0.0	0.0	0.0	0.0	100.0	0.0
	METHYL METHACRYLATE	N	0.0	0.0	0.0	0.0	100.0	0.0
	METHYL TERT-BUTYL ETHER	D	0.0	0.0	0.0	0.0	50.0	0.0
		N	0.0	0.0	0.0	0.0	50.0	0.0
	METHYLENE CHLORIDE	A	0.0	0.0	16.2	100.0	0.0	0.0
		AC	0.0	0.0	66.2	0.0	0.0	0.0
		ACG	0.0	0.0	1.5	0.0	0.0	0.0
		ACP	0.0	0.0	4.4	0.0	0.0	0.0
		AP	0.0	0.0	10.3	0.0	0.0	0.0
		C	0.0	0.0	0.0	0.0	83.3	0.0
		CAN	0.0	0.0	1.5	0.0	0.0	0.0
		CG	0.0	0.0	0.0	0.0	16.7	0.0
	PROPIONITRILE	C	0.0	0.0	0.0	0.0	0.0	100.0
	STYRENE	N	0.0	0.0	0.0	0.0	100.0	0.0
	TETRACHLOROETHENE	N	0.0	0.0	0.0	0.0	100.0	0.0
	TOLUENE	N	0.0	0.0	0.0	0.0	100.0	0.0
	TOTAL XYLENES	N	0.0	0.0	0.0	0.0	100.0	0.0
		P	0.0	0.0	100.0	0.0	0.0	0.0

TABLE H-13

SOIL DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Qual Code	Validation Qualifier					
			BJ	BU	J	U	UJ	UR
	TRANS-1,2-DICHLOROETHENE	N	0.0	0.0	0.0	0.0	100.0	0.0
	TRANS-1,3-DICHLOROPROPENE	N	0.0	0.0	0.0	0.0	100.0	0.0
	TRANS-1,4-DICHLORO-2-BUTENE	N	0.0	0.0	0.0	0.0	100.0	0.0
	TRICHLOROETHENE	N	0.0	0.0	0.0	0.0	100.0	0.0
	TRICHLOROFLUOROMETHANE	DP	0.0	0.0	4.3	0.0	0.0	0.0
		NP	0.0	0.0	4.3	0.0	0.0	0.0
		P	0.0	0.0	91.3	0.0	0.0	0.0
	VINYL ACETATE	C	0.0	0.0	0.0	0.0	91.7	0.0
		N	0.0	0.0	0.0	0.0	8.3	0.0
	VINYL CHLORIDE	N	0.0	0.0	0.0	0.0	100.0	0.0
PEST/PCB	4,4'-DDD	C	0.0	0.0	0.0	0.0	100.0	0.0
		P	0.0	0.0	100.0	0.0	0.0	0.0
	4,4'-DDE	C	0.0	0.0	0.0	0.0	100.0	0.0
		PU	0.0	0.0	100.0	0.0	0.0	0.0
	4,4'-DDT	P	0.0	0.0	100.0	0.0	0.0	0.0
	ALPHA-CHLORDANE	CP	0.0	0.0	50.0	0.0	0.0	0.0
		U	0.0	0.0	50.0	0.0	0.0	0.0
	AROCLOR-1016	E	0.0	0.0	0.0	0.0	100.0	0.0
	DELTA-BHC	C	0.0	0.0	0.0	0.0	100.0	0.0
	GAMMA-CHLORDANE	CP	0.0	0.0	100.0	0.0	0.0	0.0

1 Normal non-detect values (U qualifier) are excluded from this tally because they are not deficiencies.

HERB = Herbicides
M = Metals, total
SVOC = Semivolatile organic compounds
VOC = Volatile organic compounds
PEST/PCB = Pesticides/polychlorinated biphenyls

BJ = Associated blank was contaminated; anlayte was detected and reported result is an estimate
BU = Associated blank was contaminated and result was classified as non-detect
J = Result is estimated
U = Analyte was not detected at the indicated detection limit
UJ = Analyte was not detected at the indicated detection limit and result is estimated
UR = Result is not usable and was reported as not detected

A = Lab Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
N = Internal Standard Noncompliance
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
R = Surrogates Recovery Noncompliance
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC

TABLE H-14

SURFACE WATER DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) [1]

Fraction	Parameter	Qual Code	Validation Qualifier			
			J	U	UJ	UR
HERB	PENTACHLOROPHENOL	PQ	7.7	0.0	0.0	0.0
		Q	92.3	0.0	0.0	0.0
Metals, Total	ALUMINUM	A	86.7	100.0	0.0	0.0
		AF	13.3	0.0	0.0	0.0
	ANTIMONY	A	100.0	100.0	0.0	0.0
	ARSENIC	A	100.0	100.0	0.0	0.0
	BARIUM	A	100.0	0.0	0.0	0.0
	BERYLLIUM	A	0.0	100.0	0.0	0.0
	CADMIUM	A	0.0	100.0	0.0	0.0
	CALCIUM	A	12.5	0.0	0.0	0.0
		AE	87.5	0.0	0.0	0.0
	CHROMIUM	A	100.0	100.0	0.0	0.0
	COBALT	A	100.0	100.0	0.0	0.0
	COPPER	A	46.7	100.0	0.0	0.0
		AP	53.3	0.0	0.0	0.0
	IRON	A	14.3	100.0	0.0	0.0
		AI	85.7	0.0	0.0	0.0
	LEAD	A	100.0	100.0	0.0	0.0
	MAGNESIUM	A	100.0	0.0	0.0	0.0
	MANGANESE	A	50.0	0.0	0.0	0.0
		K	50.0	0.0	0.0	0.0
	MERCURY	A	0.0	100.0	0.0	0.0
	NICKEL	A	100.0	100.0	0.0	0.0
	POTASSIUM	A	12.5	0.0	0.0	0.0
		AI	87.5	0.0	0.0	0.0
	SELENIUM	A	100.0	100.0	0.0	0.0
	SILVER	A	0.0	100.0	0.0	0.0
		D	0.0	0.0	100.0	0.0
	SODIUM	A	100.0	0.0	0.0	0.0
	THALLIUM	A	0.0	100.0	0.0	0.0
	TIN	A	0.0	100.0	0.0	0.0
	VANADIUM	P	100.0	0.0	0.0	0.0
	ZINC	A	21.4	100.0	0.0	0.0
		AK	57.1	0.0	0.0	0.0
		AKP	21.4	0.0	0.0	0.0
Metals, Dissolved	ALUMINUM	A	0.0	100.0	0.0	0.0
		P	100.0	0.0	0.0	0.0
	ANTIMONY	A	0.0	100.0	0.0	0.0
	ARSENIC	A	100.0	100.0	0.0	0.0
	BARIUM	A	100.0	0.0	0.0	0.0
	BERYLLIUM	A	0.0	100.0	0.0	0.0
	CADMIUM	A	0.0	100.0	0.0	0.0
		P	100.0	0.0	0.0	0.0
	CALCIUM	A	100.0	0.0	0.0	0.0

TABLE H-14

SURFACE WATER DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) [1]

	CHROMIUM	A	100.0	100.0	0.0	0.0
	COBALT	AP	22.2	0.0	0.0	0.0
		P	77.8	0.0	0.0	0.0
	COPPER	A	31.3	0.0	0.0	0.0
		AP	56.3	0.0	0.0	0.0
		IP	12.5	0.0	0.0	0.0
	IRON	A	20.0	100.0	0.0	0.0
		AG	80.0	0.0	0.0	0.0
	LEAD	A	33.3	100.0	0.0	0.0
		AP	66.7	0.0	0.0	0.0
	MAGNESIUM	A	100.0	0.0	0.0	0.0
	MANGANESE	AI	50.0	0.0	0.0	0.0
		K	25.0	0.0	0.0	0.0
		KP	25.0	0.0	0.0	0.0
	MERCURY	A	0.0	100.0	0.0	0.0
	NICKEL	A	87.5	0.0	0.0	0.0
		K	12.5	0.0	0.0	0.0
	POTASSIUM	A	100.0	0.0	0.0	0.0
	SELENIUM	A	50.0	100.0	0.0	0.0
		AP	50.0	0.0	0.0	0.0
	SILVER	A	0.0	100.0	0.0	0.0
		D	0.0	0.0	100.0	0.0
	SODIUM	A	100.0	0.0	0.0	0.0
	THALLIUM	A	0.0	100.0	0.0	0.0
		AP	100.0	0.0	0.0	0.0
	TIN	A	0.0	100.0	0.0	0.0
	ZINC	A	0.0	100.0	0.0	0.0
		AIKP	7.1	0.0	0.0	0.0
		K	42.9	0.0	0.0	0.0
		KP	50.0	0.0	0.0	0.0
SVOC	1,4-DIOXANE	C	0.0	0.0	100.0	0.0
	2,2'-OXYBIS(1-CHLOROPROPANE)	C	0.0	0.0	100.0	0.0
	2,3,4,6-TETRACHLOROPHENOL	R	0.0	0.0	0.0	100.0
	2,4,5-TRICHLOROPHENOL	R	0.0	0.0	0.0	100.0
	2,4,6-TRICHLOROPHENOL	R	0.0	0.0	0.0	100.0
	2,4-DICHLOROPHENOL	R	0.0	0.0	0.0	100.0
	2,4-DIMETHYLPHENOL	R	0.0	0.0	0.0	100.0
	2,4-DINITROPHENOL	C	0.0	0.0	100.0	0.0
		R	0.0	0.0	0.0	100.0
	2,6-DICHLOROPHENOL	R	0.0	0.0	0.0	100.0
	2-ACETYLAMINOFLUORENE	C	0.0	0.0	100.0	0.0
	2-CHLOROPHENOL	R	0.0	0.0	0.0	100.0
	2-METHYLPHENOL	R	0.0	0.0	0.0	100.0
	2-NITROPHENOL	R	0.0	0.0	0.0	100.0
	3&4-METHYLPHENOL	C	0.0	0.0	100.0	0.0
		R	0.0	0.0	0.0	100.0
	3,3'-DICHLOROBENZIDINE	D	0.0	0.0	0.0	100.0
	3,3'-DIMETHYLBENZIDINE	C	0.0	0.0	100.0	0.0

TABLE H-14

SURFACE WATER DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) [1]

	4,6-DINITRO-2-METHYLPHENOL	R	0.0	0.0	0.0	100.0
	4-CHLORO-3-METHYLPHENOL	R	0.0	0.0	0.0	100.0
	4-NITROPHENOL	C	0.0	0.0	100.0	0.0
		R	0.0	0.0	0.0	100.0
	4-NITROQUINOLINE-1-OXIDE	C	0.0	0.0	0.0	100.0
	A,A-DIMETHYLPHENETHYLAMINE	C	0.0	0.0	100.0	0.0
	ACENAPHTHENE	P	100.0	0.0	0.0	0.0
	ACENAPHTHYLENE	P	100.0	0.0	0.0	0.0
	ACETOPHENONE	C	0.0	0.0	100.0	0.0
	ANTHRACENE	P	100.0	0.0	0.0	0.0
	BENZO(A)ANTHRACENE	P	100.0	0.0	0.0	0.0
	BENZO(K)FLUORANTHENE	G	66.7	0.0	0.0	0.0
		P	33.3	0.0	0.0	0.0
	BIS(2-ETHYLHEXYL)PHTHALATE	P	100.0	0.0	0.0	0.0
	DI-N-OCTYL PHTHALATE	C	0.0	0.0	100.0	0.0
	ETHYL METHANE SULFONATE	C	0.0	0.0	100.0	0.0
	FLUORENE	P	100.0	0.0	0.0	0.0
	HEXACHLOROBENZENE	C	0.0	0.0	100.0	0.0
	HEXACHLOROCYCLOPENTADIENE	C	0.0	0.0	100.0	0.0
	INDENO(1,2,3-CD)PYRENE	P	100.0	0.0	0.0	0.0
	KEPONE	C	0.0	0.0	100.0	0.0
	METHAPYRILENE	C	0.0	0.0	100.0	0.0
	NAPHTHALENE	P	100.0	0.0	0.0	0.0
	N-NITROSODIMETHYLAMINE	C	0.0	0.0	100.0	0.0
	N-NITROSO-DI-N-PROPYLAMINE	C	0.0	0.0	100.0	0.0
	N-NITROSOMORPHOLINE	C	0.0	0.0	100.0	0.0
	N-NITROSOPIPERIDINE	C	0.0	0.0	100.0	0.0
	PHENANTHRENE	P	100.0	0.0	0.0	0.0
	PHENOL	R	0.0	0.0	0.0	100.0
	PYRENE	P	100.0	0.0	0.0	0.0
	PYRIDINE	C	0.0	0.0	100.0	0.0
VOC	1,1-DICHLOROETHENE	E	0.0	0.0	100.0	0.0
	3-CHLOROPROPENE	C	0.0	0.0	100.0	0.0
	ACETONE	AP	100.0	0.0	0.0	0.0
		C	0.0	0.0	100.0	0.0
	ACETONITRILE	C	0.0	0.0	0.0	100.0
	ACROLEIN	C	0.0	0.0	0.0	100.0
	BROMOMETHANE	C	0.0	0.0	100.0	0.0
	ETHYL METHACRYLATE	C	0.0	0.0	100.0	0.0
	ISOBUTANOL	C	0.0	0.0	0.0	100.0
	METHYLENE CHLORIDE	C	0.0	0.0	100.0	0.0
	PROPIONITRILE	C	0.0	0.0	0.0	100.0

1 Normal non-detect values (U qualifier) are excluded from this tally because they are not deficiencies.

HERB = Herbicides
M = Metals, total
MF = Metals, dissolved

TABLE H-14

SURFACE WATER DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) [1]

SVOC = Semivolatile organic compounds
VOC = Volatile organic compounds

J = Result is estimated
U = Analyte was not detected at the indicated detection limit
UJ = Analyte was not detected at the indicated detection limit and result is estimated
UR = Result is not usable and was reported as not detected

A = Lab Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
I = ICP Serial Dilution Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography, interferences, etc.)
R = Surrogates Recovery Noncompliance

TABLE H-15
SEDIMENT DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Qual Code	Validation Qualifier			
			J	U	UJ	UR
HERB	2,4,5-T	U	100.0	0.0	0.0	0.0
	PENTACHLOROPHENOL	R	55.6	0.0	0.0	0.0
		U	44.4	0.0	0.0	0.0
Metals, Total	ALUMINUM	AF	15.4	0.0	0.0	0.0
		D	84.6	0.0	0.0	0.0
	ANTIMONY	A	0.0	100.0	0.0	0.0
	ARSENIC	AFI	92.3	0.0	0.0	0.0
		AFIK	7.7	0.0	0.0	0.0
	BARIUM	AD	15.4	0.0	0.0	0.0
		DG	84.6	0.0	0.0	0.0
	BERYLLIUM	A	66.7	100.0	0.0	0.0
		AFI	22.2	0.0	0.0	0.0
		AP	11.1	0.0	0.0	0.0
	CADMIUM	A	30.0	100.0	0.0	0.0
		AP	70.0	0.0	0.0	0.0
	CALCIUM	AFI	15.4	0.0	0.0	0.0
		AI	84.6	0.0	0.0	0.0
	CHROMIUM	ADFI	15.4	0.0	0.0	0.0
		AF	84.6	0.0	0.0	0.0
	COBALT	A	84.6	0.0	0.0	0.0
		AFI	7.7	0.0	0.0	0.0
		AFIK	7.7	0.0	0.0	0.0
	COPPER	A	84.6	0.0	0.0	0.0
		AFIK	15.4	0.0	0.0	0.0
	IRON	A	84.6	0.0	0.0	0.0
		AF	15.4	0.0	0.0	0.0
	LEAD	AF	15.4	0.0	0.0	0.0
		AI	84.6	0.0	0.0	0.0
	MAGNESIUM	AF	84.6	0.0	0.0	0.0
		AI	15.4	0.0	0.0	0.0
	MANGANESE	A	84.6	0.0	0.0	0.0
		AF	15.4	0.0	0.0	0.0
	MERCURY	P	100.0	0.0	0.0	0.0
	NICKEL	A	84.6	0.0	0.0	0.0
		ADFI	7.7	0.0	0.0	0.0
		ADFIK	7.7	0.0	0.0	0.0
	POTASSIUM	A	84.6	0.0	0.0	0.0
		ADI	15.4	0.0	0.0	0.0
	SELENIUM	A	22.2	100.0	0.0	0.0
		AF	22.2	0.0	0.0	0.0
		AP	55.6	0.0	0.0	0.0
	SILVER	A	0.0	100.0	0.0	0.0
	SODIUM	A	100.0	100.0	0.0	0.0

TABLE H-15
SEDIMENT DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) (1)

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Qual Code	Validation Qualifier			
			J	U	UJ	UR
	THALLIUM	A	100.0	100.0	0.0	0.0
	TIN	A	100.0	100.0	0.0	0.0
	VANADIUM	A	84.6	0.0	0.0	0.0
		ADFI	15.4	0.0	0.0	0.0
	ZINC	AFI	50.0	0.0	0.0	0.0
		AFIK	50.0	0.0	0.0	0.0
SVOC	1,4-DIOXANE	C	0.0	0.0	100.0	0.0
	2,4-DINITROPHENOL	C	0.0	0.0	100.0	0.0
	2-METHYLNAPHTHALENE	P	100.0	0.0	0.0	0.0
	3,3'-DIMETHYLBENZIDINE	C	0.0	0.0	100.0	0.0
	4-NITROPHENOL	C	0.0	0.0	100.0	0.0
	4-NITROQUINOLINE-1-OXIDE	C	0.0	0.0	0.0	100.0
	ACENAPHTHENE	P	100.0	0.0	0.0	0.0
	ACENAPHTHYLENE	P	100.0	0.0	0.0	0.0
	ACETOPHENONE	C	0.0	0.0	100.0	0.0
		P	100.0	0.0	0.0	0.0
	ANTHRACENE	P	100.0	0.0	0.0	0.0
	BENZO(A)ANTHRACENE	N	100.0	0.0	0.0	0.0
	BENZO(A)PYRENE	N	100.0	0.0	0.0	0.0
	BENZO(B)FLUORANTHENE	N	100.0	0.0	0.0	0.0
	BENZO(G,H,I)PERYLENE	N	100.0	0.0	0.0	0.0
	BENZO(K)FLUORANTHENE	N	100.0	0.0	0.0	0.0
	BIS(2-ETHYLHEXYL)PHTHALATE	P	100.0	0.0	0.0	0.0
	CHRYSENE	N	100.0	0.0	0.0	0.0
	DIBENZO(A,H)ANTHRACENE	N	100.0	0.0	100.0	0.0
	DIBENZOFURAN	P	100.0	0.0	0.0	0.0
	DI-N-BUTYL PHTHALATE	P	100.0	0.0	0.0	0.0
	FLUORENE	P	100.0	0.0	0.0	0.0
	HEXACHLOROBENZENE	C	0.0	0.0	100.0	0.0
	HEXACHLOROCYCLOPENTADIENE	C	0.0	0.0	100.0	0.0
		D	0.0	0.0	0.0	100.0
	INDENO(1,2,3-CD)PYRENE	N	100.0	0.0	0.0	0.0
	KEPONE	C	0.0	0.0	100.0	0.0
	METHAPYRILENE	C	0.0	0.0	100.0	0.0
	NAPHTHALENE	P	100.0	0.0	0.0	0.0
	N-NITROSODIMETHYLAMINE	C	0.0	0.0	100.0	0.0
	N-NITROSOMETHYLETHYLAMINE	C	0.0	0.0	100.0	0.0
	PYRENE	E	28.6	0.0	0.0	0.0
		N	71.4	0.0	0.0	0.0
	PYRIDINE	C	0.0	0.0	100.0	0.0
VOC	1,1,1,2-TETRACHLOROETHANE	D	0.0	0.0	100.0	0.0
	1,2-DIBROMO-3-CHLOROPROPANE	D	0.0	0.0	100.0	0.0
	4-METHYL-2-PENTANONE	C	0.0	0.0	100.0	0.0

TABLE H-15
SEDIMENT DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Qual Code	Validation Qualifier			
			J	U	UJ	UR
	ACETONE	A	0.0	100.0	0.0	0.0
		C	0.0	0.0	100.0	0.0
		CP	100.0	0.0	0.0	0.0
	ACETONITRILE	C	0.0	0.0	0.0	100.0
	ACROLEIN	C	0.0	0.0	0.0	100.0
	ISOBUTANOL	C	0.0	0.0	0.0	100.0
	METHYLENE CHLORIDE	A	0.0	100.0	0.0	0.0
		C	0.0	0.0	100.0	0.0
	PROPIONITRILE	C	0.0	0.0	0.0	100.0
	VINYL ACETATE	C	0.0	0.0	100.0	0.0
PEST/PCB	4,4'-DDD	P	50.0	0.0	0.0	0.0
		PU	25.0	0.0	0.0	0.0
		U	25.0	0.0	0.0	0.0
	4,4'-DDE	P	33.3	0.0	0.0	0.0
		PU	33.3	0.0	0.0	0.0
		U	33.3	0.0	0.0	0.0
	4,4'-DDT	P	57.1	0.0	0.0	0.0
		PU	28.6	0.0	0.0	0.0
		U	14.3	0.0	0.0	0.0
	AROCLOR-1254	U	100.0	0.0	0.0	0.0
	GAMMA-CHLORDANE	U	100.0	0.0	0.0	0.0

1 Normal non-detect values (U qualifier) are excluded from this tally because they are not deficiencies.

HERB = Herbicides
M = Metals, total
SVOC = Semivolatile organic compounds
VOC = Volatile organic compounds
PEST/PCB = Pesticides/polychlorinated biphenyls

J = Result is estimated
U = Analyte was not detected at the indicated detection limit
UJ = Analyte was not detected at the indicated detection limit and result is estimated
UR = Result is not usable and was reported as not detected

A = Lab Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
I = ICP Serial Dilution Noncompliance
K = ICP Interference - includes ICS % R Noncompliance

TABLE H-15
SEDIMENT DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Qual Code	Validation Qualifier			
			J	U	UJ	UR
N = Internal Standard Noncompliance						
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)						
R = Surrogates Recovery Noncompliance						
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC						

TABLE H-16

GROUNDWATER DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Qual Code	Validation Qualifier			
			J	U	UJ	UR
HERB	2,4,5-TP (SILVEX)	PU	100.0	0.0	0.0	0.0
	DINOSEB	D	0.0	0.0	0.0	100.0
	PENTACHLOROPHENOL	U	100.0	0.0	0.0	0.0
Metals, Total	ALUMINUM	A	50.0	100.0	0.0	0.0
		AF	50.0	0.0	0.0	0.0
	ANTIMONY	A	100.0	100.0	0.0	0.0
	ARSENIC	A	28.6	100.0	0.0	0.0
		AI	71.4	0.0	0.0	0.0
	BARIUM	A	100.0	0.0	0.0	0.0
	BERYLLIUM	A	0.0	100.0	0.0	0.0
		ADP	50.0	0.0	0.0	0.0
		AP	50.0	0.0	0.0	0.0
		D	0.0	0.0	100.0	0.0
	CADMIUM	A	100.0	100.0	0.0	0.0
	CALCIUM	A	44.4	0.0	0.0	0.0
		I	55.6	0.0	0.0	0.0
	CHROMIUM	A	100.0	100.0	0.0	0.0
	COBALT	A	83.3	0.0	0.0	0.0
		P	16.7	0.0	0.0	0.0
	COPPER	A	12.5	100.0	0.0	0.0
		AI	37.5	0.0	0.0	0.0
		AIP	25.0	0.0	0.0	0.0
		AP	25.0	0.0	0.0	0.0
	IRON	A	100.0	0.0	0.0	0.0
	LEAD	A	50.0	100.0	0.0	0.0
		AI	50.0	0.0	0.0	0.0
	MAGNESIUM	A	44.4	0.0	0.0	0.0
		AI	55.6	0.0	0.0	0.0
	MANGANESE	A	44.4	0.0	0.0	0.0
		AI	55.6	0.0	0.0	0.0
	MERCURY	D	0.0	0.0	100.0	0.0
		DP	50.0	0.0	0.0	0.0
		P	50.0	0.0	0.0	0.0
	NICKEL	K	83.3	0.0	0.0	0.0
		P	16.7	0.0	0.0	0.0
	POTASSIUM	A	100.0	0.0	0.0	0.0
	SELENIUM	A	0.0	100.0	0.0	0.0
		AP	25.0	0.0	0.0	0.0
		P	75.0	0.0	0.0	0.0
	SILVER	A	0.0	100.0	0.0	0.0
	SODIUM	A	44.4	0.0	0.0	0.0
		AI	55.6	0.0	0.0	0.0
	THALLIUM	A	0.0	100.0	0.0	0.0

TABLE H-16

GROUNDWATER DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Qual Code	Validation Qualifier			
			J	U	UJ	UR
		IP	100.0	0.0	0.0	0.0
	TIN	A	0.0	100.0	0.0	0.0
		AP	100.0	0.0	0.0	0.0
	VANADIUM	A	75.0	0.0	0.0	0.0
		P	25.0	0.0	0.0	0.0
	ZINC	A	25.0	100.0	0.0	0.0
		AIK	75.0	0.0	0.0	0.0
Metals, Dissolved	ALUMINUM	A	0.0	100.0	0.0	0.0
	ANTIMONY	A	100.0	100.0	0.0	0.0
	ARSENIC	A	75.0	100.0	0.0	0.0
		AP	25.0	0.0	0.0	0.0
	BARIUM	A	100.0	0.0	0.0	0.0
	BERYLLIUM	A	0.0	100.0	0.0	0.0
		D	0.0	0.0	100.0	0.0
	CADMIUM	A	0.0	100.0	0.0	0.0
		P	100.0	0.0	0.0	0.0
	CHROMIUM	A	0.0	100.0	0.0	0.0
	COBALT	A	83.3	0.0	0.0	0.0
		AP	16.7	0.0	0.0	0.0
	COPPER	AI	16.7	0.0	0.0	0.0
		AIP	33.3	0.0	0.0	0.0
		IP	50.0	0.0	0.0	0.0
	IRON	A	50.0	0.0	0.0	0.0
		ADI	50.0	0.0	0.0	0.0
	LEAD	A	0.0	100.0	0.0	0.0
		AIP	33.3	0.0	0.0	0.0
		AP	66.7	0.0	0.0	0.0
	MAGNESIUM	A	100.0	0.0	0.0	0.0
	MANGANESE	AI	83.3	0.0	0.0	0.0
		AIK	16.7	0.0	0.0	0.0
	MERCURY	A	0.0	100.0	0.0	0.0
	NICKEL	K	100.0	0.0	0.0	0.0
	POTASSIUM	A	100.0	0.0	0.0	0.0
	SELENIUM	A	20.0	100.0	0.0	0.0
		AP	20.0	0.0	0.0	0.0
		P	60.0	0.0	0.0	0.0
	SODIUM	A	50.0	0.0	0.0	0.0
		AI	50.0	0.0	0.0	0.0
	THALLIUM	AP	100.0	0.0	0.0	0.0
	TIN	A	0.0	100.0	0.0	0.0
		AKP	100.0	0.0	0.0	0.0
	ZINC	A	0.0	100.0	0.0	0.0
		AIKP	100.0	0.0	0.0	0.0

TABLE H-16

GROUNDWATER DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) [1]

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Qual Code	Validation Qualifier			
			J	U	UJ	UR
SVOC	1,4-DIOXANE	C	0.0	0.0	100.0	0.0
	2,3,4,6-TETRACHLOROPHENOL	R	0.0	0.0	0.0	100.0
	2,4,5-TRICHLOROPHENOL	R	0.0	0.0	0.0	100.0
	2,4,6-TRICHLOROPHENOL	R	0.0	0.0	0.0	100.0
	2,4-DICHLOROPHENOL	R	0.0	0.0	0.0	100.0
	2,4-DIMETHYLPHENOL	R	0.0	0.0	0.0	100.0
	2,4-DINITROPHENOL	C	0.0	0.0	100.0	50.0
		R	0.0	0.0	0.0	50.0
	2,6-DICHLOROPHENOL	R	0.0	0.0	0.0	100.0
	2-ACETYLAMINOFLUORENE	C	0.0	0.0	100.0	0.0
	2-CHLOROPHENOL	R	0.0	0.0	0.0	100.0
	2-METHYLPHENOL	R	0.0	0.0	0.0	100.0
	2-NITROPHENOL	C	0.0	0.0	100.0	0.0
		R	0.0	0.0	0.0	100.0
	3&4-METHYLPHENOL	C	0.0	0.0	100.0	0.0
		P	100.0	0.0	0.0	0.0
		R	0.0	0.0	0.0	100.0
	3,3'-DICHLOROBENZIDINE	D	0.0	0.0	0.0	100.0
	4,6-DINITRO-2-METHYLPHENOL	R	0.0	0.0	0.0	100.0
	4-CHLORO-3-METHYLPHENOL	R	0.0	0.0	0.0	100.0
	4-NITROPHENOL	C	0.0	0.0	100.0	0.0
		R	0.0	0.0	0.0	100.0
	4-NITROQUINOLINE-1-OXIDE	C	0.0	0.0	0.0	100.0
	A,A-DIMETHYLPHENETHYLAMINE	C	0.0	0.0	100.0	0.0
	BENZO(A)ANTHRACENE	P	100.0	0.0	0.0	0.0
	BIS(2-ETHYLHEXYL)PHTHALATE	C	0.0	0.0	100.0	0.0
	DIBENZOFURAN	P	100.0	0.0	0.0	0.0
	FLUORANTHENE	P	100.0	0.0	0.0	0.0
	HEXACHLOROBENZENE	C	0.0	0.0	100.0	0.0
	HEXACHLOROCYCLOPENTADIENE	C	0.0	0.0	100.0	0.0
	KEPONE	C	0.0	0.0	100.0	0.0
	METHAPYRILENE	C	0.0	0.0	100.0	0.0
	N-NITROSODIMETHYLAMINE	C	0.0	0.0	100.0	0.0
	N-NITROSOMETHYLETHYLAMINE	C	0.0	0.0	100.0	0.0
	PHENOL	C	0.0	0.0	0.0	100.0
	PYRENE	P	100.0	0.0	0.0	0.0
	PYRIDINE	C	0.0	0.0	100.0	0.0
	SAFROLE	P	100.0	0.0	0.0	0.0
VOC	ACETONE	ACP	100.0	0.0	0.0	0.0
		B	0.0	100.0	0.0	0.0
		C	0.0	0.0	100.0	0.0
	ACETONITRILE	C	0.0	0.0	0.0	100.0
	ACROLEIN	C	0.0	0.0	0.0	100.0

TABLE H-16

GROUNDWATER DATA QUALIFICATION RATES
SWMU 15 (ROADS AND GROUNDS) (1)

NSWC CRANE
CRANE, INDIANA

Fraction	Parameter	Qual Code	Validation Qualifier			
			J	U	UJ	UR
	DICHLORODIFLUOROMETHANE	C	0.0	0.0	100.0	0.0
	ETHYL METHACRYLATE	C	0.0	0.0	100.0	0.0
	ISOBUTANOL	C	0.0	0.0	0.0	100.0
	METHYLENE CHLORIDE	C	0.0	0.0	100.0	0.0
	PROPIONITRILE	C	0.0	0.0	0.0	100.0
PEST/PCB	4,4'-DDD	C	0.0	0.0	100.0	0.0
	ALDRIN	C	0.0	0.0	100.0	0.0
	DELTA-BHC	C	0.0	0.0	100.0	0.0
	DIELDRIN	C	0.0	0.0	100.0	0.0
	ENDOSULFAN I	C	0.0	0.0	100.0	0.0
	ENDOSULFAN II	C	0.0	0.0	100.0	0.0
	ENDRIN	C	0.0	0.0	100.0	0.0
	GAMMA-BHC (LINDANE)	C	0.0	0.0	100.0	0.0
	HEPTACHLOR	C	0.0	0.0	100.0	0.0

1 Normal non-detect values (U qualifier) are excluded from this tally because they are not deficiencies.

HERB = Herbicides
M = Metals, total
MF = Metals, dissolved
SVOC = Semivolatile organic compounds
VOC = Volatile organic compounds
PEST/PCB = Pesticides/polychlorinated biphenyls

J = Result is estimated
U = Analyte was not detected at the indicated detection limit
UJ = Analyte was not detected at the indicated detection limit and result is estimated
UR = Result is not usable and was reported as not detected

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
D = MS/MSD Recovery Noncompliance
F = Lab Duplicate Imprecision
I = ICP Serial Dilution Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
R = Surrogates Recovery Noncompliance
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC

APPENDIX I

SWMU 12
SUPPORT DOCUMENTATION FOR THE HUMAN HEALTH RISK ASSESSMENT

TABLE 4.1
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF CONSTRUCTION WORKERS TO SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface / Subsurface Soil
Exposure Medium: Surface / Subsurface Soil
Exposure Point: Entire Site
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Soil	mg/day	330	U.S. EPA, December 2002	165	Professional Judgement	Csoil x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	1.0	U.S. EPA, May 1993	BW x AT
	EF	Exposure Frequency	days/year	150	Professional Judgement	150	Professional Judgement	U.S. EPA, December 1989
	ED	Exposure Duration	years	1	Professional Judgement	1	Professional Judgement	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	U.S. EPA, December 1989	365	U.S. EPA, December 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csoil x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	3,300	U.S. EPA, December 2002	3,300	U.S. EPA, December 2002	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.3	U.S. EPA, December 2002	0.1	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	150	Professional Judgement	150	Professional Judgement	
	ED	Exposure Duration	years	1	Professional Judgement	1	Professional Judgement	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	U.S. EPA, December 1989	365	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 2.77E-08
Noncancer Ingestion Intake - RME = 1.94E-06

Cancer Ingestion Intake - CTE = 1.38E-08
Noncancer Ingestion Intake - CTE = 9.69E-07

Cancer Dermal Intake - RME = 8.30E-08
Noncancer Dermal Intake - RME = 5.81E-06

Cancer Dermal Intake - CTE = 2.77E-08
Noncancer Dermal Intake - CTE = 1.94E-06

TABLE 7.1a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF CONSTRUCTION WORKERS TO SURFACE / SUBSURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface / Subsurface Soil
Exposure Medium: Surface / Subsurface Soil
Exposure Point: Entire Site
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	6.17E-01	mg/kg	6.17E-01	mg/kg	M	6.0E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	1.81E+00	mg/kg	1.81E+00	mg/kg	M	1.8E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.19E+00	mg/kg	2.19E+00	mg/kg	M	2.1E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.87E-01	mg/kg	3.87E-01	mg/kg	M	3.7E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.9E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	4.23E-01	mg/kg	4.23E-01	mg/kg	M	4.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.93E+04	mg/kg	1.93E+04	mg/kg	M	1.9E-02	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	1.9E-02
	Arsenic	1.06E+01	mg/kg	1.06E+01	mg/kg	M	1.0E-05	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	3.4E-02
	Cadmium	1.08E+00	mg/kg	1.08E+00	mg/kg	M	1.0E-06	mg/kg-day	5.0E-04	mg/kg-day	NA	NA	2.1E-03
	Iron	2.74E+04	mg/kg	2.74E+04	mg/kg	M	2.7E-02	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	8.9E-02
	Manganese	6.35E+02	mg/kg	6.35E+02	mg/kg	M	6.2E-04	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	8.8E-03
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	3.3E-05	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	3.3E-02
	(total)												**1.9E-01**
Dermal	Benzo(a)anthracene	6.17E-01	mg/kg	6.17E-01	mg/kg	M	1.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	1.81E+00	mg/kg	1.81E+00	mg/kg	M	4.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.19E+00	mg/kg	2.19E+00	mg/kg	M	5.5E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.87E-01	mg/kg	3.87E-01	mg/kg	M	9.7E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	5.0E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	4.23E-01	mg/kg	4.23E-01	mg/kg	M	1.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.93E+04	mg/kg	1.93E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.06E+01	mg/kg	1.06E+01	mg/kg	M	6.2E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	2.1E-03
	Cadmium	1.08E+00	mg/kg	1.08E+00	mg/kg	M	2.1E-09	mg/kg-day	2.5E-05	mg/kg-day	NA	NA	8.4E-05
	Iron	2.74E+04	mg/kg	2.74E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	6.35E+02	mg/kg	6.35E+02	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**2.1E-03**
												Total Hazard Index Across All Exposure Routes/Pathways	**1.9E-01**

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.1a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF CONSTRUCTION WORKERS TO SURFACE / SUBSURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface / Subsurface Soil
Exposure Medium: Surface / Subsurface Soil
Exposure Point: Entire Site
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	6.17E-01	mg/kg	6.17E-01	mg/kg	M	8.5E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	6.2E-09
	Benzo(a)pyrene	1.81E+00	mg/kg	1.81E+00	mg/kg	M	2.5E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-07
	Benzo(b)fluoranthene	2.19E+00	mg/kg	2.19E+00	mg/kg	M	3.0E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.2E-08
	Dibenzo(a,h)anthracene	3.87E-01	mg/kg	3.87E-01	mg/kg	M	5.4E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.9E-08
	Indeno(1,2,3-cd)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	2.8E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.0E-08
	Aroclor-1260	4.23E-01	mg/kg	4.23E-01	mg/kg	M	5.9E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-08
	Aluminum	1.93E+04	mg/kg	1.93E+04	mg/kg	M	2.7E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.06E+01	mg/kg	1.06E+01	mg/kg	M	1.5E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.2E-07
	Cadmium	1.08E+00	mg/kg	1.08E+00	mg/kg	M	1.5E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.74E+04	mg/kg	2.74E+04	mg/kg	M	3.8E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	6.35E+02	mg/kg	6.35E+02	mg/kg	M	8.8E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	4.8E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**5.0E-07**
Dermal	Benzo(a)anthracene	6.17E-01	mg/kg	6.17E-01	mg/kg	M	2.2E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.6E-09
	Benzo(a)pyrene	1.81E+00	mg/kg	1.81E+00	mg/kg	M	6.5E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	4.8E-08
	Benzo(b)fluoranthene	2.19E+00	mg/kg	2.19E+00	mg/kg	M	7.9E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	5.8E-09
	Dibenzo(a,h)anthracene	3.87E-01	mg/kg	3.87E-01	mg/kg	M	1.4E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.0E-08
	Indeno(1,2,3-cd)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	7.2E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	5.3E-09
	Aroclor-1260	4.23E-01	mg/kg	4.23E-01	mg/kg	M	1.6E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.3E-09
	Aluminum	1.93E+04	mg/kg	1.93E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.06E+01	mg/kg	1.06E+01	mg/kg	M	8.8E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-08
	Cadmium	1.08E+00	mg/kg	1.08E+00	mg/kg	M	3.0E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.74E+04	mg/kg	2.74E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	6.35E+02	mg/kg	6.35E+02	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**8.7E-08**
										Total Risk Across All Exposure Routes/Pathways	**5.9E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 4.1
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF CONSTRUCTION WORKERS TO SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface / Subsurface Soil
Exposure Medium: Surface / Subsurface Soil
Exposure Point: Entire Site
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Soil	mg/day	330	U.S. EPA, December 2002	165	Professional Judgement	Csoil x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	1.0	U.S. EPA, May 1993	BW x AT
	EF	Exposure Frequency	days/year	150	Professional Judgement	150	Professional Judgement	U.S. EPA, December 1989
	ED	Exposure Duration	years	1	Professional Judgement	1	Professional Judgement	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	U.S. EPA, December 1989	365	U.S. EPA, December 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csoil x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	3,300	U.S. EPA, December 2002	3,300	U.S. EPA, December 2002	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.3	U.S. EPA, December 2002	0.1	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	150	Professional Judgement	150	Professional Judgement	
	ED	Exposure Duration	years	1	Professional Judgement	1	Professional Judgement	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	U.S. EPA, December 1989	365	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 2.77E-08
Noncancer Ingestion Intake - RME = 1.94E-06

Cancer Ingestion Intake - CTE = 1.38E-08
Noncancer Ingestion Intake - CTE = 9.69E-07

Cancer Dermal Intake - RME = 8.30E-08
Noncancer Dermal Intake - RME = 5.81E-06

Cancer Dermal Intake - CTE = 2.77E-08
Noncancer Dermal Intake - CTE = 1.94E-06

TABLE 7.1 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF CONSTRUCTION WORKERS TO SURFACE / SUBSURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface / Subsurface Soil
Exposure Medium: Surface / Subsurface Soil
Exposure Point: Entire Site
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	6.17E-01	mg/kg	6.17E-01	mg/kg	M	1.2E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	1.81E+00	mg/kg	1.81E+00	mg/kg	M	3.5E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.19E+00	mg/kg	2.19E+00	mg/kg	M	4.2E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.87E-01	mg/kg	3.87E-01	mg/kg	M	7.5E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	3.9E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	4.23E-01	mg/kg	4.23E-01	mg/kg	M	8.2E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.93E+04	mg/kg	1.93E+04	mg/kg	M	3.7E-02	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	3.7E-02
	Arsenic	1.06E+01	mg/kg	1.06E+01	mg/kg	M	2.1E-05	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	6.8E-02
	Cadmium	1.08E+00	mg/kg	1.08E+00	mg/kg	M	2.1E-06	mg/kg-day	5.0E-04	mg/kg-day	NA	NA	4.2E-03
	Iron	2.74E+04	mg/kg	2.74E+04	mg/kg	M	5.3E-02	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	1.8E-01
	Manganese	6.35E+02	mg/kg	6.35E+02	mg/kg	M	1.2E-03	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	1.8E-02
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	6.7E-05	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	6.7E-02
	(total)												**3.7E-01**
Dermal	Benzo(a)anthracene	6.17E-01	mg/kg	6.17E-01	mg/kg	M	4.7E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	1.81E+00	mg/kg	1.81E+00	mg/kg	M	1.4E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.19E+00	mg/kg	2.19E+00	mg/kg	M	1.7E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.87E-01	mg/kg	3.87E-01	mg/kg	M	2.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.5E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	4.23E-01	mg/kg	4.23E-01	mg/kg	M	3.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.93E+04	mg/kg	1.93E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.06E+01	mg/kg	1.06E+01	mg/kg	M	1.8E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	6.2E-03
	Cadmium	1.08E+00	mg/kg	1.08E+00	mg/kg	M	6.3E-09	mg/kg-day	2.5E-05	mg/kg-day	NA	NA	2.5E-04
	Iron	2.74E+04	mg/kg	2.74E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	6.35E+02	mg/kg	6.35E+02	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**6.4E-03**
												Total Hazard Index Across All Exposure Routes/Pathways	**3.8E-01**

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.1 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF CONSTRUCTION WORKERS TO SURFACE / SUBSURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface / Subsurface Soil
Exposure Medium: Surface / Subsurface Soil
Exposure Point: Entire Site
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	6.17E-01	mg/kg	6.17E-01	mg/kg	M	1.7E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-08
	Benzo(a)pyrene	1.81E+00	mg/kg	1.81E+00	mg/kg	M	5.0E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-07
	Benzo(b)fluoranthene	2.19E+00	mg/kg	2.19E+00	mg/kg	M	6.1E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.4E-08
	Dibenzo(a,h)anthracene	3.87E-01	mg/kg	3.87E-01	mg/kg	M	1.1E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	7.8E-08
	Indeno(1,2,3-cd)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	5.5E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.0E-08
	Aroclor-1260	4.23E-01	mg/kg	4.23E-01	mg/kg	M	1.2E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-08
	Aluminum	1.93E+04	mg/kg	1.93E+04	mg/kg	M	5.4E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.06E+01	mg/kg	1.06E+01	mg/kg	M	2.9E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	4.4E-07
	Cadmium	1.08E+00	mg/kg	1.08E+00	mg/kg	M	3.0E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.74E+04	mg/kg	2.74E+04	mg/kg	M	7.6E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	6.35E+02	mg/kg	6.35E+02	mg/kg	M	1.8E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	9.5E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**1.0E-06**
Dermal	Benzo(a)anthracene	6.17E-01	mg/kg	6.17E-01	mg/kg	M	6.7E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.9E-09
	Benzo(a)pyrene	1.81E+00	mg/kg	1.81E+00	mg/kg	M	2.0E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-07
	Benzo(b)fluoranthene	2.19E+00	mg/kg	2.19E+00	mg/kg	M	2.4E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.7E-08
	Dibenzo(a,h)anthracene	3.87E-01	mg/kg	3.87E-01	mg/kg	M	4.2E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.0E-08
	Indeno(1,2,3-cd)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	2.2E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.6E-08
	Aroclor-1260	4.23E-01	mg/kg	4.23E-01	mg/kg	M	4.9E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.8E-09
	Aluminum	1.93E+04	mg/kg	1.93E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.06E+01	mg/kg	1.06E+01	mg/kg	M	2.6E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	4.0E-08
	Cadmium	1.08E+00	mg/kg	1.08E+00	mg/kg	M	9.0E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.74E+04	mg/kg	2.74E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	6.35E+02	mg/kg	6.35E+02	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**2.6E-07**
										Total Risk Across All Exposure Routes/Pathways	**1.3E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 4.15a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF MAINTENANCE WORKERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Sediment	mg/day	100	U.S. EPA, May 1993	50	U.S. EPA, May 1993	Csed x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	1.0	U.S. EPA, May 1993	BW x AT
	EF	Exposure Frequency	days/year	24	Professional Judgment	12	Professional Judgment	U.S. EPA, December 1989
	ED	Exposure Duration	years	25	U.S. EPA, May 1993	9	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	U.S. EPA, December 1989	3,285	U.S. EPA, December 1989	
Dermal	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csed x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	3,300	U.S. EPA, July 2004	3,300	U.S. EPA, July 2004	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.2	U.S. EPA, July 2004	0.02	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	24	Professional Judgment	12	Professional Judgment	
	ED	Exposure Duration	years	25	U.S. EPA, December 1989	9	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	U.S. EPA, December 1989	3,285	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 3.35E-08
Noncancer Ingestion Intake - RME = 9.39E-08

Cancer Ingestion Intake - CTE = 3.02E-09
Noncancer Ingestion Intake - CTE = 2.35E-08

Cancer Dermal Intake - RME = 2.21E-07
Noncancer Dermal Intake - RME = 6.20E-07

Cancer Dermal Intake - CTE = 3.99E-09
Noncancer Dermal Intake - CTE = 3.10E-08

TABLE 4.16a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF ADOLESCENT TRESPASSERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Trespasser
Receptor Age: Adolescent (age 6 - 17)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Sediment	mg/day	100	U.S. EPA, May 1993	50	U.S. EPA, May 1993	Csed x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	0.5	Professional Judgement	BW x AT
	EF	Exposure Frequency	days/year	26	Professional Judgement	13	Professional Judgement	U.S. EPA, December 1989
	ED	Exposure Duration	years	11	6 - 17 years of age	11	6 - 17 years of age	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	43	U.S. EPA, August 1997	43	U.S. EPA, August 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	4,015	U.S. EPA, December 1989	4,015	U.S. EPA, December 1989	
Dermal	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csed x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	3,280	U.S. EPA, August 1997	3,100	U.S. EPA, August 1997	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.2	U.S. EPA, July 2004	0.04	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	26	Professional Judgment	13	Professional Judgment	
	ED	Exposure Duration	years	11	U.S. EPA, December 1989	11	U.S. EPA, December 1989	
	BW	Body Weight	kg	43	U.S. EPA, August 1997	43	U.S. EPA, August 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	4,015	U.S. EPA, December 1989	4,015	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 2.60E-08
Noncancer Ingestion Intake - RME = 1.66E-07

Cancer Ingestion Intake - CTE = 3.25E-09
Noncancer Ingestion Intake - CTE = 2.07E-08

Cancer Dermal Intake - RME = 1.71E-07
Noncancer Dermal Intake - RME = 1.09E-06

Cancer Dermal Intake - CTE = 1.61E-08
Noncancer Dermal Intake - CTE = 1.03E-07

TABLE 4.17a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF CHILD RECREATIONAL USERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Sediment	mg/day	200	U.S. EPA, May 1993	100	U.S. EPA, May 1993	Csed x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	0.5	Professional Judgment	0.5	Professional Judgment	BW x AT
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	U.S. EPA, December 1989
	ED	Exposure Duration	years	6	U.S. EPA, May 1993	2	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	
Dermal	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csed x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	3,300	1/2 total body area (EPA 2004)	3,300	1/2 total body area (EPA 2004)	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.2	U.S. EPA, July 2004	0.04	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	
	ED	Exposure Duration	years	6	U.S. EPA, December 1989	2	U.S. EPA, December 1989	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 8.14E-08
Noncancer Ingestion Intake - RME = 9.50E-07

Cancer Ingestion Intake - CTE = 6.78E-09
Noncancer Ingestion Intake - CTE = 2.37E-07

Cancer Dermal Intake - RME = 5.37E-07
Noncancer Dermal Intake - RME = 6.27E-06

Cancer Dermal Intake - CTE = 1.79E-08
Noncancer Dermal Intake - CTE = 6.27E-07

TABLE 4.18a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF ADULT RECREATIONAL USERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Sediment	mg/day	100	U.S. EPA, May 1993	50	U.S. EPA, May 1993	Csed x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	0.5	Professional Judgment	0.5	Professional Judgment	BW x AT
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	U.S. EPA, December 1989
	ED	Exposure Duration	years	24	U.S. EPA, May 1993	7	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	
Dermal	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csed x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	9,070	U.S. EPA, August 1997	9,070	U.S. EPA, August 1997	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.07	U.S. EPA, July 2004	0.01	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	
	ED	Exposure Duration	years	24	U.S. EPA, December 1989	7	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 3.49E-08
Noncancer Ingestion Intake - RME = 1.02E-07

Cancer Ingestion Intake - CTE = 2.54E-09
Noncancer Ingestion Intake - CTE = 2.54E-08

Cancer Dermal Intake - RME = 4.43E-07
Noncancer Dermal Intake - RME = 1.29E-06

Cancer Dermal Intake - CTE = 9.23E-09
Noncancer Dermal Intake - CTE = 9.23E-08

TABLE 4.19a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF FUTURE CHILD RESIDENTS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Sediment	mg/day	100	Professional Judgment	50	Professional Judgment	Csed x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	1.0	U.S. EPA, May 1993	BW x AT
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	U.S. EPA, December 1989
	ED	Exposure Duration	years	6	U.S. EPA, May 1993	2	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	
Dermal	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csed x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	2,800	U.S. EPA, July 2004	2,800	U.S. EPA, July 2004	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.2	U.S. EPA, July 2004	0.04	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	
	ED	Exposure Duration	years	6	U.S. EPA, December 1989	2	U.S. EPA, December 1989	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 8.14E-08
Noncancer Ingestion Intake - RME = 9.50E-07

Cancer Ingestion Intake - CTE = 6.78E-09
Noncancer Ingestion Intake - CTE = 2.37E-07

Cancer Dermal Intake - RME = 4.56E-07
Noncancer Dermal Intake - RME = 5.32E-06

Cancer Dermal Intake - CTE = 1.52E-08
Noncancer Dermal Intake - CTE = 5.32E-07

TABLE 4.20a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF FUTURE ADULT RESIDENTS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Sediment	mg/day	50	Professional Judgment	25	Professional Judgment	Csed x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	1.0	U.S. EPA, May 1993	BW x AT
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	U.S. EPA, December 1989
	ED	Exposure Duration	years	24	U.S. EPA, May 1993	7	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	
Dermal	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csed x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	5,700	U.S. EPA, July 2004	5,700	U.S. EPA, July 2004	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.07	U.S. EPA, July 2004	0.01	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	
	ED	Exposure Duration	years	24	U.S. EPA, December 1989	7	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 3.49E-08
Noncancer Ingestion Intake - RME = 1.02E-07

Cancer Ingestion Intake - CTE = 2.54E-09
Noncancer Ingestion Intake - CTE = 2.54E-08

Cancer Dermal Intake - RME = 2.78E-07
Noncancer Dermal Intake - RME = 8.12E-07

Cancer Dermal Intake - CTE = 5.80E-09
Noncancer Dermal Intake - CTE = 5.80E-08

TABLE 7.15a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF MAINTENANCE WORKERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	4.3E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	4.7E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	5.5E-08	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	9.2E-09	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	3.6E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	3.7E-09	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	1.9E-04
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	7.7E-09	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	2.7E-04	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	2.7E-04
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	2.8E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	9.2E-04
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	7.2E-04	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	2.4E-03
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	3.1E-05	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	4.4E-04
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	7.7E-07	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	7.7E-04
	(total)												**5.0E-03**
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	7.5E-09	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	8.1E-09	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	9.4E-09	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	1.6E-09	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	6.1E-09	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	6.9E-10	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	3.4E-05
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	1.4E-09	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	1.1E-08	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	3.7E-05
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**7.1E-05**
												Total Hazard Index Across All Exposure Routes/Pathways	**5.1E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.16a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADOLESCENT TRESPASSERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Trespasser
Receptor Age: Adolescent (age 6 - 17)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	3.8E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	4.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	4.8E-08	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	8.1E-09	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	3.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	3.3E-09	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	1.6E-04
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	6.8E-09	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	2.3E-04	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	2.3E-04
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	2.4E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	8.1E-04
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	6.4E-04	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	2.1E-03
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	2.7E-05	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	3.9E-04
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	6.8E-07	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	6.8E-04
	(total)												**4.4E-03**
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	2.5E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	2.7E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	3.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	5.2E-09	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	2.0E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	2.3E-09	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	1.1E-04
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	4.7E-09	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	3.6E-08	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	1.2E-04
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**2.3E-04**
												Total Hazard Index Across All Exposure Routes/Pathways	**4.6E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.17a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF CHILD RECREATIONAL USERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	4.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	4.7E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	5.5E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	9.3E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	3.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	3.8E-08	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	1.9E-03
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	7.8E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	2.7E-03	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	2.7E-03
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	2.8E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	9.3E-03
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	7.3E-03	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	2.4E-02
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	3.1E-04	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	4.4E-03
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	7.8E-06	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	7.8E-03
	(total)												**5.1E-02**
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.5E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	1.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	3.2E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.2E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.4E-08	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	6.9E-04
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	2.9E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	2.2E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	7.4E-04
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**1.4E-03**
												Total Hazard Index Across All Exposure Routes/Pathways	**5.2E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.18a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADULT RECREATIONAL USERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	4.7E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	5.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	5.9E-08	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	9.9E-09	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	3.9E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	4.0E-09	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	2.0E-04
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	8.4E-09	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	2.9E-04	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	2.9E-04
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	3.0E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	1.0E-03
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	7.8E-04	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	2.6E-03
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	3.3E-05	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	4.7E-04
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	8.4E-07	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	8.4E-04
	(total)												**5.4E-03**
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	2.2E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	2.4E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	2.8E-08	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	4.7E-09	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.8E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	2.0E-09	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	1.0E-04
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	4.3E-09	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	3.3E-08	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	1.1E-04
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**2.1E-04**
												Total Hazard Index Across All Exposure Routes/Pathways	**5.6E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.19a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF FUTURE CHILD RESIDENTS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	4.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	4.7E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	5.5E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	9.3E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	3.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	3.8E-08	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	1.9E-03
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	7.8E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	2.7E-03	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	2.7E-03
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	2.8E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	9.3E-03
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	7.3E-03	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	2.4E-02
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	3.1E-04	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	4.4E-03
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	7.8E-06	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	7.8E-03
	(total)												**5.1E-02**
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.3E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	1.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	2.7E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.2E-08	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	5.9E-04
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	2.4E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	1.9E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	6.3E-04
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**1.2E-03**
												Total Hazard Index Across All Exposure Routes/Pathways	**5.2E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.20a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF FUTURE ADULT RESIDENTS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	4.7E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	5.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	5.9E-08	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	9.9E-09	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	3.9E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	4.0E-09	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	2.0E-04
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	8.4E-09	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	2.9E-04	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	2.9E-04
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	3.0E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	1.0E-03
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	7.8E-04	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	2.6E-03
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	3.3E-05	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	4.7E-04
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	8.4E-07	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	8.4E-04
	(total)												**5.4E-03**
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.4E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.5E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	1.8E-08	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	2.9E-09	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.3E-09	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	6.4E-05
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	2.7E-09	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	2.1E-08	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	6.8E-05
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**1.3E-04**
												Total Hazard Index Across All Exposure Routes/Pathways	**5.5E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.15a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF MAINTENANCE WORKERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	5.6E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.1E-09
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	6.0E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	4.4E-08
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	7.0E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	5.1E-09
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	1.2E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	8.6E-09
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	4.6E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.4E-09
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	4.8E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.5E-10
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	9.9E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.0E-09
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	3.4E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	3.6E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	5.3E-08
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	9.3E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	3.9E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	9.9E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**1.2E-07**
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	9.6E-10	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	7.0E-10
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.0E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	7.6E-09
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	1.2E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	8.8E-10
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	2.0E-10	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-09
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	7.9E-10	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	5.7E-10
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	8.8E-11	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-10
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	1.8E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-10
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	1.4E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-09
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**1.4E-08**
										Total Risk Across All Exposure Routes/Pathways	**1.4E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.16a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADOLESCENT TRESPASSERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Trespasser
Receptor Age: Adolescent (age 6 - 17)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	6.0E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.4E-09
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	6.5E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	4.8E-08
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	7.6E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	5.5E-09
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	1.3E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	9.3E-09
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	4.9E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.6E-09
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	5.1E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.0E-09
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	1.1E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-09
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	3.7E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	3.8E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	5.8E-08
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	1.0E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	4.2E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	1.1E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**1.3E-07**
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	3.9E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.8E-09
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	4.2E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.1E-08
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	4.9E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.6E-09
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	8.2E-10	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	6.0E-09
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	3.2E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.3E-09
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	3.6E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.1E-10
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	7.4E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-09
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	5.7E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	8.6E-09
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**5.6E-08**
										Total Risk Across All Exposure Routes/Pathways	**1.9E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.17a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF CHILD RECREATIONAL USERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.3E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	9.2E-09
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.4E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	9.9E-08
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	1.6E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-08
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	2.6E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.9E-08
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.0E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	7.5E-09
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.1E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-09
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	2.2E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.5E-09
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	7.7E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	8.0E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-07
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	2.1E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	8.9E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	2.2E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											2.7E-07
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	4.3E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.1E-09
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	4.7E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-08
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	5.4E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.0E-09
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	9.1E-10	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	6.6E-09
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	3.5E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.6E-09
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	4.0E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.9E-10
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	8.2E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-09
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	6.3E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	9.5E-09
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											6.2E-08
										Total Risk Across All Exposure Routes/Pathways	**3.4E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.18a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT RECREATIONAL USERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	4.7E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.4E-09
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	5.1E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-08
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	5.9E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.3E-09
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	9.9E-10	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	7.2E-09
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	3.9E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.8E-09
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	4.0E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	8.0E-10
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	8.4E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-09
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	2.9E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	3.0E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	4.5E-08
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	7.8E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	3.3E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	8.4E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											1.0E-07
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	2.2E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.6E-09
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	2.4E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-08
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	2.8E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.0E-09
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	4.7E-10	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-09
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.8E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.3E-09
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	2.0E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.1E-10
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	4.3E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	8.5E-10
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	3.3E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	4.9E-09
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											3.2E-08
										Total Risk Across All Exposure Routes/Pathways	**1.3E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.19a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF FUTURE CHILD RESIDENTS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.3E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	9.2E-08
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.4E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	9.9E-08
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	1.6E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-08
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	2.6E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.9E-08
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.0E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	7.5E-09
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.1E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-09
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	2.2E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.5E-09
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	7.7E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	8.0E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-07
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	2.1E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	8.9E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	2.2E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											3.6E-07
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	3.7E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.7E-09
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	4.0E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.9E-08
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	4.6E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.4E-09
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	7.7E-10	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	5.6E-09
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	3.0E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.2E-09
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	3.4E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	6.7E-10
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	7.0E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-09
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	5.4E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	8.1E-09
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											5.3E-08
										Total Risk Across All Exposure Routes/Pathways	**4.1E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.20a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF FUTURE ADULT RESIDENTS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	4.7E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.4E-09
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	5.1E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-08
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	5.9E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.3E-09
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	9.9E-10	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	7.2E-09
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	3.9E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.8E-09
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	4.0E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	8.0E-10
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	8.4E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-09
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	2.9E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	3.0E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	4.5E-08
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	7.8E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	3.3E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	8.4E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											1.0E-07
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.4E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.0E-09
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.5E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-08
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	1.8E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.3E-09
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	2.9E-10	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-09
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.1E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	8.4E-10
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.3E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.6E-10
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	2.7E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.3E-10
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	2.1E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	3.1E-09
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											2.0E-08
										Total Risk Across All Exposure Routes/Pathways	**1.2E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 4.15
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF MAINTENANCE WORKERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Sediment	mg/day	100	U.S. EPA, May 1993	50	U.S. EPA, May 1993	Csed x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	1.0	U.S. EPA, May 1993	BW x AT
	EF	Exposure Frequency	days/year	24	Professional Judgment	12	Professional Judgment	U.S. EPA, December 1989
	ED	Exposure Duration	years	25	U.S. EPA, May 1993	9	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	U.S. EPA, December 1989	3,285	U.S. EPA, December 1989	
Dermal	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csed x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	3,300	U.S. EPA, July 2004	3,300	U.S. EPA, July 2004	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.2	U.S. EPA, July 2004	0.02	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	24	Professional Judgment	12	Professional Judgment	
	ED	Exposure Duration	years	25	U.S. EPA, December 1989	9	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	U.S. EPA, December 1989	3,285	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 3.35E-08
Noncancer Ingestion Intake - RME = 9.39E-08

Cancer Ingestion Intake - CTE = 3.02E-09
Noncancer Ingestion Intake - CTE = 2.35E-08

Cancer Dermal Intake - RME = 2.21E-07
Noncancer Dermal Intake - RME = 6.20E-07

Cancer Dermal Intake - CTE = 3.99E-09
Noncancer Dermal Intake - CTE = 3.10E-08

TABLE 4.16
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF ADOLESCENT TRESPASSERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Trespasser
Receptor Age: Adolescent (age 6 - 17)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Sediment	mg/day	100	U.S. EPA, May 1993	50	U.S. EPA, May 1993	Csed x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	0.5	Professional Judgement	BW x AT
	EF	Exposure Frequency	days/year	26	Professional Judgement	13	Professional Judgement	U.S. EPA, December 1989
	ED	Exposure Duration	years	11	6 - 17 years of age	11	6 - 17 years of age	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	43	U.S. EPA, August 1997	43	U.S. EPA, August 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	4,015	U.S. EPA, December 1989	4,015	U.S. EPA, December 1989	
Dermal	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csed x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	3,280	U.S. EPA, August 1997	3,100	U.S. EPA, August 1997	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.2	U.S. EPA, July 2004	0.04	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	26	Professional Judgment	13	Professional Judgment	
	ED	Exposure Duration	years	11	U.S. EPA, December 1989	11	U.S. EPA, December 1989	
	BW	Body Weight	kg	43	U.S. EPA, August 1997	43	U.S. EPA, August 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	4,015	U.S. EPA, December 1989	4,015	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 2.60E-08
Noncancer Ingestion Intake - RME = 1.66E-07

Cancer Ingestion Intake - CTE = 3.25E-09
Noncancer Ingestion Intake - CTE = 2.07E-08

Cancer Dermal Intake - RME = 1.71E-07
Noncancer Dermal Intake - RME = 1.09E-06

Cancer Dermal Intake - CTE = 1.61E-08
Noncancer Dermal Intake - CTE = 1.03E-07

TABLE 4.17
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF CHILD RECREATIONAL USERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Sediment	mg/day	200	U.S. EPA, May 1993	100	U.S. EPA, May 1993	Csed x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	0.5	Professional Judgment	0.5	Professional Judgment	BW x AT
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	U.S. EPA, December 1989
	ED	Exposure Duration	years	6	U.S. EPA, May 1993	2	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	
Dermal	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csed x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	3,300	1/2 total body area (EPA 2004)	3,300	1/2 total body area (EPA 2004)	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.2	U.S. EPA, July 2004	0.04	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	
	ED	Exposure Duration	years	6	U.S. EPA, December 1989	2	U.S. EPA, December 1989	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 8.14E-08
Noncancer Ingestion Intake - RME = 9.50E-07

Cancer Ingestion Intake - CTE = 6.78E-09
Noncancer Ingestion Intake - CTE = 2.37E-07

Cancer Dermal Intake - RME = 5.37E-07
Noncancer Dermal Intake - RME = 6.27E-06

Cancer Dermal Intake - CTE = 1.79E-08
Noncancer Dermal Intake - CTE = 6.27E-07

TABLE 4.18
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF ADULT RECREATIONAL USERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Sediment	mg/day	100	U.S. EPA, May 1993	50	U.S. EPA, May 1993	Csed x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	0.5	Professional Judgment	0.5	Professional Judgment	BW x AT
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	U.S. EPA, December 1989
	ED	Exposure Duration	years	24	U.S. EPA, May 1993	7	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	
Dermal	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csed x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	9,070	U.S. EPA, August 1997	9,070	U.S. EPA, August 1997	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.07	U.S. EPA, July 2004	0.01	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	
	ED	Exposure Duration	years	24	U.S. EPA, December 1989	7	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 3.49E-08
Noncancer Ingestion Intake - RME = 1.02E-07

Cancer Ingestion Intake - CTE = 2.54E-09
Noncancer Ingestion Intake - CTE = 2.54E-08

Cancer Dermal Intake - RME = 4.43E-07
Noncancer Dermal Intake - RME = 1.29E-06

Cancer Dermal Intake - CTE = 9.23E-09
Noncancer Dermal Intake - CTE = 9.23E-08

TABLE 4.19
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF FUTURE CHILD RESIDENTS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Sediment	mg/day	100	Professional Judgment	50	Professional Judgment	Csed x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	1.0	U.S. EPA, May 1993	BW x AT
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	U.S. EPA, December 1989
	ED	Exposure Duration	years	6	U.S. EPA, May 1993	2	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	
Dermal	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csed x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	2,800	U.S. EPA, July 2004	2,800	U.S. EPA, July 2004	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.2	U.S. EPA, July 2004	0.04	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	
	ED	Exposure Duration	years	6	U.S. EPA, December 1989	2	U.S. EPA, December 1989	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 8.14E-08
Noncancer Ingestion Intake - RME = 9.50E-07

Cancer Ingestion Intake - CTE = 6.78E-09
Noncancer Ingestion Intake - CTE = 2.37E-07

Cancer Dermal Intake - RME = 4.56E-07
Noncancer Dermal Intake - RME = 5.32E-06

Cancer Dermal Intake - CTE = 1.52E-08
Noncancer Dermal Intake - CTE = 5.32E-07

TABLE 4.20
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF FUTURE ADULT RESIDENTS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Sediment	mg/day	50	Professional Judgment	25	Professional Judgment	Csed x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	1.0	U.S. EPA, May 1993	BW x AT
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	U.S. EPA, December 1989
	ED	Exposure Duration	years	24	U.S. EPA, May 1993	7	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	
Dermal	Csed	Chemical Concentration in Sediment	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csed x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	5,700	U.S. EPA, July 2004	5,700	U.S. EPA, July 2004	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.07	U.S. EPA, July 2004	0.01	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	
	ED	Exposure Duration	years	24	U.S. EPA, December 1989	7	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 3.49E-08
Noncancer Ingestion Intake - RME = 1.02E-07

Cancer Ingestion Intake - CTE = 2.54E-09
Noncancer Ingestion Intake - CTE = 2.54E-08

Cancer Dermal Intake - RME = 2.78E-07
Noncancer Dermal Intake - RME = 8.12E-07

Cancer Dermal Intake - CTE = 5.80E-09
Noncancer Dermal Intake - CTE = 5.80E-08

TABLE 7.15 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF MAINTENANCE WORKERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.7E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	2.2E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	3.7E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.5E-08	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	7.4E-04
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	3.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	1.1E-03	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	1.1E-03
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	3.7E-03
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	2.9E-03	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	9.6E-03
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	1.2E-04	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	1.8E-03
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	3.1E-06	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	3.1E-03
	(total)												**2.0E-02**
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.5E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	1.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	3.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.2E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.4E-08	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	6.9E-04
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	2.9E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	2.2E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	7.3E-04
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**1.4E-03**
												Total Hazard Index Across All Exposure Routes/Pathways	**2.1E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.16 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADOLESCENT TRESPASSERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Trespasser
Receptor Age: Adolescent (age 6 - 17)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	3.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	3.3E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	3.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	6.5E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	2.5E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	2.6E-08	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	1.3E-03
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	5.5E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	1.9E-03	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	1.9E-03
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	2.0E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	6.5E-03
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	5.1E-03	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	1.7E-02
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	2.2E-04	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	3.1E-03
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	5.5E-06	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	5.5E-03
	(total)												**3.5E-02**
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	2.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	2.8E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	3.3E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	5.5E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	2.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	2.4E-08	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	1.2E-03
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	5.0E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	3.8E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	1.3E-03
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**2.5E-03**
												Total Hazard Index Across All Exposure Routes/Pathways	**3.8E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.17 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF CHILD RECREATIONAL USERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.8E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.9E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	2.2E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	3.7E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.4E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.5E-07	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	7.5E-03
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	3.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	1.1E-02	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	1.1E-02
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	1.1E-05	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	3.7E-02
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	2.9E-02	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	9.7E-02
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	1.2E-03	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	1.8E-02
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	3.1E-05	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	3.1E-02
	(total)												**2.0E-01**
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.5E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.6E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	1.9E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	3.2E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.2E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.4E-07	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	6.9E-03
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	2.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	7.4E-03
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**1.4E-02**
												Total Hazard Index Across All Exposure Routes/Pathways	**2.2E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.18 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADULT RECREATIONAL USERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	2.0E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	2.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	4.0E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.5E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.6E-08	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	8.0E-04
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	3.3E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	1.1E-03	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	1.1E-03
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	1.2E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	4.0E-03
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	3.1E-03	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	1.0E-02
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	1.3E-04	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	1.9E-03
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	3.3E-06	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	3.3E-03
	(total)												**2.2E-02**
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	3.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	3.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	3.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	6.6E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	2.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	2.9E-08	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	1.4E-03
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	6.0E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	4.6E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	1.5E-03
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**3.0E-03**
												Total Hazard Index Across All Exposure Routes/Pathways	**2.5E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.19 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF FUTURE CHILD RESIDENTS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.8E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.9E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	2.2E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	3.7E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.4E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.5E-07	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	7.5E-03
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	3.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	1.1E-02	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	1.1E-02
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	1.1E-05	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	3.7E-02
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	2.9E-02	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	9.7E-02
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	1.2E-03	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	1.8E-02
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	3.1E-05	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	3.1E-02
	(total)												**2.0E-01**
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.3E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.4E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	1.6E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	2.7E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.1E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.2E-07	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	5.9E-03
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	2.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	1.9E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	6.3E-03
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**1.2E-02**
												Total Hazard Index Across All Exposure Routes/Pathways	**2.1E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.20 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF FUTURE ADULT RESIDENTS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	2.0E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	2.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	4.0E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.5E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.6E-08	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	8.0E-04
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	3.3E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	1.1E-03	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	1.1E-03
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	1.2E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	4.0E-03
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	3.1E-03	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	1.0E-02
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	1.3E-04	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	1.9E-03
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	3.3E-06	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	3.3E-03
	(total)												**2.2E-02**
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	2.0E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	2.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	2.5E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	4.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.8E-08	mg/kg-day	2.0E-05	mg/kg-day	NA	NA	9.0E-04
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	3.7E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	2.9E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	9.6E-04
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**1.9E-03**
												Total Hazard Index Across All Exposure Routes/Pathways	**2.4E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

CALCULATION OF CANCER RISKS FROM EXPOSURE OF MAINTENANCE WORKERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	6.2E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.5E-08
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	6.7E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	4.9E-07
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	7.8E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	5.7E-08
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	1.3E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	9.6E-08
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	5.1E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.7E-08
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	5.3E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-08
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	1.1E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.2E-08
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	3.8E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	4.0E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	5.9E-07
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	1.0E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	4.4E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	1.1E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**1.4E-06**
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	5.3E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.9E-08
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	5.8E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-07
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	6.7E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.9E-08
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	1.1E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	8.2E-08
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	4.4E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.2E-08
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	4.9E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.8E-09
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	1.0E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.0E-08
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	7.8E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-07
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**7.7E-07**
										Total Risk Across All Exposure Routes/Pathways	**2.1E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.16 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADOLESCENT TRESPASSERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Trespasser
Receptor Age: Adolescent (age 6 - 17)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	4.8E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.5E-08
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	5.2E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.8E-07
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	6.1E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.4E-08
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	1.0E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	7.4E-08
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	4.0E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.9E-08
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	4.1E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	8.2E-09
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	8.6E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-08
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	2.9E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	3.1E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	4.6E-07
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	8.0E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	3.4E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	8.6E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**1.0E-06**
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	4.1E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.0E-08
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	4.4E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.2E-07
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	5.2E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.8E-08
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	8.7E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	6.3E-08
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	3.4E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.5E-08
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	3.8E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.6E-09
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	7.9E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-08
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	6.0E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	9.1E-08
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**5.9E-07**
										Total Risk Across All Exposure Routes/Pathways	**1.6E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.17 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF CHILD RECREATIONAL USERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.5E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.1E-07
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.6E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-06
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	1.9E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.4E-07
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	3.2E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-07
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.2E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	9.0E-08
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.3E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.6E-08
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	2.7E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.4E-08
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	9.2E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	9.6E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-06
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	2.5E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	1.1E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	2.7E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											3.3E-06
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.3E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	9.4E-08
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.4E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.0E-06
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	1.6E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-07
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	2.7E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.0E-07
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.1E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	7.8E-08
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.2E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.4E-08
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	2.5E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.9E-08
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	1.9E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.9E-07
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											1.9E-06
										Total Risk Across All Exposure Routes/Pathways	**5.1E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.18 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT RECREATIONAL USERS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	6.5E-08	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	4.7E-08
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	7.0E-08	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	5.1E-07
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	8.1E-08	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	5.9E-08
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	1.4E-08	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	9.9E-08
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	5.3E-08	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	3.9E-08
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	5.5E-09	mg/kg-day	2.0E+00	(mg/kg-day)$^{-1}$	1.1E-08
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	1.1E-08	mg/kg-day	2.0E+00	(mg/kg-day)$^{-1}$	2.3E-08
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	3.9E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	4.1E-07	mg/kg-day	1.5E+00	(mg/kg-day)$^{-1}$	6.2E-07
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	1.1E-03	mg/kg-day		(mg/kg-day)$^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	4.6E-05	mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	1.1E-06	mg/kg-day		(mg/kg-day)$^{-1}$	
											1.4E-06
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.1E-07	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	7.8E-08
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.2E-07	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	8.4E-07
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	1.3E-07	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	9.8E-08
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	2.2E-08	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	1.6E-07
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	8.8E-08	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	6.4E-08
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	9.8E-09	mg/kg-day	2.0E+00	(mg/kg-day)$^{-1}$	2.0E-08
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	2.0E-08	mg/kg-day	2.0E+00	(mg/kg-day)$^{-1}$	4.1E-08
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	1.6E-07	mg/kg-day	1.5E+00	(mg/kg-day)$^{-1}$	2.4E-07
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
											1.5E-06
										Total Risk Across All Exposure Routes/Pathways	**2.9E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.19 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF FUTURE CHILD RESIDENTS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.5E-07	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	1.1E-06
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.6E-07	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	1.2E-06
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	1.9E-07	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	1.4E-07
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	3.2E-08	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	2.3E-07
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	1.2E-07	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	9.0E-08
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.3E-08	mg/kg-day	2.0E+00	(mg/kg-day)$^{-1}$	2.6E-08
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	2.7E-08	mg/kg-day	2.0E+00	(mg/kg-day)$^{-1}$	5.4E-08
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	9.2E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	9.6E-07	mg/kg-day	1.5E+00	(mg/kg-day)$^{-1}$	1.4E-06
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	2.5E-03	mg/kg-day		(mg/kg-day)$^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	1.1E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	2.7E-06	mg/kg-day		(mg/kg-day)$^{-1}$	
											4.3E-06
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	1.1E-07	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	8.0E-08
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	1.2E-07	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	8.7E-07
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	1.4E-07	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	1.0E-07
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	2.3E-08	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	1.7E-07
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	9.0E-08	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	6.6E-08
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	1.0E-08	mg/kg-day	2.0E+00	(mg/kg-day)$^{-1}$	2.0E-08
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	2.1E-08	mg/kg-day	2.0E+00	(mg/kg-day)$^{-1}$	4.2E-08
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	1.6E-07	mg/kg-day	1.5E+00	(mg/kg-day)$^{-1}$	2.4E-07
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
											1.6E-06
										Total Risk Across All Exposure Routes/Pathways	**5.9E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.20 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF FUTURE ADULT RESIDENTS TO SEDIMENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	6.5E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.7E-08
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	7.0E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	5.1E-07
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	8.1E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	5.9E-08
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	1.4E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	9.9E-08
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	5.3E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.9E-08
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	5.5E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-08
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	1.1E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-08
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M	3.9E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	4.1E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	6.2E-07
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M	1.1E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M	4.6E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M	1.1E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											1.4E-06
Dermal	Benzo(a)anthracene	1.85E+00	mg/kg	1.85E+00	mg/kg	M	6.7E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.9E-08
	Benzo(a)pyrene	2.00E+00	mg/kg	2.00E+00	mg/kg	M	7.2E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	5.3E-07
	Benzo(b)fluoranthene	2.33E+00	mg/kg	2.33E+00	mg/kg	M	8.4E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	6.2E-08
	Dibenzo(a,h)anthracene	3.90E-01	mg/kg	3.90E-01	mg/kg	M	1.4E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.0E-07
	Indeno(1,2,3-cd)pyrene	1.52E+00	mg/kg	1.52E+00	mg/kg	M	5.5E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.0E-08
	Aroclor-1254	1.58E-01	mg/kg	1.58E-01	mg/kg	M	6.2E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-08
	Aroclor-1260	3.29E-01	mg/kg	3.29E-01	mg/kg	M	1.3E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.6E-08
	Aluminum	1.13E+04	mg/kg	1.13E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.18E+01	mg/kg	1.18E+01	mg/kg	M	9.9E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-07
	Iron	3.08E+04	mg/kg	3.08E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	1.31E+03	mg/kg	1.31E+03	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.29E+01	mg/kg	3.29E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											9.7E-07
										Total Risk Across All Exposure Routes/Pathways	**2.4E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 4.2a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF MAINTENANCE WORKERS TO SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Soil	mg/day	100	U.S. EPA, May 1993	50	U.S. EPA, May 1993	Csoil x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	1.0	U.S. EPA, May 1993	BW x AT
	EF	Exposure Frequency	days/year	24	Professional Judgement	12	Professional Judgement	U.S. EPA, December 1989
	ED	Exposure Duration	years	25	U.S. EPA, May 1993	9	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	U.S. EPA, December 1989	3,285	U.S. EPA, December 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csoil x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	3,300	U.S. EPA, July 2004	3,300	U.S. EPA, July 2004	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.2	U.S. EPA, July 2004	0.02	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	24	Professional Judgement	12	Professional Judgement	
	ED	Exposure Duration	years	25	U.S. EPA, May 1993	9	U.S. EPA, May 1993	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	U.S. EPA, December 1989	3,285	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 3.35E-08
Noncancer Ingestion Intake - RME = 9.39E-08

Cancer Ingestion Intake - CTE = 3.02E-09
Noncancer Ingestion Intake - CTE = 2.35E-08

Cancer Dermal Intake - RME = 2.21E-07
Noncancer Dermal Intake - RME = 6.20E-07

Cancer Dermal Intake - CTE = 3.99E-09
Noncancer Dermal Intake - CTE = 3.10E-08

TABLE 4.3a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF OCCUPATIONAL WORKERS TO SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Occupational Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Soil	mg/day	100	U.S. EPA, May 1993	50	U.S. EPA, May 1993	Csoil x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	1.0	U.S. EPA, May 1993	BW x AT
	EF	Exposure Frequency	days/year	250	U.S. EPA, May 1993	219	U.S. EPA, May 1993	U.S. EPA, December 1989
	ED	Exposure Duration	years	25	U.S. EPA, May 1993	9	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	U.S. EPA, December 1989	3,285	U.S. EPA, December 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csoil x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	3,300	U.S. EPA, July 2004	3,300	U.S. EPA, July 2004	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.2	U.S. EPA, July 2004	0.02	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	250	U.S. EPA, May 1993	219	U.S. EPA, May 1993	
	ED	Exposure Duration	years	25	U.S. EPA, December 1989	9	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	U.S. EPA, December 1989	3,285	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 3.49E-07
Noncancer Ingestion Intake - RME = 9.78E-07

Cancer Ingestion Intake - CTE = 5.51E-08
Noncancer Ingestion Intake - CTE = 4.29E-07

Cancer Dermal Intake - RME = 2.31E-06
Noncancer Dermal Intake - RME = 6.46E-06

Cancer Dermal Intake - CTE = 7.27E-08
Noncancer Dermal Intake - CTE = 5.66E-07

TABLE 4.4a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF ADOLESCENT TRESPASSERS TO SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Trespasser
Receptor Age: Adolescent (age 6 - 17)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Soil	mg/day	100	U.S. EPA, May 1993	50	U.S. EPA, May 1993	Csoil x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	1.0	U.S. EPA, May 1993	BW x AT
	EF	Exposure Frequency	days/year	26	Professional Judgement	13	Professional Judgement	U.S. EPA, December 1989
	ED	Exposure Duration	years	11	6 - 17 years of age	11	6 - 17 years of age	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	43	U.S. EPA, August 1997	43	U.S. EPA, August 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	4,015	U.S. EPA, December 1989	4,015	U.S. EPA, December 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csoil x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	3,280	U.S. EPA, August 1997	3,100	U.S. EPA, August 1997	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.2	U.S. EPA, July 2004	0.04	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	26	Professional Judgement	13	Professional Judgement	
	ED	Exposure Duration	years	11	6 - 17 years of age	11	6 - 17 years of age	
	BW	Body Weight	kg	43	U.S. EPA, August 1997	43	U.S. EPA, August 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	4,015	U.S. EPA, December 1989	4,015	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 2.60E-08
Noncancer Ingestion Intake - RME = 1.66E-07

Cancer Ingestion Intake - CTE = 6.51E-09
Noncancer Ingestion Intake - CTE = 4.14E-08

Cancer Dermal Intake - RME = 1.71E-07
Noncancer Dermal Intake - RME = 1.09E-06

Cancer Dermal Intake - CTE = 1.61E-08
Noncancer Dermal Intake - CTE = 1.03E-07

TABLE 4.5a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF CHILD RECREATIONAL USERS TO SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Soil	mg/day	200	U.S. EPA, May 1993	100	U.S. EPA, May 1993	Csoil x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	0.5	Professional Judgment	0.5	Professional Judgment	BW x AT
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	U.S. EPA, December 1989
	ED	Exposure Duration	years	6	U.S. EPA, May 1993	2	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csoil x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	3,300	1/2 total body area (EPA 2004)	3,300	1/2 total body area (EPA 2004)	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.2	U.S. EPA, July 2004	0.04	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	
	ED	Exposure Duration	years	6	U.S. EPA, December 1989	2	U.S. EPA, December 1989	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 8.14E-08
Noncancer Ingestion Intake - RME = 9.50E-07

Cancer Ingestion Intake - CTE = 6.78E-09
Noncancer Ingestion Intake - CTE = 2.37E-07

Cancer Dermal Intake - RME = 5.37E-07
Noncancer Dermal Intake - RME = 6.27E-06

Cancer Dermal Intake - CTE = 1.79E-08
Noncancer Dermal Intake - CTE = 6.27E-07

TABLE 4.6a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF ADULT RECREATIONAL USERS TO SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Soil	mg/day	100	U.S. EPA, May 1993	50	U.S. EPA, May 1993	Csoil x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	0.5	Professional Judgment	0.5	Professional Judgment	BW x AT
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	U.S. EPA, December 1989
	ED	Exposure Duration	years	24	U.S. EPA, May 1993	7	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csoil x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	9,070	U.S. EPA, August 1997	9,070	U.S. EPA, August 1997	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.07	U.S. EPA, July 2004	0.01	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	
	ED	Exposure Duration	years	24	U.S. EPA, December 1989	7	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 3.49E-08
Noncancer Ingestion Intake - RME = 1.02E-07

Cancer Ingestion Intake - CTE = 2.54E-09
Noncancer Ingestion Intake - CTE = 2.54E-08

Cancer Dermal Intake - RME = 4.43E-07
Noncancer Dermal Intake - RME = 1.29E-06

Cancer Dermal Intake - CTE = 9.23E-09
Noncancer Dermal Intake - CTE = 9.23E-08

TABLE 4.7a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF FUTURE CHILD RESIDENTS TO SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Soil	mg/day	200	U.S. EPA, May 1993	100	U.S. EPA, May 1993	Csoil x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	1.0	U.S. EPA, May 1993	BW x AT
	EF	Exposure Frequency	days/year	350	U.S. EPA, May 1993	234	U.S. EPA, May 1993	U.S. EPA, December 1989
	ED	Exposure Duration	years	6	U.S. EPA, May 1993	2	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csoil x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	2,800	U.S. EPA, July 2004	2,800	U.S. EPA, July 2004	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.2	U.S. EPA, July 2004	0.04	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	350	U.S. EPA, May 1993	234	U.S. EPA, May 1993	
	ED	Exposure Duration	years	6	U.S. EPA, December 1989	2	U.S. EPA, December 1989	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 1.10E-06
Noncancer Ingestion Intake - RME = 1.28E-05

Cancer Ingestion Intake - CTE = 1.22E-07
Noncancer Ingestion Intake - CTE = 4.27E-06

Cancer Dermal Intake - RME = 3.07E-06
Noncancer Dermal Intake - RME = 3.58E-05

Cancer Dermal Intake - CTE = 1.37E-07
Noncancer Dermal Intake - CTE = 4.79E-06

TABLE 4.8a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF FUTURE ADULT RESIDENTS TO SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Soil	mg/day	100	U.S. EPA, May 1993	50	U.S. EPA, May 1993	Csoil x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	1.0	U.S. EPA, May 1993	BW x AT
	EF	Exposure Frequency	days/year	350	U.S. EPA, May 1993	234	U.S. EPA, May 1993	U.S. EPA, December 1989
	ED	Exposure Duration	years	24	U.S. EPA, May 1993	7	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csoil x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	5,700	U.S. EPA, July 2004	5,700	U.S. EPA, July 2004	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.07	U.S. EPA, July 2004	0.01	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	350	U.S. EPA, May 1993	234	U.S. EPA, May 1993	
	ED	Exposure Duration	years	24	U.S. EPA, December 1989	7	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 4.70E-07
Noncancer Ingestion Intake - RME = 1.37E-06

Cancer Ingestion Intake - CTE = 4.58E-08
Noncancer Ingestion Intake - CTE = 4.58E-07

Cancer Dermal Intake - RME = 1.87E-06
Noncancer Dermal Intake - RME = 5.47E-06

Cancer Dermal Intake - CTE = 5.22E-08
Noncancer Dermal Intake - CTE = 5.22E-07

TABLE 7.2a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF MAINTENANCE WORKERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	3.0E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	6.0E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	7.3E-08	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	1.9E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	6.6E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.2E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	4.4E-04	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	4.4E-04
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	2.6E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	8.6E-04
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	3.0E-08	mg/kg-day	5.0E-04	mg/kg-day	NA	NA	5.9E-05
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	6.6E-04	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	2.2E-03
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	1.3E-05	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	1.9E-04
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	8.1E-07	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	8.1E-04
	(total)												**4.5E-03**
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	5.1E-09	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.0E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	1.2E-08	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	3.3E-09	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	1.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	2.2E-09	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.0E-08	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	3.4E-05
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	3.9E-11	mg/kg-day	2.5E-05	mg/kg-day	NA	NA	1.6E-06
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**3.6E-05**
												Total Hazard Index Across All Exposure Routes/Pathways	**4.6E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.3a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF OCCUPATIONAL WORKERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Occupational Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	5.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.1E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	1.3E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	3.5E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	1.2E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	2.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	8.1E-03	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	8.1E-03
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	4.7E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	1.6E-02
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	5.4E-07	mg/kg-day	5.0E-04	mg/kg-day	NA	NA	1.1E-03
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	1.2E-02	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	4.0E-02
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	2.4E-04	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	3.5E-03
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	1.5E-05	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	1.5E-02
	(total)												**8.3E-02**
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	9.3E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	2.3E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	6.0E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	2.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	4.0E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.9E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	6.2E-04
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	7.1E-10	mg/kg-day	2.5E-05	mg/kg-day	NA	NA	2.9E-05
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**6.5E-04**
												Total Hazard Index Across All Exposure Routes/Pathways	**8.4E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.4a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADOLESCENT TRESPASSERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Trespasser
Receptor Age: Adolescent (age 6 - 17)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	5.2E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	1.3E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	3.4E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	1.2E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	2.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	7.8E-04	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	7.8E-04
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	4.6E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	1.5E-03
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	5.2E-08	mg/kg-day	5.0E-04	mg/kg-day	NA	NA	1.0E-04
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	1.2E-03	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	3.9E-03
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	2.4E-05	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	3.4E-04
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	1.4E-06	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	1.4E-03
	(total)												**8.0E-03**
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.7E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	3.4E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	4.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	1.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	3.8E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	7.2E-09	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	3.4E-08	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	1.1E-04
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.3E-10	mg/kg-day	2.5E-05	mg/kg-day	NA	NA	5.2E-06
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**1.2E-04**
												Total Hazard Index Across All Exposure Routes/Pathways	**8.1E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.5a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF CHILD RECREATIONAL USERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	3.0E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	6.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	7.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	1.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	6.7E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.2E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	4.5E-03	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	4.5E-03
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	2.6E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	8.7E-03
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	3.0E-07	mg/kg-day	5.0E-04	mg/kg-day	NA	NA	6.0E-04
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	6.6E-03	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	2.2E-02
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	1.4E-04	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	1.9E-03
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	8.2E-06	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	8.2E-03
	(total)												**4.6E-02**
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.0E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	2.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	2.5E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	6.6E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	2.3E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	4.4E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	2.1E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	6.9E-04
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	7.9E-10	mg/kg-day	2.5E-05	mg/kg-day	NA	NA	3.2E-05
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**7.2E-04**
												Total Hazard Index Across All Exposure Routes/Pathways	**4.7E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.6a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADULT RECREATIONAL USERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	3.2E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	6.5E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	7.9E-08	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	2.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	7.2E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.3E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	4.8E-04	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	4.8E-04
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	2.8E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	9.3E-04
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	3.2E-08	mg/kg-day	5.0E-04	mg/kg-day	NA	NA	6.4E-05
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	7.1E-04	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	2.4E-03
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	1.5E-05	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	2.1E-04
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	8.8E-07	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	8.8E-04
	(total)												**4.9E-03**
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.5E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	3.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	3.7E-08	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	9.8E-09	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	3.4E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	6.5E-09	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	3.0E-08	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	1.0E-04
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.2E-10	mg/kg-day	2.5E-05	mg/kg-day	NA	NA	4.7E-06
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**1.1E-04**
												Total Hazard Index Across All Exposure Routes/Pathways	**5.0E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.7a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF FUTURE CHILD RESIDENTS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	5.4E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.1E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	1.3E-05	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	3.5E-06	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	1.2E-05	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	2.1E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	8.0E-02	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	8.0E-02
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	4.7E-05	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	1.6E-01
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	5.4E-06	mg/kg-day	5.0E-04	mg/kg-day	NA	NA	1.1E-02
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	1.2E-01	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	4.0E-01
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	2.4E-03	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	3.5E-02
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	1.5E-04	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	1.5E-01
	(total)												**8.3E-01**
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	7.8E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.6E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	1.9E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	5.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	1.8E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	3.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.6E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	5.3E-03
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	6.0E-09	mg/kg-day	2.5E-05	mg/kg-day	NA	NA	2.4E-04
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**5.5E-03**
												Total Hazard Index Across All Exposure Routes/Pathways	**8.3E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.8a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF FUTURE ADULT RESIDENTS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	5.8E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.2E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	1.4E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	3.7E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	1.3E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	2.3E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	8.6E-03	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	8.6E-03
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	5.0E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	1.7E-02
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	5.8E-07	mg/kg-day	5.0E-04	mg/kg-day	NA	NA	1.2E-03
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	1.3E-02	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	4.3E-02
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	2.6E-04	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	3.7E-03
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	1.6E-05	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	1.6E-02
	(total)												**8.9E-02**
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	8.6E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.7E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	2.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	5.5E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	1.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	3.7E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.7E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	5.7E-04
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	6.6E-10	mg/kg-day	2.5E-05	mg/kg-day	NA	NA	2.6E-05
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**6.0E-04**
												Total Hazard Index Across All Exposure Routes/Pathways	**8.9E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.2a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF MAINTENANCE WORKERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	3.8E-09	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	2.8E-09
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	7.7E-09	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	5.6E-08
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	9.4E-09	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	6.8E-09
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	2.5E-09	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	1.8E-08
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	8.5E-09	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	6.2E-09
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.5E-09	mg/kg-day	2.0E+00	(mg/kg-day)$^{-1}$	3.0E-09
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	5.7E-05	mg/kg-day		(mg/kg-day)$^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	3.3E-08	mg/kg-day	1.5E+00	(mg/kg-day)$^{-1}$	5.0E-08
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	3.8E-09	mg/kg-day		(mg/kg-day)$^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	8.4E-05	mg/kg-day		(mg/kg-day)$^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	1.7E-06	mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	1.0E-07	mg/kg-day		(mg/kg-day)$^{-1}$	
	(total)										**1.4E-07**
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	6.5E-10	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	4.8E-10
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.3E-09	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	9.7E-09
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	1.6E-09	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	1.2E-09
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	4.2E-10	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	3.1E-09
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	1.5E-09	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	1.1E-09
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	2.8E-10	mg/kg-day	2.0E+00	(mg/kg-day)$^{-1}$	5.6E-10
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.3E-09	mg/kg-day	1.5E+00	(mg/kg-day)$^{-1}$	2.0E-09
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	5.0E-12	mg/kg-day		(mg/kg-day)$^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	(total)										**1.8E-08**
										Total Risk Across All Exposure Routes/Pathways	**1.6E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.3a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF OCCUPATIONAL WORKERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Occupational Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	6.9E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	5.1E-08
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.4E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.0E-06
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	1.7E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-07
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	4.5E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.3E-07
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	1.6E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.1E-07
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	2.8E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.5E-08
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	1.0E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	6.1E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	9.1E-07
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	6.9E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	1.5E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	3.1E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	1.9E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											2.6E-06
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.2E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	8.7E-09
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	2.4E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-07
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	2.9E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.1E-08
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	7.7E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	5.6E-08
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	2.7E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.0E-08
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	5.1E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.0E-08
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	2.4E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	3.6E-08
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	9.2E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											3.3E-07
										Total Risk Across All Exposure Routes/Pathways	**2.9E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.4a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADOLESCENT TRESPASSERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Trespasser
Receptor Age: Adolescent (age 6 - 17)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	8.2E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	6.0E-09
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.7E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-07
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	2.0E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.5E-08
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	5.3E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.9E-08
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	1.8E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.3E-08
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	3.3E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	6.5E-09
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	1.2E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	7.2E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-07
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	8.2E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	1.8E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	3.7E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	2.2E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											3.1E-07
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	2.6E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.9E-09
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	5.4E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.9E-08
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	6.5E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.7E-09
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	1.7E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-08
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	5.9E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.3E-09
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.1E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-09
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	5.3E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	8.0E-09
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	2.0E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											7.3E-08
										Total Risk Across All Exposure Routes/Pathways	**3.8E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.5a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF CHILD RECREATIONAL USERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	8.5E-09	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	6.2E-08
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.7E-08	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	1.3E-07
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	2.1E-08	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	1.5E-08
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	5.5E-09	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	4.0E-08
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	1.9E-08	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	1.4E-08
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	3.4E-09	mg/kg-day	2.0E+00	(mg/kg-day)$^{-1}$	6.8E-09
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	1.3E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	7.5E-08	mg/kg-day	1.5E+00	(mg/kg-day)$^{-1}$	1.1E-07
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	8.5E-09	mg/kg-day		(mg/kg-day)$^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	1.9E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	3.9E-06	mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	2.3E-07	mg/kg-day		(mg/kg-day)$^{-1}$	
											3.8E-07
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	2.9E-09	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	2.1E-09
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	6.0E-09	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	4.4E-08
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	7.2E-09	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	5.3E-09
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	1.9E-09	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	1.4E-08
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	6.6E-09	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	4.8E-09
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.3E-09	mg/kg-day	2.0E+00	(mg/kg-day)$^{-1}$	2.5E-09
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	5.9E-09	mg/kg-day	1.5E+00	(mg/kg-day)$^{-1}$	8.9E-09
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	2.3E-11	mg/kg-day		(mg/kg-day)$^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
											8.1E-08
										Total Risk Across All Exposure Routes/Pathways	**4.6E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.6a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT RECREATIONAL USERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	3.2E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.3E-09
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	6.5E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	4.8E-08
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	7.9E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	5.8E-09
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	2.1E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-08
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	7.2E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	5.3E-09
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.3E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.5E-09
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	4.8E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	2.8E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-08
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	3.2E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	7.1E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	1.5E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	8.8E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											1.2E-07
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.5E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.1E-09
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	3.1E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.2E-08
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	3.7E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.7E-09
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	9.8E-10	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	7.1E-09
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	3.4E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.5E-09
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	6.5E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-09
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	3.0E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	4.6E-09
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.2E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											4.2E-08
										Total Risk Across All Exposure Routes/Pathways	**1.6E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.7a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF FUTURE CHILD RESIDENTS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.5E-07	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	1.1E-07
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	3.1E-07	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	2.3E-06
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	3.8E-07	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	2.8E-07
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	9.9E-08	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	7.3E-07
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	3.5E-07	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	2.5E-07
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	6.1E-08	mg/kg-day	2.0E+00	(mg/kg-day)$^{-1}$	1.2E-07
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	2.3E-03	mg/kg-day		(mg/kg-day)$^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.3E-06	mg/kg-day	1.5E+00	(mg/kg-day)$^{-1}$	2.0E-06
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.5E-07	mg/kg-day		(mg/kg-day)$^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	3.4E-03	mg/kg-day		(mg/kg-day)$^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	7.0E-05	mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	4.2E-06	mg/kg-day		(mg/kg-day)$^{-1}$	
											5.8E-06
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	2.2E-08	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	1.6E-08
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	4.6E-08	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	3.3E-07
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	5.5E-08	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	4.0E-08
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	1.4E-08	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	1.1E-07
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	5.0E-08	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	3.7E-08
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	9.6E-09	mg/kg-day	2.0E+00	(mg/kg-day)$^{-1}$	1.9E-08
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	4.5E-08	mg/kg-day	1.5E+00	(mg/kg-day)$^{-1}$	6.8E-08
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.7E-10	mg/kg-day		(mg/kg-day)$^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
											6.2E-07
										Total Risk Across All Exposure Routes/Pathways	**6.4E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.8a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF FUTURE ADULT RESIDENTS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	5.8E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.2E-08
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.2E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	8.6E-07
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	1.4E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.0E-07
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	3.7E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-07
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	1.3E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	9.5E-08
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	2.3E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.6E-08
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	8.6E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	5.0E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	7.6E-07
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	5.8E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	1.3E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	2.6E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	1.6E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											2.2E-06
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	8.6E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	6.2E-09
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.7E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-07
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	2.1E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.5E-08
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	5.5E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	4.0E-08
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	1.9E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.4E-08
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	3.7E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.3E-09
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.7E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.6E-08
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	6.6E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											2.4E-07
										Total Risk Across All Exposure Routes/Pathways	**2.4E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 4.2
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF MAINTENANCE WORKERS TO SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Soil	mg/day	100	U.S. EPA, May 1993	50	U.S. EPA, May 1993	Csoil x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	1.0	U.S. EPA, May 1993	BW x AT
	EF	Exposure Frequency	days/year	24	Professional Judgement	12	Professional Judgement	U.S. EPA, December 1989
	ED	Exposure Duration	years	25	U.S. EPA, May 1993	9	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	U.S. EPA, December 1989	3,285	U.S. EPA, December 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csoil x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	3,300	U.S. EPA, July 2004	3,300	U.S. EPA, July 2004	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.2	U.S. EPA, July 2004	0.02	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	24	Professional Judgement	12	Professional Judgement	
	ED	Exposure Duration	years	25	U.S. EPA, May 1993	9	U.S. EPA, May 1993	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	U.S. EPA, December 1989	3,285	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 3.35E-08
Noncancer Ingestion Intake - RME = 9.39E-08

Cancer Ingestion Intake - CTE = 3.02E-09
Noncancer Ingestion Intake - CTE = 2.35E-08

Cancer Dermal Intake - RME = 2.21E-07
Noncancer Dermal Intake - RME = 6.20E-07

Cancer Dermal Intake - CTE = 3.99E-09
Noncancer Dermal Intake - CTE = 3.10E-08

TABLE 4.3
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF OCCUPATIONAL WORKERS TO SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Occupational Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Soil	mg/day	100	U.S. EPA, May 1993	50	U.S. EPA, May 1993	Csoil x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	1.0	U.S. EPA, May 1993	BW x AT
	EF	Exposure Frequency	days/year	250	U.S. EPA, May 1993	219	U.S. EPA, May 1993	U.S. EPA, December 1989
	ED	Exposure Duration	years	25	U.S. EPA, May 1993	9	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	U.S. EPA, December 1989	3,285	U.S. EPA, December 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csoil x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	3,300	U.S. EPA, July 2004	3,300	U.S. EPA, July 2004	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.2	U.S. EPA, July 2004	0.02	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	250	U.S. EPA, May 1993	219	U.S. EPA, May 1993	
	ED	Exposure Duration	years	25	U.S. EPA, December 1989	9	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	U.S. EPA, December 1989	3,285	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 3.49E-07
Noncancer Ingestion Intake - RME = 9.78E-07

Cancer Ingestion Intake - CTE = 5.51E-08
Noncancer Ingestion Intake - CTE = 4.29E-07

Cancer Dermal Intake - RME = 2.31E-06
Noncancer Dermal Intake - RME = 6.46E-06

Cancer Dermal Intake - CTE = 7.27E-08
Noncancer Dermal Intake - CTE = 5.66E-07

TABLE 4.4
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF ADOLESCENT TRESPASSERS TO SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Trespasser
Receptor Age: Adolescent (age 6 - 17)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Soil	mg/day	100	U.S. EPA, May 1993	50	U.S. EPA, May 1993	Csoil x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	1.0	U.S. EPA, May 1993	BW x AT
	EF	Exposure Frequency	days/year	26	Professional Judgement	13	Professional Judgement	U.S. EPA, December 1989
	ED	Exposure Duration	years	11	6 - 17 years of age	11	6 - 17 years of age	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	43	U.S. EPA, August 1997	43	U.S. EPA, August 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	4,015	U.S. EPA, December 1989	4,015	U.S. EPA, December 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csoil x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	3,280	U.S. EPA, August 1997	3,100	U.S. EPA, August 1997	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.2	U.S. EPA, July 2004	0.04	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	26	Professional Judgement	13	Professional Judgement	
	ED	Exposure Duration	years	11	6 - 17 years of age	11	6 - 17 years of age	
	BW	Body Weight	kg	43	U.S. EPA, August 1997	43	U.S. EPA, August 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	4,015	U.S. EPA, December 1989	4,015	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 2.60E-08
Noncancer Ingestion Intake - RME = 1.66E-07

Cancer Ingestion Intake - CTE = 6.51E-09
Noncancer Ingestion Intake - CTE = 4.14E-08

Cancer Dermal Intake - RME = 1.71E-07
Noncancer Dermal Intake - RME = 1.09E-06

Cancer Dermal Intake - CTE = 1.61E-08
Noncancer Dermal Intake - CTE = 1.03E-07

TABLE 4.5
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF CHILD RECREATIONAL USERS TO SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Soil	mg/day	200	U.S. EPA, May 1993	100	U.S. EPA, May 1993	Csoil x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	0.5	Professional Judgment	0.5	Professional Judgment	BW x AT
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	U.S. EPA, December 1989
	ED	Exposure Duration	years	6	U.S. EPA, May 1993	2	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csoil x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	3,300	1/2 total body area (EPA 2004)	3,300	1/2 total body area (EPA 2004)	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.2	U.S. EPA, July 2004	0.04	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	
	ED	Exposure Duration	years	6	U.S. EPA, December 1989	2	U.S. EPA, December 1989	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 8.14E-08
Noncancer Ingestion Intake - RME = 9.50E-07

Cancer Ingestion Intake - CTE = 6.78E-09
Noncancer Ingestion Intake - CTE = 2.37E-07

Cancer Dermal Intake - RME = 5.37E-07
Noncancer Dermal Intake - RME = 6.27E-06

Cancer Dermal Intake - CTE = 1.79E-08
Noncancer Dermal Intake - CTE = 6.27E-07

TABLE 4.6
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF ADULT RECREATIONAL USERS TO SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Soil	mg/day	100	U.S. EPA, May 1993	50	U.S. EPA, May 1993	Csoil x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	0.5	Professional Judgment	0.5	Professional Judgment	BW x AT
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	U.S. EPA, December 1989
	ED	Exposure Duration	years	24	U.S. EPA, May 1993	7	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csoil x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	9,070	U.S. EPA, August 1997	9,070	U.S. EPA, August 1997	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.07	U.S. EPA, July 2004	0.01	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	52	Professional Judgment	26	Professional Judgment	
	ED	Exposure Duration	years	24	U.S. EPA, December 1989	7	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 3.49E-08
Noncancer Ingestion Intake - RME = 1.02E-07

Cancer Ingestion Intake - CTE = 2.54E-09
Noncancer Ingestion Intake - CTE = 2.54E-08

Cancer Dermal Intake - RME = 4.43E-07
Noncancer Dermal Intake - RME = 1.29E-06

Cancer Dermal Intake - CTE = 9.23E-09
Noncancer Dermal Intake - CTE = 9.23E-08

TABLE 4.7
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF FUTURE CHILD RESIDENTS TO SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Soil	mg/day	200	U.S. EPA, May 1993	100	U.S. EPA, May 1993	Csoil x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	1.0	U.S. EPA, May 1993	BW x AT
	EF	Exposure Frequency	days/year	350	U.S. EPA, May 1993	234	U.S. EPA, May 1993	U.S. EPA, December 1989
	ED	Exposure Duration	years	6	U.S. EPA, May 1993	2	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csoil x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	2,800	U.S. EPA, July 2004	2,800	U.S. EPA, July 2004	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.2	U.S. EPA, July 2004	0.04	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	350	U.S. EPA, May 1993	234	U.S. EPA, May 1993	
	ED	Exposure Duration	years	6	U.S. EPA, December 1989	2	U.S. EPA, December 1989	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 1.10E-06
Noncancer Ingestion Intake - RME = 1.28E-05

Cancer Ingestion Intake - CTE = 1.22E-07
Noncancer Ingestion Intake - CTE = 4.27E-06

Cancer Dermal Intake - RME = 3.07E-06
Noncancer Dermal Intake - RME = 3.58E-05

Cancer Dermal Intake - CTE = 1.37E-07
Noncancer Dermal Intake - CTE = 4.79E-06

TABLE 4.8
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF FUTURE ADULT RESIDENTS TO SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Ingestion CDI[1] (mg/kg/day) =
	IR	Ingestion Rate of Soil	mg/day	100	U.S. EPA, May 1993	50	U.S. EPA, May 1993	Csoil x IR x Fi x EF x ED x CF
	Fi	Fraction Ingested	unitless	1.0	U.S. EPA, May 1993	1.0	U.S. EPA, May 1993	BW x AT
	EF	Exposure Frequency	days/year	350	U.S. EPA, May 1993	234	U.S. EPA, May 1993	U.S. EPA, December 1989
	ED	Exposure Duration	years	24	U.S. EPA, May 1993	7	U.S. EPA, May 1993	
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	
Dermal	Csoil	Chemical Concentration in Soil	mg/kg	95% UCL or Max	U.S. EPA, December 2002	95% UCL or Max	U.S. EPA, December 2002	Dermal CDI[1] (mg/kg/day) =
	CF	Conversion Factor	kg/mg	1.0E-06	U.S. EPA, December 1989	1.0E-06	U.S. EPA, December 1989	Csoil x CF x SA x AF x ABS x EF x ED
	SA	Skin Surface Area	cm^2/day	5,700	U.S. EPA, July 2004	5,700	U.S. EPA, July 2004	BW x AT
	AF	Soil to Skin Adherence Factor	mg/cm^2	0.07	U.S. EPA, July 2004	0.01	U.S. EPA, July 2004	U.S. EPA, December 1989
	ABS	Dermal Absorption Factor (Solid)	unitless	chemical specific	U.S. EPA, July 2004	chemical specific	U.S. EPA, July 2004	
	EF	Exposure Frequency	days/year	350	U.S. EPA, May 1993	234	U.S. EPA, May 1993	
	ED	Exposure Duration	years	24	U.S. EPA, December 1989	7	U.S. EPA, December 1989	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	

1 CDI = Chronic Daily Intake

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME = 4.70E-07
Noncancer Ingestion Intake - RME = 1.37E-06

Cancer Ingestion Intake - CTE = 4.58E-08
Noncancer Ingestion Intake - CTE = 4.58E-07

Cancer Dermal Intake - RME = 1.87E-06
Noncancer Dermal Intake - RME = 5.47E-06

Cancer Dermal Intake - CTE = 5.22E-08
Noncancer Dermal Intake - CTE = 5.22E-07

TABLE 7.2 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF MAINTENANCE WORKERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.2E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	2.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	2.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	7.6E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	2.7E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	4.7E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	1.8E-03	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	1.8E-03
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.0E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	3.4E-03
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.2E-07	mg/kg-day	5.0E-04	mg/kg-day	NA	NA	2.4E-04
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	2.6E-03	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	8.7E-03
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	5.4E-05	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	7.6E-04
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	3.2E-06	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	3.2E-03
	(total)												**1.8E-02**
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.0E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	2.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	2.5E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	6.6E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	2.3E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	4.3E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	2.0E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	6.8E-04
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	7.8E-10	mg/kg-day	2.5E-05	mg/kg-day	NA	NA	3.1E-05
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**7.1E-04**
												Total Hazard Index Across All Exposure Routes/Pathways	**1.9E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.3 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF OCCUPATIONAL WORKERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Occupational Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.2E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	2.5E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	3.0E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	8.0E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	2.8E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	4.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	1.8E-02	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	1.8E-02
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.1E-05	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	3.6E-02
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.2E-06	mg/kg-day	5.0E-04	mg/kg-day	NA	NA	2.5E-03
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	2.7E-02	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	9.1E-02
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	5.6E-04	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	8.0E-03
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	3.4E-05	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	3.4E-02
	(total)												**1.9E-01**
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.1E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	2.1E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	2.6E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	6.8E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	2.4E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	4.5E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	2.1E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	7.1E-03
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	8.1E-09	mg/kg-day	2.5E-05	mg/kg-day	NA	NA	3.3E-04
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**7.4E-03**
												Total Hazard Index Across All Exposure Routes/Pathways	**2.0E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.4 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADOLESCENT TRESPASSERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Trespasser
Receptor Age: Adolescent (age 6 - 17)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	2.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	4.2E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	5.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	1.3E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	4.7E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	8.3E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	3.1E-03	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	3.1E-03
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.8E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	6.1E-03
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	2.1E-07	mg/kg-day	5.0E-04	mg/kg-day	NA	NA	4.2E-04
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	4.6E-03	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	1.5E-02
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	9.4E-05	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	1.3E-03
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	5.7E-06	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	5.7E-03
	(total)												**3.2E-02**
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.8E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	3.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	4.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	1.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	4.0E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	7.6E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	3.6E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	1.2E-03
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.4E-09	mg/kg-day	2.5E-05	mg/kg-day	NA	NA	5.5E-05
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**1.3E-03**
												Total Hazard Index Across All Exposure Routes/Pathways	**3.3E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.5 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF CHILD RECREATIONAL USERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.2E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	2.4E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	2.9E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	7.7E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	2.7E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	4.7E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	1.8E-02	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	1.8E-02
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.0E-05	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	3.5E-02
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.2E-06	mg/kg-day	5.0E-04	mg/kg-day	NA	NA	2.4E-03
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	2.7E-02	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	8.8E-02
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	5.4E-04	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	7.7E-03
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	3.3E-05	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	3.3E-02
	(total)												**1.8E-01**
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.0E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	2.1E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	2.5E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	6.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	2.3E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	4.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	2.1E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	6.9E-03
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	7.9E-09	mg/kg-day	2.5E-05	mg/kg-day	NA	NA	3.2E-04
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**7.2E-03**
												Total Hazard Index Across All Exposure Routes/Pathways	**1.9E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.6 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADULT RECREATIONAL USERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.3E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	2.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	3.2E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	8.3E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	2.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	5.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	1.9E-03	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	1.9E-03
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	3.7E-03
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.3E-07	mg/kg-day	5.0E-04	mg/kg-day	NA	NA	2.6E-04
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	2.8E-03	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	9.5E-03
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	5.8E-05	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	8.3E-04
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	3.5E-06	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	3.5E-03
	(total)												**2.0E-02**
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	2.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	4.3E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	5.2E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	1.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	4.8E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	9.0E-08	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	4.3E-07	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	1.4E-03
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.6E-09	mg/kg-day	2.5E-05	mg/kg-day	NA	NA	6.5E-05
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**1.5E-03**
												Total Hazard Index Across All Exposure Routes/Pathways	**2.1E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.7 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF FUTURE CHILD RESIDENTS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.6E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	3.3E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	4.0E-05	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	1.0E-05	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	3.6E-05	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	6.4E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	2.4E-01	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	2.4E-01
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.4E-04	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	4.7E-01
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.6E-05	mg/kg-day	5.0E-04	mg/kg-day	NA	NA	3.2E-02
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	3.6E-01	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	1.2E+00
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	7.3E-03	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	1.0E-01
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	4.4E-04	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	4.4E-01
	(total)												**2.5E+00**
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	5.9E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.2E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	1.4E-05	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	3.8E-06	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	1.3E-05	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	2.5E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.2E-05	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	3.9E-02
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	4.5E-08	mg/kg-day	2.5E-05	mg/kg-day	NA	NA	1.8E-03
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**4.1E-02**
												Total Hazard Index Across All Exposure Routes/Pathways	**2.5E+00**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 7.8 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF FUTURE ADULT RESIDENTS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.7E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	3.5E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	4.2E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	1.1E-06	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	3.9E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	6.8E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	2.6E-02	mg/kg-day	1.0E+00	mg/kg-day	NA	NA	2.6E-02
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.5E-05	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	5.0E-02
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.7E-06	mg/kg-day	5.0E-04	mg/kg-day	NA	NA	3.5E-03
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	3.8E-02	mg/kg-day	3.0E-01	mg/kg-day	NA	NA	1.3E-01
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	7.8E-04	mg/kg-day	7.0E-02	mg/kg-day	NA	NA	1.1E-02
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	4.7E-05	mg/kg-day	1.0E-03	mg/kg-day	NA	NA	4.7E-02
	(total)												**2.7E-01**
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	9.0E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.8E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	2.2E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	5.8E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	2.0E-06	mg/kg-day		mg/kg-day	NA	NA	
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	3.8E-07	mg/kg-day		mg/kg-day	NA	NA	
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day	1.0E+00	mg/kg-day	NA	NA	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.8E-06	mg/kg-day	3.0E-04	mg/kg-day	NA	NA	6.0E-03
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	6.9E-09	mg/kg-day	2.5E-05	mg/kg-day	NA	NA	2.8E-04
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day	3.0E-01	mg/kg-day	NA	NA	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day	2.8E-03	mg/kg-day	NA	NA	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day	2.6E-05	mg/kg-day	NA	NA	
	(total)												**6.3E-03**
												Total Hazard Index Across All Exposure Routes/Pathways	**2.7E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.2 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF MAINTENANCE WORKERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	4.2E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.1E-08
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	8.6E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	6.3E-07
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	1.0E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	7.6E-08
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	2.7E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.0E-07
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	9.5E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	6.9E-08
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.7E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-08
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	6.3E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	3.7E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	5.5E-07
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	4.2E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	9.4E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	1.9E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	1.2E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**1.6E-06**
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	3.6E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.6E-08
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	7.4E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	5.4E-07
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	8.9E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	6.5E-08
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	2.3E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-07
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	8.1E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	5.9E-08
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.5E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.1E-08
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	7.3E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-07
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	2.8E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**1.0E-06**
										Total Risk Across All Exposure Routes/Pathways	**2.6E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.3 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF OCCUPATIONAL WORKERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Occupational Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	4.4E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.2E-07
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	8.9E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	6.5E-06
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	1.1E-06	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	7.9E-07
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	2.8E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-06
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	9.9E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	7.2E-07
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.7E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.5E-07
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	6.6E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	3.8E-06	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	5.8E-06
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	4.4E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	9.8E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	2.0E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	1.2E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											1.7E-05
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	3.8E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.8E-07
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	7.7E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	5.6E-06
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	9.3E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	6.8E-07
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	2.4E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-06
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	8.5E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	6.2E-07
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.6E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.2E-07
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	7.6E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-06
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	2.9E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											1.0E-05
										Total Risk Across All Exposure Routes/Pathways	**2.7E-05**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction from Soil(ABS) (USEPA, July 2004):

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.4 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADOLESCENT TRESPASSERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Trespasser
Receptor Age: Adolescent (age 6 - 17)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	3.3E-08	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	2.4E-08
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	6.7E-08	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	4.9E-07
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	8.1E-08	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	5.9E-08
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	2.1E-08	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	1.5E-07
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	7.4E-08	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	5.4E-08
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.3E-08	mg/kg-day	2.0E+00	(mg/kg-day)$^{-1}$	2.6E-08
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	4.9E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	2.9E-07	mg/kg-day	1.5E+00	(mg/kg-day)$^{-1}$	4.3E-07
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	3.3E-08	mg/kg-day		(mg/kg-day)$^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	7.3E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	1.5E-05	mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	9.0E-07	mg/kg-day		(mg/kg-day)$^{-1}$	
											1.2E-06
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	2.8E-08	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	2.0E-08
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	5.7E-08	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	4.1E-07
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	6.9E-08	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	5.0E-08
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	1.8E-08	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	1.3E-07
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	6.3E-08	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	4.6E-08
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.2E-08	mg/kg-day	2.0E+00	(mg/kg-day)$^{-1}$	2.4E-08
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	5.6E-08	mg/kg-day	1.5E+00	(mg/kg-day)$^{-1}$	8.5E-08
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	2.2E-10	mg/kg-day		(mg/kg-day)$^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
											7.7E-07
										Total Risk Across All Exposure Routes/Pathways	**2.0E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.5 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF CHILD RECREATIONAL USERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.0E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	7.5E-07
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	2.1E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-06
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	2.5E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.8E-07
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	6.6E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	4.8E-07
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	2.3E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.7E-07
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	4.1E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	8.1E-08
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	1.5E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	9.0E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-06
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.0E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	2.3E-03	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	4.6E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	2.8E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											4.5E-06
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	8.8E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	6.4E-08
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.8E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-06
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	2.2E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.6E-07
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	5.7E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-07
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	2.0E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.4E-07
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	3.8E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.5E-08
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.8E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-07
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	6.8E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											2.4E-06
										Total Risk Across All Exposure Routes/Pathways	**7.0E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.6 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT RECREATIONAL USERS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	4.4E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.2E-08
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	8.9E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	6.5E-07
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	1.1E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	7.9E-08
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	2.8E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-07
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	9.9E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	7.2E-08
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.7E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.5E-08
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	6.6E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	3.8E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	5.8E-07
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	4.4E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	9.7E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	2.0E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	1.2E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											1.7E-06
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	7.3E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	5.3E-08
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.5E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-06
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	1.8E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.3E-07
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	4.7E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-07
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	1.6E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-07
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	3.1E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	6.2E-08
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.5E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.2E-07
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	5.6E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											2.0E-06
										Total Risk Across All Exposure Routes/Pathways	**3.7E-06**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.7 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF FUTURE CHILD RESIDENTS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.4E-06	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.0E-06
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	2.8E-06	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.0E-05
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	3.4E-06	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.5E-06
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	8.9E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	6.5E-06
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	3.1E-06	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.3E-06
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	5.5E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-06
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	2.1E-02	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.2E-05	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-05
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	1.4E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	3.1E-02	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	6.2E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	3.8E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											5.2E-05
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	5.0E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.7E-07
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.0E-06	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	7.5E-06
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	1.2E-06	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	9.0E-07
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	3.2E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.4E-06
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	1.1E-06	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	8.2E-07
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	2.1E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.3E-07
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	1.0E-06	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-06
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	3.9E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											1.4E-05
										Total Risk Across All Exposure Routes/Pathways	**6.6E-05**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 8.8 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF FUTURE ADULT RESIDENTS TO SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Entire Site
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	5.9E-07	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	4.3E-07
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	1.2E-06	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	8.8E-06
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	1.5E-06	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	1.1E-06
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	3.8E-07	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	2.8E-06
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	1.3E-06	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	9.7E-07
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	2.3E-07	mg/kg-day	2.0E+00	(mg/kg-day)$^{-1}$	4.7E-07
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M	8.8E-03	mg/kg-day		(mg/kg-day)$^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	5.2E-06	mg/kg-day	1.5E+00	(mg/kg-day)$^{-1}$	7.7E-06
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	5.9E-07	mg/kg-day		(mg/kg-day)$^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M	1.3E-02	mg/kg-day		(mg/kg-day)$^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M	2.7E-04	mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M	1.6E-05	mg/kg-day		(mg/kg-day)$^{-1}$	
											2.2E-05
Dermal	Benzo(a)anthracene	1.26E+00	mg/kg	1.26E+00	mg/kg	M	3.1E-07	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	2.2E-07
	Benzo(a)pyrene	2.56E+00	mg/kg	2.56E+00	mg/kg	M	6.2E-07	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	4.6E-06
	Benzo(b)fluoranthene	3.10E+00	mg/kg	3.10E+00	mg/kg	M	7.6E-07	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	5.5E-07
	Dibenzo(a,h)anthracene	8.14E-01	mg/kg	8.14E-01	mg/kg	M	2.0E-07	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	1.4E-06
	Indeno(1,2,3-cd)pyrene	2.83E+00	mg/kg	2.83E+00	mg/kg	M	6.9E-07	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	5.0E-07
	Aroclor-1260	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.3E-07	mg/kg-day	2.0E+00	(mg/kg-day)$^{-1}$	2.6E-07
	Aluminum	1.88E+04	mg/kg	1.88E+04	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Arsenic	1.10E+01	mg/kg	1.10E+01	mg/kg	M	6.2E-07	mg/kg-day	1.5E+00	(mg/kg-day)$^{-1}$	9.3E-07
	Cadmium	1.26E+00	mg/kg	1.26E+00	mg/kg	M	2.4E-09	mg/kg-day		(mg/kg-day)$^{-1}$	
	Iron	2.79E+04	mg/kg	2.79E+04	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Manganese	5.70E+02	mg/kg	5.70E+02	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
	Vanadium	3.45E+01	mg/kg	3.45E+01	mg/kg	M		mg/kg-day		(mg/kg-day)$^{-1}$	
											8.5E-06
										Total Risk Across All Exposure Routes/Pathways	**3.1E-05**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

PAHs - 0.13 Arsenic - 0.03
PCBS - 0.14 Cadmium - 0.001
Other Metals - not evaluated for dermal contact with soil or sediment

TABLE 4.9a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF MAINTENANCE WORKERS TO GULLY SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Dermal	Cw	Chemical Concentration in Water	mg/L	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	The equations and parameters for for estimating DAevent and the chemical-specific dermally absorbed dose from water (DAD) are provided in Section 7.3.4.3 of the text.
	A	Skin Surface Area	cm^2	3,300	U.S. EPA, July 2004	3,300	U.S. EPA, July 2004	
	DAevent	Absorbed Dose per Event	mg/cm^2-event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	EV	Event Frequency	event/day	1	Professional judgement	1	Professional judgement	
	ED	Exposure Duration	years	25	U.S. EPA, May 1993	9	U.S. EPA, May 1993	
	EF	Exposure Frequency	days/year	24	Professional judgement	12	Professional judgement	
	t_{event}	Duration of Event	hour/event	2	Professional judgement	1	Professional judgement	USEPA, July 2004
	t*	Time to reach steady state	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	T	Lag Time	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	B	Bunge Model Constant	dimensionless	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	USEPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	U.S. EPA, December 1989	3,285	USEPA, December 1989	

1 - Professional judgment. Assumes two days a week in warm weather months for RME and one day a week for CTE.

Daily Intake Calculations

Dermal Intake = (A x EV x ED x EF) / (BW x AT)

Cancer Dermal Intake(RME) = 1.11E+00
Noncancer Dermal Intake(RME) = 3.10E+00

Cancer Dermal Intake(CTE) = 1.99E-01
Noncancer Dermal Intake(CTE) = 1.55E+00

TABLE 4.10a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF ADOLESCENT TRESPASSERS TO GULLY SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Trespasser
Receptor Age: Adolescent (age 6 - 17)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cw	Chemical Concentration in Water	(mg/L)	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate of Surface Water	(L/hr)	0.05	U.S. EPA Region 4, May 2000	0.05	U.S. EPA Region 4, May 2000	Cw x IR x ET x EF x ED / BW x AT
	EF	Exposure Frequency	(days/year)	26	Professional judgement	13	Professional judgement	
	ED	Exposure Duration	(years)	11	6 - 17 years of age	11	6 - 17 years of age	
	ET	Exposure Time	(hr/day)	4	Professional judgement	2	Professional judgement	
	BW	Body Weight	(kg)	43	U.S. EPA, August 1997	43	U.S. EPA, August 1997	
	AT-C	Averaging Time (Cancer)	(days)	25550	U.S. EPA, December 1989	25550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Noncancer)	(days)	4015	U.S. EPA, December 1989	4,015	U.S. EPA, December 1989	
Dermal	Cw	Chemical Concentration in Water	mg/L	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	The equations and parameters for
	A	Skin Surface Area	cm^2	3,280	U.S. EPA, August 1997	3,100	U.S. EPA, August 1997	for estimating DAevent and the chemical-
	DAevent	Absorbed Dose per Event	mg/cm^2-event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	specific dermally absorbed dose from
	EV	Event Frequency	event/day	1	Professional judgement	1	Professional judgement	water (DAD) are provided in Section 7.3.4.3
	ED	Exposure Duration	years	11	6 - 17 years of age	11	6 - 17 years of age	of the text.
	EF	Exposure Frequency	days/year	26	Professional judgement	13	Professional judgement	
	t_{event}	Duration of Event	hour/event	4	Professional judgement	2	Professional judgement	USEPA, July 2004
	t*	Time to reach steady state	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	T	Lag Time	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	B	Bunge Model Constant	dimensionless	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	BW	Body Weight	kg	43	U.S. EPA, August 1997	43	U.S. EPA, August 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	USEPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	4,015	U.S. EPA, December 1989	4,015	USEPA, December 1989	

1 - Professional judgment. Assumes two days a week in warm weather months for RME and one day a week for CTE.

Daily Intake Calculations
Ingestion Intake = (IRgw x EF x ED) / (BW x AT)
Dermal Intake = (A x EV x ED x EF) / (BW x AT)

Cancer Ingestion Intake(RME) = 5.21E-05
Noncancer Ingestion Intake(RME) = 3.31E-04

Cancer Ingestion Intake(CTE) = 1.30E-05
Noncancer Ingestion Intake(CTE) = 8.28E-05

Cancer Dermal Intake(RME) = 8.54E-01
Noncancer Dermal Intake(RME) = 5.43E+00

Cancer Dermal Intake(CTE) = 4.03E-01
Noncancer Dermal Intake(CTE) = 2.57E+00

TABLE 4.11a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF CHILD RECREATIONAL USERS TO GULLY SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cw	Chemical Concentration in Water	(mg/L)	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate of Surface Water	(L/hr)	0.05	U.S. EPA Region 4, May 2000	0.05	U.S. EPA Region 4, May 2000	Cw x IR x ET x EF x ED / BW x AT
	EF	Exposure Frequency	(days/year)	52	Professional judgement	26	Professional judgement	
	ED	Exposure Duration	(years)	6	U.S. EPA, May 1993	2	U.S. EPA, May 1993	
	ET	Exposure Time	(hr/day)	4	Professional judgement	2	Professional judgement	
	BW	Body Weight	(kg)	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	(days)	25550	U.S. EPA, December 1989	25550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Noncancer)	(days)	2190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	
Dermal	Cw	Chemical Concentration in Water	mg/L	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	The equations and parameters for
	A	Skin Surface Area	cm^2	3,300	1/2 total body area (EPA 2004)	3,300	1/2 total body area (EPA 2004)	for estimating DAevent and the chemical-
	DAevent	Absorbed Dose per Event	mg/cm^2-event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	specific dermally absorbed dose from
	EV	Event Frequency	event/day	1	Professional judgement	1	Professional judgement	water (DAD) are provided in Section 7.3.4.3
	ED	Exposure Duration	years	6	U.S. EPA, May 1993	2	U.S. EPA, May 1993	of the text.
	EF	Exposure Frequency	days/year	52	Professional judgement	26	Professional judgement	
	t_{event}	Duration of Event	hour/event	4	Professional judgement	2	Professional judgement	USEPA, July 2004
	t*	Time to reach steady state	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	T	Lag Time	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	B	Bunge Model Constant	dimensionless	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	USEPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	USEPA, December 1989	

1 - Professional judgment. Assumes two days a week in warm weather months for RME and one day a week for CTE.

Daily Intake Calculations
Ingestion Intake = (IRgw x EF x ED) / (BW x AT)
Dermal Intake = (A x EV x ED x EF) / (BW x AT)

Cancer Ingestion Intake(RME) = 1.63E-04
Noncancer Ingestion Intake(RME) = 1.90E-03

Cancer Ingestion Intake(CTE) = 1.36E-05
Noncancer Ingestion Intake(CTE) = 4.75E-04

Cancer Dermal Intake(RME) = 2.69E+00
Noncancer Dermal Intake(RME) = 3.13E+01

Cancer Dermal Intake(CTE) = 4.48E-01
Noncancer Dermal Intake(CTE) = 1.57E+01

TABLE 4.12a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF ADULT RECREATIONAL USERS TO GULLY SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cw	Chemical Concentration in Water	(mg/L)	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate of Surface Water	(L/hr)	0.01	U.S. EPA Region 4, May 2000	0.01	U.S. EPA Region 4, May 2000	Cw x IR x ET x EF x ED / BW x AT
	EF	Exposure Frequency	(days/year)	52	Professional judgement	26	Professional judgement	
	ED	Exposure Duration	(years)	24	U.S. EPA, May 1993	7	U.S. EPA, May 1993	
	ET	Exposure Time	(hr/day)	4	Professional judgement	2	Professional judgement	
	BW	Body Weight	(kg)	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	(days)	25550	U.S. EPA, December 1989	25550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Noncancer)	(days)	8760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	
Dermal	Cw	Chemical Concentration in Water	mg/L	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	The equations and parameters for
	A	Skin Surface Area	cm^2	9,070	USEPA, August 1997	9,070	USEPA, August 1997	for estimating DAevent and the chemical-
	DAevent	Absorbed Dose per Event	mg/cm^2-event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	specific dermally absorbed dose from
	EV	Event Frequency	event/day	1	Professional judgement	1	Professional judgement	water (DAD) are provided in Section 7.3.4.3
	ED	Exposure Duration	years	24	U.S. EPA, May 1993	7	U.S. EPA, May 1993	of the text.
	EF	Exposure Frequency	days/year	52	Professional judgement	26	Professional judgement	
	t_{event}	Duration of Event	hour/event	4	Professional judgement	2	Professional judgement	USEPA, July 2004
	t*	Time to reach steady state	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	T	Lag Time	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	B	Bunge Model Constant	dimensionless	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	USEPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	USEPA, December 1989	

1 - Professional judgment. Assumes two days a week in warm weather months for RME and one day a week for CTE.

Daily Intake Calculations
Ingestion Intake = (IRgw x EF x ED) / (BW x AT)
Dermal Intake = (A x EV x ED x EF) / (BW x AT)

Cancer Ingestion Intake(RME) = 2.79E-05
Noncancer Ingestion Intake(RME) = 8.14E-05

Cancer Ingestion Intake(CTE) = 2.04E-06
Noncancer Ingestion Intake(CTE) = 2.04E-05

Cancer Dermal Intake(RME) = 6.33E+00
Noncancer Dermal Intake(RME) = 1.85E+01

Cancer Dermal Intake(CTE) = 9.23E-01
Noncancer Dermal Intake(CTE) = 9.23E+00

TABLE 4.13a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF FUTURE CHILD RESIDENTS TO GULLY SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cw	Chemical Concentration in Water	(mg/L)	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate of Surface Water	(L/hr)	0.05	U.S. EPA Region 4, May 2000	0.05	U.S. EPA Region 4, May 2000	Cw x IR x ET x EF x ED / BW x AT
	EF	Exposure Frequency	(days/year)	52	Professional judgement	26	Professional judgement	
	ED	Exposure Duration	(years)	6	U.S. EPA, May 1993	2	U.S. EPA, May 1993	
	ET	Exposure Time	(hr/day)	4	Professional judgement	2	Professional judgement	
	BW	Body Weight	(kg)	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	(days)	25550	U.S. EPA, December 1989	25550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Noncancer)	(days)	2190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	
Dermal	Cw	Chemical Concentration in Water	mg/L	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	The equations and parameters for
	A	Skin Surface Area	cm^2	3,300	1/2 total body area (EPA 200	3,300	1/2 total body area (EPA 200	for estimating DAevent and the chemical-
	DAevent	Absorbed Dose per Event	mg/cm^2-event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	specific dermally absorbed dose from
	EV	Event Frequency	event/day	1	Professional judgement	1	Professional judgement	water (DAD) are provided in Section 7.3.4.3
	ED	Exposure Duration	years	6	U.S. EPA, May 1993	2	U.S. EPA, May 1993	of the text.
	EF	Exposure Frequency	days/year	52	Professional judgement	26	Professional judgement	
	t_{event}	Duration of Event	hour/event	4	Professional judgement	2	Professional judgement	USEPA, July 2004
	t*	Time to reach steady state	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	T	Lag Time	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	B	Bunge Model Constant	dimensionless	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	USEPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	USEPA, December 1989	

1 - Professional judgment. Assumes two days a week in warm weather months for RME and one day a week for CTE.

Daily Intake Calculations
Ingestion Intake = (IRgw x EF x ED) / (BW x AT)
Dermal Intake = (A x EV x ED x EF) / (BW x AT)

Cancer Ingestion Intake(RME) = 1.63E-04
Noncancer Ingestion Intake(RME) = 1.90E-03

Cancer Ingestion Intake(CTE) = 1.36E-05
Noncancer Ingestion Intake(CTE) = 4.75E-04

Cancer Dermal Intake(RME) = 2.69E+00
Noncancer Dermal Intake(RME) = 3.13E+01

Cancer Dermal Intake(CTE) = 4.48E-01
Noncancer Dermal Intake(CTE) = 1.57E+01

TABLE 4.14a
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF FUTURE ADULT RESIDENTS TO GULLY SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cw	Chemical Concentration in Water	(mg/L)	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate of Surface Water	(L/hr)	0.01	U.S. EPA Region 4, May 2000	0.01	U.S. EPA Region 4, May 2000	Cw x IR x ET x EF x ED / BW x AT
	EF	Exposure Frequency	(days/year)	52	Professional judgement	26	Professional judgement	
	ED	Exposure Duration	(years)	24	U.S. EPA, May 1993	7	U.S. EPA, May 1993	
	ET	Exposure Time	(hr/day)	4	Professional judgement	2	Professional judgement	
	BW	Body Weight	(kg)	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	(days)	25550	U.S. EPA, December 1989	25550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Noncancer)	(days)	8760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	
Dermal	Cw	Chemical Concentration in Water	mg/L	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	The equations and parameters for
	A	Skin Surface Area	cm^2	9,070	USEPA, August 1997	9,070	USEPA, August 1997	for estimating DAevent and the chemical-
	DAevent	Absorbed Dose per Event	mg/cm^2-event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	specific dermally absorbed dose from
	EV	Event Frequency	event/day	1	Professional judgement	1	Professional judgement	water (DAD) are provided in Section 7.3.4.3
	ED	Exposure Duration	years	24	U.S. EPA, May 1993	7	U.S. EPA, May 1993	of the text.
	EF	Exposure Frequency	days/year	52	Professional judgement	26	Professional judgement	
	t_{event}	Duration of Event	hour/event	4	Professional judgement	2	Professional judgement	USEPA, July 2004
	t*	Time to reach steady state	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	T	Lag Time	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	B	Bunge Model Constant	dimensionless	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	USEPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	USEPA, December 1989	

1 - Professional judgment. Assumes two days a week in warm weather months for RME and one day a week for CTE.

Daily Intake Calculations
Ingestion Intake = (IRgw x EF x ED) / (BW x AT)
Dermal Intake = (A x EV x ED x EF) / (BW x AT)

Cancer Ingestion Intake(RME) = 2.79E-05
Noncancer Ingestion Intake(RME) = 8.14E-05

Cancer Ingestion Intake(CTE) = 2.04E-06
Noncancer Ingestion Intake(CTE) = 2.04E-05

Cancer Dermal Intake(RME) = 6.33E+00
Noncancer Dermal Intake(RME) = 1.85E+01

Cancer Dermal Intake(CTE) = 9.23E-01
Noncancer Dermal Intake(CTE) = 9.23E+00

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH SURFACE WATER
MAINTENANCE WORKERS - CENTRAL TENDENCY EXPOSURE (CTE)

SITE NAME: SWMU 15 (ROADS AND GROUNDS AREA)
LOCATION: NSWC CRANE, CRANE, INDIANA
DATE: 10/31/05

REFERENCES: U.S. EPA, July 2004

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF

FOR ORGANICS: IF tevent < t*, DAevent = 2FA x Kp x C x CF x $(6T \times tevent/3.1416)^{0.5}$

IF tevent > t*, DAevent = FA x Kp x C x CF x $((tevent/(1 + B)) + (2T \times ((1+3B+3B^2)/(1 + B)^2)))$

WHERE: FA = FRACTION ABSORBED (DIMENSIONLESS)
Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	SW CONC. (mg/L)		ORGANIC OR INORGANIC?		t* (HR)	tevent	T (HR)		Kp (CM/HR)		B	FA	DAevent
Benzo(a)anthracene	1.66E-03		o		8.53E+00	1.00E+00	2.03E+00		4.74E-01		2.75E+00	1	3.10E-06
Benzo(a)pyrene	2.26E-03		o		1.17E+01	1.00E+00	2.69E+00		7.01E-01		4.27E+00	1	7.19E-06
Benzo(b)fluoranthene	5.38E-03		o		1.20E+01	1.00E+00	2.77E+00		7.02E-01		4.29E+00	1	1.74E-05
Benzo(k)fluoranthene	1.55E-03		o		1.17E+01	1.00E+00	2.72E+00		6.60E-01		4.03E+00	1	4.66E-06
Chrysene	4.12E-03		o		8.53E+00	1.00E+00	2.03E+00		4.74E-01		2.75E+00	1	7.69E-06
Dibenzo(a,h)anthracene	2.30E-04		o		1.76E+01	1.00E+00	3.88E+00		1.51E+00		9.68E+00	0.6	1.13E-06
Indeno(1,2,3-cd)pyrene	2.02E-03		o		1.68E+01	1.00E+00	3.78E+00		1.04E+00		6.65E+00	0.6	6.78E-06
Antimony	1.06E-03		i			1.00E+00			1.00E-03			1	1.06E-09
Arsenic	1.40E-03		i			1.00E+00			1.00E-03			1	1.40E-09
Iron	1.77E+00		i			1.00E+00			1.00E-03			1	1.77E-06
Manganese	5.15E-01		i			1.00E+00			1.00E-03			1	5.15E-07
Vanadium	3.69E-03		i			1.00E+00			1.00E-03			1	3.69E-09

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH SURFACE WATER
ADOLESCENT TRESPASSERS - CENTRAL TENDENCY EXPOSURE (CTE)

SITE NAME: SWMU 15 (ROADS AND GROUNDS AREA)
LOCATION: NSWC CRANE, CRANE, INDIANA
DATE: 10/31/05

REFERENCES: U.S. EPA, July 2004

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF

FOR ORGANICS: IF tevent < t*, DAevent = 2FA x Kp x C x CF x $(6T \times tevent/3.1416)^{0.5}$

IF tevent > t*, DAevent = FA x Kp x C x CF x $((tevent/(1 + B)) + (2T \times ((1+3B+3B^2)/(1 + B)^2)))$

WHERE: FA = FRACTION ABSORBED (DIMENSIONLESS)
Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	SW CONC. (mg/L)	ORGANIC OR INORGANIC?	t* (HR)	tevent	T (HR)	Kp (CM/HR)	B	FA	DAevent
Benzo(a)anthracene	1.66E-03	o	8.53E+00	2.00E+00	2.03E+00	4.74E-01	2.75E+00	1	4.38E-06
Benzo(a)pyrene	2.26E-03	o	1.17E+01	2.00E+00	2.69E+00	7.01E-01	4.27E+00	1	1.02E-05
Benzo(b)fluoranthene	5.38E-03	o	1.20E+01	2.00E+00	2.77E+00	7.02E-01	4.29E+00	1	2.46E-05
Benzo(k)fluoranthene	1.55E-03	o	1.17E+01	2.00E+00	2.72E+00	6.60E-01	4.03E+00	1	6.59E-06
Chrysene	4.12E-03	o	8.53E+00	2.00E+00	2.03E+00	4.74E-01	2.75E+00	1	1.09E-05
Dibenzo(a,h)anthracene	2.30E-04	o	1.76E+01	2.00E+00	3.88E+00	1.51E+00	9.68E+00	0.6	1.60E-06
Indeno(1,2,3-cd)pyrene	2.02E-03	o	1.68E+01	2.00E+00	3.78E+00	1.04E+00	6.65E+00	0.6	9.59E-06
Antimony	1.06E-03	i		2.00E+00		1.00E-03		1	2.12E-09
Arsenic	1.40E-03	i		2.00E+00		1.00E-03		1	2.80E-09
Iron	1.77E+00	i		2.00E+00		1.00E-03		1	3.55E-06
Manganese	5.15E-01	i		2.00E+00		1.00E-03		1	1.03E-06
Vanadium	3.69E-03	i		2.00E+00		1.00E-03		1	7.38E-09

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH SURFACE WATER
CHILD RECREATIONAL USERS - CENTRAL TENDENCY EXPOSURE (CTE)

SITE NAME: SWMU 15 (ROADS AND GROUNDS AREA)
LOCATION: NSWC CRANE, CRANE, INDIANA
DATE: 10/31/05

REFERENCES: U.S. EPA, July 2004

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF

FOR ORGANICS: IF tevent < t*, DAevent = $2FA \times Kp \times C \times CF \times (6T \times tevent/3.1416)^{0.5}$

IF tevent > t*, DAevent = $FA \times Kp \times C \times CF \times ((tevent/(1 + B)) + (2T \times ((1+3B+3B^2)/(1 + B)^2)))$

WHERE: FA = FRACTION ABSORBED (DIMENSIONLESS)
Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	SW CONC. (mg/L)	ORGANIC OR INORGANIC?	t* (HR)	tevent	T (HR)	Kp (CM/HR)	B	FA	DAevent
Benzo(a)anthracene	1.66E-03	o	8.53E+00	2.00E+00	2.03E+00	4.74E-01	2.75E+00	1	4.38E-06
Benzo(a)pyrene	2.26E-03	o	1.17E+01	2.00E+00	2.69E+00	7.01E-01	4.27E+00	1	1.02E-05
Benzo(b)fluoranthene	5.38E-03	o	1.20E+01	2.00E+00	2.77E+00	7.02E-01	4.29E+00	1	2.46E-05
Benzo(k)fluoranthene	1.55E-03	o	1.17E+01	2.00E+00	2.72E+00	6.60E-01	4.03E+00	1	6.59E-06
Chrysene	4.12E-03	o	8.53E+00	2.00E+00	2.03E+00	4.74E-01	2.75E+00	1	1.09E-05
Dibenzo(a,h)anthracene	2.30E-04	o	1.76E+01	2.00E+00	3.88E+00	1.51E+00	9.68E+00	0.6	1.60E-06
Indeno(1,2,3-cd)pyrene	2.02E-03	o	1.68E+01	2.00E+00	3.78E+00	1.04E+00	6.65E+00	0.6	9.59E-06
Antimony	1.06E-03	i		2.00E+00		1.00E-03		1	2.12E-09
Arsenic	1.40E-03	i		2.00E+00		1.00E-03		1	2.80E-09
Iron	1.77E+00	i		2.00E+00		1.00E-03		1	3.55E-06
Manganese	5.15E-01	i		2.00E+00		1.00E-03		1	1.03E-06
Vanadium	3.69E-03	i		2.00E+00		1.00E-03		1	7.38E-09

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH SURFACE WATER
ADULT RECREATIONAL USERS - CENTRAL TENDENCY EXPOSURE (CTE)

SITE NAME: SWMU 15 (ROADS AND GROUNDS AREA)
LOCATION: NSWC CRANE, CRANE, INDIANA
DATE: 10/31/05

REFERENCES: U.S. EPA, July 2004

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF

FOR ORGANICS: IF tevent < t*, DAevent = 2FA x Kp x C x CF x (6T x tevent/3.1416)$^{0.5}$
IF tevent > t*, DAevent = FA x Kp x C x CF x ((tevent/(1 + B)) + (2T x ((1+3B+3B^2)/(1 + B)^2)))

WHERE: FA = FRACTION ABSORBED (DIMENSIONLESS)
Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	SW CONC. (mg/L)	ORGANIC OR INORGANIC?	t* (HR)	tevent	T (HR)	Kp (CM/HR)	B	FA	DAevent
Benzo(a)anthracene	1.66E-03	o	8.53E+00	2.00E+00	2.03E+00	4.74E-01	2.75E+00	1	4.38E-06
Benzo(a)pyrene	2.26E-03	o	1.17E+01	2.00E+00	2.69E+00	7.01E-01	4.27E+00	1	1.02E-05
Benzo(b)fluoranthene	5.38E-03	o	1.20E+01	2.00E+00	2.77E+00	7.02E-01	4.29E+00	1	2.46E-05
Benzo(k)fluoranthene	1.55E-03	o	1.17E+01	2.00E+00	2.72E+00	6.60E-01	4.03E+00	1	6.59E-06
Chrysene	4.12E-03	o	8.53E+00	2.00E+00	2.03E+00	4.74E-01	2.75E+00	1	1.09E-05
Dibenzo(a,h)anthracene	2.30E-04	o	1.76E+01	2.00E+00	3.88E+00	1.51E+00	9.68E+00	0.6	1.60E-06
Indeno(1,2,3-cd)pyrene	2.02E-03	o	1.68E+01	2.00E+00	3.78E+00	1.04E+00	6.65E+00	0.6	9.59E-06
Antimony	1.06E-03	i		2.00E+00		1.00E-03		1	2.12E-09
Arsenic	1.40E-03	i		2.00E+00		1.00E-03		1	2.80E-09
Iron	1.77E+00	i		2.00E+00		1.00E-03		1	3.55E-06
Manganese.	5.15E-01	i		2.00E+00		1.00E-03		1	1.03E-06
Vanadium	3.69E-03	i		2.00E+00		1.00E-03		1	7.38E-09

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH SURFACE WATER
FUTURE CHILD RESIDENTS - CENTRAL TENDENCY EXPOSURE (CTE)

SITE NAME: SWMU 15 (ROADS AND GROUNDS AREA)
LOCATION: NSWC CRANE, CRANE, INDIANA
DATE: 10/31/05

REFERENCES: U.S. EPA, July 2004

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF
FOR ORGANICS: IF tevent < t*, DAevent = 2FA x Kp x C x CF x (6T x tevent/3.1416)$^{0.5}$
IF tevent > t*, DAevent = FA x Kp x C x CF x ((tevent/(1 + B)) + (2T x ((1+3B+3B^2)/(1 + B)^2)))

WHERE: FA = FRACTION ABSORBED (DIMENSIONLESS)
Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	SW CONC. (mg/L)	ORGANIC OR INORGANIC?	t* (HR)	tevent	T (HR)	Kp (CM/HR)	B	FA	DAevent
Benzo(a)anthracene	1.66E-03	o	8.53E+00	2.00E+00	2.03E+00	4.74E-01	2.75E+00	1	4.38E-06
Benzo(a)pyrene	2.26E-03	o	1.17E+01	2.00E+00	2.69E+00	7.01E-01	4.27E+00	1	1.02E-05
Benzo(b)fluoranthene	5.38E-03	o	1.20E+01	2.00E+00	2.77E+00	7.02E-01	4.29E+00	1	2.46E-05
Benzo(k)fluoranthene	1.55E-03	o	1.17E+01	2.00E+00	2.72E+00	6.60E-01	4.03E+00	1	6.59E-06
Chrysene	4.12E-03	o	8.53E+00	2.00E+00	2.03E+00	4.74E-01	2.75E+00	1	1.09E-05
Dibenzo(a,h)anthracene	2.30E-04	o	1.76E+01	2.00E+00	3.88E+00	1.51E+00	9.68E+00	0.6	1.60E-06
Indeno(1,2,3-cd)pyrene	2.02E-03	o	1.68E+01	2.00E+00	3.78E+00	1.04E+00	6.65E+00	0.6	9.59E-06
Antimony	1.06E-03	i		2.00E+00		1.00E-03		1	2.12E-09
Arsenic	1.40E-03	i		2.00E+00		1.00E-03		1	2.80E-09
Iron	1.77E+00	i		2.00E+00		1.00E-03		1	3.55E-06
Manganese	5.15E-01	i		2.00E+00		1.00E-03		1	1.03E-06
Vanadium	3.69E-03	i		2.00E+00		1.00E-03		1	7.38E-09

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH SURFACE WATER
FUTURE ADULT RESIDENTS - CENTRAL TENDENCY EXPOSURE (CTE)

SITE NAME: SWMU 15 (ROADS AND GROUNDS AREA)
LOCATION: NSWC CRANE, CRANE, INDIANA
DATE: 10/31/05

REFERENCES: U.S. EPA, July 2004

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF

FOR ORGANICS: IF tevent < t*, DAevent = 2FA x Kp x C x CF x (6T x tevent/3.1416)$^{0.5}$
IF tevent > t*, DAevent = FA x Kp x C x CF x ((tevent/(1 + B)) + (2T x ((1+3B+3B^2)/(1 + B)^2)))

WHERE: FA = FRACTION ABSORBED (DIMENSIONLESS)
Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	SW CONC. (mg/L)	ORGANIC OR INORGANIC?	t* (HR)	tevent	T (HR)	Kp (CM/HR)	B	FA	DAevent
Benzo(a)anthracene	1.66E-03	o	8.53E+00	2.00E+00	2.03E+00	4.74E-01	2.75E+00	1	4.38E-06
Benzo(a)pyrene	2.26E-03	o	1.17E+01	2.00E+00	2.69E+00	7.01E-01	4.27E+00	1	1.02E-05
Benzo(b)fluoranthene	5.38E-03	o	1.20E+01	2.00E+00	2.77E+00	7.02E-01	4.29E+00	1	2.46E-05
Benzo(k)fluoranthene	1.55E-03	o	1.17E+01	2.00E+00	2.72E+00	6.60E-01	4.03E+00	1	6.59E-06
Chrysene	4.12E-03	o	8.53E+00	2.00E+00	2.03E+00	4.74E-01	2.75E+00	1	1.09E-05
Dibenzo(a,h)anthracene	2.30E-04	o	1.76E+01	2.00E+00	3.88E+00	1.51E+00	9.68E+00	0.6	1.60E-06
Indeno(1,2,3-cd)pyrene	2.02E-03	o	1.68E+01	2.00E+00	3.78E+00	1.04E+00	6.65E+00	0.6	9.59E-06
Antimony	1.06E-03	i		2.00E+00		1.00E-03		1	2.12E-09
Arsenic	1.40E-03	i		2.00E+00		1.00E-03		1	2.80E-09
Iron	1.77E+00	i		2.00E+00		1.00E-03		1	3.55E-06
Manganese	5.15E-01	i		2.00E+00		1.00E-03		1	1.03E-06
Vanadium	3.69E-03	i		2.00E+00		1.00E-03		1	7.38E-09

TABLE 7.9a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF MAINTENANCE WORKERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
	(total)												
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	4.8E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	1.1E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	2.7E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	7.2E-06	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	1.2E-05	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	1.8E-06	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	1.1E-05	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	1.6E-09	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	2.7E-05
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	2.2E-09	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	7.2E-06
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	2.7E-06	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	9.2E-06
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	8.0E-07	mg/kg-day	9.60E-04	mg/kg-day	NA	NA	8.3E-04
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	5.7E-09	mg/kg-day	2.60E-05	mg/kg-day	NA	NA	2.2E-04
	(total)												1.1E-03
												Total Hazard Index Across All Exposure Routes/Pathways	**1.1E-03**

TABLE 7.10a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADOLESCENT TRESPASSERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Trespasser
Receptor Age: Adolescent (age 6 - 17)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	1.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	1.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	4.5E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	1.3E-07	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	3.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	1.9E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	1.7E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	8.8E-08	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	2.2E-04
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	1.2E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	3.9E-04
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	1.5E-04	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	4.9E-04
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	4.3E-05	mg/kg-day	2.40E-02	mg/kg-day	NA	NA	1.8E-03
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	3.1E-07	mg/kg-day	1.00E-03	mg/kg-day	NA	NA	3.1E-04
	(total)												**3.2E-03**
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	1.1E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	2.6E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	6.3E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	1.7E-05	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	2.8E-05	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	4.1E-06	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	2.5E-05	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	5.4E-09	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	9.1E-05
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	7.2E-09	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	2.4E-05
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	9.1E-06	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	3.0E-05
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	2.6E-06	mg/kg-day	9.60E-04	mg/kg-day	NA	NA	2.8E-03
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	1.9E-08	mg/kg-day	2.60E-05	mg/kg-day	NA	NA	7.3E-04
	(total)												**3.6E-03**
												Total Hazard Index Across All Exposure Routes/Pathways	**6.8E-03**

TABLE 7.11a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF CHILD RECREATIONAL USERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	7.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	1.1E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	2.6E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	7.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	2.0E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	1.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	9.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	5.0E-07	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	1.3E-03
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	6.6E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	2.2E-03
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	8.4E-04	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	2.8E-03
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	2.4E-04	mg/kg-day	2.40E-02	mg/kg-day	NA	NA	1.0E-02
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	1.8E-06	mg/kg-day	1.00E-03	mg/kg-day	NA	NA	1.8E-03
	(total)												**1.8E-02**
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	6.9E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	1.6E-04	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	3.9E-04	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	1.0E-04	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	1.7E-04	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	2.5E-05	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	1.5E-04	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	3.3E-08	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	5.5E-04
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	4.4E-08	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	1.5E-04
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	5.6E-05	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	1.9E-04
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	1.6E-05	mg/kg-day	9.60E-04	mg/kg-day	NA	NA	1.7E-02
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	1.2E-07	mg/kg-day	2.60E-05	mg/kg-day	NA	NA	4.4E-03
	(total)												**2.2E-02**
												Total Hazard Index Across All Exposure Routes/Pathways	**4.0E-02**

TABLE 7.12a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADULT RECREATIONAL USERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	3.4E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	4.6E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	1.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	3.2E-08	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	8.4E-08	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	4.7E-09	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	4.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	2.2E-08	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	5.4E-05
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	2.8E-08	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	9.5E-05
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	3.6E-05	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	1.2E-04
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	1.0E-05	mg/kg-day	2.40E-02	mg/kg-day	NA	NA	4.4E-04
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	7.5E-08	mg/kg-day	1.00E-03	mg/kg-day	NA	NA	7.5E-05
	(total)												**7.8E-04**
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	4.0E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	9.4E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	2.3E-04	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	6.1E-05	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	1.0E-04	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	1.5E-05	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	8.8E-05	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	2.0E-08	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	3.3E-04
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	2.6E-08	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	8.6E-05
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	3.3E-05	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	1.1E-04
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	9.5E-06	mg/kg-day	9.60E-04	mg/kg-day	NA	NA	9.9E-03
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	6.8E-08	mg/kg-day	2.60E-05	mg/kg-day	NA	NA	2.6E-03
	(total)												**1.3E-02**
												Total Hazard Index Across All Exposure Routes/Pathways	**1.4E-02**

TABLE 7.13a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF FUTURE CHILD RESIDENTS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	7.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	1.1E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	2.6E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	7.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	2.0E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	1.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	9.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	5.0E-07	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	1.3E-03
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	6.6E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	2.2E-03
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	8.4E-04	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	2.8E-03
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	2.4E-04	mg/kg-day	2.40E-02	mg/kg-day	NA	NA	1.0E-02
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	1.8E-06	mg/kg-day	1.00E-03	mg/kg-day	NA	NA	1.8E-03
	(total)												**1.8E-02**
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	6.9E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	1.6E-04	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	3.9E-04	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	1.0E-04	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	1.7E-04	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	2.5E-05	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	1.5E-04	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	3.3E-08	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	5.5E-04
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	4.4E-08	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	1.5E-04
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	5.6E-05	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	1.9E-04
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	1.6E-05	mg/kg-day	9.60E-04	mg/kg-day	NA	NA	1.7E-02
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	1.2E-07	mg/kg-day	2.60E-05	mg/kg-day	NA	NA	4.4E-03
	(total)												**2.2E-02**
												Total Hazard Index Across All Exposure Routes/Pathways	**4.0E-02**

TABLE 4.14a
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF FUTURE ADULT RESIDENTS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	3.4E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	4.6E-08	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	1.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	3.2E-08	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	8.4E-08	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	4.7E-09	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	4.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	2.2E-08	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	5.4E-05
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	2.8E-08	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	9.5E-05
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	3.6E-05	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	1.2E-04
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	1.0E-05	mg/kg-day	2.40E-02	mg/kg-day	NA	NA	4.4E-04
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	7.5E-08	mg/kg-day	1.00E-03	mg/kg-day	NA	NA	7.5E-05
	(total)												**7.8E-04**
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	4.0E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	9.4E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	2.3E-04	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	6.1E-05	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	1.0E-04	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	1.5E-05	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	8.8E-05	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	2.0E-08	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	3.3E-04
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	2.6E-08	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	8.6E-05
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	3.3E-05	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	1.1E-04
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	9.5E-06	mg/kg-day	9.60E-04	mg/kg-day	NA	NA	9.9E-03
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	6.8E-08	mg/kg-day	2.60E-05	mg/kg-day	NA	NA	2.6E-03
	(total)												**1.3E-02**
												Total Hazard Index Across All Exposure Routes/Pathways	**1.4E-02**

TABLE 8.9a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF MAINTENANCE WORKERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
	(total)										
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	6.2E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	4.5E-07
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	1.4E-06	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	1.0E-05
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	3.5E-06	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.5E-06
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	9.3E-07	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	6.8E-08
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	1.5E-06	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	1.1E-08
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	2.3E-07	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-06
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	1.4E-06	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	9.9E-07
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	2.1E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	2.8E-10	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-10
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	3.5E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	1.0E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	7.4E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.6E-05
										Total Risk Across All Exposure Routes/Pathways	**1.6E-05**

TABLE 8.10a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADOLESCENT TRESPASSERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Trespasser
Receptor Age: Adolescent (age 6 - 17)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	2.2E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.6E-08
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	2.9E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-07
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	7.0E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	5.1E-08
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	2.0E-08	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	1.5E-09
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	5.4E-08	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	3.9E-10
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	3.0E-09	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.2E-08
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	2.6E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.9E-08
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	1.4E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	1.8E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-08
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	2.3E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	6.7E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	4.8E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**3.5E-07**
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	1.8E-06	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.3E-06
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	4.1E-06	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	3.0E-05
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	9.9E-06	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	7.2E-06
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	2.7E-06	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	1.9E-07
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	4.4E-06	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	3.2E-08
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	6.5E-07	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	4.7E-06
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	3.9E-06	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.8E-06
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	8.6E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	1.1E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-09
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	1.4E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	4.2E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	3.0E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**4.6E-05**
										Total Risk Across All Exposure Routes/Pathways	**4.7E-05**

TABLE 8.11a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF CHILD RECREATIONAL USERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	2.3E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.6E-08
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	3.1E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.2E-07
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	7.3E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	5.3E-08
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	2.1E-08	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	1.5E-09
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	5.6E-08	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	4.1E-10
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	3.1E-09	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-08
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	2.7E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.0E-08
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	1.4E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	1.9E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-08
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	2.4E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	7.0E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	5.0E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											3.7E-07
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	2.0E-06	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.4E-06
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	4.6E-06	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	3.3E-05
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	1.1E-05	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	8.0E-06
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	3.0E-06	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	2.2E-07
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	4.9E-06	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	3.6E-08
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	7.2E-07	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	5.2E-06
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	4.3E-06	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	3.1E-06
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	9.5E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	1.3E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	1.9E-09
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	1.6E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	4.6E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	3.3E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											5.1E-05
										Total Risk Across All Exposure Routes/Pathways	**5.2E-05**

TABLE 8.12a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT RECREATIONAL USERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	3.4E-09	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.5E-09
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	4.6E-09	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-08
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	1.1E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	8.0E-09
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	3.2E-09	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	2.3E-10
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	8.4E-09	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	6.1E-11
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	4.7E-10	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-09
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	4.1E-09	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	3.0E-09
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	2.2E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	2.8E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	4.3E-09
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	3.6E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	1.0E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	7.5E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											5.5E-08
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	4.0E-06	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	3.0E-06
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	9.4E-06	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	6.8E-05
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	2.3E-05	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.7E-05
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	6.1E-06	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	4.4E-07
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	1.0E-05	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	7.3E-08
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	1.5E-06	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-05
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	8.8E-06	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	6.5E-06
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	2.0E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	2.6E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	3.9E-09
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	3.3E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	9.5E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	6.8E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											1.1E-04
										Total Risk Across All Exposure Routes/Pathways	**1.1E-04**

TABLE 8.13a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF FUTURE CHILD RESIDENTS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	2.3E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.6E-08
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	3.1E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.2E-07
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	7.3E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	5.3E-08
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	2.1E-08	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	1.5E-09
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	5.6E-08	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	4.1E-10
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	3.1E-09	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-08
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	2.7E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.0E-08
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	1.4E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	1.9E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-08
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	2.4E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	7.0E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	5.0E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											3.7E-07
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	2.0E-06	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.4E-06
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	4.6E-06	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	3.3E-05
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	1.1E-05	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	8.0E-06
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	3.0E-06	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	2.2E-07
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	4.9E-06	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	3.6E-08
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	7.2E-07	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	5.2E-06
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	4.3E-06	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	3.1E-06
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	9.5E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	1.3E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	1.9E-09
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	1.6E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	4.6E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	3.3E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											5.1E-05
										Total Risk Across All Exposure Routes/Pathways	**5.2E-05**

TABLE 8.14a - CENTRAL TENDENCY EXPOSURE (CTE)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF FUTURE ADULT RESIDENTS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	3.4E-09	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.5E-09
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	4.6E-09	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-08
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	1.1E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	8.0E-09
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	3.2E-09	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	2.3E-10
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	8.4E-09	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	6.1E-11
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	4.7E-10	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-09
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	4.1E-09	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	3.0E-09
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	2.2E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	2.8E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	4.3E-09
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	3.6E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	1.0E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	7.5E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											5.5E-08
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	4.0E-06	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	3.0E-06
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	9.4E-06	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	6.8E-05
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	2.3E-05	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.7E-05
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	6.1E-06	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	4.4E-07
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	1.0E-05	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	7.3E-08
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	1.5E-06	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-05
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	8.8E-06	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	6.5E-06
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	2.0E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	2.6E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	3.9E-09
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	3.3E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	9.5E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	6.8E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											1.1E-04
										Total Risk Across All Exposure Routes/Pathways	**1.1E-04**

TABLE 4.9
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF MAINTENANCE WORKERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Dermal	Cw	Chemical Concentration in Water	mg/L	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	The equations and parameters for for estimating DAevent and the chemical-specific dermally absorbed dose from water (DAD) are provided in Section 7.3.4.3 of the text.
	A	Skin Surface Area	cm^2	3,300	U.S. EPA, July 2004	3,300	U.S. EPA, July 2004	
	DAevent	Absorbed Dose per Event	mg/cm^2-event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	EV	Event Frequency	event/day	1	Professional judgement	1	Professional judgement	
	ED	Exposure Duration	years	25	U.S. EPA, May 1993	9	U.S. EPA, May 1993	
	EF	Exposure Frequency	days/year	24	Professional judgement	12	Professional judgement	
	t_{event}	Duration of Event	hour/event	2	Professional judgement	1	Professional judgement	USEPA, July 2004
	t*	Time to reach steady state	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	T	Lag Time	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	B	Bunge Model Constant	dimensionless	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	USEPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	U.S. EPA, December 1989	3,285	USEPA, December 1989	

1 - Professional judgment. Assumes two days a week in warm weather months for RME and one day a week for CTE.

Daily Intake Calculations

Dermal Intake = (A x EV x ED x EF) / (BW x AT)

Cancer Dermal Intake(RME) = 1.11E+00
Noncancer Dermal Intake(RME) = 3.10E+00

Cancer Dermal Intake(CTE) = 1.99E-01
Noncancer Dermal Intake(CTE) = 1.55E+00

TABLE 4.10
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF ADOLESCENT TRESPASSERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Trespasser
Receptor Age: Adolescent (age 6 - 17)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cw	Chemical Concentration In Water	(mg/L)	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate of Surface Water	(L/hr)	0.05	U.S. EPA Region 4, May 2000	0.05	U.S. EPA Region 4, May 2000	Cw x IR x ET x EF x ED / BW x AT
	EF	Exposure Frequency	(days/year)	26	Professional judgement	13	Professional judgement	
	ED	Exposure Duration	(years)	11	6 - 17 years of age	11	6 - 17 years of age	
	ET	Exposure Time	(hr/day)	4	Professional judgement	2	Professional judgement	
	BW	Body Weight	(kg)	43	U.S. EPA, August 1997	43	U.S. EPA, August 1997	
	AT-C	Averaging Time (Cancer)	(days)	25550	U.S. EPA, December 1989	25550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Noncancer)	(days)	4015	U.S. EPA, December 1989	4,015	U.S. EPA, December 1989	
Dermal	Cw	Chemical Concentration in Water	mg/L	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	The equations and parameters for
	A	Skin Surface Area	cm^2	3,280	U.S. EPA, August 1997	3,100	U.S. EPA, August 1997	for estimating DAevent and the chemical-
	DAevent	Absorbed Dose per Event	mg/cm^2-event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	specific dermally absorbed dose from
	EV	Event Frequency	event/day	1	Professional judgement	1	Professional judgement	water (DAD) are provided in Section 7.3.4.3
	ED	Exposure Duration	years	11	6 - 17 years of age	11	6 - 17 years of age	of the text.
	EF	Exposure Frequency	days/year	26	Professional judgement	13	Professional judgement	
	t_{event}	Duration of Event	hour/event	4	Professional judgement	2	Professional judgement	USEPA, July 2004
	t*	Time to reach steady state	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	T	Lag Time	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	B	Bunge Model Constant	dimensionless	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	BW	Body Weight	kg	43	U.S. EPA, August 1997	43	U.S. EPA, August 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	USEPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	4,015	U.S. EPA, December 1989	4,015	USEPA, December 1989	

1 - Professional judgment. Assumes two days a week in warm weather months for RME and one day a week for CTE.

Daily Intake Calculations
Ingestion Intake = (IRgw x EF x ED) / (BW x AT)
Dermal Intake = (A x EV x ED x EF) / (BW x AT)

Cancer Ingestion Intake(RME) = 5.21E-05
Noncancer Ingestion Intake(RME) = 3.31E-04

Cancer Ingestion Intake(CTE) = 1.30E-05
Noncancer Ingestion Intake(CTE) = 8.28E-05

Cancer Dermal Intake(RME) = 8.54E-01
Noncancer Dermal Intake(RME) = 5.43E+00

Cancer Dermal Intake(CTE) = 4.03E-01
Noncancer Dermal Intake(CTE) = 2.57E+00

TABLE 4.11
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF CHILD RECREATIONAL USERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cw	Chemical Concentration in Water	(mg/L)	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate of Surface Water	(L/hr)	0.05	U.S. EPA Region 4, May 2000	0.05	U.S. EPA Region 4, May 2000	Cw x IR x ET x EF x ED / BW x AT
	EF	Exposure Frequency	(days/year)	52	Professional judgement	26	Professional judgement	
	ED	Exposure Duration	(years)	6	U.S. EPA, May 1993	2	U.S. EPA, May 1993	
	ET	Exposure Time	(hr/day)	4	Professional judgement	2	Professional judgement	
	BW	Body Weight	(kg)	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	(days)	25550	U.S. EPA, December 1989	25550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Noncancer)	(days)	2190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	
Dermal	Cw	Chemical Concentration in Water	mg/L	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	The equations and parameters for
	A	Skin Surface Area	cm^2	3,300	1/2 total body area (EPA 2004)	3,300	1/2 total body area (EPA 2004)	for estimating DAevent and the chemical-
	DAevent	Absorbed Dose per Event	mg/cm^2-event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	specific dermally absorbed dose from
	EV	Event Frequency	event/day	1	Professional judgement	1	Professional judgement	water (DAD) are provided in Section 7.3.4.3
	ED	Exposure Duration	years	6	U.S. EPA, May 1993	2	U.S. EPA, May 1993	of the text.
	EF	Exposure Frequency	days/year	52	Professional judgement	26	Professional judgement	
	t_{event}	Duration of Event	hour/event	4	Professional judgement	2	Professional judgement	USEPA, July 2004
	t*	Time to reach steady state	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	T	Lag Time	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	B	Bunge Model Constant	dimensionless	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	USEPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	USEPA, December 1989	

1 - Professional judgment. Assumes two days a week in warm weather months for RME and one day a week for CTE.

Daily Intake Calculations
Ingestion Intake = (IRgw x EF x ED) / (BW x AT)
Dermal Intake = (A x EV x ED x EF) / (BW x AT)

Cancer Ingestion Intake(RME) = 1.63E-04
Noncancer Ingestion Intake(RME) = 1.90E-03

Cancer Ingestion Intake(CTE) = 1.36E-05
Noncancer Ingestion Intake(CTE) = 4.75E-04

Cancer Dermal Intake(RME) = 2.69E+00
Noncancer Dermal Intake(RME) = 3.13E+01

Cancer Dermal Intake(CTE) = 4.48E-01
Noncancer Dermal Intake(CTE) = 1.57E+01

TABLE 4.12
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF ADULT RECREATIONAL USERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cw	Chemical Concentration in Water	(mg/L)	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate of Surface Water	(L/hr)	0.01	U.S. EPA Region 4, May 2000	0.01	U.S. EPA Region 4, May 2000	Cw x IR x ET x EF x ED / BW x AT
	EF	Exposure Frequency	(days/year)	52	Professional judgement	26	Professional judgement	
	ED	Exposure Duration	(years)	24	U.S. EPA, May 1993	7	U.S. EPA, May 1993	
	ET	Exposure Time	(hr/day)	4	Professional judgement	2	Professional judgement	
	BW	Body Weight	(kg)	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	(days)	25550	U.S. EPA, December 1989	25550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Noncancer)	(days)	8760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	
Dermal	Cw	Chemical Concentration in Water	mg/L	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	The equations and parameters for
	A	Skin Surface Area	cm^2	9,070	USEPA, August 1997	9,070	USEPA, August 1997	for estimating DAevent and the chemical-
	DAevent	Absorbed Dose per Event	mg/cm^2-event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	specific dermally absorbed dose from
	EV	Event Frequency	event/day	1	Professional judgement	1	Professional judgement	water (DAD) are provided in Section 7.3.4.3
	ED	Exposure Duration	years	24	U.S. EPA, May 1993	7	U.S. EPA, May 1993	of the text.
	EF	Exposure Frequency	days/year	52	Professional judgement	26	Professional judgement	
	t_{event}	Duration of Event	hour/event	4	Professional judgement	2	Professional judgement	USEPA, July 2004
	t*	Time to reach steady state	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	T	Lag Time	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	B	Bunge Model Constant	dimensionless	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	USEPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	USEPA, December 1989	

1 - Professional judgment. Assumes two days a week in warm weather months for RME and one day a week for CTE.

Daily Intake Calculations
Ingestion Intake = (IRgw x EF x ED) / (BW x AT)
Dermal Intake = (A x EV x ED x EF) / (BW x AT)

Cancer Ingestion Intake(RME) = 2.79E-05
Noncancer Ingestion Intake(RME) = 8.14E-05

Cancer Ingestion Intake(CTE) = 2.04E-06
Noncancer Ingestion Intake(CTE) = 2.04E-05

Cancer Dermal Intake(RME) = 6.33E+00
Noncancer Dermal Intake(RME) = 1.85E+01

Cancer Dermal Intake(CTE) = 9.23E-01
Noncancer Dermal Intake(CTE) = 9.23E+00

TABLE 4.13
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF FUTURE CHILD RESIDENTS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cw	Chemical Concentration in Water	(mg/L)	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate of Surface Water	(L/hr)	0.05	U.S. EPA Region 4, May 2000	0.05	U.S. EPA Region 4, May 2000	Cw x IR x ET x EF x ED / BW x AT
	EF	Exposure Frequency	(days/year)	52	Professional judgement	26	Professional judgement	
	ED	Exposure Duration	(years)	6	U.S. EPA, May 1993	2	U.S. EPA, May 1993	
	ET	Exposure Time	(hr/day)	4	Professional judgement	2	Professional judgement	
	BW	Body Weight	(kg)	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	(days)	25550	U.S. EPA, December 1989	25550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Noncancer)	(days)	2190	U.S. EPA, December 1989	730	U.S. EPA, December 1989	
Dermal	Cw	Chemical Concentration in Water	mg/L	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	The equations and parameters for
	A	Skin Surface Area	cm^2	3,300	1/2 total body area (EPA 200	3,300	1/2 total body area (EPA 200	for estimating DAevent and the chemical-
	DAevent	Absorbed Dose per Event	mg/cm^2-event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	specific dermally absorbed dose from
	EV	Event Frequency	event/day	1	Professional judgement	1	Professional judgement	water (DAD) are provided in Section 7.3.4.3
	ED	Exposure Duration	years	6	U.S. EPA, May 1993	2	U.S. EPA, May 1993	of the text.
	EF	Exposure Frequency	days/year	52	Professional judgement	26	Professional judgement	
	t_{event}	Duration of Event	hour/event	4	Professional judgement	2	Professional judgement	USEPA, July 2004
	t*	Time to reach steady state	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	T	Lag Time	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	B	Bunge Model Constant	dimensionless	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	BW	Body Weight	kg	15	U.S. EPA, May 1993	15	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	USEPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, December 1989	730	USEPA, December 1989	

1 - Professional judgment. Assumes two days a week in warm weather months for RME and one day a week for CTE.

Daily Intake Calculations
Ingestion Intake = (IRgw x EF x ED) / (BW x AT)
Dermal Intake = (A x EV x ED x EF) / (BW x AT)

Cancer Ingestion Intake(RME) = 1.63E-04
Noncancer Ingestion Intake(RME) = 1.90E-03

Cancer Ingestion Intake(CTE) = 1.36E-05
Noncancer Ingestion Intake(CTE) = 4.75E-04

Cancer Dermal Intake(RME) = 2.69E+00
Noncancer Dermal Intake(RME) = 3.13E+01

Cancer Dermal Intake(CTE) = 4.48E-01
Noncancer Dermal Intake(CTE) = 1.57E+01

SWMU15SurfaceWaterCalcsRME.xls

TABLE 4.14
VALUES OF DAILY INTAKE CALCULATIONS FOR EXPOSURE OF FUTURE ADULT RESIDENTS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cw	Chemical Concentration in Water	(mg/L)	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate of Surface Water	(L/hr)	0.01	U.S. EPA Region 4, May 2000	0.01	U.S. EPA Region 4, May 2000	Cw x IR x ET x EF x ED / BW x AT
	EF	Exposure Frequency	(days/year)	52	Professional judgement	26	Professional judgement	
	ED	Exposure Duration	(years)	24	U.S. EPA, May 1993	7	U.S. EPA, May 1993	
	ET	Exposure Time	(hr/day)	4	Professional judgement	2	Professional judgement	
	BW	Body Weight	(kg)	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	(days)	25550	U.S. EPA, December 1989	25550	U.S. EPA, December 1989	
	AT-N	Averaging Time (Noncancer)	(days)	8760	U.S. EPA, December 1989	2,555	U.S. EPA, December 1989	
Dermal	Cw	Chemical Concentration in Water	mg/L	Max or 95% UCL	U.S. EPA, December 2002	Maximum	U.S. EPA, December 2002	The equations and parameters for
	A	Skin Surface Area	cm^2	9,070	USEPA, August 1997	9,070	USEPA, August 1997	for estimating DAevent and the chemical-
	DAevent	Absorbed Dose per Event	mg/cm^2-event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	specific dermally absorbed dose from
	EV	Event Frequency	event/day	1	Professional judgement	1	Professional judgement	water (DAD) are provided in Section 7.3.4.3
	ED	Exposure Duration	years	24	U.S. EPA, May 1993	7	U.S. EPA, May 1993	of the text.
	EF	Exposure Frequency	days/year	52	Professional judgement	26	Professional judgement	
	t_{event}	Duration of Event	hour/event	4	Professional judgement	2	Professional judgement	USEPA, July 2004
	t*	Time to reach steady state	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	T	Lag Time	hour/event	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	B	Bunge Model Constant	dimensionless	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	Kp	Permeability Coefficient from Water	cm/hour	chemical-specific	U.S. EPA, July 2004	chemical-specific	U.S. EPA, July 2004	
	BW	Body Weight	kg	70	U.S. EPA, May 1993	70	U.S. EPA, May 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, December 1989	25,550	USEPA, December 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, December 1989	2,555	USEPA, December 1989	

1 - Professional judgment. Assumes two days a week in warm weather months for RME and one day a week for CTE.

Daily Intake Calculations
Ingestion Intake = (IRgw x EF x ED) / (BW x AT)
Dermal Intake = (A x EV x ED x EF) / (BW x AT)

Cancer Ingestion Intake(RME) = 2.79E-05
Noncancer Ingestion Intake(RME) = 8.14E-05

Cancer Ingestion Intake(CTE) = 2.04E-06
Noncancer Ingestion Intake(CTE) = 2.04E-05

Cancer Dermal Intake(RME) = 6.33E+00
Noncancer Dermal Intake(RME) = 1.85E+01

Cancer Dermal Intake(CTE) = 9.23E-01
Noncancer Dermal Intake(CTE) = 9.23E+00

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH SURFACE WATER
MAINTENANCE WORKERS - REASONABLE MAXIMUM EXPOSURE (RME)

SITE NAME: SWMU 15 (ROADS AND GROUNDS AREA)
LOCATION: NSWC CRANE, CRANE, INDIANA
DATE: 10/31/05

REFERENCES: U.S. EPA, July 2004

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF

FOR ORGANICS: IF tevent < t*, DAevent = 2FA x Kp x C x CF x (6T x tevent/3.1416)$^{0.5}$
IF tevent > t*, DAevent = FA x Kp x C x CF x ((tevent/(1 + B)) + (2T x ((1+3B+3B^2)/(1 + B)^2)))

WHERE: FA = FRACTION ABSORBED (DIMENSIONLESS)
Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	SW CONC. (mg/L)		ORGANIC OR INORGANIC?		t* (HR)	tevent	T (HR)		Kp (CM/HR)		B	FA	DAevent
Benzo(a)anthracene	1.66E-03		o		8.53E+00	2.00E+00	2.03E+00		4.74E-01		2.75E+00	1	4.38E-06
Benzo(a)pyrene	2.26E-03		o		1.17E+01	2.00E+00	2.69E+00		7.01E-01		4.27E+00	1	1.02E-05
Benzo(b)fluoranthene	5.38E-03		o		1.20E+01	2.00E+00	2.77E+00		7.02E-01		4.29E+00	1	2.46E-05
Benzo(k)fluoranthene	1.55E-03		o		1.17E+01	2.00E+00	2.72E+00		6.60E-01		4.03E+00	1	6.59E-06
Chrysene	4.12E-03		o		8.53E+00	2.00E+00	2.03E+00		4.74E-01		2.75E+00	1	1.09E-05
Dibenzo(a,h)anthracene	2.30E-04		o		1.76E+01	2.00E+00	3.88E+00		1.51E+00		9.68E+00	0.6	1.60E-06
Indeno(1,2,3-cd)pyrene	2.02E-03		o		1.68E+01	2.00E+00	3.78E+00		1.04E+00		6.65E+00	0.6	9.59E-06
Antimony	1.06E-03		i			2.00E+00			1.00E-03			1	2.12E-09
Arsenic	1.40E-03		i			2.00E+00			1.00E-03			1	2.80E-09
Iron	1.77E+00		i			2.00E+00			1.00E-03			1	3.55E-06
Manganese	5.15E-01		i			2.00E+00			1.00E-03			1	1.03E-06
Vanadium	3.69E-03		i			2.00E+00			1.00E-03			1	7.38E-09

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH SURFACE WATER
ADOLESCENT TRESPASSERS - REASONABLE MAXIMUM EXPOSURE (RME)

SITE NAME: SWMU 15 (ROADS AND GROUNDS AREA)
LOCATION: NSWC CRANE, CRANE, INDIANA
DATE: 10/31/05

REFERENCES: U.S. EPA, July 2004

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF

FOR ORGANICS: IF tevent < t*, DAevent = 2FA x Kp x C x CF x (6T x tevent/3.1416)$^{0.5}$
IF tevent > t*, DAevent = FA x Kp x C x CF x ((tevent/(1 + B)) + (2T x ((1+3B+3B^2)/(1 + B)^2)))

WHERE: FA = FRACTION ABSORBED (DIMENSIONLESS)
Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	SW CONC. (mg/L)		ORGANIC OR INORGANIC?		t* (HR)	tevent	T (HR)		Kp (CM/HR)		B	FA	DAevent
Benzo(a)anthracene	1.66E-03		o		8.53E+00	4.00E+00	2.03E+00		4.74E-01		2.75E+00	1	6.19E-06
Benzo(a)pyrene	2.26E-03		o		1.17E+01	4.00E+00	2.69E+00		7.01E-01		4.27E+00	1	1.44E-05
Benzo(b)fluoranthene	5.38E-03		o		1.20E+01	4.00E+00	2.77E+00		7.02E-01		4.29E+00	1	3.48E-05
Benzo(k)fluoranthene	1.55E-03		o		1.17E+01	4.00E+00	2.72E+00		6.60E-01		4.03E+00	1	9.32E-06
Chrysene	4.12E-03		o		8.53E+00	4.00E+00	2.03E+00		4.74E-01		2.75E+00	1	1.54E-05
Dibenzo(a,h)anthracene	2.30E-04		o		1.76E+01	4.00E+00	3.88E+00		1.51E+00		9.68E+00	0.6	2.27E-06
Indeno(1,2,3-cd)pyrene	2.02E-03		o		1.68E+01	4.00E+00	3.78E+00		1.04E+00		6.65E+00	0.6	1.36E-05
Antimony	1.06E-03		i			4.00E+00			1.00E-03			1	4.24E-09
Arsenic	1.40E-03		i			4.00E+00			1.00E-03			1	5.60E-09
Iron	1.77E+00		i			4.00E+00			1.00E-03			1	7.09E-06
Manganese	5.15E-01		i			4.00E+00			1.00E-03			1	2.06E-06
Vanadium	3.69E-03		i			4.00E+00			1.00E-03			1	1.48E-08

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH SURFACE WATER
CHILD RECREATIONAL USERS - REASONABLE MAXIMUM EXPOSURE (RME)

SITE NAME: SWMU 15 (ROADS AND GROUNDS AREA)
LOCATION: NSWC CRANE, CRANE, INDIANA
DATE: 10/31/05

REFERENCES: U.S. EPA, July 2004

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF

FOR ORGANICS: IF tevent < t*, DAevent = 2FA x Kp x C x CF x $(6T \times tevent/3.1416)^{0.5}$

IF tevent > t*, DAevent = FA x Kp x C x CF x $((tevent/(1 + B)) + (2T \times ((1+3B+3B^2)/(1 + B)^2)))$

WHERE: FA = FRACTION ABSORBED (DIMENSIONLESS)
Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	SW CONC. (mg/L)		ORGANIC OR INORGANIC?		t* (HR)	tevent	T (HR)		Kp (CM/HR)		B	FA	DAevent
Benzo(a)anthracene	1.66E-03		o		8.53E+00	4.00E+00	2.03E+00		4.74E-01		2.75E+00	1	6.19E-06
Benzo(a)pyrene	2.26E-03		o		1.17E+01	4.00E+00	2.69E+00		7.01E-01		4.27E+00	1	1.44E-05
Benzo(b)fluoranthene	5.38E-03		o		1.20E+01	4.00E+00	2.77E+00		7.02E-01		4.29E+00	1	3.48E-05
Benzo(k)fluoranthene	1.55E-03		o		1.17E+01	4.00E+00	2.72E+00		6.60E-01		4.03E+00	1	9.32E-06
Chrysene	4.12E-03		o		8.53E+00	4.00E+00	2.03E+00		4.74E-01		2.75E+00	1	1.54E-05
Dibenzo(a,h)anthracene	2.30E-04		o		1.76E+01	4.00E+00	3.88E+00		1.51E+00		9.68E+00	0.6	2.27E-06
Indeno(1,2,3-cd)pyrene	2.02E-03		o		1.68E+01	4.00E+00	3.78E+00		1.04E+00		6.65E+00	0.6	1.36E-05
Antimony	1.06E-03		i			4.00E+00			1.00E-03			1	4.24E-09
Arsenic	1.40E-03		i			4.00E+00			1.00E-03			1	5.60E-09
Iron	1.77E+00		i			4.00E+00			1.00E-03			1	7.09E-06
Manganese	5.15E-01		i			4.00E+00			1.00E-03			1	2.06E-06
Vanadium	3.69E-03		i			4.00E+00			1.00E-03			1	1.48E-08

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH SURFACE WATER
ADULT RECREATIONAL USERS - REASONABLE MAXIMUM EXPOSURE (RME)

SITE NAME: SWMU 15 (ROADS AND GROUNDS AREA)
LOCATION: NSWC CRANE, CRANE, INDIANA
DATE: 10/31/05

REFERENCES: U.S. EPA, July 2004

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF

FOR ORGANICS: IF tevent < t*, DAevent = 2FA x Kp x C x CF x $(6T \times tevent/3.1416)^{0.5}$

IF tevent > t*, DAevent = FA x Kp x C x CF x $((tevent/(1 + B)) + (2T \times ((1+3B+3B^2)/(1 + B)^2)))$

WHERE: FA = FRACTION ABSORBED (DIMENSIONLESS)
Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	SW CONC. (mg/L)		ORGANIC OR INORGANIC?		t* (HR)	tevent	T (HR)		Kp (CM/HR)		B	FA	DAevent
Benzo(a)anthracene	1.66E-03		o		8.53E+00	4.00E+00	2.03E+00		4.74E-01		2.75E+00	1	6.19E-06
Benzo(a)pyrene	2.26E-03		o		1.17E+01	4.00E+00	2.69E+00		7.01E-01		4.27E+00	1	1.44E-05
Benzo(b)fluoranthene	5.38E-03		o		1.20E+01	4.00E+00	2.77E+00		7.02E-01		4.29E+00	1	3.48E-05
Benzo(k)fluoranthene	1.55E-03		o		1.17E+01	4.00E+00	2.72E+00		6.60E-01		4.03E+00	1	9.32E-06
Chrysene	4.12E-03		o		8.53E+00	4.00E+00	2.03E+00		4.74E-01		2.75E+00	1	1.54E-05
Dibenzo(a,h)anthracene	2.30E-04		o		1.76E+01	4.00E+00	3.88E+00		1.51E+00		9.68E+00	0.6	2.27E-06
Indeno(1,2,3-cd)pyrene	2.02E-03		o		1.68E+01	4.00E+00	3.78E+00		1.04E+00		6.65E+00	0.6	1.36E-05
Antimony	1.06E-03		i			4.00E+00			1.00E-03			1	4.24E-09
Arsenic	1.40E-03		i			4.00E+00			1.00E-03			1	5.60E-09
Iron	1.77E+00		i			4.00E+00			1.00E-03			1	7.09E-06
Manganese	5.15E-01		i			4.00E+00			1.00E-03			1	2.06E-06
Vanadium	3.69E-03		i			4.00E+00			1.00E-03			1	1.48E-08
			i			4.00E+00			2.00E-03			1	
			i			4.00E+00			1.00E-03			1	
			i			4.00E+00			1.00E-03			1	
			i			4.00E+00			1.00E-03			1	
			i			4.00E+00			1.00E-03			1	
			i			4.00E+00			1.00E-03			1	

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH SURFACE WATER
FUTURE CHILD RESIDENTS - REASONABLE MAXIMUM EXPOSURE (RME)

SITE NAME: SWMU 15 (ROADS AND GROUNDS AREA)
LOCATION: NSWC CRANE, CRANE, INDIANA
DATE: 10/31/05

REFERENCES: U.S. EPA, July 2004

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF
FOR ORGANICS: IF tevent < t*, DAevent = 2FA x Kp x C x CF x $(6T \times tevent/3.1416)^{0.5}$
IF tevent > t*, DAevent = FA x Kp x C x CF x $((tevent/(1 + B)) + (2T \times ((1+3B+3B^2)/(1 + B)^2)))$

WHERE: FA = FRACTION ABSORBED (DIMENSIONLESS)
Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	SW CONC. (mg/L)	ORGANIC OR INORGANIC?	t* (HR)	tevent	T (HR)	Kp (CM/HR)	B	FA	DAevent
Benzo(a)anthracene	1.66E-03	o	8.53E+00	4.00E+00	2.03E+00	4.74E-01	2.75E+00	1	6.19E-06
Benzo(a)pyrene	2.26E-03	o	1.17E+01	4.00E+00	2.69E+00	7.01E-01	4.27E+00	1	1.44E-05
Benzo(b)fluoranthene	5.38E-03	o	1.20E+01	4.00E+00	2.77E+00	7.02E-01	4.29E+00	1	3.48E-05
Benzo(k)fluoranthene	1.55E-03	o	1.17E+01	4.00E+00	2.72E+00	6.60E-01	4.03E+00	1	9.32E-06
Chrysene	4.12E-03	o	8.53E+00	4.00E+00	2.03E+00	4.74E-01	2.75E+00	1	1.54E-05
Dibenzo(a,h)anthracene	2.30E-04	o	1.76E+01	4.00E+00	3.88E+00	1.51E+00	9.68E+00	0.6	2.27E-06
Indeno(1,2,3-cd)pyrene	2.02E-03	o	1.68E+01	4.00E+00	3.78E+00	1.04E+00	6.65E+00	0.6	1.36E-05
Antimony	1.06E-03	i		4.00E+00		1.00E-03		1	4.24E-09
Arsenic	1.40E-03	i		4.00E+00		1.00E-03		1	5.60E-09
Iron	1.77E+00	i		4.00E+00		1.00E-03		1	7.09E-06
Manganese	5.15E-01	i		4.00E+00		1.00E-03		1	2.06E-06
Vanadium	3.69E-03	i		4.00E+00		1.00E-03		1	1.48E-08

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH SURFACE WATER
FUTURE ADULT RESIDENTS - REASONABLE MAXIMUM EXPOSURE (RME)

SITE NAME: SWMU 15 (ROADS AND GROUNDS AREA)
LOCATION: NSWC CRANE, CRANE, INDIANA
DATE: 10/31/05

REFERENCES: U.S. EPA, July 2004

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF
FOR ORGANICS: IF tevent < t*, DAevent = 2FA x Kp x C x CF x (6T x tevent/3.1416)$^{0.5}$
IF tevent > t*, DAevent = FA x Kp x C x CF x ((tevent/(1 + B)) + (2T x ((1+3B+3B^2)/(1 + B)^2)))

WHERE: FA = FRACTION ABSORBED (DIMENSIONLESS)
Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	SW CONC. (mg/L)	ORGANIC OR INORGANIC?	t* (HR)	tevent	T (HR)	Kp (CM/HR)	B	FA	DAevent
Benzo(a)anthracene	1.66E-03	o	8.53E+00	4.00E+00	2.03E+00	4.74E-01	2.75E+00	1	6.19E-06
Benzo(a)pyrene	2.26E-03	o	1.17E+01	4.00E+00	2.69E+00	7.01E-01	4.27E+00	1	1.44E-05
Benzo(b)fluoranthene	5.38E-03	o	1.20E+01	4.00E+00	2.77E+00	7.02E-01	4.29E+00	1	3.48E-05
Benzo(k)fluoranthene	1.55E-03	o	1.17E+01	4.00E+00	2.72E+00	6.60E-01	4.03E+00	1	9.32E-06
Chrysene	4.12E-03	o	8.53E+00	4.00E+00	2.03E+00	4.74E-01	2.75E+00	1	1.54E-05
Dibenzo(a,h)anthracene	2.30E-04	o	1.76E+01	4.00E+00	3.88E+00	1.51E+00	9.68E+00	0.6	2.27E-06
Indeno(1,2,3-cd)pyrene	2.02E-03	o	1.68E+01	4.00E+00	3.78E+00	1.04E+00	6.65E+00	0.6	1.36E-05
Antimony	1.06E-03	i		4.00E+00		1.00E-03		1	4.24E-09
Arsenic	1.40E-03	i		4.00E+00		1.00E-03		1	5.60E-09
Iron	1.77E+00	i		4.00E+00		1.00E-03		1	7.09E-06
Manganese	5.15E-01	i		4.00E+00		1.00E-03		1	2.06E-06
Vanadium	3.69E-03	i		4.00E+00		1.00E-03		1	1.48E-08

TABLE 7.9 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF MAINTENANCE WORKERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
	(total)												
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	1.4E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	3.2E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	7.6E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	2.0E-05	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	3.4E-05	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	5.0E-06	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	3.0E-05	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	6.6E-09	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	1.1E-04
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	8.7E-09	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	2.9E-05
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	1.1E-05	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	3.7E-05
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	3.2E-06	mg/kg-day	9.60E-04	mg/kg-day	NA	NA	3.3E-03
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	2.3E-08	mg/kg-day	2.60E-05	mg/kg-day	NA	NA	8.8E-04
	(total)												**4.4E-03**
												Total Hazard Index Across All Exposure Routes/Pathways	**4.4E-03**

TABLE 7.10 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADOLESCENT TRESPASSERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Trespasser
Receptor Age: Adolescent (age 6 - 17)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	5.5E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	7.5E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	1.8E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	5.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	1.4E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	7.6E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	6.7E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	3.5E-07	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	8.8E-04
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	4.6E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	1.5E-03
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	5.9E-04	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	2.0E-03
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	1.7E-04	mg/kg-day	2.40E-02	mg/kg-day	NA	NA	7.1E-03
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	1.2E-06	mg/kg-day	1.00E-03	mg/kg-day	NA	NA	1.2E-03
	(total)												**1.3E-02**
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	3.4E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	7.8E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	1.9E-04	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	5.1E-05	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	8.4E-05	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	1.2E-05	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	7.4E-05	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	2.3E-08	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	3.8E-04
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	3.0E-08	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	1.0E-04
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	3.9E-05	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	1.3E-04
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	1.1E-05	mg/kg-day	9.60E-04	mg/kg-day	NA	NA	1.2E-02
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	8.0E-08	mg/kg-day	2.60E-05	mg/kg-day	NA	NA	3.1E-03
	(total)												**1.5E-02**
												Total Hazard Index Across All Exposure Routes/Pathways	**2.8E-02**

TABLE 7.11 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF CHILD RECREATIONAL USERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	3.2E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	4.3E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	1.0E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	2.9E-06	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	7.8E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	4.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	3.8E-06	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	2.0E-06	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	5.0E-03
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	2.7E-06	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	8.9E-03
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	3.4E-03	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	1.1E-02
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	9.8E-04	mg/kg-day	2.40E-02	mg/kg-day	NA	NA	4.1E-02
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	7.0E-06	mg/kg-day	1.00E-03	mg/kg-day	NA	NA	7.0E-03
	(total)												**7.3E-02**
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	1.9E-04	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	4.5E-04	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	1.1E-03	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	2.9E-04	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	4.8E-04	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	7.1E-05	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	4.2E-04	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	1.3E-07	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	2.2E-03
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	1.8E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	5.9E-04
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	2.2E-04	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	7.4E-04
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	6.5E-05	mg/kg-day	9.60E-04	mg/kg-day	NA	NA	6.7E-02
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	4.6E-07	mg/kg-day	2.60E-05	mg/kg-day	NA	NA	1.8E-02
	(total)												**8.9E-02**
												Total Hazard Index Across All Exposure Routes/Pathways	**1.6E-01**

TABLE 7.12 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF ADULT RECREATIONAL USERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	1.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	1.8E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	4.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	1.3E-07	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	3.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	1.9E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	1.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	8.6E-08	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	2.2E-04
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	1.1E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	3.8E-04
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	1.4E-04	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	4.8E-04
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	4.2E-05	mg/kg-day	2.40E-02	mg/kg-day	NA	NA	1.7E-03
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	3.0E-07	mg/kg-day	1.00E-03	mg/kg-day	NA	NA	3.0E-04
	(total)												**3.1E-03**
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	1.1E-04	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	2.7E-04	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	6.4E-04	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	1.7E-04	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	2.8E-04	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	4.2E-05	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	2.5E-04	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	7.8E-08	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	1.3E-03
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	1.0E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	3.4E-04
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	1.3E-04	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	4.4E-04
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	3.8E-05	mg/kg-day	9.60E-04	mg/kg-day	NA	NA	4.0E-02
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	2.7E-07	mg/kg-day	2.60E-05	mg/kg-day	NA	NA	1.0E-02
	(total)												**5.2E-02**
												Total Hazard Index Across All Exposure Routes/Pathways	**5.5E-02**

TABLE 7.13 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF FUTURE CHILD RESIDENTS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	3.2E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	4.3E-06	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	1.0E-05	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	2.9E-06	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	7.8E-06	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	4.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	3.8E-06	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	2.0E-06	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	5.0E-03
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	2.7E-06	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	8.9E-03
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	3.4E-03	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	1.1E-02
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	9.8E-04	mg/kg-day	2.40E-02	mg/kg-day	NA	NA	4.1E-02
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	7.0E-06	mg/kg-day	1.00E-03	mg/kg-day	NA	NA	7.0E-03
	(total)												**7.3E-02**
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	1.9E-04	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	4.5E-04	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	1.1E-03	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	2.9E-04	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	4.8E-04	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	7.1E-05	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	4.2E-04	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	1.3E-07	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	2.2E-03
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	1.8E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	5.9E-04
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	2.2E-04	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	7.4E-04
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	6.5E-05	mg/kg-day	9.60E-04	mg/kg-day	NA	NA	6.7E-02
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	4.6E-07	mg/kg-day	2.60E-05	mg/kg-day	NA	NA	1.8E-02
	(total)												**8.9E-02**
												Total Hazard Index Across All Exposure Routes/Pathways	**1.6E-01**

TABLE 4.14
CALCULATION OF NON-CANCER HAZARDS FROM EXPOSURE OF FUTURE ADULT RESIDENTS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	1.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	1.8E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	4.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	1.3E-07	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	3.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	1.9E-08	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	1.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	8.6E-08	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	2.2E-04
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	1.1E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	3.8E-04
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	1.4E-04	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	4.8E-04
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	4.2E-05	mg/kg-day	2.40E-02	mg/kg-day	NA	NA	1.7E-03
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	3.0E-07	mg/kg-day	1.00E-03	mg/kg-day	NA	NA	3.0E-04
	(total)												**3.1E-03**
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	1.1E-04	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	2.7E-04	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	6.4E-04	mg/kg-day		mg/kg-day	NA	NA	
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	1.7E-04	mg/kg-day		mg/kg-day	NA	NA	
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	2.8E-04	mg/kg-day		mg/kg-day	NA	NA	
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	4.2E-05	mg/kg-day		mg/kg-day	NA	NA	
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	2.5E-04	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	7.8E-08	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	1.3E-03
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	1.0E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	3.4E-04
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	1.3E-04	mg/kg-day	3.00E-01	mg/kg-day	NA	NA	4.4E-04
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	3.8E-05	mg/kg-day	9.60E-04	mg/kg-day	NA	NA	4.0E-02
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	2.7E-07	mg/kg-day	2.60E-05	mg/kg-day	NA	NA	1.0E-02
	(total)												**5.2E-02**
												Total Hazard Index Across All Exposure Routes/Pathways	**5.5E-02**

TABLE 8.9 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF MAINTENANCE WORKERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	4.8E-06	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	3.5E-06
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	1.1E-05	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	8.2E-05
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	2.7E-05	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.0E-05
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	7.3E-06	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	5.3E-07
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	1.2E-05	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	8.8E-08
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	1.8E-06	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-05
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	1.1E-05	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	7.7E-06
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	2.3E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	3.1E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	4.6E-09
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	3.9E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	1.1E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	8.2E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**1.3E-04**
										Total Risk Across All Exposure Routes/Pathways	**1.3E-04**

TABLE 8.10 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADOLESCENT TRESPASSERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Trespasser
Receptor Age: Adolescent (age 6 - 17)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	8.6E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	6.3E-08
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	1.2E-07	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	8.6E-07
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	2.8E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.0E-07
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	8.1E-08	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	5.9E-09
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	2.1E-07	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	1.6E-09
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	1.2E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	8.7E-08
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	1.1E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	7.7E-08
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	5.5E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	7.3E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-07
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	9.2E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	2.7E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	1.9E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**1.4E-06**
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	5.3E-06	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	3.9E-06
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	1.2E-05	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	9.0E-05
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	3.0E-05	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.2E-05
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	8.0E-06	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	5.8E-07
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	1.3E-05	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	9.6E-08
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	1.9E-06	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-05
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	1.2E-05	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	8.5E-06
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	3.6E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	4.8E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	7.2E-09
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	6.1E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	1.8E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	1.3E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										**1.4E-04**
										Total Risk Across All Exposure Routes/Pathways	**1.4E-04**

TABLE 8.11 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF CHILD RECREATIONAL USERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	2.7E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.0E-07
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	3.7E-07	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-06
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	8.8E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	6.4E-07
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	2.5E-07	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	1.8E-08
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	6.7E-07	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	4.9E-09
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	3.7E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-07
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	3.3E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.4E-07
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	1.7E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	2.3E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-07
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	2.9E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	8.4E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	6.0E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											4.4E-06
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	1.7E-05	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-05
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	3.9E-05	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-04
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	9.3E-05	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	6.8E-05
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	2.5E-05	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	1.8E-06
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	4.1E-05	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	3.0E-07
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	6.1E-06	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	4.4E-05
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	3.6E-05	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.7E-05
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	1.1E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	1.5E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-08
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	1.9E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	5.5E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	4.0E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											4.4E-04
										Total Risk Across All Exposure Routes/Pathways	**4.4E-04**

TABLE 8.12 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF ADULT RECREATIONAL USERS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	4.6E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	3.4E-08
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	6.3E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	4.6E-07
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	1.5E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.1E-07
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	4.3E-08	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	3.2E-09
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	1.1E-07	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	8.4E-10
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	6.4E-09	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	4.7E-08
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	5.6E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	4.1E-08
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	3.0E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	3.9E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	5.9E-08
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	4.9E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	1.4E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	1.0E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											7.5E-07
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	3.9E-05	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.9E-05
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	9.1E-05	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	6.6E-04
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	2.2E-04	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.6E-04
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	5.9E-05	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	4.3E-06
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	9.7E-05	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	7.1E-07
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	1.4E-05	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	1.0E-04
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	8.6E-05	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	6.3E-05
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	2.7E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	3.5E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	5.3E-08
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	4.5E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	1.3E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	9.3E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											1.0E-03
										Total Risk Across All Exposure Routes/Pathways	**1.0E-03**

TABLE 8.13 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF FUTURE CHILD RESIDENTS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	2.7E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.0E-07
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	3.7E-07	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-06
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	8.8E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	6.4E-07
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	2.5E-07	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	1.8E-08
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	6.7E-07	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	4.9E-09
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	3.7E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-07
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	3.3E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.4E-07
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	1.7E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	-
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	2.3E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-07
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	2.9E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	8.4E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	6.0E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											4.4E-06
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	1.7E-05	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-05
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	3.9E-05	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-04
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	9.3E-05	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	6.8E-05
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	2.5E-05	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	1.8E-06
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	4.1E-05	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	3.0E-07
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	6.1E-06	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	4.4E-05
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	3.6E-05	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.7E-05
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	1.1E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	1.5E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-08
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	1.9E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	5.5E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	4.0E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											4.4E-04
										Total Risk Across All Exposure Routes/Pathways	**4.4E-04**

TABLE 8.14 - REASONABLE MAXIMUM EXPOSURE (RME)
CALCULATION OF CANCER RISKS FROM EXPOSURE OF FUTURE ADULT RESIDENTS TO SURFACE WATER
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Gully
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	4.6E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	3.4E-08
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	6.3E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	4.6E-07
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	1.5E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.1E-07
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	4.3E-08	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	3.2E-09
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	1.1E-07	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	8.4E-10
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	6.4E-09	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	4.7E-08
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	5.6E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	4.1E-08
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	3.0E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	3.9E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	5.9E-08
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	4.9E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	1.4E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	1.0E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											7.5E-07
Dermal	Benzo(a)anthracene	1.66E-03	mg/L	1.66E-03	mg/L	M	3.9E-05	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.9E-05
	Benzo(a)pyrene	2.26E-03	mg/L	2.26E-03	mg/L	M	9.1E-05	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	6.6E-04
	Benzo(b)fluoranthene	5.38E-03	mg/L	5.38E-03	mg/L	M	2.2E-04	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.6E-04
	Benzo(k)fluoranthene	1.55E-03	mg/L	1.55E-03	mg/L	M	5.9E-05	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	4.3E-06
	Chrysene	4.12E-03	mg/L	4.12E-03	mg/L	M	9.7E-05	mg/kg-day	7.30E-03	$(mg/kg\text{-}day)^{-1}$	7.1E-07
	Dibenzo(a,h)anthracene	2.30E-04	mg/L	2.30E-04	mg/L	M	1.4E-05	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	1.0E-04
	Indeno(1,2,3-cd)pyrene	2.02E-03	mg/L	2.02E-03	mg/L	M	8.6E-05	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	6.3E-05
	Antimony	1.06E-03	mg/L	1.06E-03	mg/L	M	2.7E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Arsenic	1.40E-03	mg/L	1.40E-03	mg/L	M	3.5E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	5.3E-08
	Iron	1.77E+00	mg/L	1.77E+00	mg/L	M	4.5E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	5.15E-01	mg/L	5.15E-01	mg/L	M	1.3E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Vanadium	3.69E-03	mg/L	3.69E-03	mg/L	M	9.3E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
											1.0E-03
										Total Risk Across All Exposure Routes/Pathways	**1.0E-03**

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Soil	Surface Soil	Enrtire Site including Asphalt Covered Area	Maintenance Workers	Adult	Ingestion Dermal	Quant Quant	Maintenance workers may contact surface soil during normal work activities.
				Occupational Workers	Adult	Ingestion Dermal	Quant Quant	Occupational workers may contact surface soil during normal work activities.
				Trespassers	Adolescents	Ingestion Dermal	Quant Quant	Although access to the base is controlled, once inside the base, access to the SWMU 15 is not limited by any physical restraint. Adolescent trespassers may be exposed to surface soil while at the site.
		Air	Enrtire Site including Asphalt Covered Area	Maintenance Workers	Adult	Inhalation	Qual	Exposure is evaluated qualitatively by a comparison of site data to USEPA Generic SSLs for transfers from soil to air. Concentrations of all detected constituents were less than the SSLs.
				Occupational Workers	Adult	Inhalation	Qual	
				Trespassers	Adolescents	Inhalation	Qual	
	Groundwater	Groundwater	Perched Aquifer	Maintenance Workers	Adult	Ingestion Dermal Inhalation	None None None	Groundwater in the perched aquifer at SWMU 15 is not considered to be a source of potable water. Few organic chemicals were detected in groundwater and concentrations were less than risk-based screening levels. Metals detected in groundwater are not related to past site activities.
				Occupational Workers	Adult	Ingestion Dermal Inhalation	None None None	
				Trespassers	Adolescents	Ingestion Dermal Inhalation	None None None	
	Surface Water	Surface Water	Entire Site	Maintenance Workers	Adult	Ingestion Dermal	None Quant	Maintenance workers are not expected to ingest surface water. Maintenance workers may have dermal contact with surface water.
				Occupational Workers	Adult	Ingestion Dermal	None None	Occupational workers are not expected to be exposed to surface water.
				Trespassers	Adolescents	Ingestion Dermal	Quant Quant	Although access to the base is controlled, once inside the base, access to the SWMU 15 is not limited by any physical restraint. Adolescent trespassers may be exposed to surface water while at the site.
	Sediment	Sediment	Entire Site	Maintenance Workers	Adult	Ingestion Dermal	Quant Quant	Maintenance workers may contact sediment.
				Occupational Workers	Adult	Ingestion Dermal	None None	Occupational workers are not expected to be exposed to sediment.
				Trespassers	Adolescents	Ingestion Dermal	Quant Quant	Although access to the base is controlled, once inside the base, access to the SWMU 15 is not limited by any physical restraint. Adolescent trespassers may be exposed to sediment while at the site.

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Surface/ Subsurface soil	Surface/ Subsurface Soil	Entire Site Including Asphalt Covered Area	Construction Workers	Adult	Ingestion Dermal	Quant Quant	Construction workers may have contact with surface and subsurface soil during excavation activities.
		Air	Entire Site Including Asphalt Covered Area	Construction Workers	Adult	Inhalation	Qual	Exposure is evaluated qualitatively by a comparison of site data to USEPA Generic SSLs for transfers from soil to air. Concentrations of all detected constituents were less than the SSLs.
	Surface Soil	Surface Soil	Entire Site Including Asphalt Covered Area	Recreational Users	Child	Ingestion Dermal	Quant Quant	This scenario is evaluated on the assumption that the Facility would close and be turned into a state park in the future.
					Adult	Ingestion Dermal	Quant Quant	This scenario is evaluated on the assumption that the Facility would close and be turned into a state park in the future.
				Residents	Child	Ingestion Dermal	Quant Quant	Although a future residential scenario is considered unlikely at the site this scenario is included to aid in future risk management decisions.
					Adult	Ingestion Dermal	Quant Quant	Although a future residential scenario is considered unlikely at the site this scenario is included to aid in future risk management decisions.
		Air	Enrtire Site Including Asphalt Covered Area	Recreational Users	Child	Inhalation	Qual	Exposure is evaluated qualitatively by a comparison of site data to USEPA Generic SSLs for transfers from soil to air. Concentrations of all detected constituents were less than the SSLs.
					Adult	Inhalation	Qual	Exposure is evaluated qualitatively by a comparison of site data to USEPA Generic SSLs for transfers from soil to air. Concentrations of all detected constituents were less than the SSLs.
				Residents	Child	Inhalation	Qual	Exposure is evaluated qualitatively by a comparison of site data to USEPA Generic SSLs for transfers from soil to air. Concentrations of all detected constituents were less than the SSLs.
					Adult	Inhalation	Qual	Exposure is evaluated qualitatively by a comparison of site data to USEPA Generic SSLs for transfers from soil to air. Concentrations of all detected constituents were less than the SSLs.
	Ground Water	Groundwater	Perched Aquifer	Construction Workers	Adult	Ingestion Dermal Inhalation	None None None	Groundwater in the perched aquifer at SWMU 15 is not considered to be a source of potable water. Few organic chemicals were detected in groundwater and concentrations were less than risk-based screening levels. Metals detected in groundwater are not related to past site activities.
				Recreational Users	Child	Ingestion Dermal Inhalation	None None None	
					Adult	Ingestion Dermal Inhalation	None None None	
				Residents	Child	Ingestion Dermal Inhalation	None None None	
					Adult	Ingestion Dermal Inhalation	None None None	

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Surface Water	Surface Water	Entire Site	Construction Workers	Adult	Ingestion	None	Construction workers are not expected to be exposed to surface water.
						Dermal	None	
				Recreational Users	Child	Ingestion	Quant	This scenario is evaluated on the assumption that the Facility would close and be turned into a state park in the future.
						Dermal	Quant	
					Adult	Ingestion	Quant	This scenario is evaluated on the assumption that the Facility would close and be turned into a state park in the future.
						Dermal	Quant	
				Residents	Child	Ingestion	Quant	Although a future residential scenario is considered unlikely at the site, this scenario is included to aid in future risk management decisions.
						Dermal	Quant	
					Adult	Ingestion	Quant	Although a future residential scenario is considered unlikely at the site, this scenario is included to aid in future risk management decisions.
						Dermal	Quant	
	Sediment	Sediment	Entire Site	Construction Workers	Adult	Ingestion	None	Construction workers are not expected to be exposed to sediment.
						Dermal	None	
				Recreational Users	Child	Ingestion	Quant	This scenario is evaluated on the assumption that the Facility would close and be turned into a state park in the future.
						Dermal	Quant	
					Adult	Ingestion	Quant	This scenario is evaluated on the assumption that the Facility would close and be turned into a state park in the future.
						Dermal	Quant	
				Residents	Child	Ingestion	Quant	Although a future residential scenario is considered unlikely at the site, this scenario is included to aid in future risk management decisions.
						Dermal	Quant	
					Adult	Ingestion	Quant	Although a future residential scenario is considered unlikely at the site, this scenario is included to aid in future risk management decisions.
						Dermal	Quant	

Notes:
Quant - Quantitative.
Qual - Qualitative.

TABLE 9.1a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - CONSTRUCTION WORKERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface and Subsurface Soil	Benzo(a)anthracene	6.2E-09		1.6E-09	7.9E-09	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	1.8E-07		4.8E-08	2.3E-07	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	2.2E-08		5.8E-09	2.8E-08	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	3.9E-08		1.0E-08	4.9E-08	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	2.0E-08		5.3E-09	2.5E-08	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1260	1.2E-08		3.3E-09	1.5E-08	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	1.9E-02			1.9E-02
			Arsenic	2.2E-07		1.3E-08	2.3E-07	Arsenic	Skin, CVS	3.4E-02		2.1E-03	3.6E-02
			Cadmium					Cadmium	Kidney	2.1E-03		8.4E-05	2.2E-03
			Iron					Iron	NA	8.9E-02			8.9E-02
			Manganese					Manganese	CNS	8.8E-03			8.8E-03
			Vanadium					Vanadium	Kidney	3.3E-02			3.3E-02
						Total ILCR Across Surface / Subsurface Soil	5.9E-07					Total HI Across Surface / Subsurface Soil	1.9E-01
						Total ILCR Across All Media and All Exposure Routes	5.9E-07					Total HI Across All Media and All Exposure Routes	1.9E-01

Total CNS HI =	2.8E-02	Total Kidney HI =	3.6E-02
Total Skin HI =	3.6E-02	Total CVS HI =	3.6E-02

TABLE 9.2a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - MAINTENANCE WORKERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Maintenance Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Benzo(a)anthracene	3.E-09		5.E-10	3.E-09	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	6.E-08		1.E-08	7.E-08	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	7.E-09		1.E-09	8.E-09	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	2.E-08		3.E-09	2.E-08	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	6.E-09		1.E-09	7.E-09	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1260	3.E-09		6.E-10	4.E-09	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	4.E-04			4.E-04
			Arsenic	5.E-08		2.E-09	5.E-08	Arsenic	Skin, CVS	9.E-04		3.E-05	9.E-04
			Cadmium					Cadmium	Kidney	6.E-05		2.E-06	6.E-05
			Iron					Iron	NA	2.E-03			2.E-03
			Manganese					Manganese	CNS	2.E-04			2.E-04
			Vanadium					Vanadium	Kidney	8.E-04			8.E-04
Surface Water	Surface Water	Surface Water	Benzo(a)anthracene			5.E-07	5.E-07	Benzo(a)anthracene	NA				
			Benzo(a)pyrene			1.E-05	1.E-05	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene			3.E-06	3.E-06	Benzo(b)fluoranthene	NA				
			Benzo(k)fluoranthene			7.E-08	7.E-08	Benzo(k)fluoranthene	NA				
			Chrysene			1.E-08	1.E-08	Chrysene	NA				
			Dibenzo(a,h)anthracene			2.E-06	2.E-06	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene			1.E-06	1.E-06	Indeno(1,2,3-cd)pyrene	NA				
			Antimony					Antimony	Blood			3.E-05	3.E-05
			Arsenic			4.E-10	4.E-10	Arsenic	Skin, CVS			7.E-06	7.E-06
			Iron					Iron	NA			9.E-06	9.E-06
			Manganese					Manganese	CNS			8.E-04	8.E-04
			Vanadium					Vanadium	Kidney			2.E-04	2.E-04

TABLE 9.2a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - MAINTENANCE WORKERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Maintenance Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Sediment	Benzo(a)anthracene	4.E-09		7.E-10	5.E-09	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	4.E-08		8.E-09	5.E-08	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	5.E-09		9.E-10	6.E-09	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	9.E-09		1.E-09	1.E-08	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	3.E-09		6.E-10	4.E-09	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1254	1.E-09		2.E-10	1.E-09	Aroclor-1254	Immune System	2.E-04		3.E-05	2.E-04
			Aroclor-1260	2.E-09		4.E-10	2.E-09	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	3.E-04			3.E-04
			Arsenic	5.E-08		2.E-09	6.E-08	Arsenic	Skin, CVS	9.E-04		4.E-05	1.E-03
			Iron					Iron	NA	2.E-03			2.E-03
			Manganese					Manganese	CNS	4.E-04			4.E-04
			Vanadium					Vanadium	Kidney	8.E-04			8.E-04
						Total ILCR Across Surface Soil	2.E-07					Total HI Across Surface Soil	5.E-03
						Total ILCR Across Surface Water	2.E-05					Total HI Across Surface Water	1.E-03
						Total ILCR Across Sediment	1.E-07					Total HI Across Sediment	5.E-03
						Total ILCR Across All Media and All Exposure Routes	2.E-05					Total HI Across All Media and All Exposure Routes	1.E-02

Total CNS HI =	2.E-03	Total Kidney HI =	2.E-03
Total Skin HI =	2.E-03	Total Blood HI =	3.E-05
Total CVS HI =	2.E-03	Total Immune System HI =	2.E-04

TABLE 9.3a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - OCCUPATIONAL WORKERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Occupational Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Benzo(a)anthracene	5.E-08		9.E-09	6.E-08	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	1.E-06		2.E-07	1.E-06	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	1.E-07		2.E-08	1.E-07	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	3.E-07		6.E-08	4.E-07	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	1.E-07		2.E-08	1.E-07	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1260	6.E-08		1.E-08	7.E-08	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	8.E-03			8.E-03
			Arsenic	9.E-07		4.E-08	9.E-07	Arsenic	Skin, CVS	2.E-02		6.E-04	2.E-02
			Cadmium					Cadmium	Kidney	1.E-03		3.E-05	1.E-03
			Iron					Iron	NA	4.E-02			4.E-02
			Manganese					Manganese	CNS	3.E-03			3.E-03
			Vanadium					Vanadium	Kidney	1.E-02			1.E-02
						Total ILCR Across Surface Soil	3.E-06					Total HI Across Surface Soil	8.E-02
						Total ILCR Across All Media and All Exposure Routes	3.E-06					Total HI Across All Media and All Exposure Routes	8.E-02

Total CNS HI =	1.E-02	Total Kidney HI =	2.E-02
Total Skin HI =	2.E-02	Total CVS HI =	2.E-02

TABLE 9.4a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADOLESCENT TRESPASSERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent (6 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Benzo(a)anthracene	6.E-09		2.E-09	8.E-09	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	1.E-07		4.E-08	2.E-07	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	1.E-08		5.E-09	2.E-08	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	4.E-08		1.E-08	5.E-08	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	1.E-08		4.E-09	2.E-08	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1260	7.E-09		2.E-09	9.E-09	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	8.E-04			8.E-04
			Arsenic	1.E-07		8.E-09	1.E-07	Arsenic	Skin, CVS	2.E-03		1.E-04	2.E-03
			Cadmium					Cadmium	Kidney	1.E-04		5.E-06	1.E-04
			Iron					Iron	NA	4.E-03			4.E-03
			Manganese					Manganese	CNS	3.E-04			3.E-04
			Vanadium					Vanadium	Kidney	1.E-03			1.E-03
Surface Water	Surface Water	Surface Water	Benzo(a)anthracene	2.E-08		1.E-06	1.E-06	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	2.E-07		3.E-05	3.E-05	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	5.E-08		7.E-06	7.E-06	Benzo(b)fluoranthene	NA				
			Benzo(k)fluoranthene	1.E-09		2.E-07	2.E-07	Benzo(k)fluoranthene	NA				
			Chrysene	4.E-10		3.E-08	3.E-08	Chrysene	NA				
			Dibenzo(a,h)anthracene	2.E-08		5.E-06	5.E-06	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	2.E-08		3.E-06	3.E-06	Indeno(1,2,3-cd)pyrene	NA				
			Antimony					Antimony	Blood	2.E-04		9.E-05	3.E-04
			Arsenic	3.E-08		2.E-09	3.E-08	Arsenic	Skin, CVS	4.E-04		2.E-05	4.E-04
			Iron					Iron	NA	5.E-04		3.E-05	5.E-04
			Manganese					Manganese	CNS	2.E-03		3.E-03	5.E-03
			Vanadium					Vanadium	Kidney	3.E-04		7.E-04	1.E-03

TABLE 9.4a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADOLESCENT TRESPASSERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent (6 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Sediment	Benzo(a)anthracene	4.E-09		3.E-09	7.E-09	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	5.E-08		3.E-08	8.E-08	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	6.E-09		4.E-09	9.E-09	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	9.E-09		6.E-09	2.E-08	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	4.E-09		2.E-09	6.E-09	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1254	1.E-09		7.E-10	2.E-09	Aroclor-1254	Immune System	2.E-04		1.E-04	3.E-04
			Aroclor-1260	2.E-09		1.E-09	4.E-09	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	2.E-04			2.E-04
			Arsenic	6.E-08		9.E-09	7.E-08	Arsenic	Skin, CVS	8.E-04		1.E-04	9.E-04
			Iron					Iron	NA	2.E-03			2.E-03
			Manganese					Manganese	CNS	4.E-04			4.E-04
			Vanadium					Vanadium	Kidney	7.E-04			7.E-04
						Total ILCR Across Surface Soil	4.E-07					Total HI Across Surface Soil	8.E-03
						Total ILCR Across Surface Water	5.E-05					Total HI Across Surface Water	7.E-03
						Total ILCR Across Sediment	2.E-07					Total HI Across Sediment	5.E-03
						Total ILCR Across All Media and All Exposure Routes	5.E-05					Total HI Across All Media and All Exposure Routes	2.E-02

Total CNS HI =	6.E-03	Total Kidney HI =	3.E-03
Total Skin HI =	3.E-03	Total Blood HI =	3.E-04
Total CVS HI =	3.E-03	Total Immune System HI =	3.E-04

TABLE 9.5a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - CHILD RECREATIONAL USERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Child (0 to 6 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Benzo(a)anthracene	6.E-08		2.E-09	6.E-08	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	1.E-07		4.E-08	2.E-07	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	2.E-08		5.E-09	2.E-08	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	4.E-08		1.E-08	5.E-08	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	1.E-08		5.E-09	2.E-08	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1260	7.E-09		3.E-09	9.E-09	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	4.E-03			4.E-03
			Arsenic	1.E-07		9.E-09	1.E-07	Arsenic	Skin, CVS	9.E-03		7.E-04	9.E-03
			Cadmium					Cadmium	Kidney	6.E-04		3.E-05	6.E-04
			Iron					Iron	NA	2.E-02			2.E-02
			Manganese					Manganese	CNS	2.E-03			2.E-03
			Vanadium					Vanadium	Kidney	8.E-03			8.E-03
Surface Water	Surface Water	Surface Water	Benzo(a)anthracene	2.E-08		1.E-06	1.E-06	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	2.E-07		3.E-05	3.E-05	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	5.E-08		8.E-06	8.E-06	Benzo(b)fluoranthene	NA				
			Benzo(k)fluoranthene	2.E-09		2.E-07	2.E-07	Benzo(k)fluoranthene	NA				
			Chrysene	4.E-10		4.E-08	4.E-08	Chrysene	NA				
			Dibenzo(a,h)anthracene	2.E-08		5.E-06	5.E-06	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	2.E-08		3.E-06	3.E-06	Indeno(1,2,3-cd)pyrene	NA				
			Antimony					Antimony	Blood	1.E-03		6.E-04	2.E-03
			Arsenic	3.E-08		2.E-09	3.E-08	Arsenic	Skin, CVS	2.E-03		1.E-04	2.E-03
			Iron					Iron	NA	3.E-03		2.E-04	3.E-03
			Manganese					Manganese	CNS	1.E-02		2.E-02	3.E-02
			Vanadium					Vanadium	Kidney	2.E-03		4.E-03	6.E-03

TABLE 9.5a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - CHILD RECREATIONAL USERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Child (0 to 6 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Sediment	Benzo(a)anthracene	9.E-09		3.E-09	1.E-08	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	1.E-07		3.E-08	1.E-07	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	1.E-08		4.E-09	2.E-08	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	2.E-08		7.E-09	3.E-08	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	8.E-09		3.E-09	1.E-08	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1254	2.E-09		8.E-10	3.E-09	Aroclor-1254	Immune System	2.E-03		7.E-04	3.E-03
			Aroclor-1260	4.E-09		2.E-09	6.E-09	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	3.E-03			3.E-03
			Arsenic	1.E-07		1.E-08	1.E-07	Arsenic	Skin, CVS	9.E-03		7.E-04	1.E-02
			Iron					Iron	NA	2.E-02			2.E-02
			Manganese					Manganese	CNS	4.E-03			4.E-03
			Vanadium					Vanadium	Kidney	8.E-03			8.E-03
						Total ILCR Across Surface Soil	5.E-07					Total HI Across Surface Soil	5.E-02
						Total ILCR Across Surface Water	5.E-05					Total HI Across Surface Water	4.E-02
						Total ILCR Across Sediment	3.E-07					Total HI Across Sediment	5.E-02
						Total ILCR Across All Media and All Exposure Routes	5.E-05					Total HI Across All Media and All Exposure Routes	1.E-01

Total CNS HI =	4.E-02	Total Kidney HI =	2.E-02
Total Skin HI =	2.E-02	Total Blood HI =	2.E-03
Total CVS HI =	2.E-02	Total Immune System HI =	3.E-03

TABLE 9.6a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADULT RECREATIONAL USERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Benzo(a)anthracene	2.E-09		1.E-09	3.E-09	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	5.E-08		2.E-08	7.E-08	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	6.E-09		3.E-09	8.E-09	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	2.E-08		7.E-09	2.E-08	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	5.E-09		2.E-09	8.E-09	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1260	3.E-09		1.E-09	4.E-09	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	5.E-04			5.E-04
			Arsenic	4.E-08		5.E-09	5.E-08	Arsenic	Skin, CVS	9.E-04		1.E-04	1.E-03
			Cadmium					Cadmium	Kidney	6.E-05		5.E-06	7.E-05
			Iron					Iron	NA	2.E-03			2.E-03
			Manganese					Manganese	CNS	2.E-04			2.E-04
			Vanadium					Vanadium	Kidney	9.E-04			9.E-04
Surface Water	Surface Water	Surface Water	Benzo(a)anthracene	2.E-09		3.E-06	3.E-06	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	3.E-08		7.E-05	7.E-05	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	8.E-09		2.E-05	2.E-05	Benzo(b)fluoranthene	NA				
			Benzo(k)fluoranthene	2.E-10		4.E-07	4.E-07	Benzo(k)fluoranthene	NA				
			Chrysene	6.E-11		7.E-08	7.E-08	Chrysene	NA				
			Dibenzo(a,h)anthracene	3.E-09		1.E-05	1.E-05	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	3.E-09		6.E-06	6.E-06	Indeno(1,2,3-cd)pyrene	NA				
			Antimony					Antimony	Blood	5.E-05		3.E-04	4.E-04
			Arsenic	4.E-09		4.E-09	8.E-09	Arsenic	Skin, CVS	9.E-05		9.E-05	2.E-04
			Iron					Iron	NA	1.E-04		1.E-04	2.E-04
			Manganese					Manganese	CNS	4.E-04		1.E-02	1.E-02
			Vanadium					Vanadium	Kidney	8.E-05		3.E-03	3.E-03

TABLE 9.6a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADULT RECREATIONAL USERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Sediment	Benzo(a)anthracene	3.E-09		2.E-09	5.E-09	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	4.E-08		2.E-08	5.E-08	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	4.E-09		2.E-09	6.E-09	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	7.E-09		3.E-09	1.E-08	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	3.E-09		1.E-09	4.E-09	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1254	8.E-10		4.E-10	1.E-09	Aroclor-1254	Immune System	2.E-04		1.E-04	3.E-04
			Aroclor-1260	2.E-09		9.E-10	3.E-09	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	3.E-04			3.E-04
			Arsenic	5.E-08		5.E-09	5.E-08	Arsenic	Skin, CVS	1.E-03		1.E-04	1.E-03
			Iron					Iron	NA	3.E-03			3.E-03
			Manganese					Manganese	CNS	5.E-04			5.E-04
			Vanadium					Vanadium	Kidney	8.E-04			8.E-04
						Total ILCR Across Surface Soil	2.E-07					Total HI Across Surface Soil	5.E-03
						Total ILCR Across Surface Water	1.E-04					Total HI Across Surface Water	1.E-02
						Total ILCR Across Sediment	1.E-07					Total HI Across Sediment	6.E-03
						Total ILCR Across All Media and All Exposure Routes	1.E-04					Total HI Across All Media and All Exposure Routes	2.E-02

Total CNS HI =	1.E-02	Total Kidney HI =	4.E-03
Total Skin HI =	2.E-03	Total Blood HI =	4.E-04
Total CVS HI =	2.E-03	Total Immune System HI =	3.E-04

TABLE 9.7a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - TOTAL RECREATIONAL ILCRS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Child + Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Benzo(a)anthracene	6.E-08		3.E-09	7.E-08	Benzo(a)anthracene					
			Benzo(a)pyrene	2.E-07		7.E-08	2.E-07	Benzo(a)pyrene					
			Benzo(b)fluoranthene	2.E-08		8.E-09	3.E-08	Benzo(b)fluoranthene					
			Dibenzo(a,h)anthracene	6.E-08		2.E-08	8.E-08	Dibenzo(a,h)anthracene					
			Indeno(1,2,3-cd)pyrene	2.E-08		7.E-09	3.E-08	Indeno(1,2,3-cd)pyrene					
			Aroclor-1260	9.E-09		4.E-09	1.E-08	Aroclor-1260					
			Aluminum					Aluminum					
			Arsenic	2.E-07		1.E-08	2.E-07	Arsenic					
			Cadmium					Cadmium					
			Iron					Iron					
			Manganese					Manganese					
			Vanadium					Vanadium					
Surface Water	Surface Water	Surface Water	Benzo(a)anthracene	2.E-08		4.E-06	4.E-06	Benzo(a)anthracene					
			Benzo(a)pyrene	3.E-07		1.E-04	1.E-04	Benzo(a)pyrene					
			Benzo(b)fluoranthene	6.E-08		2.E-05	2.E-05	Benzo(b)fluoranthene					
			Benzo(k)fluoranthene	2.E-09		7.E-07	7.E-07	Benzo(k)fluoranthene					
			Chrysene	5.E-10		1.E-07	1.E-07	Chrysene					
			Dibenzo(a,h)anthracene	3.E-08		2.E-05	2.E-05	Dibenzo(a,h)anthracene					
			Indeno(1,2,3-cd)pyrene	2.E-08		1.E-05	1.E-05	Indeno(1,2,3-cd)pyrene					
			Antimony					Antimony					
			Arsenic	3.E-08		6.E-09	4.E-08	Arsenic					
			Iron					Iron					
			Manganese					Manganese					
			Vanadium					Vanadium					

TABLE 9.7a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - TOTAL RECREATIONAL ILCRS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Child + Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Sediment	Benzo(a)anthracene	1.E-08		5.E-09	2.E-08	Benzo(a)anthracene					
			Benzo(a)pyrene	1.E-07		5.E-08	2.E-07	Benzo(a)pyrene					
			Benzo(b)fluoranthene	2.E-08		6.E-09	2.E-08	Benzo(b)fluoranthene					
			Dibenzo(a,h)anthracene	3.E-08		1.E-08	4.E-08	Dibenzo(a,h)anthracene					
			Indeno(1,2,3-cd)pyrene	1.E-08		4.E-09	1.E-08	Indeno(1,2,3-cd)pyrene					
			Aroclor-1254	3.E-09		1.E-09	4.E-09	Aroclor-1254					
			Aroclor-1260	6.E-09		3.E-09	9.E-09	Aroclor-1260					
			Aluminum					Aluminum					
			Arsenic	2.E-07		1.E-08	2.E-07	Arsenic					
			Iron					Iron					
			Manganese					Manganese					
			Vanadium					Vanadium					
						Total ILCR Across Surface Soil	6.E-07					Total HI Across Surface Soil	
						Total ILCR Across Surface Water	2.E-04					Total HI Across Surface Water	
						Total ILCR Across Sediment	5.E-07					Total HI Across Sediment	
						Total ILCR Across All Media and All Exposure Routes	2.E-04					Total HI Across All Media and All Exposure Routes	

TABLE 9.8a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - FUTURE CHILD RESIDENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child (0 to 6 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Benzo(a)anthracene	1.E-07		2.E-08	1.E-07	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	2.E-06		3.E-07	3.E-06	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	3.E-07		4.E-08	3.E-07	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	7.E-07		1.E-07	8.E-07	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	3.E-07		4.E-08	3.E-07	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1260	1.E-07		2.E-08	1.E-07	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	8.E-02			8.E-02
			Arsenic	2.E-06		7.E-08	2.E-06	Arsenic	Skin, CVS	2.E-01		5.E-03	2.E-01
			Cadmium					Cadmium	Kidney	1.E-02		2.E-04	1.E-02
			Iron					Iron	NA	4.E-01			4.E-01
			Manganese					Manganese	CNS	3.E-02			3.E-02
			Vanadium					Vanadium	Kidney	1.E-01			1.E-01
Surface Water	Surface Water	Surface Water	Benzo(a)anthracene	2.E-08		1.E-06	1.E-06	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	2.E-07		3.E-05	3.E-05	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	5.E-08		8.E-06	8.E-06	Benzo(b)fluoranthene	NA				
			Benzo(k)fluoranthene	2.E-09		2.E-07	2.E-07	Benzo(k)fluoranthene	NA				
			Chrysene	4.E-10		4.E-08	4.E-08	Chrysene	NA				
			Dibenzo(a,h)anthracene	2.E-08		5.E-06	5.E-06	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	2.E-08		3.E-06	3.E-06	Indeno(1,2,3-cd)pyrene	NA				
			Antimony					Antimony	Blood	1.E-03		6.E-04	2.E-03
			Arsenic	3.E-08		2.E-09	3.E-08	Arsenic	Skin, CVS	2.E-03		1.E-04	2.E-03
			Iron					Iron	NA	3.E-03		2.E-04	3.E-03
			Manganese					Manganese	CNS	1.E-02		2.E-02	3.E-02
			Vanadium					Vanadium	Kidney	2.E-03		4.E-03	6.E-03

TABLE 9.8a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - FUTURE CHILD RESIDENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child (0 to 6 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Sediment	Benzo(a)anthracene	9.E-08		3.E-09	9.E-08	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	1.E-07		3.E-08	1.E-07	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	1.E-08		3.E-09	1.E-08	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	2.E-08		6.E-09	2.E-08	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	8.E-09		2.E-09	1.E-08	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1254	2.E-09		7.E-10	3.E-09	Aroclor-1254	Immune System	2.E-03		6.E-04	2.E-03
			Aroclor-1260	4.E-09		1.E-09	6.E-09	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	3.E-03			3.E-03
			Arsenic	1.E-07		8.E-09	1.E-07	Arsenic	Skin, CVS	9.E-03		6.E-04	1.E-02
			Iron					Iron	NA	2.E-02			2.E-02
			Manganese					Manganese	CNS	4.E-03			4.E-03
			Vanadium					Vanadium	Kidney	8.E-03			8.E-03
							Total ILCR Across Surface Soil					Total HI Across Surface Soil	8.E-01
							Total ILCR Across Surface Water					Total HI Across Surface Water	4.E-02
							Total ILCR Across Sediment					Total HI Across Sediment	5.E-02
							Total ILCR Across All Media and All Exposure Routes					Total HI Across All Media and All Exposure Routes	9.E-01

Total CNS HI =	1.E-01	Total Kidney HI =	2.E-01
Total Skin HI =	2.E-01	Total Blood HI =	2.E-03
Total CVS HI =	2.E-01	Total Immune System HI =	2.E-03

TABLE 9.9a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - FUTURE ADULT RESIDENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Benzo(a)anthracene	4.E-08		6.E-09	5.E-08	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	9.E-07		1.E-07	1.E-06	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	1.E-07		2.E-08	1.E-07	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	3.E-07		4.E-08	3.E-07	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	9.E-08		1.E-08	1.E-07	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1260	5.E-08		7.E-09	5.E-08	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	9.E-03			9.E-03
			Arsenic	8.E-07		3.E-08	8.E-07	Arsenic	Skin, CVS	2.E-02		6.E-04	2.E-02
			Cadmium					Cadmium	Kidney	1.E-03		3.E-05	1.E-03
			Iron					Iron	NA	4.E-02			4.E-02
			Manganese					Manganese	CNS	4.E-03			4.E-03
			Vanadium					Vanadium	Kidney	2.E-02			2.E-02
Surface Water	Surface Water	Surface Water	Benzo(a)anthracene	2.E-09		3.E-06	3.E-06	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	3.E-08		7.E-05	7.E-05	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	8.E-09		2.E-05	2.E-05	Benzo(b)fluoranthene	NA				
			Benzo(k)fluoranthene	2.E-10		4.E-07	4.E-07	Benzo(k)fluoranthene	NA				
			Chrysene	6.E-11		7.E-08	7.E-08	Chrysene	NA				
			Dibenzo(a,h)anthracene	3.E-09		1.E-05	1.E-05	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	3.E-09		6.E-06	6.E-06	Indeno(1,2,3-cd)pyrene	NA				
			Antimony					Antimony	Blood	5.E-05		3.E-04	4.E-04
			Arsenic	4.E-09		4.E-09	8.E-09	Arsenic	Skin, CVS	9.E-05		9.E-05	2.E-04
			Iron					Iron	NA	1.E-04		1.E-04	2.E-04
			Manganese					Manganese	CNS	4.E-04		1.E-02	1.E-02
			Vanadium					Vanadium	Kidney	8.E-05		3.E-03	3.E-03

TABLE 9.9a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - FUTURE ADULT RESIDENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Sediment	Benzo(a)anthracene	3.E-09		1.E-09	4.E-09	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	4.E-08		1.E-08	5.E-08	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	4.E-09		1.E-09	6.E-09	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	7.E-09		2.E-09	9.E-09	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	3.E-09		8.E-10	4.E-09	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1254	8.E-10		3.E-10	1.E-09	Aroclor-1254	Immune System	2.E-04		6.E-05	3.E-04
			Aroclor-1260	2.E-09		5.E-10	2.E-09	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	3.E-04			3.E-04
			Arsenic	5.E-08		3.E-09	5.E-08	Arsenic	Skin, CVS	1.E-03		7.E-05	1.E-03
			Iron					Iron	NA	3.E-03			3.E-03
			Manganese					Manganese	CNS	5.E-04			5.E-04
			Vanadium					Vanadium	Kidney	8.E-04			8.E-04
						Total ILCR Across Surface Soil	2.E-06					Total HI Across Surface Soil	9.E-02
						Total ILCR Across Surface Water	1.E-04					Total HI Across Surface Water	1.E-02
						Total ILCR Across Sediment	1.E-07					Total HI Across Sediment	6.E-03
						Total ILCR Across All Media and All Exposure Routes	1.E-04					Total HI Across All Media and All Exposure Routes	1.E-01

Total CNS HI =	2.E-02	Total Kidney HI =	2.E-02
Total Skin HI =	2.E-02	Total Blood HI =	4.E-04
Total CVS HI =	2.E-02	Total Immune System HI =	3.E-04

TABLE 9.10a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - TOTAL RESIDENTIAL ILCRS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child + Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Benzo(a)anthracene	2.E-07		2.E-08	2.E-07	Benzo(a)anthracene					
			Benzo(a)pyrene	3.E-06		5.E-07	4.E-06	Benzo(a)pyrene					
			Benzo(b)fluoranthene	4.E-07		6.E-08	4.E-07	Benzo(b)fluoranthene					
			Dibenzo(a,h)anthracene	1.E-06		1.E-07	1.E-06	Dibenzo(a,h)anthracene					
			Indeno(1,2,3-cd)pyrene	3.E-07		5.E-08	4.E-07	Indeno(1,2,3-cd)pyrene					
			Aroclor-1260	2.E-07		3.E-08	2.E-07	Aroclor-1260					
			Aluminum					Aluminum					
			Arsenic	3.E-06		9.E-08	3.E-06	Arsenic					
			Cadmium					Cadmium					
			Iron					Iron					
			Manganese					Manganese					
			Vanadium					Vanadium					
Surface Water	Surface Water	Surface Water	Benzo(a)anthracene	2.E-08		4.E-06	4.E-06	Benzo(a)anthracene					
			Benzo(a)pyrene	3.E-07		1.E-04	1.E-04	Benzo(a)pyrene					
			Benzo(b)fluoranthene	6.E-08		2.E-05	2.E-05	Benzo(b)fluoranthene					
			Benzo(k)fluoranthene	2.E-09		7.E-07	7.E-07	Benzo(k)fluoranthene					
			Chrysene	5.E-10		1.E-07	1.E-07	Chrysene					
			Dibenzo(a,h)anthracene	3.E-08		2.E-05	2.E-05	Dibenzo(a,h)anthracene					
			Indeno(1,2,3-cd)pyrene	2.E-08		1.E-05	1.E-05	Indeno(1,2,3-cd)pyrene					
			Antimony					Antimony					
			Arsenic	3.E-08		6.E-09	4.E-08	Arsenic					
			Iron					Iron					
			Manganese					Manganese					
			Vanadium					Vanadium					

TABLE 9.10a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - TOTAL RESIDENTIAL ILCRS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child + Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Sediment	Benzo(a)anthracene	1.E-07		4.E-09	1.E-07	Benzo(a)anthracene					
			Benzo(a)pyrene	1.E-07		4.E-08	2.E-07	Benzo(a)pyrene					
			Benzo(b)fluoranthene	2.E-08		5.E-09	2.E-08	Benzo(b)fluoranthene					
			Dibenzo(a,h)anthracene	3.E-08		8.E-09	3.E-08	Dibenzo(a,h)anthracene					
			Indeno(1,2,3-cd)pyrene	1.E-08		3.E-09	1.E-08	Indeno(1,2,3-cd)pyrene					
			Aroclor-1254	3.E-09		9.E-10	4.E-09	Aroclor-1254					
			Aroclor-1260	6.E-09		2.E-09	8.E-09	Aroclor-1260					
			Aluminum					Aluminum					
			Arsenic	2.E-07		1.E-08	2.E-07	Arsenic					
			Iron					Iron					
			Manganese					Manganese					
			Vanadium					Vanadium					
						Total ILCR Across Surface Soil	9.E-06					Total HI Across Surface Soil	
						Total ILCR Across Surface Water	2.E-04					Total HI Across Surface Water	
						Total ILCR Across Sediment	5.E-07					Total HI Across Sediment	
						Total ILCR Across All Media and All Exposure Routes	2.E-04					Total HI Across All Media and All Exposure Routes	

TABLE 9.1. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - CONSTRUCTION WORKERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface and Subsurface Soil	Benzo(a)anthracene	1.2E-08		4.9E-09	1.7E-08	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	3.7E-07		1.4E-07	5.1E-07	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	4.4E-08		1.7E-08	6.2E-08	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	7.8E-08		3.0E-08	1.1E-07	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	4.0E-08		1.6E-08	5.6E-08	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1260	2.3E-08		9.8E-09	3.3E-08	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	3.7E-02			3.7E-02
			Arsenic	4.4E-07		4.0E-08	4.8E-07	Arsenic	Skin, CVS	6.8E-02		6.2E-03	7.5E-02
			Cadmium					Cadmium	Kidney	4.2E-03		2.5E-04	4.4E-03
			Iron					Iron	NA	1.8E-01			1.8E-01
			Manganese					Manganese	CNS	1.8E-02			1.8E-02
			Vanadium					Vanadium	Kidney	6.7E-02			6.7E-02
			Total ILCR Across Surface / Subsurface Soil				1.3E-06		Total HI Across Surface / Subsurface Soil				3.8E-01
			Total ILCR Across All Media and All Exposure Routes				1.3E-06		Total HI Across All Media and All Exposure Routes				3.8E-01

Total CNS HI =	5.5E-02	Total Kidney HI =	7.1E-02
Total Skin HI =	7.5E-02	Total CVS HI =	7.5E-02

TABLE 9.2. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - MAINTENANCE WORKERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Maintenance Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Benzo(a)anthracene	3.E-08		3.E-08	6.E-08	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	6.E-07		5.E-07	1.E-06	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	8.E-08		7.E-08	1.E-07	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	2.E-07		2.E-07	4.E-07	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	7.E-08		6.E-08	1.E-07	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1260	3.E-08		3.E-08	6.E-08	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	2.E-03			2.E-03
			Arsenic	6.E-07		1.E-07	7.E-07	Arsenic	Skin, CVS	3.E-03		7.E-04	4.E-03
			Cadmium					Cadmium	Kidney	2.E-04		3.E-05	3.E-04
			Iron					Iron	NA	9.E-03			9.E-03
			Manganese					Manganese	CNS	8.E-04			8.E-04
			Vanadium					Vanadium	Kidney	3.E-03			3.E-03
Surface Water	Surface Water	Surface Water	Benzo(a)anthracene			4.E-06	4.E-06	Benzo(a)anthracene	NA				
			Benzo(a)pyrene			8.E-05	8.E-05	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene			2.E-05	2.E-05	Benzo(b)fluoranthene	NA				
			Benzo(k)fluoranthene			5.E-07	5.E-07	Benzo(k)fluoranthene	NA				
			Chrysene			9.E-08	9.E-08	Chrysene	NA				
			Dibenzo(a,h)anthracene			1.E-05	1.E-05	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene			8.E-06	8.E-06	Indeno(1,2,3-cd)pyrene	NA				
			Antimony					Antimony	Blood			1.E-04	1.E-04
			Arsenic			5.E-09	5.E-09	Arsenic	Skin, CVS			3.E-05	3.E-05
			Iron					Iron	NA			4.E-05	4.E-05
			Manganese					Manganese	CNS			3.E-03	3.E-03
			Vanadium					Vanadium	Kidney			9.E-04	9.E-04

TABLE 9.2. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - MAINTENANCE WORKERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Maintenance Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Sediment	Benzo(a)anthracene	5.E-08		4.E-08	8.E-08	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	5.E-07		4.E-07	9.E-07	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	6.E-08		5.E-08	1.E-07	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	1.E-07		8.E-08	2.E-07	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	4.E-08		3.E-08	7.E-08	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1254	1.E-08		1.E-08	2.E-08	Aroclor-1254	Immune System	7.E-04		7.E-04	1.E-03
			Aroclor-1260	2.E-08		2.E-08	4.E-08	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	1.E-03			1.E-03
			Arsenic	6.E-07		1.E-07	7.E-07	Arsenic	Skin, CVS	4.E-03		7.E-04	4.E-03
			Iron					Iron	NA	1.E-02			1.E-02
			Manganese					Manganese	CNS	2.E-03			2.E-03
			Vanadium					Vanadium	Kidney	3.E-03			3.E-03
						Total ILCR Across Surface Soil	3.E-06					Total HI Across Surface Soil	2.E-02
						Total ILCR Across Surface Water	1.E-04					Total HI Across Surface Water	4.E-03
						Total ILCR Across Sediment	2.E-06					Total HI Across Sediment	2.E-02
						Total ILCR Across All Media and All Exposure Routes	1.E-04					Total HI Across All Media and All Exposure Routes	4.E-02

Total CNS HI =	9.E-03	Total Kidney HI =	7.E-03
Total Skin HI =	9.E-03	Total Blood HI =	1.E-04
Total CVS HI =	9.E-03	Total Immune System HI =	1.E-03

TABLE 9.3. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - OCCUPATIONAL WORKERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Occupational Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Benzo(a)anthracene	3.E-07		3.E-07	6.E-07	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	7.E-06		6.E-06	1.E-05	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	8.E-07		7.E-07	1.E-06	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	2.E-06		2.E-06	4.E-06	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	7.E-07		6.E-07	1.E-06	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1260	3.E-07		3.E-07	7.E-07	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	2.E-02			2.E-02
			Arsenic	6.E-06		1.E-06	7.E-06	Arsenic	Skin, CVS	4.E-02		7.E-03	4.E-02
			Cadmium					Cadmium	Kidney	2.E-03		3.E-04	3.E-03
			Iron					Iron	NA	9.E-02			9.E-02
			Manganese					Manganese	CNS	8.E-03			8.E-03
			Vanadium					Vanadium	Kidney	3.E-02			3.E-02
						Total ILCR Across Surface Soil	3.E-05					Total HI Across Surface Soil	2.E-01
						Total ILCR Across All Media and All Exposure Routes	3.E-05					Total HI Across All Media and All Exposure Routes	2.E-01

Total CNS HI =	3.E-02	Total Kidney HI =	4.E-02
Total Skin HI =	4.E-02	Total CVS HI =	4.E-02

TABLE 9.3. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - OCCUPATIONAL WORKERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Occupational Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Benzo(a)anthracene	3.E-07		3.E-07	6.E-07	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	7.E-06		6.E-06	1.E-05	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	8.E-07		7.E-07	1.E-06	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	2.E-06		2.E-06	4.E-06	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	7.E-07		6.E-07	1.E-06	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1260	3.E-07		3.E-07	7.E-07	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	2.E-02			2.E-02
			Arsenic	6.E-06		1.E-06	7.E-06	Arsenic	Skin, CVS	4.E-02		7.E-03	4.E-02
			Cadmium					Cadmium	Kidney	2.E-03		3.E-04	3.E-03
			Iron					Iron	NA	9.E-02			9.E-02
			Manganese					Manganese	CNS	8.E-03			8.E-03
			Vanadium					Vanadium	Kidney	3.E-02			3.E-02
Surface Water	Surface Water	Surface Water							NA				
									NA				
									NA				
									NA				
									NA				
									NA				
									NA				
									Blood				
									Skin, CVS				
									NA				
									CNS				
									Kidney				

TABLE 9.3. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - OCCUPATIONAL WORKERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Occupational Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Sediment							NA				
									NA				
									NA				
									NA				
									NA				
									Immune System				
									NA				
									CNS				
									Skin, CVS				
									NA				
									CNS				
									Kidney				
						Total ILCR Across Surface Soil	3.E-05					Total HI Across Surface Soil	2.E-01
						Total ILCR Across Surface Water						Total HI Across Surface Water	
						Total ILCR Across Sediment						Total HI Across Sediment	
						Total ILCR Across All Media and All Exposure Routes	3.E-05					Total HI Across All Media and All Exposure Routes	2.E-01

Total CNS HI =	3.E-02	Total Kidney HI =	4.E-02
Total Skin HI =	4.E-02	Total CVS HI =	4.E-02

TABLE 9.3. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - OCCUPATIONAL WORKERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Occupational Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Benzo(a)anthracene	3.E-07		3.E-07	6.E-07	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	7.E-06		6.E-06	1.E-05	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	8.E-07		7.E-07	1.E-06	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	2.E-06		2.E-06	4.E-06	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	7.E-07		6.E-07	1.E-06	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1260	3.E-07		3.E-07	7.E-07	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	2.E-02			2.E-02
			Arsenic	6.E-06		1.E-06	7.E-06	Arsenic	Skin, CVS	4.E-02		7.E-03	4.E-02
			Cadmium					Cadmium	Kidney	2.E-03		3.E-04	3.E-03
			Iron					Iron	NA	9.E-02			9.E-02
			Manganese					Manganese	CNS	8.E-03			8.E-03
			Vanadium					Vanadium	Kidney	3.E-02			3.E-02
Surface Water	Surface Water	Surface Water							NA				
									NA				
									NA				
									NA				
									NA				
									NA				
									NA				
									Blood				
									Skin, CVS				
									NA				
									CNS				
									Kidney				

TABLE 9.3. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - OCCUPATIONAL WORKERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Occupational Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Sediment							NA				
									NA				
									NA				
									NA				
									NA				
									Immune System				
									NA				
									CNS				
									Skin, CVS				
									NA				
									CNS				
									Kidney				
						Total ILCR Across Surface Soil	3.E-05					Total HI Across Surface Soil	2.E-01
						Total ILCR Across Surface Water						Total HI Across Surface Water	
						Total ILCR Across Sediment						Total HI Across Sediment	
						Total ILCR Across All Media and All Exposure Routes	3.E-05					Total HI Across All Media and All Exposure Routes	2.E-01

Total CNS HI =	3.E-02	Total Kidney HI =	4.E-02
Total Skin HI =	4.E-02	Total CVS HI =	4.E-02

TABLE 9.6. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADULT RECREATIONAL USERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Benzo(a)anthracene	3.E-08		5.E-08	9.E-08	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	7.E-07		1.E-06	2.E-06	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	8.E-08		1.E-07	2.E-07	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	2.E-07		3.E-07	5.E-07	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	7.E-08		1.E-07	2.E-07	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1260	3.E-08		6.E-08	1.E-07	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	2.E-03			2.E-03
			Arsenic	6.E-07		2.E-07	8.E-07	Arsenic	Skin, CVS	4.E-03		1.E-03	5.E-03
			Cadmium					Cadmium	Kidney	3.E-04		7.E-05	3.E-04
			Iron					Iron	NA	9.E-03			9.E-03
			Manganese					Manganese	CNS	8.E-04			8.E-04
			Vanadium					Vanadium	Kidney	4.E-03			4.E-03
Surface Water	Surface Water	Surface Water	Benzo(a)anthracene	3.E-08		3.E-05	3.E-05	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	5.E-07		7.E-04	7.E-04	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	1.E-07		2.E-04	2.E-04	Benzo(b)fluoranthene	NA				
			Benzo(k)fluoranthene	3.E-09		4.E-06	4.E-06	Benzo(k)fluoranthene	NA				
			Chrysene	8.E-10		7.E-07	7.E-07	Chrysene	NA				
			Dibenzo(a,h)anthracene	5.E-08		1.E-04	1.E-04	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	4.E-08		6.E-05	6.E-05	Indeno(1,2,3-cd)pyrene	NA				
			Antimony					Antimony	Blood	2.E-04		1.E-03	2.E-03
			Arsenic	6.E-08		5.E-08	1.E-07	Arsenic	Skin, CVS	4.E-04		3.E-04	7.E-04
			Iron					Iron	NA	5.E-04		4.E-04	9.E-04
			Manganese					Manganese	CNS	2.E-03		4.E-02	4.E-02
			Vanadium					Vanadium	Kidney	3.E-04		1.E-02	1.E-02

TABLE 9.6. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADULT RECREATIONAL USERS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Sediment	Benzo(a)anthracene	5.E-08		8.E-08	1.E-07	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	5.E-07		8.E-07	1.E-06	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	6.E-08		1.E-07	2.E-07	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	1.E-07		2.E-07	3.E-07	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	4.E-08		6.E-08	1.E-07	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1254	1.E-08		2.E-08	3.E-08	Aroclor-1254	Immune System	8.E-04		1.E-03	2.E-03
			Aroclor-1260	2.E-08		4.E-08	6.E-08	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	1.E-03			1.E-03
			Arsenic	6.E-07		2.E-07	9.E-07	Arsenic	Skin, CVS	4.E-03		2.E-03	6.E-03
			Iron					Iron	NA	1.E-02			1.E-02
			Manganese					Manganese	CNS	2.E-03			2.E-03
			Vanadium					Vanadium	Kidney	3.E-03			3.E-03
						Total ILCR Across Surface Soil	4.E-06					Total HI Across Surface Soil	2.E-02
						Total ILCR Across Surface Water	1.E-03					Total HI Across Surface Water	6.E-02
						Total ILCR Across Sediment	3.E-06					Total HI Across Sediment	2.E-02
						Total ILCR Across All Media and All Exposure Routes	1.E-03					Total HI Across All Media and All Exposure Routes	1.E-01

Total CNS HI =	5.E-02	Total Kidney HI =	2.E-02
Total Skin HI =	1.E-02	Total Blood HI =	2.E-03
Total CVS HI =	1.E-02	Total Immune System HI =	2.E-03

TABLE 9.7. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - TOTAL RECREATIONAL ILCRS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Child + Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Benzo(a)anthracene	4.E-07		3.E-07	7.E-07	Benzo(a)anthracene					
			Benzo(a)pyrene	7.E-06		7.E-06	1.E-05	Benzo(a)pyrene					
			Benzo(b)fluoranthene	9.E-07		8.E-07	2.E-06	Benzo(b)fluoranthene					
			Dibenzo(a,h)anthracene	2.E-06		2.E-06	4.E-06	Dibenzo(a,h)anthracene					
			Indeno(1,2,3-cd)pyrene	8.E-07		7.E-07	2.E-06	Indeno(1,2,3-cd)pyrene					
			Aroclor-1260	4.E-07		4.E-07	8.E-07	Aroclor-1260					
			Aluminum					Aluminum					
			Arsenic	6.E-06		1.E-06	8.E-06	Arsenic					
			Cadmium					Cadmium					
			Iron					Iron					
			Manganese					Manganese					
			Vanadium					Vanadium					
Surface Water	Surface Water	Surface Water	Benzo(a)anthracene	3.E-08		3.E-05	3.E-05	Benzo(a)anthracene					
			Benzo(a)pyrene	5.E-07		7.E-04	7.E-04	Benzo(a)pyrene					
			Benzo(b)fluoranthene	1.E-07		2.E-04	2.E-04	Benzo(b)fluoranthene					
			Benzo(k)fluoranthene	3.E-09		4.E-06	4.E-06	Benzo(k)fluoranthene					
			Chrysene	8.E-10		7.E-07	7.E-07	Chrysene					
			Dibenzo(a,h)anthracene	5.E-08		1.E-04	1.E-04	Dibenzo(a,h)anthracene					
			Indeno(1,2,3-cd)pyrene	4.E-08		6.E-05	6.E-05	Indeno(1,2,3-cd)pyrene					
			Antimony					Antimony					
			Arsenic	6.E-08		5.E-08	1.E-07	Arsenic					
			Iron					Iron					
			Manganese					Manganese					
			Vanadium					Vanadium					

TABLE 9.7. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - TOTAL RECREATIONAL ILCRS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Child + Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Sediment	Benzo(a)anthracene	5.E-08		8.E-08	1.E-07	Benzo(a)anthracene					
			Benzo(a)pyrene	5.E-07		8.E-07	1.E-06	Benzo(a)pyrene					
			Benzo(b)fluoranthene	6.E-08		1.E-07	2.E-07	Benzo(b)fluoranthene					
			Dibenzo(a,h)anthracene	1.E-07		2.E-07	3.E-07	Dibenzo(a,h)anthracene					
			Indeno(1,2,3-cd)pyrene	4.E-08		6.E-08	1.E-07	Indeno(1,2,3-cd)pyrene					
			Aroclor-1254	1.E-08		2.E-08	3.E-08	Aroclor-1254					
			Aroclor-1260	2.E-08		4.E-08	6.E-08	Aroclor-1260					
			Aluminum					Aluminum					
			Arsenic	6.E-07		2.E-07	9.E-07	Arsenic					
			Iron					Iron					
			Manganese					Manganese					
			Vanadium					Vanadium					
						Total ILCR Across Surface Soil	3.E-05					Total HI Across Surface Soil	
						Total ILCR Across Surface Water	1.E-03					Total HI Across Surface Water	
						Total ILCR Across Sediment	3.E-06					Total HI Across Sediment	
						Total ILCR Across All Media and All Exposure Routes	1.E-03					Total HI Across All Media and All Exposure Routes	

TABLE 9.8. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - FUTURE CHILD RESIDENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child (0 to 6 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Benzo(a)anthracene	1.E-06		4.E-07	1.E-06	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	2.E-05		7.E-06	3.E-05	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	2.E-06		9.E-07	3.E-06	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	7.E-06		2.E-06	9.E-06	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	2.E-06		8.E-07	3.E-06	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1260	1.E-06		4.E-07	2.E-06	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	2.E-01			2.E-01
			Arsenic	2.E-05		2.E-06	2.E-05	Arsenic	Skin, CVS	5.E-01		4.E-02	5.E-01
			Cadmium					Cadmium	Kidney	3.E-02		2.E-03	3.E-02
			Iron					Iron	NA	1.E+00			1.E+00
			Manganese					Manganese	CNS	1.E-01			1.E-01
			Vanadium					Vanadium	Kidney	4.E-01			4.E-01
Surface Water	Surface Water	Surface Water	Benzo(a)anthracene	2.E-07		1.E-05	1.E-05	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	3.E-06		3.E-04	3.E-04	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	6.E-07		7.E-05	7.E-05	Benzo(b)fluoranthene	NA				
			Benzo(k)fluoranthene	2.E-08		2.E-06	2.E-06	Benzo(k)fluoranthene	NA				
			Chrysene	5.E-09		3.E-07	3.E-07	Chrysene	NA				
			Dibenzo(a,h)anthracene	3.E-07		4.E-05	4.E-05	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	2.E-07		3.E-05	3.E-05	Indeno(1,2,3-cd)pyrene	NA				
			Antimony					Antimony	Blood	5.E-03		2.E-03	7.E-03
			Arsenic	3.E-07		2.E-08	4.E-07	Arsenic	Skin, CVS	9.E-03		6.E-04	9.E-03
			Iron					Iron	NA	1.E-02		7.E-04	1.E-02
			Manganese					Manganese	CNS	4.E-02		7.E-02	1.E-01
			Vanadium					Vanadium	Kidney	7.E-03		2.E-02	2.E-02

TABLE 9.8. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - FUTURE CHILD RESIDENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child (0 to 6 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Sediment	Benzo(a)anthracene	1.E-06		8.E-08	1.E-06	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	1.E-06		9.E-07	2.E-06	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	1.E-07		1.E-07	2.E-07	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	2.E-07		2.E-07	4.E-07	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	9.E-08		7.E-08	2.E-07	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1254	3.E-08		2.E-08	5.E-08	Aroclor-1254	Immune System	8.E-03		6.E-03	1.E-02
			Aroclor-1260	5.E-08		4.E-08	1.E-07	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	1.E-02			1.E-02
			Arsenic	1.E-06		2.E-07	2.E-06	Arsenic	Skin, CVS	4.E-02		6.E-03	4.E-02
			Iron					Iron	NA	1.E-01			1.E-01
			Manganese					Manganese	CNS	2.E-02			2.E-02
			Vanadium					Vanadium	Kidney	3.E-02			3.E-02
						Total ILCR Across Surface Soil	7.E-05					Total HI Across Surface Soil	3.E+00
						Total ILCR Across Surface Water	4.E-04					Total HI Across Surface Water	2.E-01
						Total ILCR Across Sediment	6.E-06					Total HI Across Sediment	2.E-01
						Total ILCR Across All Media and All Exposure Routes	5.E-04					Total HI Across All Media and All Exposure Routes	3.E+00

Total CNS HI =	5.E-01	Total Kidney HI =	5.E-01
Total Skin HI =	6.E-01	Total Blood HI =	7.E-03
Total CVS HI =	6.E-01	Total Immune System HI =	1.E-02

TABLE 9.9. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - FUTURE ADULT RESIDENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Benzo(a)anthracene	4.E-07		2.E-07	7.E-07	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	9.E-06		5.E-06	1.E-05	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	1.E-06		6.E-07	2.E-06	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	3.E-06		1.E-06	4.E-06	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	1.E-06		5.E-07	1.E-06	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1260	5.E-07		3.E-07	7.E-07	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	3.E-02			3.E-02
			Arsenic	8.E-06		9.E-07	9.E-06	Arsenic	Skin, CVS	5.E-02		6.E-03	6.E-02
			Cadmium					Cadmium	Kidney	3.E-03		3.E-04	4.E-03
			Iron					Iron	NA	1.E-01			1.E-01
			Manganese					Manganese	CNS	1.E-02			1.E-02
			Vanadium					Vanadium	Kidney	5.E-02			5.E-02
Surface Water	Surface Water	Surface Water	Benzo(a)anthracene	3.E-08		3.E-05	3.E-05	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	5.E-07		7.E-04	7.E-04	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	1.E-07		2.E-04	2.E-04	Benzo(b)fluoranthene	NA				
			Benzo(k)fluoranthene	3.E-09		4.E-06	4.E-06	Benzo(k)fluoranthene	NA				
			Chrysene	8.E-10		7.E-07	7.E-07	Chrysene	NA				
			Dibenzo(a,h)anthracene	5.E-08		1.E-04	1.E-04	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	4.E-08		6.E-05	6.E-05	Indeno(1,2,3-cd)pyrene	NA				
			Antimony					Antimony	Blood	2.E-04		1.E-03	2.E-03
			Arsenic	6.E-08		5.E-08	1.E-07	Arsenic	Skin, CVS	4.E-04		3.E-04	7.E-04
			Iron					Iron	NA	5.E-04		4.E-04	9.E-04
			Manganese					Manganese	CNS	2.E-03		4.E-02	4.E-02
			Vanadium					Vanadium	Kidney	3.E-04		1.E-02	1.E-02

TABLE 9.9. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - FUTURE ADULT RESIDENT
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Sediment	Benzo(a)anthracene	5.E-08		5.E-08	1.E-07	Benzo(a)anthracene	NA				
			Benzo(a)pyrene	5.E-07		5.E-07	1.E-06	Benzo(a)pyrene	NA				
			Benzo(b)fluoranthene	6.E-08		6.E-08	1.E-07	Benzo(b)fluoranthene	NA				
			Dibenzo(a,h)anthracene	1.E-07		1.E-07	2.E-07	Dibenzo(a,h)anthracene	NA				
			Indeno(1,2,3-cd)pyrene	4.E-08		4.E-08	8.E-08	Indeno(1,2,3-cd)pyrene	NA				
			Aroclor-1254	1.E-08		1.E-08	2.E-08	Aroclor-1254	Immune System	8.E-04		9.E-04	2.E-03
			Aroclor-1260	2.E-08		3.E-08	5.E-08	Aroclor-1260	NA				
			Aluminum					Aluminum	CNS	1.E-03			1.E-03
			Arsenic	6.E-07		1.E-07	8.E-07	Arsenic	Skin, CVS	4.E-03		1.E-03	5.E-03
			Iron					Iron	NA	1.E-02			1.E-02
			Manganese					Manganese	CNS	2.E-03			2.E-03
			Vanadium					Vanadium	Kidney	3.E-03			3.E-03
						Total ILCR Across Surface Soil	3.E-05					Total HI Across Surface Soil	3.E-01
						Total ILCR Across Surface Water	1.E-03					Total HI Across Surface Water	6.E-02
						Total ILCR Across Sediment	2.E-06					Total HI Across Sediment	2.E-02
						Total ILCR Across All Media and All Exposure Routes	1.E-03					Total HI Across All Media and All Exposure Routes	4.E-01

Total CNS HI =	8.E-02	Total Kidney HI =	7.E-02
Total Skin HI =	6.E-02	Total Blood HI =	2.E-03
Total CVS HI =	6.E-02	Total Immune System HI =	2.E-03

TABLE 9.10. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - TOTAL RESIDENTIAL ILCRS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child + Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Benzo(a)anthracene	1.E-06		6.E-07	2.E-06	Benzo(a)anthracene					
			Benzo(a)pyrene	3.E-05		1.E-05	4.E-05	Benzo(a)pyrene					
			Benzo(b)fluoranthene	4.E-06		1.E-06	5.E-06	Benzo(b)fluoranthene					
			Dibenzo(a,h)anthracene	9.E-06		4.E-06	1.E-05	Dibenzo(a,h)anthracene					
			Indeno(1,2,3-cd)pyrene	3.E-06		1.E-06	5.E-06	Indeno(1,2,3-cd)pyrene					
			Aroclor-1260	2.E-06		7.E-07	2.E-06	Aroclor-1260					
			Aluminum					Aluminum					
			Arsenic	3.E-05		2.E-06	3.E-05	Arsenic					
			Cadmium					Cadmium					
			Iron					Iron					
			Manganese					Manganese					
			Vanadium					Vanadium					
Surface Water	Surface Water	Surface Water	Benzo(a)anthracene	2.E-07		4.E-05	4.E-05	Benzo(a)anthracene					
			Benzo(a)pyrene	3.E-06		9.E-04	9.E-04	Benzo(a)pyrene					
			Benzo(b)fluoranthene	7.E-07		2.E-04	2.E-04	Benzo(b)fluoranthene					
			Benzo(k)fluoranthene	2.E-08		6.E-06	6.E-06	Benzo(k)fluoranthene					
			Chrysene	6.E-09		1.E-06	1.E-06	Chrysene					
			Dibenzo(a,h)anthracene	3.E-07		1.E-04	1.E-04	Dibenzo(a,h)anthracene					
			Indeno(1,2,3-cd)pyrene	3.E-07		9.E-05	9.E-05	Indeno(1,2,3-cd)pyrene					
			Antimony					Antimony					
			Arsenic	4.E-07		8.E-08	5.E-07	Arsenic					
			Iron					Iron					
			Manganese					Manganese					
			Vanadium					Vanadium					

TABLE 9.10. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - TOTAL RESIDENTIAL ILCRS
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child + Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Sediment	Benzo(a)anthracene	1.E-06		1.E-07	1.E-06	Benzo(a)anthracene					
			Benzo(a)pyrene	2.E-06		1.E-06	3.E-06	Benzo(a)pyrene					
			Benzo(b)fluoranthene	2.E-07		2.E-07	4.E-07	Benzo(b)fluoranthene					
			Dibenzo(a,h)anthracene	3.E-07		3.E-07	6.E-07	Dibenzo(a,h)anthracene					
			Indeno(1,2,3-cd)pyrene	1.E-07		1.E-07	2.E-07	Indeno(1,2,3-cd)pyrene					
			Aroclor-1254	4.E-08		3.E-08	7.E-08	Aroclor-1254					
			Aroclor-1260	8.E-08		7.E-08	1.E-07	Aroclor-1260					
			Aluminum					Aluminum					
			Arsenic	2.E-06		4.E-07	2.E-06	Arsenic					
			Iron					Iron					
			Manganese					Manganese					
			Vanadium					Vanadium					
						Total ILCR Across Surface Soil	1.E-04					Total HI Across Surface Soil	
						Total ILCR Across Surface Water	1.E-03					Total HI Across Surface Water	
						Total ILCR Across Sediment	8.E-06					Total HI Across Sediment	
						Total ILCR Across All Media and All Exposure Routes	2.E-03					Total HI Across All Media and All Exposure Routes	

CLIENT: NSWC CRANE, INDIANA		**JOB NUMBER:** 1245
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SOIL FUTURE ON-SITE ADULT RESIDENT		
BASED ON: U.S. EPA, DECEMBER 1989		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 09/06/2005

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from incidental ingestion of surface soil.

EQUATION:

$$IEX = \frac{CS \times IR \times EF \times ED \times FI \times CF}{BW \times AT}$$

Where:

IEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in soil (mg/kg)
IR	=	incidental ingestion rate (mg/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
FI	=	fraction ingested from contaminated source (unitless)
CF	=	conversion factor (1.0E-6 kg/mg)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFo	=	oral carcinogenic slope factor ($(mg/kg/day)^{-1}$)
RfDo	=	oral noncarcinogenic reference dose (mg/kg/day)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFo (mg/kg/day)-1
HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDo (mg/kg/day)

ASSUMPTIONS:

Cs	=	11	mg/kg	Chemical: Arsenic
IR	=	100	mg/day	
EF	=	350	days/year	
ED	=	24	years	
FI	=	1		
CF	=	1.0E-06	kg/mg	
BW	=	70	kg	
ATc	=	25550	days	
ATnc	=	8760	days	
CSFo	=	1.5E+00	$(mg/kg/day)^{-1}$	
RfDo	=	3.0E-04	(mg/kg/day)	

CLIENT: NSWC CRANE, INDIANA		**JOB NUMBER:** 1245
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SOIL FUTURE ON-SITE ADULT RESIDENT		
BASED ON: U.S. EPA, DECEMBER 1989		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 09/06/2005

EXAMPLE CARCINOGENIC CALCULATION

$$IEXc = \frac{11\ mg/kg \times 100\ mg/day \times 350\ days/year \times 24\ years \times 1 \times 1.0E\text{-}06\ kg/mg}{70\ kg \times 25550\ days}$$

IEXc = 5.17E-06 mg/kg/day

ILCR = 5.17E-06 mg/kg/day x 1.50E+00 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ILCR = 7.7E-06

EXAMPLE NONCARCINOGENIC CALCULATION

$$IEXnc = \frac{11\ mg/kg \times 100\ mg/day \times 350\ days/year \times 24\ years \times 1 \times 1.0E\text{-}06\ kg/mg}{70\ kg \times 8760\ days}$$

IEXnc = 1.51E-05 mg/kg/day

HQ = 1.51E-05 mg/kg/day / 3.00E-04 (mg/kg/day) = Hazard Quotient

HQ = 5.0E-02

CLIENT: NCWS CRANE, INDIANA		**JOB NUMBER:** 1245
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SOIL FUTURE ON-SITE ADULT RESIDENT		
BASED ON: U.S. EPA, JULY 2004		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 09/06/2005

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from dermal contact with surface soil.

EQUATION:

$$DEX = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:

DEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in soil (mg/kg)
CF	=	conversion factor (1.0E-6 kg/mg)
SA	=	skin surface available for contact (cm^2/day)
ABS	=	absorption factor (unitless)
AF	=	adherence factor (mg/cm^2)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFd	=	dermal carcinogenic slope factor ($(mg/kg/day)^{-1}$)
RfDd	=	dermal noncarcinogenic reference dose (mg/kg/day)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFd (mg/kg/day)-1
HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDd (mg/kg/day)

ASSUMPTIONS:

Cs	=	11	mg/kg	Chemical: Arsenic
CF	=	1.0E-06	kg/mg	
SA	=	5700	cm^2/day	
AF	=	0.07	mg/cm^2	
ABS	=	0.03		
EF	=	350	days/year	
ED	=	24	years	
BW	=	70	kg	
ATc	=	25550	days	
ATnc	=	8760	days	
CSFd	=	1.5E+00	$(mg/kg/day)^{-1}$	
RfDd	=	3.0E-04	(mg/kg/day)	

CLIENT: NCWS CRANE, INDIANA		JOB NUMBER: 1245
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SOIL FUTURE ON-SITE ADULT RESIDENT		
BASED ON: U.S. EPA, JULY 2004		
BY: R. JUPIN	CHECKED BY:	DATE: 09/06/2005

EXAMPLE CARCINOGENIC CALCULATION

$$DEXc = \frac{11\ mg/kg \times 1.0E\text{-}06\ kg/mg \times 5700\ cm2/day \times 0.07\ mg/cm2 \times 0.03 \times 350\ days/year \times 24\ years}{70\ kg \times 25550\ days}$$

DEXc = 6.18E-07 mg/kg/day

ILCR = 6.18E-07 mg/kg/day x 1.50E+00 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ILCR = 9.3E-07

EXAMPLE NONCARCINOGENIC CALCULATION

$$DEXnc = \frac{11\ mg/kg \times 1.0E\text{-}06\ kg/mg \times 5700\ cm2/day \times 0.07\ mg/cm2 \times 0.03 \times 350\ days/year \times 24\ years}{70\ kg \times 8760\ days}$$

DEXnc = 1.80E-06 mg/kg/day

HQ = 1.80E-06 mg/kg/day / 3.00E-04 (mg/kg/day) = Hazard Quotient

HQ = 6.0E-03

CALCULATION WORKSHEET

CLIENT: NSWC CRANE, INDIANA		**JOB NUMBER:** 1245
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SURFACE WATER ADULT RESIDENT		
BASED ON: U.S. EPA, DECEMBER 1989		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 09/06/2005

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from incidental ingestion of surface water.

EQUATION:

$$IEX = \frac{Csw \times CF \times CRsw \times ET \times EF \times ED}{BW \times AT}$$

Where:

IEX	=	estimated exposure intake (mg/kg/day)
Csw	=	exposure point concentration in surface water (ug/L)
CF	=	conversion factor (1.0E-3 mg/ug)
CRsw	=	contact rate (L/hour)
ET	=	exposure time (hours/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFo	=	oral carcinogenic slope factor ($(mg/kg/day)^{-1}$)
RfDo	=	oral noncarcinogenic reference dose (mg/kg/day)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFo (mg/kg/day)-1
HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDo (mg/kg/day)

ASSUMPTIONS:

Csw	=	1.4	ug/L	Chemical: Arsenic
CRsw	=	0.01	L/hr	
CF	=	1.0E-03	mg/ug	
ET	=	4	hours	
EF	=	52	days/year	
ED	=	24	years	
BW	=	70	kg	
ATc	=	25550	days	
ATnc	=	8760	days	
CSFo	=	1.5E+00	$(mg/kg/day)^{-1}$	
RfDo	=	3.0E-04	(mg/kg/day)	

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 1245
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SURFACE WATER ADULT RESIDENT		
BASED ON: U.S. EPA, DECEMBER 1989		
BY: R. JUPIN	CHECKED BY:	DATE: 09/06/2005

EXAMPLE CARCINOGENIC CALCULATION

$$IEXc = \frac{1.4\ ug/L \times 1.0E\text{-}03\ mg/ug \times 0.01\ L/hr \times 4\ hours \times 52\ days/year \times 24\ years}{70\ kg \times 25550\ days}$$

IEXc = 3.91E-08 mg/kg/day

ILCR = 3.91E-08 mg/kg/day x 1.50E+00 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ILCR = 5.9E-08

EXAMPLE NONCARCINOGENIC CALCULATION

$$IEXnc = \frac{1.4\ ug/L \times 1.0E\text{-}03\ mg/ug \times 0.01\ L/hr \times 4\ hours \times 52\ days/year \times 24\ years}{70\ kg \times 8760\ days}$$

IEXnc = 1.14E-07 mg/kg/day

$$HQ = \frac{1.14E\text{-}07\ mg/kg/day}{3.00E\text{-}04\ (mg/kg/day)} = \text{Hazard Quotient}$$

HQ = 3.8E-04

CLIENT: NSWC CRANE, INDIANA		**JOB NUMBER:** 1245
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SURFACE WATER ADULT RESIDENT		
BASED ON: U.S. EPA, DECEMBER 1989, JULY 2004		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 09/06/2005

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from dermal contact with surface water.

EQUATION:

$$DAD = \frac{DAevent \times EV \times ED \times EF \times A}{BW \times AT}$$

Where:

DAD	=	dermally absorbed dose (mg/kg/day)
DAevent	=	absorbed does per event (mg/cm^2/event)
EV	=	event frequency (events/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
A	=	skin surface available for contact (cm^2)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFo	=	oral carcinogenic slope factor ((mg/kg/day)$^{-1}$)
RfDo	=	oral noncarcinogenic reference dose (mg/kg/day)

RISKS:

ILCR (Carcinogens) = DAD (mg/kg/day) x CSFd (mg/kg/day)-1
HQ (Noncarcinogens) = DAD (mg/kg/day) / RFDd (mg/kg/day)

EQUATIONS for DAevent:

For Inorganics:

DAevent = Kp x Cw x CF x tevent

For Organics:

$$\text{If } tevent \le t^{*}, \text{ then: } DAevent = 2 \times FA \times Kp \times Cw \times CF \times \sqrt{\frac{6 \times tau \times tevent}{\pi}}$$

$$\text{If } tevent > t^{*}, \text{ then: } DAevent = FA \times Kp \times Cw \times CF \times \left[\frac{tevent}{1+B} + 2 \times tau \times \left(\frac{1+3B+3B^2}{(1+B)^2}\right)\right]$$

CLIENT: NSWC CRANE, INDIANA		**JOB NUMBER:** 1245
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SURFACE WATER ADULT RESIDENT		
BASED ON: U.S. EPA, DECEMBER 1989, JULY 2004		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 09/06/2005

Where:

Kp	=	permeability coefficient from water (cm/hr)
Cgw	=	concentration of chemical in groundwater (mg/L)
tevent	=	duration of event (hr/event)
CF	=	conversion factor (0.001 L/cm^3)
t*	=	time it takes to reach steady-state (hr/event)
τ	=	lag time (hr/event)
B	=	Bunge Model Constant (dimensionless)

EXAMPLE CALCULATION OF DAevent

ASSUMPTIONS:

Cgw	=	0.0014	mg/L	Chemical: Arsenic
Kp	=	1.00E-03	cm/hr	
FA	=	1	unitless	
tevent	=	4	hr/event	
CF	=	0.001	L/cm^3	
t*	=	1.39	hr/event	
τ	=	0.58	hr/event	
B	=	0.051		

DAevent = 0.001 cm/hr x 0.0014 mg/L x 0.001 L/cm3 x 4 hr/event

DAevent = 5.60E-09 mg/cm^2-event

RISK CALCULATIONS

ASSUMPTIONS:

A	=	9070	cm^2/day
EV	=	1	event/day
ED	=	24	years
EF	=	52	days/year
BW	=	70	kg
ATc	=	25550	days
ATnc	=	8760	days
CSFd	=	1.5E+00	(mg/kg/day)$^{-1}$
RfDd	=	3.0E-04	(mg/kg/day)

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 1245
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SURFACE WATER ADULT RESIDENT		
BASED ON: U.S. EPA, DECEMBER 1989, JULY 2004		
BY: R. JUPIN	CHECKED BY:	DATE: 09/06/2005

EXAMPLE CARCINOGENIC CALCULATION

$$DADc = \frac{5.60E\text{-}09 \text{ mg/cm2-event} \times 1 \text{ event/day} \times 24 \text{ years} \times 52 \text{ days/year} \times 9070 \text{ cm2/day}}{70 \text{ kg} \times 25550 \text{ days}}$$

DADc = 3.54E-08 mg/kg/day

DADc = 3.54E-08 mg/kg/day x 1.50E+00 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ILCR = 5.3E-08

EXAMPLE NONCARCINOGENIC CALCULATION

$$DADnc = \frac{5.60E\text{-}09 \text{ mg/cm2-event} \times 1 \text{ event/day} \times 24 \text{ years} \times 52 \text{ days/year} \times 9070 \text{ cm2/day}}{70 \text{ kg} \times 8760 \text{ days}}$$

DADnc = 1.03E-07 mg/kg/day

HQ = 1.03E-07 mg/kg/day / 3.00E-04 (mg/kg/day) = Hazard Quotient

HQ = 3.4E-04

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 1245
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SEDIMENT ADULT RESIDENT		
BASED ON: U.S. EPA, DECEMBER 1989		
BY: R. JUPIN	CHECKED BY:	DATE: 09/06/2005

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from incidental ingestion of sediment.

EQUATION:

$$IEX = \frac{CS \times IR \times EF \times ED \times FI \times CF}{BW \times AT}$$

Where:

IEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in sediment (mg/kg)
IR	=	incidental ingestion rate (mg/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
FI	=	fraction ingested from contaminated source (unitless)
CF	=	conversion factor (1.0E-6 kg/mg)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFo	=	oral carcinogenic slope factor ($(mg/kg/day)^{-1}$)
RfDo	=	oral noncarcinogenic reference dose (mg/kg/day)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFo (mg/kg/day)-1
HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDo (mg/kg/day)

ASSUMPTIONS:

Cs	=	11.8	mg/kg	Chemical: Arsenic
IR	=	50	mg/day	
EF	=	52	days/year	
ED	=	24	years	
FI	=	1		
CF	=	1.0E-06	kg/mg	
BW	=	70	kg	
ATc	=	25550	days	
ATnc	=	8760	days	
CSFo	=	1.5E+00	$(mg/kg/day)^{-1}$	
RfDo	=	3.0E-04	(mg/kg/day)	

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 1245
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SEDIMENT ADULT RESIDENT		
BASED ON: U.S. EPA, DECEMBER 1989		
BY: R. JUPIN	CHECKED BY:	DATE: 09/06/2005

EXAMPLE CARCINOGENIC CALCULATION

$$IEXc = \frac{11.8 \text{ mg/kg} \times 50 \text{ mg/day} \times 52 \text{ days/year} \times 24 \text{ years} \times 1.0E\text{-}06 \text{ kg/mg}}{70 \text{ kg} \times 25550 \text{ days}}$$

IEXc = 4.12E-07 mg/kg/day

ILCR = 4.12E-07 mg/kg/day x 1.50E+00 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ILCR = 6.2E-07

EXAMPLE NONCARCINOGENIC CALCULATION

$$IEXnc = \frac{11.8 \text{ mg/kg} \times 50 \text{ mg/day} \times 52 \text{ days/year} \times 24 \text{ years} \times 1.0E\text{-}06 \text{ kg/mg}}{70 \text{ kg} \times 8760 \text{ days}}$$

IEXnc = 1.20E-06 mg/kg/day

HQ = 1.20E-06 mg/kg/day / 3.00E-04 (mg/kg/day) = Hazard Quotient

HQ = 4.0E-03

CLIENT: NCWS CRANE, INDIANA		JOB NUMBER: 1245
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SEDIMENT ADULT RESIDENT		
BASED ON: U.S. EPA, JULY 2004		
BY: R. JUPIN	CHECKED BY:	DATE: 09/06/2005

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from dermal contact with sediment.

EQUATION:

$$DEX = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:

DEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in sediment (mg/kg)
CF	=	conversion factor (1.0E-6 kg/mg)
SA	=	skin surface available for contact (cm^2/day)
ABS	=	absorption factor (unitless)
AF	=	adherence factor (mg/cm^2)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFd	=	dermal carcinogenic slope factor ((mg/kg/day)$^{-1}$)
RfDd	=	dermal noncarcinogenic reference dose (mg/kg/day)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFd (mg/kg/day)-1
HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDd (mg/kg/day)

ASSUMPTIONS:

Cs	=	11.8	mg/kg	Chemical: Arsenic
CF	=	1.0E-06	kg/mg	
SA	=	5700	cm^2/day	
AF	=	0.07	mg/cm^2	
ABS	=	0.03		
EF	=	52	days/year	
ED	=	24	years	
BW	=	70	kg	
ATc	=	25550	days	
ATnc	=	8760	days	
CSFd	=	1.5E+00	(mg/kg/day)$^{-1}$	
RfDd	=	3.0E-04	(mg/kg/day)	

CLIENT: NCWS CRANE, INDIANA		**JOB NUMBER:** 1245
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SEDIMENT ADULT RESIDENT		
BASED ON: U.S. EPA, JULY 2004		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 09/06/2005

EXAMPLE CARCINOGENIC CALCULATION

$$DEXc = \frac{11.8 \text{ mg/kg} \times 1.0E\text{-}06 \text{ kg/mg} \times 5700 \text{ cm2/day} \times 0.07 \text{ mg/cm2} \times 0.03 \times 52 \text{ days/year} \times 24 \text{ years}}{70 \text{ kg} \times 25550 \text{ days}}$$

DEXc = 9.86E-08 mg/kg/day

ILCR = 9.86E-08 mg/kg/day x 1.50E+00 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ILCR = 1.5E-07

EXAMPLE NONCARCINOGENIC CALCULATION

$$DEXnc = \frac{11.8 \text{ mg/kg} \times 1.0E\text{-}06 \text{ kg/mg} \times 5700 \text{ cm2/day} \times 0.07 \text{ mg/cm2} \times 0.03 \times 52 \text{ days/year} \times 24 \text{ years}}{70 \text{ kg} \times 8760 \text{ days}}$$

DEXnc = 2.87E-07 mg/kg/day

HQ = 2.87E-07 mg/kg/day / 3.00E-04 (mg/kg/day) = Hazard Quotient

HQ = 9.6E-04

TABLE 2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	EPA Region 9 PRG (Residential)[5]	Potential ARAR/TBC[6]	Potential ARAR/TBC Source[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
SWMU 15	**Volatile Organic Compounds**														
	78-93-3	2-Butanone	2 J	22	ug/kg	15SS0120002	10/40	0.8 - 1.48	22	NA	2200000 N	44000000	IDEM	No	BSL
	67-64-1	Acetone	25 J	79 J	ug/kg	15SS0440002	7/40	0.8 - 39	79	NA	1400000 N	4800000	IDEM	No	BSL
	75-15-0	Carbon Disulfide	1 J	1 J	ug/kg	15SS0440002	1/40	0.8 - 1.48	1	NA	36000 N	900000	IDEM	No	BSL
	156-59-2	cis-1,2-Dichloroethene	1 J	5	ug/kg	15SS0220002	2/40	0.8 - 1.48	5	NA	4300 N	110000	IDEM	No	BSL
	75-09-2	Methylene Chloride	1 J	97 J	ug/kg	15SS0300002	29/40	0.992 - 10	97	NA	9100 C	120000	IDEM	No	BSL
	1330-20-7	Total Xylenes	1.06 J	1.06 J	ug/kg	15SS0120002	1/40	0.8 - 1.48	1.06	NA	27000 N	690000	IDEM	No	BSL
	75-69-4	Trichlorofluoromethane	1 J	5	ug/kg	15SS0620002	13/40	0.8 - 1.48	5	NA	39000 N	NA	NA	No	BSL
	Semi-Volatile Organic Compounds														
	91-57-6	2-Methylnaphthalene	5 J	590 J	ug/kg	15SS0070002	17/45	3.63 - 111	590	NA	5600 N[8]	3200000	IDEM	No	BSL
	83-32-9	Acenaphthene	5 J	410	ug/kg	15SS0030002	10/45	3.63 - 111	410	NA	370000 N	9500000	IDEM	No	BSL
	208-96-8	Acenaphthylene	4 J	1200	ug/kg	15SS0030002	11/45	3.63 - 27.5	1200	NA	370000 N[9]	1100000	IDEM	No	BSL
	98-86-2	Acetophenone	150 J	150 J	ug/kg	15SS0460002	1/45	71.7 - 310	150	NA	NA	NA	NA	No	NTX
	120-12-7	Anthracene	5 J	1200	ug/kg	15SS0030002	21/45	3.63 - 15.6	1200	NA	2200000 N	47000000	IDEM	No	BSL
	56-55-3	**Benzo(a)anthracene**	5 J	4600 J	ug/kg	15SS0030002	28/45	3.63 - 15.6	4600	NA	620 C	5000	IDEM	Yes	ASL
	50-32-8	**Benzo(a)pyrene**	7 J	10000	ug/kg	15SS0030002	24/45	3.63 - 27.5	10000	NA	62 C	500	IDEM	Yes	ASL
	205-99-2	**Benzo(b)fluoranthene**	5 J	12000	ug/kg	15SS0030002	22/45	3.63 - 27.5	12000	NA	620 C	5000	IDEM	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	14	13000	ug/kg	15SS0030002	23/45	3.63 - 27.5	13000	NA	230000 N[10]	50000	IDEM	No	BSL
	207-08-9	**Benzo(k)fluoranthene**	6 J	6900	ug/kg	15SS0030002	21/45	3.63 - 27.5	6900	NA	6200 C	50000	IDEM	Yes	ASL
	117-81-7	Bis(2-ethylhexyl)phthalate	79 J	760	ug/kg	15SS0300002	11/45	71.7 - 301	760	NA	35000 C	300000	IDEM	No	BSL
	218-01-9	Chrysene	6 J	9500 J	ug/kg	15SS0030002	29/45	3.63 - 14.1	9500	NA	62000 C	500000	IDEM	No	BSL
	84-74-2	Di-N-Butyl Phthalate	91 J	290 J	ug/kg	15SS0440002	6/45	71.7 - 301	290	NA	61000 N	18000000	IDEM	No	BSL
	117-84-0	Di-N-Octyl Phthalate	920 J	920 J	ug/kg	15SS0300002	1/45	71.7 - 301	920	NA	240000 N	3700000	IDEM	No	BSL
	53-70-3	**Dibenzo(a,h)anthracene**	18	3200	ug/kg	15SS0030002	6/45	3.63 - 111	3200	NA	62 C	500	IDEM	Yes	ASL
	132-64-9	Dibenzofuran	95 J	460 J	ug/kg	15SS0030002	3/45	71.7 - 301	460	NA	15000 N	370000	IDEM	No	BSL
	206-44-0	Fluoranthene	4 J	6000	ug/kg	15SS0030002	36/45	3.7 - 4.28	6000	NA	230000 N	6300000	IDEM	No	BSL
	86-73-7	Fluorene	6 J	330	ug/kg	15SS0010002	9/45	3.63 - 111	330	NA	270000 N	6300000	IDEM	No	BSL
	193-39-5	**Indeno(1,2,3-cd)pyrene**	11 J	11000	ug/kg	15SS0030002	19/45	3.63 - 27.5	11000	NA	620 C	5000	IDEM	Yes	ASL
	86-30-6	N-Nitrosodiphenylamine	1500	1500	ug/kg	15SS0380002	1/45	71.7 - 301	1500	NA	99000 C	870000	IDEM	No	BSL
	91-20-3	Naphthalene	4 J	280 J	ug/kg	15SS0070002	15/45	3.63 - 111	280	NA	5600 N	3200000	IDEM	No	BSL
	85-01-8	Phenanthrene	5 J	2800	ug/kg	15SS0010002	34/45	3.7 - 4.28	2800	NA	230000 N[10]	470000	IDEM	No	BSL
	129-00-0	Pyrene	6 J	14000 J	ug/kg	15SS0030002	34/45	3.7 - 4.28	14000	NA	230000 N	4700000	IDEM	No	BSL
	Pesticides PCBs														
	72-54-8	4,4'-DDD	2.7 J	110	ug/kg	15SS0220002	4/29	1.51 - 1.75	110	NA	2400 C	28000	IDEM	No	BSL
	72-55-9	4,4'-DDE	2 J	12	ug/kg	15SS0490002	2/29	1.51 - 1.75	12	NA	1700 C	20000	IDEM	No	BSL
	50-29-3	4,4'-DDT	14	14	ug/kg	15SS0490002	1/29	1.51 - 1.75	14	NA	1700 C	20000	IDEM	No	BSL
	5103-71-9	Alpha-Chlordane	1.6 J	69	ug/kg	15SS0200002	4/29	0.729 - 0.843	69	NA	1600 C[11]	17000	IDEM[11]	No	BSL
	11096-82-5	**Aroclor-1260**	20	1200	ug/kg	15SS0230002	4/27	10.1 - 11.7	1200	NA	110 N[12]	1800	IDEM	Yes	ASL
	5103-74-2	Gamma-Chlordane	3.6	75	ug/kg	15SS0200002	3/29	0.729 - 0.843	75	NA	1600 C[11]	17000	IDEM[11]	No	BSL
	76-44-8	Heptachlor	8.5	8.5	ug/kg	15SS0200002	1/29	0.729 - 0.843	8.5	NA	110 C	930	IDEM	No	BSL
	1024-57-3	Heptachlor Epoxide	4.8	4.8	ug/kg	15SS0200002	1/29	0.729 - 0.843	4.8	NA	53 C	470	IDEM	No	BSL
	Herbicides														
	87-86-5	Pentachlorophenol	28 J	28 J	ug/kg	15SS0490002	1/36	0.482 - 3.8	28	NA	3000 C	20000	IDEM	No	BSL
	Inorganics														
	7429-90-5	**Aluminum**	1700 J	29900 J	mg/kg	15SS0200002, 15SS0310002	42/42	---	29900	5020 - 17400	7600 N	NA	NA	Yes	ASL
	7440-36-0	Antimony	1.4 J	2.7 J	mg/kg	15SS0060002	3/42	0.022 - 1.2	2.7	0.49 - 11.3	3.1 N	140	IDEM	No	BSL
	7440-38-2	**Arsenic**	0.79 J	20.7 J	mg/kg	15SS0360002	42/42	---	20.7	1.1 - 10.2	0.39 C	3.9	IDEM	Yes	ASL
	7440-39-3	Barium	16 J	254 J	mg/kg	15SS0140002	42/42	---	254	24.8 - 155	540 N	23000	IDEM	No	BSL
	7440-41-7	Beryllium	0.31 J	2.9	mg/kg	15SS0190002	38/42	0.1 - 0.22	2.9	0.3 - 0.82	15 N	680	IDEM	No	BSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	EPA Region 9 PRG (Residential)[5]	Potential ARAR/TBC[6]	Potential ARAR/TBC Source[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
	7440-43-9	Cadmium	0.18 J	6.9 J	mg/kg	15SS0020002	36/42	0.16 - 0.34	6.9	0.05 - 3.6	3.7 N	12	IDEM	Yes	ASL
	7440-70-2	Calcium	170 J	381000 J	mg/kg	15SS0050002	42/42	---	381000	53.6 - 35300	NA	NA	NA	No	NUT
	7440-47-3	Chromium	6 J	49.7 J	mg/kg	15SS0360002	42/42	---	49.7	7.7 - 30.6	210 C[13]	430[14]	IDEM	No	BSL
	7440-48-4	Cobalt	0.59 J	59.6 J	mg/kg	15SS0350002	42/42	---	59.6	1.8 - 27.1	140 N[12]	NA	NA	No	BSL
	7440-50-8	Copper	1.4 J	20.1 J	mg/kg	15SS0060002	42/42	---	20.1	3.5 - 23.8	310 N	13000	IDEM	No	BSL
	7439-89-6	Iron	1870 J	57600 J	mg/kg	15SS0360002	42/42	---	57600	7140 - 40800	2300 N	NA	NA	Yes	ASL
	7439-92-1	Lead	1.7 J	155 J	mg/kg	15SS0080002	42/42	---	155	6.4 - 21.5	400	400	IDEM	No	BSL
	7439-95-4	Magnesium	754 J	42700 J	mg/kg	15SS0030002	42/42	---	42700	496 - 2870	NA	NA	NA	No	NUT
	7439-96-5	Manganese	28.6 J	4400 J	mg/kg	15SS0350002	42/42	---	4400	23.2 - 3040	180 N	NA	NA	Yes	ASL
	7439-97-6	Mercury	0.01 J	0.13	mg/kg	15SS0100002	35/42	0.006 - 0.007	0.13	0.04 - 0.14	2.3 N	100	IDEM	No	BSL
	7440-02-0	Nickel	4.2 J	31.6 J	mg/kg	15SS0350002	42/42	---	31.6	4.6 - 23.7	160 N	6900	IDEM	No	BSL
	7440-09-7	Potassium	419 J	2720 J	mg/kg	15SS0440002	42/42	---	2720	280 - 1650	NA	NA	NA	No	NUT
	7782-49-2	Selenium	0.11 J	1.1	mg/kg	15SS0380002	33/42	0.06 - 0.5	1.1	0.28 - 0.88	39 N	1700	IDEM	No	BSL
	7440-22-4	Silver	0.04 J	0.04 J	mg/kg	15SS0450002	1/42	0.041 - 0.35	0.04	0.04 - 0.11	39 N	1700	IDEM	No	BSL
	7440-23-5	Sodium	76.4 J	1250 J	mg/kg	15SS0190002	27/42	35.3 - 121	1250	3.7 - 205	NA	NA	NA	No	NUT
	7440-28-0	Thallium	0.21 J	0.47 J	mg/kg	15SS0380002	14/42	0.06 - 0.49	0.47	0.05 - 0.31	0.52 N	24	IDEM	No	BSL
	7440-31-5	Tin	0.34 J	2.2 J	mg/kg	15SS0060002	6/42	0.21 - 1.2	2.2	NA	4700 N	NA	NA	No	BSL
	7440-62-2	Vanadium	5.3 J	57.4	mg/kg	15SS0360002	42/42	---	57.4	14.1 - 48.5	7.8 N	NA	NA	Yes	ASL
	7440-66-6	Zinc	19.4 J	626	mg/kg	15SS0020002	42/42	---	626	9.4 - 60.2	2300 N	100000	IDEM	No	BSL

Footnotes
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - Taken from Table 4-1 of the Final Basewide Background Soil Investigation Report, Naval Surface Warfare Center Crane, Crane, Indiana, January, 2001.
5 - USEPA Region IX Preliminary Remediation Goal (PRG). The noncarcinogenic values (denoted with a "N" flag) are the PRG divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag) (USEPA Region IX, October 2004, Updated December 28, 2004).
6 - Indiana Department of Environmental Management (IDEM), Risk Integrated System of Closure (RISC) residential closure levels for soil (IDEM, January 2004).
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
Chemicals selected as COPCs are indicated by shaded chemical names.
8 - The value for naphthalene was used as a surrogate for 2-methylnaphthalene.
9 - The value for acenaphthene was used as a surrogate for acenaphthylene.
10 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
11 - Chlordane is used as a surrogate for alpha- and gamma-chlordane.
12 - One tenth of the noncarcinogenic PRG is less than the carcinogenic PRG, therefore the one tenth noncarcinogenic PRG is presented.
13 - The PRG for residential land use for total chromium is presented.
14 - Value is for hexavalent chromium.

Associated Samples

15SS0010002	15SS0110002	15SS0210002	15SS0310002	15SS0410002
15SS0020002	15SS0120002	15SS0220002	15SS0320002	15SS0420002
15SS0030002	15SS0130002	15SS0230002	15SS0330002	15SS0430002
15SS0040002	15SS0140002	15SS0240002	15SS0340002	15SS0440002
15SS0050002	15SS0150002	15SS0250002	15SS0350002	15SS0450002
15SS0060002	15SS0160002	15SS0260002	15SS0360002	15SS0460002
15SS0070002	15SS0170002	15SS0270002	15SS0370002	15SS0470002
15SS0080002	15SS0180002	15SS0280002	15SS0380002	15SS0480002
15SS0090002	15SS0190002	15SS0290002	15SS0390002	15SS0490002
15SS0100002	15SS0200002	15SS0300002	15SS0400002	15SS0620002

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
COPC = Chemical Of Potential Concern
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available
PRG = Preliminary Remediation Goal

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level

For elimination as a COPC:
BSL = Below Screening Level
NTX = No Toxicity Data
NUT = Essential Nutrient

TABLE 2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	U.S. EPA Generic SSL for Soil to Air[5]	U.S. EPA Generic SSL for Migration to Groundwater[5]	IDEM SSL for Migration to Groundwater[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
SWMU 15	**Volatile Organic Compounds**														
	78-93-3	2-Butanone	2 J	22	ug/kg	15SS0120002	10/40	0.8 - 1.48	22	NA	24000000 sat	4400	35000	No	BSL
	67-64-1	Acetone	25 J	79 J	ug/kg	15SS0440002	7/40	0.8 - 39	79	NA	NA	6600	3800	No	BSL
	75-15-0	Carbon Disulfide	1 J	1 J	ug/kg	15SS0440002	1/40	0.8 - 1.48	1	NA	720000 sat	1500	10000	No	BSL
	156-59-2	cis-1,2-Dichloroethene	1 J	5	ug/kg	15SS0220002	2/40	0.8 - 1.48	5	NA	NA	20	400	No	BSL
	75-09-2	Methylene Chloride	1 J	97 J	ug/kg	15SS0300002	29/40	0.992 - 10	97	NA	13000 C	1.2	23	Yes	ASL
	1330-20-7	Total Xylenes	1.06 J	1.06 J	ug/kg	15SS0120002	1/40	0.8 - 1.48	1.06	NA	71000 N	7100	210000	No	BSL
	75-69-4	Trichlorofluoromethane	1 J	5	ug/kg	15SS0620002	13/40	0.8 - 1.48	5	NA	110000 N	8000	NA	No	BSL
	Semi-Volatile Organic Compounds														
	91-57-6	2-Methylnaphthalene	5 J	590 J	ug/kg	15SS0070002	17/45	3.63 - 111	590	NA	NA	NA	16000	No	BSL
	83-32-9	Acenaphthene	5 J	410	ug/kg	15SS0030002	10/45	3.63 - 111	410	NA	NA	31000	130000	No	BSL
	208-96-8	Acenaphthylene	4 J	1200	ug/kg	15SS0030002	11/45	3.63 - 27.5	1200	NA	NA	NA	18000	No	BSL
	98-86-2	Acetophenone	150 J	150 J	ug/kg	15SS0460002	1/45	71.7 - 310	150	NA	NA	890	NA	No	BSL
	120-12-7	Anthracene	5 J	1200	ug/kg	15SS0030002	21/45	3.63 - 15.6	1200	NA	NA	650000	51000	No	BSL
	56-55-3	Benzo(a)anthracene	5 J	4600 J	ug/kg	15SS0030002	28/45	3.63 - 15.6	4600	NA	NA	160	19000	Yes	ASL
	50-32-8	Benzo(a)pyrene	7 J	10000	ug/kg	15SS0030002	24/45	3.63 - 27.5	10000	NA	NA	410	8200	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	5 J	12000	ug/kg	15SS0030002	22/45	3.63 - 27.5	12000	NA	NA	490	57000	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	14	13000	ug/kg	15SS0030002	23/45	3.63 - 27.5	13000	NA	NA	NA	16000	No	BSL
	207-08-9	Benzo(k)fluoranthene	6 J	6900	ug/kg	15SS0030002	21/45	3.63 - 27.5	6900	NA	NA	490	39000	Yes	ASL
	117-81-7	Bis(2-ethylhexyl)phthalate	79 J	760	ug/kg	15SS0300002	11/45	71.7 - 301	760	NA	NA	180000	3600000	No	BSL
	218-01-9	Chrysene	6 J	9500 J	ug/kg	15SS0030002	29/45	3.63 - 14.1	9500	NA	7500000 C	160	25000	Yes	ASL
	84-74-2	Di-N-Butyl Phthalate	91 J	290 J	ug/kg	15SS0440002	6/45	71.7 - 301	290	NA	NA	250000	5000000	No	BSL
	117-84-0	Di-N-Octyl Phthalate	920 J	920 J	ug/kg	15SS0300002	1/45	71.7 - 301	920	NA	NA	2400000000	67000000	No	BSL
	53-70-3	Dibenzo(a,h)anthracene	18	3200	ug/kg	15SS0030002	6/45	3.63 - 111	3200	NA	NA	1500	18000	Yes	ASL
	132-64-9	Dibenzofuran	95 J	460 J	ug/kg	15SS0030002	3/45	71.7 - 301	460	NA	NA	2400	4900	No	BSL
	206-44-0	Fluoranthene	4 J	6000	ug/kg	15SS0030002	36/45	3.7 - 4.28	6000	NA	NA	310000	880000	No	BSL
	86-73-7	Fluorene	6 J	330	ug/kg	15SS0010002	9/45	3.63 - 111	330	NA	NA	41000	170000	No	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	11 J	11000	ug/kg	15SS0030002	19/45	3.63 - 27.5	11000	NA	NA	1400	3100	Yes	ASL
	86-30-6	N-Nitrosodiphenylamine	1500	1500	ug/kg	15SS0380002	1/45	71.7 - 301	1500	NA	NA	220	9700	Yes	ASL
	91-20-3	Naphthalene	4 J	280 J	ug/kg	15SS0070002	15/45	3.63 - 111	280	NA	17000 N	3100	700	No	BSL
	85-01-8	Phenanthrene	5 J	2800	ug/kg	15SS0010002	34/45	3.7 - 4.28	2800	NA	NA	NA	13000	No	BSL
	129-00-0	Pyrene	6 J	14000 J	ug/kg	15SS0030002	34/45	3.7 - 4.28	14000	NA	NA	230000	570000	No	BSL
	Pesticides PCBs														
	72-54-8	4,4'-DDD	2.7 J	110	ug/kg	15SS0220002	4/29	1.51 - 1.75	110	NA	NA	710	140000	No	BSL
	72-55-9	4,4'-DDE	2 J	12	ug/kg	15SS0490002	2/29	1.51 - 1.75	12	NA	NA	2200	450000	No	BSL
	50-29-3	4,4'-DDT	14	14	ug/kg	15SS0490002	1/29	1.51 - 1.75	14	NA	750000 C	1300	26000	No	BSL
	5103-71-9	Alpha-Chlordane[8]	1.6 J	69	ug/kg	15SS0200002	4/29	0.729 - 0.843	69	NA	72000 C	480	9600	No	BSL
	11096-82-5	Aroclor-1260	20	1200	ug/kg	15SS0230002	4/27	10.1 - 11.7	1200	NA	NA	NA	6200	No	BSL
	5103-74-2	Gamma-Chlordane[8]	3.6	75	ug/kg	15SS0200002	3/29	0.729 - 0.843	75	NA	72000 C	480	9600	No	BSL
	76-44-8	Heptachlor	8.5	8.5	ug/kg	15SS0200002	1/29	0.729 - 0.843	8.5	NA	4200 C	1100	23000	No	BSL
	1024-57-3	Heptachlor Epoxide	4.8	4.8	ug/kg	15SS0200002	1/29	0.729 - 0.843	4.8	NA	4800 C	33	670	No	BSL
	Herbicides														
	87-86-5	Pentachlorophenol	28 J	28 J	ug/kg	15SS0490002	1/36	0.482 - 3.8	28	NA	NA	1.4	28	Yes	ASL
	Inorganics														
	7429-90-5	Aluminum	1700 J	29900 J	mg/kg	15SS0200002, 15SS0310002	42/42	---	29900	5020 - 17400	686000 N	8.3	NA	Yes	ASL
	7440-36-0	Antimony	1.4 J	2.7 J	mg/kg	15SS0060002	3/42	0.022 - 1.2	2.7	0.49 - 11.3	NA	0.27	5.4	Yes	ASL
	7440-38-2	Arsenic	0.79 J	20.7 J	mg/kg	15SS0360002	42/42	---	20.7	1.1 - 10.2	745 C	0.29	29	Yes	ASL
	7440-39-3	Barium	16 J	254 J	mg/kg	15SS0140002	42/42	---	254	24.8 - 155	68600 N	82	1600	Yes	ASL

TABLE 2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	U.S. EPA Generic SSL for Soil to Air[5]	U.S. EPA Generic SSL for Migration to Groundwater[5]	IDEM SSL for Migration to Groundwater[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
	7440-41-7	Beryllium	0.31 J	2.9	mg/kg	15SS0190002	38/42	0.1 - 0.22	2.9	0.3 - 0.82	1330 C	3.2	63	No	BSL
	7440-43-9	Cadmium	0.18 J	6.9 J	mg/kg	15SS0020002	36/42	0.16 - 0.34	6.9	0.05 - 3.6	1780 C	0.38	7.5	Yes	ASL
	7440-70-2	Calcium	170 J	381000 J	mg/kg	15SS0050002	42/42	---	381000	53.6 - 35300	NA	NA	NA	No	NUT
	7440-47-3	Chromium[9]	6 J	49.7 J	mg/kg	15SS0360002	42/42	---	49.7	7.7 - 30.6	267 C	2.1	NA	Yes	ASL
	7440-48-4	Cobalt	0.59 J	59.6 J	mg/kg	15SS0350002	42/42	---	59.6	1.8 - 27.1	1140 C	0.17	NA	Yes	ASL
	7440-50-8	Copper	1.4 J	20.1 J	mg/kg	15SS0060002	42/42	---	20.1	3.5 - 23.8	NA	560	920	No	BSL
	7439-89-6	Iron	1870 J	57600 J	mg/kg	15SS0360002	42/42	---	57600	7140 - 40800	NA	NA	NA	No	NTX
	7439-92-1	Lead	1.7 J	155 J	mg/kg	15SS0080002	42/42	---	155	6.4 - 21.5	NA	NA	81	Yes	ASL
	7439-95-4	Magnesium	754 J	42700 J	mg/kg	15SS0030002	42/42	---	42700	496 - 2870	NA	NA	NA	No	NUT
	7439-96-5	Manganese	28.6 J	4400 J	mg/kg	15SS0350002	42/42	---	4400	23.2 - 3040	6860 N	110	NA	Yes	ASL
	7439-97-6	Mercury	0.01 J	0.13	mg/kg	15SS0100002	35/42	0.006 - 0.007	0.13	0.04 - 0.14	2.9 sat	0.1	2.1	Yes	ASL
	7440-02-0	Nickel	4.2 J	31.6 J	mg/kg	15SS0350002	42/42	---	31.6	4.6 - 23.7	NA	14	950	Yes	ASL
	7440-09-7	Potassium	419 J	2720 J	mg/kg	15SS0440002	42/42	---	2720	280 - 1650	NA	NA	NA	No	NUT
	7782-49-2	Selenium	0.11 J	1.1	mg/kg	15SS0380002	33/42	0.06 - 0.5	1.1	0.28 - 0.88	NA	0.26	5.2	Yes	ASL
	7440-22-4	Silver	0.04 J	0.04 J	mg/kg	15SS0450002	1/42	0.041 - 0.35	0.04	0.04 - 0.11	NA	1.6	31	No	BSL
	7440-23-5	Sodium	76.4 J	1250 J	mg/kg	15SS0190002	27/42	35.3 - 121	1250	3.7 - 205	NA	NA	NA	No	NUT
	7440-28-0	Thallium	0.21 J	0.47 J	mg/kg	15SS0380002	14/42	0.06 - 0.49	0.47	0.05 - 0.31	NA	0.056	2.8	Yes	ASL
	7440-31-5	Tin	0.34 J	2.2 J	mg/kg	15SS0060002	6/42	0.21 - 1.2	2.2	NA	NA	NA	NA	No	NTX
	7440-62-2	Vanadium	5.3 J	57.4	mg/kg	15SS0360002	42/42	---	57.4	14.1 - 48.5	NA	260	NA	No	BSL
	7440-66-6	Zinc	19.4 J	626	mg/kg	15SS0020002	42/42	---	626	9.4 - 60.2	NA	680	14000	No	BSL

Footnotes
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - Taken from Table 4-1 of the Final Basewide Background Soil Investigation Report, Naval Surface Warfare Center Crane, Crane, Indiana, January, 2001.
5 - EPA Soil Screening Levels. EPA Internet Site at http://risk.lsd.ornl.gov/calc_start.htm (Soil to air SSLs for noncarcinogens are divided by 10).
The migration to groundwater value represents a dilution and attenuation factor (DAF) of 1.
6 - Indiana Department of Environmental Management (IDEM), Risk Integrated System of Closure (RISC) residential closure levels for soil (IDEM, January 2004).
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
Chemicals selected as COPCs are indicated by shaded chemical names.
8 - The COPC screening criteira for chlordane is used as a surrogate.
9 - The COPC screening value is for total chromium.

Associated Samples

15SS0010002	15SS0110002	15SS0210002	15SS0310002	15SS0410002
15SS0020002	15SS0120002	15SS0220002	15SS0320002	15SS0420002
15SS0030002	15SS0130002	15SS0230002	15SS0330002	15SS0430002
15SS0040002	15SS0140002	15SS0240002	15SS0340002	15SS0440002
15SS0050002	15SS0150002	15SS0250002	15SS0350002	15SS0450002
15SS0060002	15SS0160002	15SS0260002	15SS0360002	15SS0460002
15SS0070002	15SS0170002	15SS0270002	15SS0370002	15SS0470002
15SS0080002	15SS0180002	15SS0280002	15SS0380002	15SS0480002
15SS0090002	15SS0190002	15SS0290002	15SS0390002	15SS0490002
15SS0100002	15SS0200002	15SS0300002	15SS0400002	15SS0620002

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
COPC = Chemical Of Potential Concern
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available

SSL = Soil Screening Level
sat = Soil Saturation Limit

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level

For elimination as a COPC:
BSL = Below Screening Level
NTX = No Toxicity Data
NUT = Essential Nutrient

TABLE 2.3
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SUBSURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	EPA Region 9 PRG (Residential)[5]	Potential ARAR/TBC[6]	Potential ARAR/TBC Source[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
SWMU 15	**Volatile Organic Compounds**														
	78-93-3	2-Butanone	1 J	18	ug/kg	15SB0461020	18/43	0.867 - 1.23	18	NA	2200000 N	44000000	IDEM	No	BSL
	591-78-6	2-Hexanone	2 J	2 J	ug/kg	15SB0460206	1/43	0.796 - 1.48	2	NA	NA	NA	NA	No	NTX
	67-64-1	Acetone	3 J	72	ug/kg	15SB0210206, 15SB0400206	18/43	3 - 42	72	NA	1400000 N	4800000	IDEM	No	BSL
	75-15-0	Carbon Disulfide	1 J	3 J	ug/kg	15SB0461020	3/43	0.796 - 1.48	3	NA	36000 N	900000	IDEM	No	BSL
	156-59-2	cis-1,2-Dichloroethene	2 J	2 J	ug/kg	15SB0220206, 15SB0430206	2/43	0.796 - 1.48	2	NA	4300 N	110000	IDEM	No	BSL
	75-09-2	Methylene Chloride	1 J	54 J	ug/kg	15SB0450610	36/43	0.891 - 10	54	NA	9100 C	120000	IDEM	No	BSL
	1330-20-7	Total Xylenes	1.13 J	1.13 J	ug/kg	15SB0311014	1/43	0.796 - 1.48	1.13	NA	27000 N	690000	IDEM	No	BSL
	75-69-4	Trichlorofluoromethane	1 J	3	ug/kg	15SB0311014, 15SB0450610	12/43	0.815 - 1.48	3	NA	39000 N	NA	NA	No	BSL
	Semi-Volatile Organic Compounds														
	91-57-6	2-Methylnaphthalene	4 J	47	ug/kg	15SB0020206	7/19	3.85 - 4.3	47	NA	5600 N[8]	3200000	IDEM[8]	No	BSL
	83-32-9	Acenaphthene	6 J	110	ug/kg	15SB0020206	5/19	3.78 - 4.3	110	NA	370000 N	9500000	IDEM	No	BSL
	98-86-2	Acetophenone	140 J	140 J	ug/kg	15SB0460206	1/12	72.7 - 130	140	NA	NA	NA	NA	No	NTX
	120-12-7	Anthracene	4 J	120	ug/kg	15SB0020206	8/19	3.78 - 4.3	120	NA	2200000 N	47000000	IDEM	No	BSL
	56-55-3	Benzo(a)anthracene	8	110	ug/kg	15SB0280206	9/19	3.85 - 4.3	110	NA	620 C	5000	IDEM	No	BSL
	50-32-8	**Benzo(a)pyrene**	8	150	ug/kg	15SB0230206	9/19	3.85 - 4.3	150	NA	**62 C**	500	IDEM	**Yes**	ASL
	205-99-2	Benzo(b)fluoranthene	10	230	ug/kg	15SB0230206	9/19	3.85 - 4.3	230	NA	620 C	5000	IDEM	No	BSL
	191-24-2	Benzo(g,h,i)perylene	6 J	120	ug/kg	15SB0280206	8/19	3.79 - 4.3	120	NA	230000 N[9]	50000	IDEM[9]	No	BSL
	207-08-9	Benzo(k)fluoranthene	5 J	86	ug/kg	15SB0280206	8/19	3.78 - 4.3	86	NA	6200 C	50000	IDEM	No	BSL
	117-81-7	Bis(2-ethylhexyl)phthalate	110 J	110 J	ug/kg	15SB0090206	1/12	72.7 - 86.9	110	NA	35000 C	300000	IDEM	No	BSL
	218-01-9	Chrysene	9	120	ug/kg	15SB0230206, 15SB0280206	9/19	3.85 - 4.3	120	NA	62000 C	500000	IDEM	No.	BSL
	84-74-2	Di-N-Butyl Phthalate	100 J	180 J	ug/kg	15SB0460206	2/12	72.7 - 87.4	180	NA	61000 N	18000000	IDEM	No	BSL
	53-70-3	Dibenzo(a,h)anthracene	7 J	31	ug/kg	15SB0280206	3/19	3.78 - 4.3	31	NA	62 C	500	IDEM	No	BSL
	206-44-0	Fluoranthene	12	370	ug/kg	15SB0020206	10/19	3.85 - 4.3	370	NA	230000 N	6300000	IDEM	No	BSL
	86-73-7	Fluorene	4 J	120	ug/kg	15SB0020206	7/19	3.79 - 4.3	120	NA	270000 N	6300000	IDEM	No	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	6 J	85	ug/kg	15SB0280206	8/19	3.79 - 4.3	85	NA	620 C	5000	IDEM	No	BSL
	120-58-1	Isosafrole	1300	6000	ug/kg	15SB0460206	2/12	72.7 - 86.9	6000	NA	NA	NA	NA	No	NTX
	91-20-3	Naphthalene	6 J	42	ug/kg	15SB0020206	7/19	3.79 - 4.3	42	NA	5600 N	3200000	IDEM	No	BSL
	85-01-8	Phenanthrene	6 J	510	ug/kg	15SB0020206	11/19	3.85 - 4.3	510	NA	230000 N[9]	470000	IDEM[9]	No	BSL
	129-00-0	Pyrene	12	490	ug/kg	15SB0280206	11/19	3.85 - 4.3	490	NA	230000 N	4700000	IDEM	No	BSL
Pesticides PCBs															
	72-54-8	4,4'-DDD	2.3 J	2.3 J	ug/kg	15SB0480206	1/5	1.53 - 1.64	2.3	NA	2400 C	28000	IDEM	No	BSL
	50-29-3	4,4'-DDT	1.59 J	1.59 J	ug/kg	15SB0480206	1/5	1.53 - 1.64	1.59	NA	1700 C	20000	IDEM	No	BSL
	5103-71-9	Alpha-Chlordane	1 J	1 J	ug/kg	15SB0140206	1/5	0.744 - 0.788	1	NA	1600 C[10]	17000	IDEM[10]	No	BSL
	5103-74-2	Gamma-Chlordane	1.1 J	1.1 J	ug/kg	15SB0140206	1/5	0.744 - 0.788	1.1	NA	1600 C[10]	17000	IDEM[10]	No	BSL
Inorganics															
	7429-90-5	**Aluminum**	14400 J	31100 J	mg/kg	15SB0230206	12/12	---	31100	5020 - 17400	**7600 N**	NA	NA	**Yes**	ASL
	7440-38-2	**Arsenic**	3.9 J	14.9 J	mg/kg	15SB0230206	12/12	---	14.9	1.1 - 10.2	**0.39 C**	**3.9**	IDEM	**Yes**	ASL
	7440-39-3	Barium	53.7 J	157 J	mg/kg	15SB0080206, 15SB0100610	12/12	---	157	24.8 - 155	540 N	23000	IDEM	No	BSL
	7440-41-7	Beryllium	0.55	1.1 J	mg/kg	15SB0060206, 15SB0100206	12/12	---	1.1	0.3 - 0.82	15 N	680	IDEM	No	BSL
	7440-43-9	Cadmium	0.22 J	0.95	mg/kg	15SB0480206	12/12	---	0.95	0.05 - 3.6	3.7 N	12	IDEM	No	BSL
	7440-70-2	Calcium	726 J	22900 J	mg/kg	15SB0450206	9/12	301 - 5680	22900	53.6 - 35300	NA	NA	NA	No	NUT
	7440-47-3	Chromium	16.5 J	32.6 J	mg/kg	15SB0060206	12/12	---	32.6	7.7 - 30.6	210 C[11]	430	IDEM[12]	No	BSL

TABLE 2.3
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SUBSURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration(1)	Maximum Concentration(1)	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondects(2)	Concentration Used for Screening(3)	Range of Background Concentrations(4)	EPA Region 9 PRG (Residential)(5)	Potential ARAR/TBC(6)	Potential ARAR/TBC Source(6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)
	7440-48-4	Cobalt	5.4 J	54.2 J	mg/kg	15SB0100206	12/12	---	54.2	1.8 - 27.1	140 N(13)	NA	NA	No	BSL
	7440-50-8	Copper	6.1 J	18.7 J	mg/kg	15SB0230206	12/12	---	18.7	3.5 - 23.8	310 N	13000	IDEM	No	BSL
	7439-89-6	Iron	16500 J	35600 J	mg/kg	15SB0230206	12/12	---	35600	7140 - 40800	2300 N	NA	NA	Yes	ASL
	7439-92-1	Lead	9.2 J	21.7 J	mg/kg	15SB0480206	12/12	---	21.7	6.4 - 21.5	400	400	IDEM	No	BSL
	7439-95-4	Magnesium	1030 J	3890 J	mg/kg	15SB0230206	12/12	---	3890	496 - 2870	NA	NA	NA	No	NUT
	7439-96-5	Manganese	101	3570 J	mg/kg	15SB0090206	12/12	---	3570	23.2 - 3040	180 N	NA	NA	Yes	ASL
	7439-97-6	Mercury	0.008 J	0.055 J	mg/kg	15SB0100206	8/9	0.007	0.055	0.04 - 0.14	2.3 N	100	IDEM	No	BSL
	7440-02-0	Nickel	12 J	33.2 J	mg/kg	15SB0060206	12/12	---	33.2	4.6 - 23.7	160 N	6900	IDEM	No	BSL
	7440-09-7	Potassium	1050 J	2820 J	mg/kg	15SB0060206	12/12	---	2820	280 - 1650	NA	NA	NA	No	NUT
	7782-49-2	Selenium	0.16 J	0.79 J	mg/kg	15SB0100206	11/12	0.28	0.79	0.28 - 0.88	39 N	1700	IDEM	No	BSL
	7440-22-4	Silver	0.05 J	0.05 J	mg/kg	15SB0460206	1/12	0.044 - 0.08	0.05	0.04 - 0.11	39 N	1700	IDEM	No	BSL
	7440-23-5	Sodium	79 J	135 J	mg/kg	15SB0090206	11/12	83	135	3.7 - 205	NA	NA	NA	No	NUT
	7440-28-0	Thallium	0.27 J	0.39 J	mg/kg	15SB0230206	4/12	0.17 - 0.33	0.39	0.05 - 0.31	0.52 N	24	IDEM	No	BSL
	7440-62-2	Vanadium	23.5 J	55.9 J	mg/kg	15SB0230206	12/12	---	55.9	14.1 - 48.5	7.8 N	NA	NA	Yes	ASL
	7440-66-6	Zinc	26 J	61 J	mg/kg	15SB0230206	11/12	64.7	61	9.4 - 60.2	2300 N	100000	IDEM	No	BSL

Footnotes
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - Taken from Table 4-1 of the Final Basewide Background Soil Investigation Report, Naval Surface Warfare Center Crane, Crane, Indiana, January, 2001.
5 - USEPA Region IX Preliminary Remediation Goal (PRG). The noncarcinogenic values (denoted with a "N" flag) are the PRG divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag) (USEPA Region IX, October 2004, Updated December 28, 2004).
6 - Indiana Department of Environmental Management (IDEM), Risk Integrated System of Closure (RISC) residential closure levels for soil (IDEM, January 2004).
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
Chemicals selected as COPCs are indicated by shaded chemical names.
8 - The value for naphthalene was used as a surrogate for 2-methylnaphthalene.
9 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
10 - Chlordane is used as a surrogate for alpha- and gamma-chlordane.
11 - The PRG for residential land use for total chromium is presented.
12 - Value is for hexavalent chromium.
13 - One tenth of the noncarcinogenic PRG is less than the carcinogenic PRG, therefore the one tenth noncarcinogenic PRG is presented.

Associated Samples

15SB0010206	15SB0090206	15SB0200206	15SB0310610	15SB0450610
15SB0020206	15SB0090610	15SB0210206	15SB0311014	15SB0451012
15SB0030206	15SB0100206	15SB0220206	15SB0320206	15SB0460206
15SB0040206	15SB0100610	15SB0230206	15SB0350206	15SB0460610
15SB0050206	15SB0110206	15SB0230206-D	15SB0370206	15SB0461020
15SB0060206	15SB0120206	15SB0280206	15SB0400206	15SB0480206
15SB0060206-D	15SB0130206	15SB0280206-D	15SB0420206	15SB0480206-D
15SB0070206	15SB0140206	15SB0290206	15SB0430206	15SB0480610
15SB0080206	15SB0140206-D	15SB0300206	15SB0440206	15SB0481015
15SB0080610	15SB0190206	15SB0310206	15SB0450206	15SB0620206

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
COPC = Chemical Of Potential Concern
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available
PRG = Preliminary Remediation Goal

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level

For elimination as a COPC:
BSL = Below Screening Level
NTX = No Toxicity Data
NUT = Essential Nutrient

TABLE 2.4
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SUBSURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	U.S. EPA Generic SSL for Soil to Air[5]	U.S. EPA Generic SSL for Migration to Groundwater[5]	IDEM SSL for Migration to Groundwater[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
SWMU 15	**Volatile Organic Compounds**														
	78-93-3	2-Butanone	1 J	18	ug/kg	15SB0461020	18/43	0.867 - 1.23	18	NA	24000000 sat	4400	35000	No	BSL
	591-78-6	2-Hexanone	2 J	2 J	ug/kg	15SB0460206	1/43	0.796 - 1.48	2	NA	NA	NA	NA	No	NTX
	67-64-1	Acetone	3 J	72	ug/kg	15SB0210206, 15SB0400206	18/43	3 - 42	72	NA	NA	6600	3800	No	BSL
	75-15-0	Carbon Disulfide	1 J	3 J	ug/kg	15SB0461020	3/43	0.796 - 1.48	3	NA	720000 sat	1500	10000	No	BSL
	156-59-2	cis-1,2-Dichloroethene	2 J	2 J	ug/kg	15SB0220206, 15SB0430206	2/43	0.796 - 1.48	2	NA	NA	20	400	No	BSL
	75-09-2	**Methylene Chloride**	1 J	54 J	ug/kg	15SB0450610	36/43	0.891 - 10	54	NA	13000 C	1.2	23	Yes	ASL
	1330-20-7	Total Xylenes	1.13 J	1.13 J	ug/kg	15SB0311014	1/43	0.796 - 1.48	1.13	NA	71000 N	7100	210000	No	BSL
	75-69-4	Trichlorofluoromethane	1 J	3	ug/kg	15SB0311014, 15SB0450610	12/43	0.815 - 1.48	3	NA	110000 N	8000	NA	No	BSL
	Semi-Volatile Organic Compounds														
	91-57-6	2-Methylnaphthalene	4 J	47	ug/kg	15SB0020206	7/19	3.85 - 4.3	47	NA	NA	NA	16000	No	BSL
	83-32-9	Acenaphthene	6 J	110	ug/kg	15SB0020206	5/19	3.78 - 4.3	110	NA	NA	31000	130000	No	BSL
	98-86-2	Acetophenone	140 J	140 J	ug/kg	15SB0460206	1/12	72.7 - 130	140	NA	NA	890	NA	No	BSL
	120-12-7	Anthracene	4 J	120	ug/kg	15SB0020206	8/19	3.78 - 4.3	120	NA	NA	650000	51000	No	BSL
	56-55-3	Benzo(a)anthracene	8	110	ug/kg	15SB0280206	9/19	3.85 - 4.3	110	NA	NA	160	19000	No	BSL
	50-32-8	Benzo(a)pyrene	8	150	ug/kg	15SB0230206	9/19	3.85 - 4.3	150	NA	NA	410	8200	No	BSL
	205-99-2	Benzo(b)fluoranthene	10	230	ug/kg	15SB0230206	9/19	3.85 - 4.3	230	NA	NA	490	57000	No	BSL
	191-24-2	Benzo(g,h,i)perylene	6 J	120	ug/kg	15SB0280206	8/19	3.79 - 4.3	120	NA	NA	NA	16000	No	BSL
	207-08-9	Benzo(k)fluoranthene	5 J	86	ug/kg	15SB0280206	8/19	3.78 - 4.3	86	NA	NA	490	39000	No	BSL
	117-81-7	Bis(2-ethylhexyl)phthalate	110 J	110 J	ug/kg	15SB0090206	1/12	72.7 - 86.9	110	NA	NA	180000	3600000	No	BSL
	218-01-9	Chrysene	9	120	ug/kg	15SB0230206, 15SB0280206	9/19	3.85 - 4.3	120	NA	7500000 C	160	25000	No	BSL
	84-74-2	Di-N-Butyl Phthalate	100 J	180 J	ug/kg	15SB0460206	2/12	72.7 - 87.4	180	NA	NA	250000	5000000	No	BSL
	53-70-3	Dibenzo(a,h)anthracene	7 J	31	ug/kg	15SB0280206	3/19	3.78 - 4.3	31	NA	NA	1500	18000	No	BSL
	206-44-0	Fluoranthene	12	370	ug/kg	15SB0020206	10/19	3.85 - 4.3	370	NA	NA	310000	880000	No	BSL
	86-73-7	Fluorene	4 J	120	ug/kg	15SB0020206	7/19	3.79 - 4.3	120	NA	NA	41000	170000	No	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	6 J	85	ug/kg	15SB0280206	8/19	3.79 - 4.3	85	NA	NA	1400	3100	No	BSL
	120-58-1	Isosafrole	1300	6000	ug/kg	15SB0460206	2/12	72.7 - 86.9	6000	NA	NA	NA	NA	No	NTX
	91-20-3	Naphthalene	6 J	42	ug/kg	15SB0020206	7/19	3.79 - 4.3	42	NA	17000 N	3100	700	No	BSL
	85-01-8	Phenanthrene	6 J	510	ug/kg	15SB0020206	11/19	3.85 - 4.3	510	NA	NA	NA	13000	No	BSL
	129-00-0	Pyrene	12	490	ug/kg	15SB0280206	11/19	3.85 - 4.3	490	NA	NA	230000	570000	No	BSL
Pesticides PCBs															
	72-54-8	4,4'-DDD	2.3 J	2.3 J	ug/kg	15SB0480206	1/5	1.53 - 1.64	2.3	NA	NA	710	140000	No	BSL
	50-29-3	4,4'-DDT	1.59 J	1.59 J	ug/kg	15SB0480206	1/5	1.53 - 1.64	1.59	NA	750000 C	1300	26000	No	BSL
	5103-71-9	Alpha-Chlordane[8]	1 J	1 J	ug/kg	15SB0140206	1/5	0.744 - 0.788	1	NA	72000 C	480	9600	No	BSL
	5103-74-2	Gamma-Chlordane[8]	1.1 J	1.1 J	ug/kg	15SB0140206	1/5	0.744 - 0.788	1.1	NA	72000 C	480	9600	No	BSL
Inorganics															
	7429-90-5	**Aluminum**	14400 J	31100 J	mg/kg	15SB0230206	12/12	---	31100	5020 - 17400	686000 N	8.3	NA	Yes	ASL
	7440-38-2	**Arsenic**	3.9 J	14.9 J	mg/kg	15SB0230206	12/12	---	14.9	1.1 - 10.2	745 C	0.29	29	Yes	ASL
	7440-39-3	**Barium**	53.7 J	157 J	mg/kg	15SB0080206, 15SB0100610	12/12	---	157	24.8 - 155	68600 N	82	1600	Yes	ASL
	7440-41-7	Beryllium	0.55	1.1 J	mg/kg	15SB0060206, 15SB0100206	12/12	---	1.1	0.3 - 0.82	1330 C	3.2	63	No	BSL
	7440-43-9	**Cadmium**	0.22 J	0.95	mg/kg	15SB0480206	12/12	---	0.95	0.05 - 3.6	1780 C	0.38	7.5	Yes	ASL
	7440-70-2	Calcium	726 J	22900 J	mg/kg	15SB0450206	9/12	301 - 5680	22900	53.6 - 35300	NA	NA	NA	No	NUT
	7440-47-3	**Chromium[9]**	16.5 J	32.6 J	mg/kg	15SB0060206	12/12	---	32.6	7.7 - 30.6	267 C	2.1	NA	Yes	ASL

TABLE 2.4
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SUBSURFACE SOIL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration(1)	Maximum Concentration(1)	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondects(2)	Concentration Used for Screening(3)	Range of Background Concentrations(4)	U.S. EPA Generic SSL for Soil to Air(5)	U.S. EPA Generic SSL for Migration to Groundwater(5)	IDEM SSL for Migration to Groundwater(6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)
	7440-48-4	Cobalt	5.4 J	54.2 J	mg/kg	15SB0100206	12/12	---	54.2	1.8 - 27.1	1140 C	0.17	NA	Yes	ASL
	7440-50-8	Copper	6.1 J	18.7 J	mg/kg	15SB0230206	12/12	---	18.7	3.5 - 23.8	NA	560	920	No	BSL
	7439-89-6	Iron	16500 J	35600 J	mg/kg	15SB0230206	12/12	---	35600	7140 - 40800	NA	NA	NA	No	NTX
	7439-92-1	Lead	9.2 J	21.7 J	mg/kg	15SB0480206	12/12	---	21.7	6.4 - 21.5	NA	NA	81	No	BSL
	7439-95-4	Magnesium	1030 J	3890 J	mg/kg	15SB0230206	12/12	---	3890	496 - 2870	NA	NA	NA	No	NUT
	7439-96-5	Manganese	101	3570 J	mg/kg	15SB0090206	12/12	---	3570	23.2 - 3040	6860 N	110	NA	Yes	ASL
	7439-97-6	Mercury	0.008 J	0.055 J	mg/kg	15SB0100206	8/9	0.007	0.055	0.04 - 0.14	2.9 sat	0.1	2.1	No	BSL
	7440-02-0	Nickel	12 J	33.2 J	mg/kg	15SB0060206	12/12	---	33.2	4.6 - 23.7	NA	14	950	Yes	ASL
	7440-09-7	Potassium	1050 J	2820 J	mg/kg	15SB0060206	12/12	---	2820	280 - 1650	NA	NA	NA	No	NUT
	7782-49-2	Selenium	0.16 J	0.79 J	mg/kg	15SB0100206	11/12	0.28	0.79	0.28 - 0.88	NA	0.26	5.2	Yes	ASL
	7440-22-4	Silver	0.05 J	0.05 J	mg/kg	15SB0460206	1/12	0.044 - 0.08	0.05	0.04 - 0.11	NA	1.6	31	No	BSL
	7440-23-5	Sodium	79 J	135 J	mg/kg	15SB0090206	11/12	83	135	3.7 - 205	NA	NA	NA	No	NUT
	7440-28-0	Thallium	0.27 J	0.39 J	mg/kg	15SB0230206	4/12	0.17 - 0.33	0.39	0.05 - 0.31	NA	0.056	2.8	Yes	ASL
	7440-62-2	Vanadium	23.5 J	55.9 J	mg/kg	15SB0230206	12/12	---	55.9	14.1 - 48.5	NA	260	NA	No	BSL
	7440-66-6	Zinc	26 J	61 J	mg/kg	15SB0230206	11/12	64.7	61	9.4 - 60.2	NA	680	14000	No	BSL

Footnotes
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - Taken from Table 4-1 of the Final Basewide Background Soil Investigation Report, Naval Surface Warfare Center Crane, Crane, Indiana, January, 2001.
5 - EPA Soil Screening Levels. EPA Internet Site at http://risk.lsd.ornl.gov/calc_start.htm (Soil to air SSLs for noncarcinogens are divided by 10).
The migration to groundwater value represents a dilution and attenuation factor (DAF) of 1.
6 - Indiana Department of Environmental Management (IDEM), Risk Integrated System of Closure (RISC) residential closure levels for soil (IDEM, January 2004).
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
Chemicals selected as COPCs are indicated by shaded chemical names.
8 - The COPC screening criteira for chlordane is used as a surrogate.
9 - The COPC screening value is for total chromium.

Associated Samples

15SB0010206	15SB0090206	15SB0200206	15SB0310610	15SB0450610
15SB0020206	15SB0090610	15SB0210206	15SB0311014	15SB0451012
15SB0030206	15SB0100206	15SB0220206	15SB0320206	15SB0460206
15SB0040206	15SB0100610	15SB0230206	15SB0350206	15SB0460610
15SB0050206	15SB0110206	15SB0230206-D	15SB0370206	15SB0461020
15SB0060206	15SB0120206	15SB0280206	15SB0400206	15SB0480206
15SB0060206-D	15SB0130206	15SB0280206-D	15SB0420206	15SB0480206-D
15SB0070206	15SB0140206	15SB0290206	15SB0430206	15SB0480610
15SB0080206	15SB0140206-D	15SB0300206	15SB0440206	15SB0481015
15SB0080610	15SB0190206	15SB0310206	15SB0450206	15SB0620206

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
COPC = Chemical Of Potential Concern
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available
SSL = Soil Screening Level
sat = Soil Saturation Limit

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level

For elimination as a COPC:
BSL = Below Screening Level
NUT = Essential Nutrient
NTX = No Toxicity Data

TABLE 2.5
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - SURFACE WATER - GULLIES
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondects[2]	Concentration Used for Screening[3]	Upgradient Concentrations[4]	Screening Toxicity Value[5]	Potential ARAR/TBC[6]	Potential ARAR/TBC Source[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
SWMU 15	**Volatile Organic Compounds**														
	67-64-1	Acetone	3.1 J	4 J	ug/L	15SW/SD002	2/14	0.5	4	NA	550 N	NA 950	NA IDEM	No	BSL
	Semivolatile Organic Compounds														
	83-32-9	Acenaphthene	0.06 J	0.33	ug/L	15SW/SD010	2/14	0.048 - 0.056	0.33	NA	37 N	NA 460	NA IDEM	No	BSL
	208-96-8	Acenaphthylene	0.43	0.43	ug/L	15SW/SD010	1/14	0.048 - 0.056	0.43	NA	37 N[8]	NA 71	NA IDEM	No	BSL
	120-12-7	Anthracene	0.05 J	0.36	ug/L	15SW/SD010	4/14	0.048 - 0.056	0.36	NA	180 N	NA 43	NA IDEM	No	BSL
	56-55-3	**Benzo(a)anthracene**	0.09 J	1.84	ug/L	15SW/SD010	7/14	0.048 - 0.052	1.84	0.12	0.092 C	NA 1.2	NA IDEM	Yes	ASL
	50-32-8	**Benzo(a)pyrene**	0.1	2.38	ug/L	15SW/SD010	7/14	0.048 - 0.052	2.38	0.1	0.0092 C	0.2 0.2	FED-MCL IDEM	Yes	ASL
	205-99-2	**Benzo(b)fluoranthene**	0.21	5.83	ug/L	15SW/SD010	7/14	0.048 - 0.052	5.83	0.2	0.092 C	NA 1.2	NA IDEM	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	0.1	2.46	ug/L	15SW/SD010	7/14	0.048 - 0.052	2.46	0.11	18 N[9]	NA 12	NA IDEM	No	BSL
	207-08-9	**Benzo(k)fluoranthene**	0.08 J	1.72	ug/L	15SW/SD010	7/14	0.048 - 0.052	1.72	0.1	0.92 C	NA 0.8	NA IDEM	Yes	ASL
	117-81-7	Bis(2-ethylhexyl)phthalate	1.01 J	1.01 J	ug/L	15SW/SD010	1/14	0.952 - 1.06	1.01	NA	4.8 C	6 6	FED-MCL IDEM	No	BSL
	218-01-9	**Chrysene**	0.2	4.46	ug/L	15SW/SD010	7/14	0.048 - 0.052	4.46	0.18	9.2 C	NA 1.6	NA IDEM	Yes	ASL
	53-70-3	**Dibenzo(a,h)anthracene**	0.3	0.46	ug/L	15SW/SD010	2/14	0.048 - 0.056	0.46	NA	0.0092 C	NA 0.12	NA IDEM	Yes	ASL
	206-44-0	Fluoranthene	0.1	11.9	ug/L	15SW/SD010	9/14	0.048 - 0.052	11.9	0.49	150 N	NA 210	NA IDEM	No	BSL
	86-73-7	Fluorene	0.08 J	0.34	ug/L	15SW/SD010	2/14	0.048 - 0.056	0.34	NA	24 N	NA 310	NA IDEM	No	BSL
	193-39-5	**Indeno(1,2,3-cd)pyrene**	0.08 J	2.09	ug/L	15SW/SD010	7/14	0.048 - 0.052	2.09	0.09 J	0.092 C	NA 0.022	NA IDEM	Yes	ASL
	91-20-3	Naphthalene	0.05 J	0.12	ug/L	15SW/SD010	2/14	0.048 - 0.056	0.12	NA	6.2 N	NA 8.3	NA IDEM	No	BSL
	85-01-8	Phenanthrene	0.06 J	4.73	ug/L	15SW/SD010	9/14	0.048 - 0.052	4.73	0.32	18 N[9]	NA 23	NA IDEM	No	BSL
	129-00-0	Pyrene	0.05 J	8.61	ug/L	15SW/SD010	11/14	0.049 - 0.052	8.61	0.42	18 N	NA 140	NA IDEM	No	BSL
	87-86-5	Pentachlorophenol	0.022 J	0.075 J	ug/L	15SW/SD006	11/13	0.013 - 0.013	0.075	0.037 J	0.56 C	1 1	FED-MCL IDEM	No	BSL
Total Metals															
	7429-90-5	Aluminum	54.6 J	3020 J	ug/L	15SW/SD018	13/14	41.6	3020	421 J	3600 N	NA NA	NA NA	No	BSL
	7440-36-0	**Antimony**	2.5 J	2.5 J	ug/L	15SW/SD013	1/14	0.19 - 0.49	2.5	NA	1.5 N	6 6	FED-MCL IDEM	Yes	ASL
	7440-38-2	**Arsenic**	1.4 J	1.4 J	ug/L	15SW/SD018	1/14	0.26 - 1.2	1.4	NA	0.045 C	10 50	FED-MCL IDEM	Yes	ASL
	7440-39-3	Barium	25.4 J	162 J	ug/L	15SW/SD013	14/14	-	162	40.7 J	260 N	2000 2000	FED-MCL IDEM	No	BSL

TABLE 2.5
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - SURFACE WATER - GULLIES
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondects[2]	Concentration Used for Screening[3]	Upgradient Concentrations[4]	Screening Toxicity Value[5]	Potential ARAR/TBC[6]	Potential ARAR/TBC Source[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
	7440-70-2	Calcium	30400 J	96900 J	ug/L	15SW/SD013	14/14	-	96900	40600 J	NA	NA NA	NA NA	No	NUT
	7440-47-3	Chromium	1.3 J	3.6 J	ug/L	15SW/SD011, 15SW/SD018	7/14	0.42 - 1	3.6	NA	11 N[10]	100 110	FED-MCL IDEM[10]	No	BSL
	7440-48-4	Cobalt	1.4 J	5.8 J	ug/L	15SW/SD006	8/14	0.16 - 0.91	5.8	NA	73 N	NA NA	NA NA	No	BSL
	7440-50-8	Copper	1.3 J	8.1 J	ug/L	15SW/SD011	13/14	1.1 - 1.1	8.1	1.5 J	150 N	1300 1300	FED-MCL[11] IDEM	No	BSL
	7439-89-6	Iron	306 J	3330 J	ug/L	15SW/SD018	12/14	41 - 49.9	3330	411 J	1100 N	NA NA	NA NA	Yes	ASL
	7439-92-1	Lead	1.1 J	2.9 J	ug/L	15SW/SD018	8/14	0.279 - 0.633	2.9	NA	NA	15 15	FED-MCL[11] IDEM	No	BSL
	7439-95-4	Magnesium	6630 J	18900 J	ug/L	15SW/SD011	14/14	-	18900	9810 J	NA	NA NA	NA NA	No	NUT
	7439-96-5	Manganese	6.4 J	1230	ug/L	15SW/SD006	14/14	-	1230	69	88 N	NA NA	NA NA	Yes	ASL
	7440-02-0	Nickel	1.4 J	8 J	ug/L	15SW/SD017	13/14	0.88	8	3.8 J	73 N	NA NA	NA NA	No	BSL
	7440-09-7	Potassium	757 J	6500 J	ug/L	15SW/SD011	14/14	- - -	6500	1610 J	NA	NA NA	NA NA	No	NUT
	7782-49-2	Selenium	1.3 J	1.3 J	ug/L	15SW/SD004	1/14	0.14 - 0.75	1.3	NA	18 N	50 50	FED-MCL IDEM	No	BSL
	7440-23-5	Sodium	15600 J	135000 J	ug/L	15SW/SD011	14/14	-	135000	23000 J	NA	NA NA	NA NA	No	NUT
	7440-62-2	Vanadium	1.2 J	6.1	ug/L	15SW/SD018	8/14	1.14	6.1	NA	3.6 N	NA NA	NA NA	Yes	ASL
	7440-66-6	Zinc	5.2 J	102 J	ug/L	15SW/SD004	12/14	3.5 - 10.6	102	7.5 J	1100 N	NA 11000	NA IDEM	No	BSL
Dissolved Metals															
	7429-90-5	Aluminum, Filtered	10.1 J	2090	ug/L	15SW/SD002	7/14	8.35 - 10.6	2090	48.8 J	3600 N	NA NA	NA NA	No	BSL
	7440-38-2	Arsenic, Filtered	1 J	17 J	ug/L	15SW/SD001	2/14	0.047 - 0.33	17	NA	0.045 C	10 50	FED-MCL IDEM	Yes	ASL
	7440-39-3	Barium, Filtered	18.7 J	149 J	ug/L	15SW/SD013	14/14	-	149	33 J	260 N	2000 2000	FED-MCL IDEM	No	BSL
	7440-43-9	Cadmium, Filtered	0.09 J	0.36 J	ug/L	15SW/SD018	2/14	0.039 - 0.33	0.36	NA	1.8 N	5 5	FED-MCL IDEM	No	BSL
	7440-70-2	Calcium, Filtered	25200 J	99600 J	ug/L	15SW/SD011, 15SW/SD013	14/14	-	99600	40400 J	NA	NA NA	NA NA	No	NUT
	7440-47-3	Chromium, Filtered	3.4 J	4.1 J	ug/L	15SW/SD002	2/14	0.32 - 1.3	4.1	NA	11 N[10]	100 110	FED-MCL IDEM[10]	No	BSL
	7440-48-4	Cobalt, Filtered	0.26 J	6.1	ug/L	15SW/SD006	14/14	-	6.1	0.86 J	73 N	NA NA	NA NA	No	BSL
	7440-50-8	Copper, Filtered	1 J	5.2 J	ug/L	15SW/SD002	14/14	-	5.2	1.2 J	150 N	1300 1300	FED-MCL[11] IDEM	No	BSL
	7439-89-6	Iron, Filtered	299 J	2860 J	ug/L	15SW/SD002	9/14	120 - 210	2860	NA	1100 N	NA NA	NA NA	Yes	ASL
	7439-92-1	Lead, Filtered	0.192 J	3.1 J	ug/L	15SW/SD002	3/14	0.069 - 0.486	3.1	NA	NA	15 15	FED-MCL[11] IDEM	No	BSL

TABLE 2.5
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - SURFACE WATER - GULLIES
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration(1)	Maximum Concentration(1)	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondects(2)	Concentration Used for Screening(3)	Upgradient Concentrations(4)	Screening Toxicity Value(5)	Potential ARAR/TBC(6)	Potential ARAR/TBC Source(6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)
	7439-95-4	Magnesium, Filtered	6410 J	21700	ug/L	15SW/SD011	14/14	-	21700	11000	NA	NA NA	NA NA	No	NUT
	7439-96-5	Manganese, Filtered	4.7 J	1230	ug/L	15SW/SD006	14/14	-	1230	41.2	88 N	NA NA	NA NA	Yes	ASL
	7440-02-0	Nickel, Filtered	2 J	9 J	ug/L	15SW/SD017	14/14	-	9	4.3 J	73 N	NA NA	NA NA	No	BSL
	7440-09-7	Potassium, Filtered	788 J	7590 J	ug/L	15SW/SD011	14/14	-	7590	1670 J	NA	NA NA	NA NA	No	NUT
	7782-49-2	Selenium, Filtered	0.67 J	1.1 J	ug/L	15SW/SD004	2/14	0.12 - 0.55	1.1	NA	18 N	50 50	FED-MCL IDEM	No	BSL
	7440-23-5	Sodium, Filtered	14500 J	141000 J	ug/L	15SW/SD011	14/14	-	141000	23900 J	NA	NA NA	NA NA	No	NUT
	7440-28-0	Thallium, Filtered	0.09 J	0.1 J	ug/L	15SW/SD018	2/14	0.043 - 0.13	0.1	NA	0.24 N	2 2	FED-MCL IDEM	No	BSL
	7440-62-2	Vanadium, Filtered	4.2	4.2	ug/L	15SW/SD002	1/14	1.14 - 1.14	4.2	NA	3.6 N	NA NA	NA NA	Yes	ASL
	7440-66-6	Zinc, Filtered	2.1 J	88 J	ug/L	15SW/SD004	13/14	3.4 - 3.4	88	3.7 J	1100 N	NA 11000	NA IDEM	No	BSL

Footnotes
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - Upgradient samples are from location 15SW/SD014.
5 - The U.S. EPA Region 9 tap water PRG is presented. Value represents the risk based tap water screening level divided by 10 to correspond to a target hazard quotient of 0.1 for noncarcinogens (denoted with a "N" flag), or an incremental cancer risk of 1.0E-6 for carcinogens (denoted with a "C" flag) (U.S. EPA Region 9, October 2004, updated December 28, 2004).
6 - U.S. EPA Primary Drinking Water Standard (U.S. EPA, Winter 2004).
Indiana Department of Environmental Management (IDEM), Risk Integrated System of Closure (RISC) residential closure levels for groundwater (IDEM, January 2004).
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
Chemicals selected as COPCs are indicated by shaded chemical names.
8 - The value for acenaphthene was used as a surrogate for acenaphthylene.
9 - Value is for pyrene.
10 - Values are for hexavalent chromium.
11 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.

Associated Samples

15SW/SD004	15SW/SD011	15SW/SD017
15SW/SD004	15SW/SD005	15SW/SD017
15SW/SD006	15SW/SD005	15SW/SD018
15SW/SD006	15SW/SD013	15SW/SD018
15SW/SD009	15SW/SD013	15SW/SD019
15SW/SD009	15SW/SD015	15SW/SD019
15SW/SD010	15SW/SD015	15SW/SD001
15SW/SD010	15SW/SD016	15SW/SD001
15SW/SD011	15SW/SD016	15SW/SD002
		15SW/SD002

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
COPC = Chemical Of Potential Concern
J = Estimated value
MCL = Maximum Contaminant Level
N = Noncarcinogen
NA = Not Applicable/Not Available
PRG = Preliminary Remediation Goal
SWDA = Safe Water Drinking Act

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BKG = Below Background
BSL = Below Screening Level
NUT = Essential Nutrient
NTX = No Toxicity Data

TABLE 2.6
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SEDIMENT - GULLIES
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondects[2]	Concentration Used for Screening[3]	Upgradient Concentrations[4]	EPA Region 9 PRG (Residential)[5]	Potential ARAR/TBC[6]	Potential ARAR/TBC Source[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
SWMU 15	**Volatile Organic Compounds**														
	630-20-6	1,1,1,2-Tetrachloroethane	1.03	1.03	ug/kg	15SD0020006	1/11	0.948 - 1.54	1.03	NA	3200 C	39000	IDEM	No	BSL
	67-64-1	Acetone	2 J	8 J	ug/kg	15SD0090006	3/11	0.948 - 2	8	NA	1400000 N	4800000	IDEM	No	BSL
	Semi-Volatile Organic Compounds														
	91-57-6	2-Methylnaphthalene	4 J	100	ug/kg	15SD0150006	13/17	4.37 - 16.3	100	5 J	5600 N[8]	3200000	IDEM	No	BSL
	83-32-9	Acenaphthene	6 J	850	ug/kg	15SD0150006	16/17	4.37 - 4.37	850	27 - 36	370000 N	9500000	IDEM	No	BSL
	208-96-8	Acenaphthylene	6 J	48	ug/kg	15SD0180006	8/17	3.81 - 16.3	48	NA	370000 N[9]	1100000	IDEM	No	BSL
	98-86-2	Acetophenone	110 J	110 J	ug/kg	15SD0020006	1/11	77.4 - 112	110	NA	NA	NA	NA	No	NTX
	120-12-7	Anthracene	18	1800	ug/kg	15SD0150006	16/17	4.37 - 4.37	1800	71 - 89	2200000 N	47000000	IDEM	No	BSL
	56-55-3	**Benzo(a)anthracene**	13	3700 J	ug/kg	15SD0240006	17/17	---	3700	270 - 330	**620 C**	5000	IDEM	**Yes**	ASL
	50-32-8	**Benzo(a)pyrene**	15	4500 J	ug/kg	15SD0240006	17/17	---	4500	330 - 390	**62 C**	**500**	IDEM	**Yes**	ASL
	205-99-2	**Benzo(b)fluoranthene**	18	6000 J	ug/kg	15SD0240006	17/17	---	6000	340 - 440	**620 C**	**5000**	IDEM	**Yes**	ASL
	191-24-2	Benzo(g,h,i)perylene	16	3800 J	ug/kg	15SD0060006	17/17	---	3800	200 - 400	230000 N[10]	50000	IDEM	No	BSL
	207-08-9	Benzo(k)fluoranthene	11	2000 J	ug/kg	15SD0240006	17/17	---	2000	190 - 310	6200 C	50000	IDEM	No	BSL
	117-81-7	Bis(2-Ethylhexyl)Phthalate	130 J	280 J	ug/kg	15SD0090006	6/11	83.2 - 112	280		35000 C	300000	IDEM	No	BSL
	218-01-9	Chrysene	14	4500 J	ug/kg	15SD0240006	17/17	---	4500	350 - 390	62000 C	500000	IDEM	No	BSL
	84-74-2	di-n-Butyl Phthalate	220 J	220 J	ug/kg	15SD0190006	1/11	77.4 - 112	220	NA	610000 N	18000000	IDEM	No	BSL
	53-70-3	**Dibenzo(a,h)anthracene**	48	700 J	ug/kg	15SD0060006	14/17	3.81 - 16.3	700	38 - 65	**62 C**	**500**	IDEM	**Yes**	ASL
	132-64-9	Dibenzofuran	89 J	420	ug/kg	15SD0060006	4/11	77.4 - 88.7	420		15000 N	370000	IDEM	No	BSL
	206-44-0	Fluoranthene	25	12000	ug/kg	15SD0060006	17/17	---	12000	720 - 1000	230000 N	6300000	IDEM	No	BSL
	86-73-7	Fluorene	8	820	ug/kg	15SD0060006	16/17	4.37 - 4.37	820	34 - 47	270000 N	6300000	IDEM	No	BSL
	193-39-5	**Indeno(1,2,3-cd)pyrene**	15	3100 J	ug/kg	15SD0060006	17/17	---	3100	180 - 310	**620 C**	5000	IDEM	**Yes**	ASL
	91-20-3	Naphthalene	5 J	370	ug/kg	15SD0150006	15/17	4.37 - 16.3	370	8 J - 10	5600 N	3200000	IDEM	No	BSL
	85-01-8	Phenanthrene	18	9100	ug/kg	15SD0060006	17/17	---	9100	560 - 630	230000 N[10]	470000	IDEM	No	BSL
	129-00-0	Pyrene	35 J	18000 J	ug/kg	15SD0240006	17/17	---	18000	690	230000 N	4700000	IDEM	No	BSL
	Pesticides/PCBs														
	72-54-8	4,4'-DDD	1.56 J	35	ug/kg	15SD0180006	8/11	1.58 - 1.62	35	NA	2400 C	28000	IDEM	No	BSL
	72-55-9	4,4'-DDE	2.5 J	76	ug/kg	15SD0130006	6/11	1.58 - 1.7	76	NA	1700 C	20000	IDEM	No	BSL
	50-29-3	4,4'-DDT	2.1 J	100	ug/kg	15SD0180006	11/11	---	100	4.2	1700 C	20000	IDEM	No	BSL
	5103-71-9	Alpha-Chlordane	5.3	31	ug/kg	15SD0150006	3/11	0.751 - 1.09	31	NA	1600 C[11]	17000	IDEM[11]	No	BSL
	11097-69-1	**Aroclor-1254**	54 J	230 J	ug/kg	15SD0010006	2/11	10.4 - 15.1	230	NA	**110 N[12]**	1800	IDEM	**Yes**	ASL
	11096-82-5	**Aroclor-1260**	330	330	ug/kg	15SD0150006	1/11	10.4 - 15.1	330	NA	**110 N[12]**	1800	IDEM	**Yes**	ASL
	5103-74-2	Gamma-Chlordane	4 J	28	ug/kg	15SD0150006	3/11	0.751 - 1.09	28	NA	1600 C[11]	17000	IDEM[11]	No	BSL
	Herbicides														
	93-76-5	2,4,5-T	5.7 J	6.8 J	ug/kg	15SD0150006	2/11	1.56 - 2.27	6.8	NA	61000 N	1800	IDEM	No	BSL
	87-86-5	Pentachlorophenol	1.5 J	4.9 J	ug/kg	15SD0090006	8/11	0.54 - 0.755	4.9	1.5 J	3000 C	20000	IDEM	No	BSL
	Inorganics														
	7429-90-5	**Aluminum**	3760 J	17700 J	mg/kg	15SD0180006	15/15	---	17700	10100 J - 14400 J	**7600 N**	NA	NA	**Yes**	ASL
	7440-36-0	Antimony	0.74 J	1.4 J	mg/kg	15SD0220006	2/15	0.19 - 1.2	1.4	0.59 J	3.1 N	140	IDEM	No	BSL
	7440-38-2	**Arsenic**	3.6 J	33.8 J	mg/kg	15SD0190006	15/15	---	33.8	7.9 J - 20.9 J	**0.39 C**	**3.9**	IDEM	**Yes**	ASL
	7440-39-3	Barium	23.5 J	131 J	mg/kg	15SD0150006	15/15	---	131	109 J - 128 J	540 N	23000	IDEM	No	BSL
	7440-41-7	Beryllium	0.34 J	1.2 J	mg/kg	15SD0150006	12/15	0.18 - 0.32	1.2	0.86 J - 1.8 J	15 N	680	IDEM	No	BSL
	7440-43-9	Cadmium	0.16 J	0.63 J	mg/kg	15SD0090006	12/15	0.27 - 0.3	0.63	0.2 J - 0.65 J	3.7 N	12	IDEM	No	BSL
	7440-70-2	Calcium	1610 J	129000 J	mg/kg	15SD0090006	15/15	---	129000	3800 J - 4910 J	NA	NA	NA	No	NUT
	7440-47-3	Chromium	10.4 J	70.1 J	mg/kg	15SD0190006	15/15	---	70.1	29.1 J - 46.1 J	210 C[13]	430[14]	IDEM	No	BSL
	7440-48-4	Cobalt	3.8 J	36.1 J	mg/kg	15SD0010006	15/15	---	36.1	37.1 J - 85.9 J	140 N[12]	NA	NA	No	BSL
	7440-50-8	Copper	4.9 J	17.8 J	mg/kg	15SD0130006	15/15	---	17.8	10.7 J - 17.3 J	310 N	13000	IDEM	No	BSL
	7439-89-6	**Iron**	9670 J	74200 J	mg/kg	15SD0190006	15/15	---	74200	28200 J - 61000 J	**2300 N**	NA	NA	**Yes**	ASL

TABLE 2.6
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SEDIMENT - GULLIES
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration(1)	Maximum Concentration(1)	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondects(2)	Concentration Used for Screening(3)	Upgradient Concentrations(4)	EPA Region 9 PRG (Residential)(5)	Potential ARAR/TBC(6)	Potential ARAR/TBC Source(6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)
	7439-92-1	Lead	8.9 J	133 J	mg/kg	15SD0090006	15/15	---	133	24.7 J - 35 J	400	400	IDEM	No	BSL
	7439-95-4	Magnesium	1280 J	17400 J	mg/kg	15SD0050006	15/15	---	17400	1210 J - 1780 J	NA	NA	NA	No	NUT
	7439-96-5	Manganese	323 J	1990 J	mg/kg	15SD0180006	15/15	---	1990	2160 J - 5160 J	180 N	NA	NA	Yes	ASL
	7439-97-6	Mercury	0.01 J	0.085 J	mg/kg	15SD0060006	12/15	0.007 - 0.008	0.085	0.035 J	2.3 N	100	IDEM	No	BSL
	7440-02-0	Nickel	8.6 J	35.4 J	mg/kg	15SD0010006	15/15	---	35.4	30.3 J - 64.5 J	160 N	6900	IDEM	No	BSL
	7440-09-7	Potassium	564 J	1700 J	mg/kg	15SD0150006	15/15	---	1700	993 - 1440 J	NA	NA	NA	No	NUT
	7782-49-2	Selenium	0.19 J	0.8 J	mg/kg	15SD0190006	12/15	0.13 - 0.27	0.8	0.37 J - 0.96 J	39 N	1700	IDEM	No	BSL
	7440-23-5	Sodium	20.7 J	243 J	mg/kg	15SD0230006	7/15	83.4 - 146	243	NA	NA	NA	NA	No	NUT
	7440-31-5	Tin	0.1 J	0.3 J	mg/kg	15SD0180006	6/15	0.04 - 0.19	0.3	NA	4700 N	NA	NA	No	BSL
	7440-32-6	Titanium	10.2 J	10.2 J	mg/kg	15SD0150006	1/15	0.095 - 0.62	10.2	NA	31000 N(15)	NA	NA	No	BSL
	7440-62-2	Vanadium	12.3 J	83.6 J	mg/kg	15SD0190006	15/15	---	83.6	24.6 J - 42.4 J	7.8 N	NA	NA	Yes	ASL
	7440-66-6	Zinc	39.5	163	mg/kg	15SD0090006	15/15	---	163	57.8 J - 161	2300 N	100000	IDEM	No	BSL

Footnotes
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - Upgradient samples are from locations 15SW/SD014 and 15SW/SD026.
5 - U.S. EPA Region 9 Preliminary Remediation Goal (PRG). The noncarcinogenic values (denoted with a "N" flag) are the PRG divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag) (U.S. EPA Region 9, October 2004, Updated December 28, 2004).
6 - Indiana Department of Environmental Management (IDEM), Risk Integrated System of Closure (RISC) residential closure levels for soil (IDEM, January 2004).
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level. Chemicals selected as COPCs are indicated by shaded chemical names.
8 - The value for naphthalene is used as a surrogate for 2-methylnaphthalene.
9 - The value for acenaphthene is used as a surrogate for acenaphthylene.
10 - The value for pyrene is used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
11 - Chlordane is used as a surrogate for alpha- and gamma-chlordane.
12 - One tenth of the noncarcinogenic PRG is less than the carcinogenic PRG, therefore the one tenth noncarcinogenic PRG is presented in the electronic version of the PRG table.
13 - The PRG for residential land use for total chromium is presented.
14 - Value is for hexavalent chromium.
15 - The printed PRG table lists a ceiling limit of 100,000 mg/kg as the PRG. The value presented is 1/10 of the actual risk-based PRG presented in the electronic version of the PRG table.

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
COPC = Chemical Of Potential Concern
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available
PRG = Preliminary Remediation Goal

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level

For elimination as a COPC:
BSL = Below Screening Level
NUT = Essential Nutrient
NTX = No Toxicity Data

Associated Samples

15SD0060006	15SD0230006
15SD0090006	15SD0240006
15SD0050006	15SD0250006
15SD0130006	15SD0010006
15SD0150006	15SD0020006
15SD0160006	15SD0200006
15SD0170006	15SD0210006
15SD0180006	15SD0220006
15SD0190006	

TABLE 3.1
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
SWMU 15	Benzo(a)anthracene	mg/kg	0.199	1.26 (NP)	4.6 J	1.26	mg/kg	99% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (1)
	Benzo(a)pyrene	mg/kg	0.334	2.56 (NP)	10	2.56	mg/kg	99% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (1)
	Benzo(b)fluoranthene	mg/kg	0.407	3.10 (NP)	12	3.10	mg/kg	99% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (1)
	Dibenzo(a,h)anthracene	mg/kg	0.099	0.814 (NP)	3.2	0.814	mg/kg	99% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (1)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.370	2.83 (NP)	11	2.83	mg/kg	99% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (1)
	Aroclor-1260	mg/kg	0.058	0.500 (NP)	1.2	0.500	mg/kg	99% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (1)
	Aluminum	mg/kg	17008	18825 (N)	29900 J	18825	mg/kg	Student-t	W-Test (2)
	Arsenic	mg/kg	8.26	11.0 (NP)	20.7 J	11.0	mg/kg	95% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (3)
	Cadmium	mg/kg	0.545	1.26 (NP)	6.9 J	1.26	mg/kg	95% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (3)
	Iron	mg/kg	24621	27910 (N)	57600 J	27910	mg/kg	Student-t	W-Test (2)
	Manganese	mg/kg	432	570 (L)	4400 J	570	mg/kg	H-UCL	W-Test (4)
	Vanadium	mg/kg	31.9	34.5 (N)	57.4	34.5	mg/kg	Student-t	W-Test (2)

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration.
L = Lognormal
N = Normal
NP = Non-parametric
J - Estimated value.
1 - The Shapiro-Wilks, Anderson-Darling, and Kolmogorov-Smirnov tests indicate that the data is non-parametric. The ProUCL guidance recommends that the 99% Chebyshev(Mean, Std) UCL be used as the exposure point concentration.
2 - The Shapiro-Wilks W test indicates that the data are normally distributed. The ProUCL guidance recommends that the 95% Student-t UCL be used as the exposure point concentration.
3 - The Shapiro-Wilks, Anderson-Darling, and Kolmogorov-Smirnov tests indicate that the data is non-parametric. The ProUCL guidance recommends that the 95% Chebyshev(Mean, Std) UCL be used as the exposure point concentration.
4 - The Shapiro-Wilks W test indicates that the data are log-normally distributed. The ProUCL guidance recommends that the H-UCL be used as the exposure point concentration.

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

TABLE 3.2
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
SWMU 15	Benzo(a)anthracene	mg/kg	0.146	0.617 (NP)	4.6 J	0.6	mg/kg	97.5% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (1)
	Benzo(a)pyrene	mg/kg	0.241	1.81 (NP)	10	2	mg/kg	99% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (2)
	Benzo(b)fluoranthene	mg/kg	0.294	2.19 (NP)	12	2	mg/kg	99% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (2)
	Dibenzo(a,h)anthracene	mg/kg	0.071	0.387 (NP)	3.2	0.4	mg/kg	97.5% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (1)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.264	2.00 (NP)	11	2	mg/kg	99% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (2)
	Aroclor-1260	mg/kg	0.050	0.423 (NP)	1.2	0.42	mg/kg	99% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (2)
	Aluminum	mg/kg	17819	19335 (N)	31100 J	19335	mg/kg	Student-t	W-Test (3)
	Arsenic	mg/kg	8.26	10.6 (NP)	20.7 J	10.6	mg/kg	95% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (4)
	Cadmium	mg/kg	0.514	1.08 (NP)	6.9 J	1.1	mg/kg	95% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (4)
	Iron	mg/kg	24818	27442 (N)	57600 J	27442	mg/kg	Student-t	W-Test (3)
	Manganese	mg/kg	499	635 (L)	4400 J	635	mg/kg	H-UCL	W-Test (5)
	Vanadium	mg/kg	32.4	34.5 (N)	57.4	34.5	mg/kg	Student-t	W-Test (3)

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, the average value was used in the calculation.
L = Lognormal
N = Normal
NP = Non-parametric
J - Estimated value.
1 - The Shapiro-Wilks, Anderson-Darling, and Kolmogorov-Smirnov tests indicate that the data is non-parametric. The ProUCL guidance recommends that the 97.5% Chebyshev(Mean, Std) UCL be used as the exposure point concentration.
2 - The Shapiro-Wilks, Anderson-Darling, and Kolmogorov-Smirnov tests indicate that the data is non-parametric. The ProUCL guidance recommends that the 99% Chebyshev(Mean, Std) UCL be used as the exposure point concentration.
3 - The Shapiro-Wilks W test indicates that the data are normally distributed. The ProUCL guidance recommends that the 95% Student-t UCL be used as the exposure point concentration.
4 - The Shapiro-Wilks, Anderson-Darling, and Kolmogorov-Smirnov tests indicate that the data is non-parametric. The ProUCL guidance recommends that the 99% Chebyshev(Mean, Std) UCL be used as the exposure point concentration.
5 - The Shapiro-Wilks W test indicates that the data are log-normally distributed. The ProUCL guidance recommends that the H-UCL be used as the exposure point concentration.

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

TABLE 3.3
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
SWMU 15	Benzo(a)anthracene	ug/L	0.271	1.66 (NP)	1.84	1.66	ug/L	99% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (1)
	Benzo(a)pyrene	ug/L	0.353	2.26 (NP)	2.38	2.26	ug/L	99% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (1)
	Benzo(b)fluoranthene	ug/L	0.799	5.38 (NP)	5.83	5.38	ug/L	99% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (1)
	Benzo(k)fluoranthene	ug/L	0.250	1.55 (NP)	1.72	1.55	ug/L	99% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (1)
	Chrysene	ug/L	0.632	4.12 (NP)	4.46	4.12	ug/L	99% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (1)
	Dibenzo(a,h)anthracene	ug/L	0.076	0.23 (NP)	0.46	0.23	ug/L	95% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (2)
	Indeno(1,2,3-cd)pyrene	ug/L	0.311	2.02 (NP)	2.09	2.02	ug/L	99% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (1)
	Antimony	ug/L	0.323	1.06 (NP)	2.5 J	1.06	ug/L	95% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (2)
	Arsenic	ug/L	0.408	0.556 (G)	1.4 J	1.4	ug/L	Maximum Detection	A-D, K-S (3)
	Iron	ug/L	1272	1773 (N)	3330 J	1773	ug/L	Student-t	W-Test (4)
	Manganese	ug/L	283	515 (G)	1230	515	ug/L	Approximate Gamma 95% UCL	A-D, K-S (5)
	Vanadium	ug/L	1.78	3.69 (NP)	6.1	3.69	ug/L	95% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (2)

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, the average value was used in the calculation.
G - Gamma distribution.
N - Normal distribution.
NP - Non-parmetric distribution.
J - Estimated value.
1 - The Shapiro-Wilks, Anderson-Darling, and Kolmogorov-Smirnov tests indicate that the data is non-parametric. The ProUCL guidance recommends that the 99% Chebyshev(Mean, Std) UCL be used as the exposure point concentration.
2 - The Shapiro-Wilks, Anderson-Darling, and Kolmogorov-Smirnov tests indicate that the data is non-parametric. The ProUCL guidance recommends that the 95% Chebyshev(Mean, Std) UCL be used as the exposure point concentration.
3 - Anderson-Darling (A-D) and Kolmogorov Smirnov (K-S) test indicates that the data follows a gamma distribution, but because of the low frequency of detection the maximum detected concentration is used as the exposure point concentration.
4 - The Shapiro-Wilks W test indicates that the data are normally distributed. The ProUCL guidance recommends that the 95% Student-t UCL be used as the exposure point concentration.
5 - Anderson-Darling (A-D) and Kolmogorov Smirnov (K-S) test indicates that the data follows a gamma distribution, the approximate gamma 95% UCL is used as the exposure point concentration.

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

TABLE 3.4
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
SWMU 15	Benzo(a)anthracene	mg/kg	1.08	1.85 (G)	3.7 J	1.85	mg/kg	Approximate Gamma 95% UCL	A-D, K-S (1)
	Benzo(a)pyrene	mg/kg	1.18	2.00 (G)	4.5 J	2.00	mg/kg	Approximate Gamma 95% UCL	A-D, K-S (1)
	Benzo(b)fluoranthene	mg/kg	1.37	2.33 (G)	6 J	2.33	mg/kg	Approximate Gamma 95% UCL	A-D, K-S (1)
	Dibenzo(a,h)anthracene	mg/kg	0.218	0.39 (G)	0.7 J	0.390	mg/kg	Approximate Gamma 95% UCL	A-D, K-S (1)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.934	1.52 (G)	3.1 J	1.52	mg/kg	Approximate Gamma 95% UCL	A-D, K-S (1)
	Aroclor-1254	mg/kg	0.031	0.234 (NP)	0.23 J	0.158	mg/kg	97.5% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (2)
	Aroclor-1260	mg/kg	0.035	0.329 (NP)	0.33	0.329	mg/kg	99% Chebyshev(Mean, Std) UCL	W-, A-D, & K-S Test (3)
	Aluminum	mg/kg	9386	11297 (N)	17700 J	11297	mg/kg	Student-t	W-Test (4)
	Arsenic	mg/kg	8.82	11.8 (G)	33.8 J	11.8	mg/kg	Approximate Gamma 95% UCL	A-D, K-S (1)
	Iron	mg/kg	23825	30793 (G)	74200 J	30793	mg/kg	Approximate Gamma 95% UCL	A-D, K-S (1)
	Manganese	mg/kg	1090	1306 (N)	1990 J	1306	mg/kg	Student-t	W-Test (4)
	Vanadium	mg/kg	25.5	32.9 (G)	83.6 J	32.9	mg/kg	Approximate Gamma 95% UCL	A-D, K-S (1)

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration.
G - Gamma distribution.
N - Normal distribution.
NP - Non-parmetric distribution.
J - Estimated value.
1 - Anderson-Darling (A-D) and Kolmogorov Smirnov (K-S) test indicates that the data follows a gamma distribution, the approximate gamma 95% UCL is used as the exposure point concentration.
2 - The Shapiro-Wilks, Anderson-Darling, and Kolmogorov-Smirnov tests indicate that the data is non-parametric. Based on a review of the frequnecy of detection, mean, and detection limits the 97.5% Chebyshev(Mean, Std) UCL was selected as the exposure point concentration.
3 - The Shapiro-Wilks, Anderson-Darling, and Kolmogorov-Smirnov tests indicate that the data is non-parametric. The ProUCL guidance recommends that the 99% Chebyshev(Mean, Std) UCL be used as the exposure point concentration.
4 - The Shapiro-Wilks W test indicates that the data are normally distributed. The ProUCL guidance recommends that the 95% Student-t UCL be used as the exposure point concentration.

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal[1]	Absorbed RfD for Dermal[2]		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
Semivolatile Organic Compounds										
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides PCBs										
Aroclor-1254	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1260	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals										
Aluminum	Chronic	1.0E+00	mg/kg/day	1	1.0E+00	mg/kg/day	CNS	100	NCEA	10/19/2004
Antimony	Chronic	4.0E-04	mg/kg/day	0.15	6.0E-05	mg/kg/day	Blood	1000/1	IRIS	9/23/2005
Arsenic	Chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	Skin, CVS	3/1	IRIS	9/23/2005
Cadmium[3]	Chronic	5.0E-04	mg/kg/day	0.05	2.5E-05	mg/kg/day	Kidney	10/1	IRIS	9/23/2005
Iron	Chronic	3.0E-01	mg/kg/day	1	3.0E-01	mg/kg/day	NA	1	NCEA	10/19/2004
Manganese (Soil)	Chronic	7.0E-02	mg/kg/day	0.04	2.8E-03	mg/kg/day	CNS	1/1	IRIS	9/23/2005
Manganese (Water)	Chronic	2.4E-02	mg/kg/day	0.04	9.6E-04	mg/kg/day	CNS	3/1	IRIS	9/23/2005
Vanadium	Chronic	1.0E-03	mg/kg/day	0.026	2.6E-05	mg/kg/day	Kidney	300	NCEA	10/19/2004

Notes:
1 - U.S. EPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.
2 - Adjusted dermal RfD = Oral RfD x Oral Absorption Efficiency for Dermal.
3 - Water value for cadmium is listed.

Definitions:
CNS = Central Nervous System
CVS = Cardiovascular system
EPA 3 = U.S. EPA Region III Risk-Based Concentration Table, October 19, 2004.
GS = Gastrointestinal System
IRIS = Integrated Risk Information System
NA = Not Applicable

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, CRANE, INDIANA

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal[1]	Absorbed Cancer Slope Factor for Dermal[2]		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
Semivolatile Organic Compounds								
Benzo(a)anthracene	7.3E-01	$(mg/kg/day)^{-1}$	1	7.3E-01	$(mg/kg/day)^{-1}$	B2	EPA(1)	7/1993
Benzo(a)pyrene	7.3E+00	$(mg/kg/day)^{-1}$	1	7.3E+00	$(mg/kg/day)^{-1}$	B2	IRIS	9/23/2005
Benzo(b)fluoranthene	7.3E-01	$(mg/kg/day)^{-1}$	1	7.3E-01	$(mg/kg/day)^{-1}$	B2	EPA(1)	7/1993
Benzo(k)fluoranthene	7.3E-02	$(mg/kg/day)^{-1}$	1	7.3E-02	$(mg/kg/day)^{-1}$	B2	EPA(1)	7/1993
Chrysene	7.3E-03	$(mg/kg/day)^{-1}$	1	7.3E-03	$(mg/kg/day)^{-1}$	B2	EPA(1)	7/1993
Dibenzo(a,h)anthracene	7.3E+00	$(mg/kg/day)^{-1}$	1	7.3E+00	$(mg/kg/day)^{-1}$	B2	EPA(1)	7/1993
Indeno(1,2,3-cd)pyrene	7.3E-01	$(mg/kg/day)^{-1}$	1	7.3E-01	$(mg/kg/day)^{-1}$	B2	EPA(1)	7/1993
Pesticides PCBs								
Aroclor-1254	2.0E+00	(mg/kg/day)-1	1	2.0E+00	(mg/kg/day)-1	B2	EPA(2)	9/23/2005
Aroclor-1260	2.0E+00	(mg/kg/day)-1	1	2.0E+00	(mg/kg/day)-1	B2	EPA(2)	9/23/2005
Metals								
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	1.5E+00	$(mg/kg/day)^{-1}$	1	1.5E+00	$(mg/kg/day)^{-1}$	A	IRIS	9/23/2005
Cadmium	NA	NA	NA	NA	NA	B1	IRIS	9/23/2005
Iron	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	D	IRIS	9/23/2005
Vanadium	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
1 - U.S. EPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.
2 - Adjusted cancer slope factor for dermal = Oral cancer slope factor x Oral Absorption Efficiency for Dermal.

EPA Group:
A - Human carcinogen.
B1 - Probable human carcinogen - indicates that limited human data are available.
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans .
C - Possible human carcinogen.
D - Not classifiable as a human carcinogen.
E - Evidence of noncarcinogenicity.

EPA(1) = U.S. EPA, Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, July 1993, EPA/600/R-93/089.

EPA(2) = U.S. EPA, PCBs: Cancer Dose-Response Assessment and Applications to Environmental Mixtures, September 1996, EPA/600/P-96/001F.

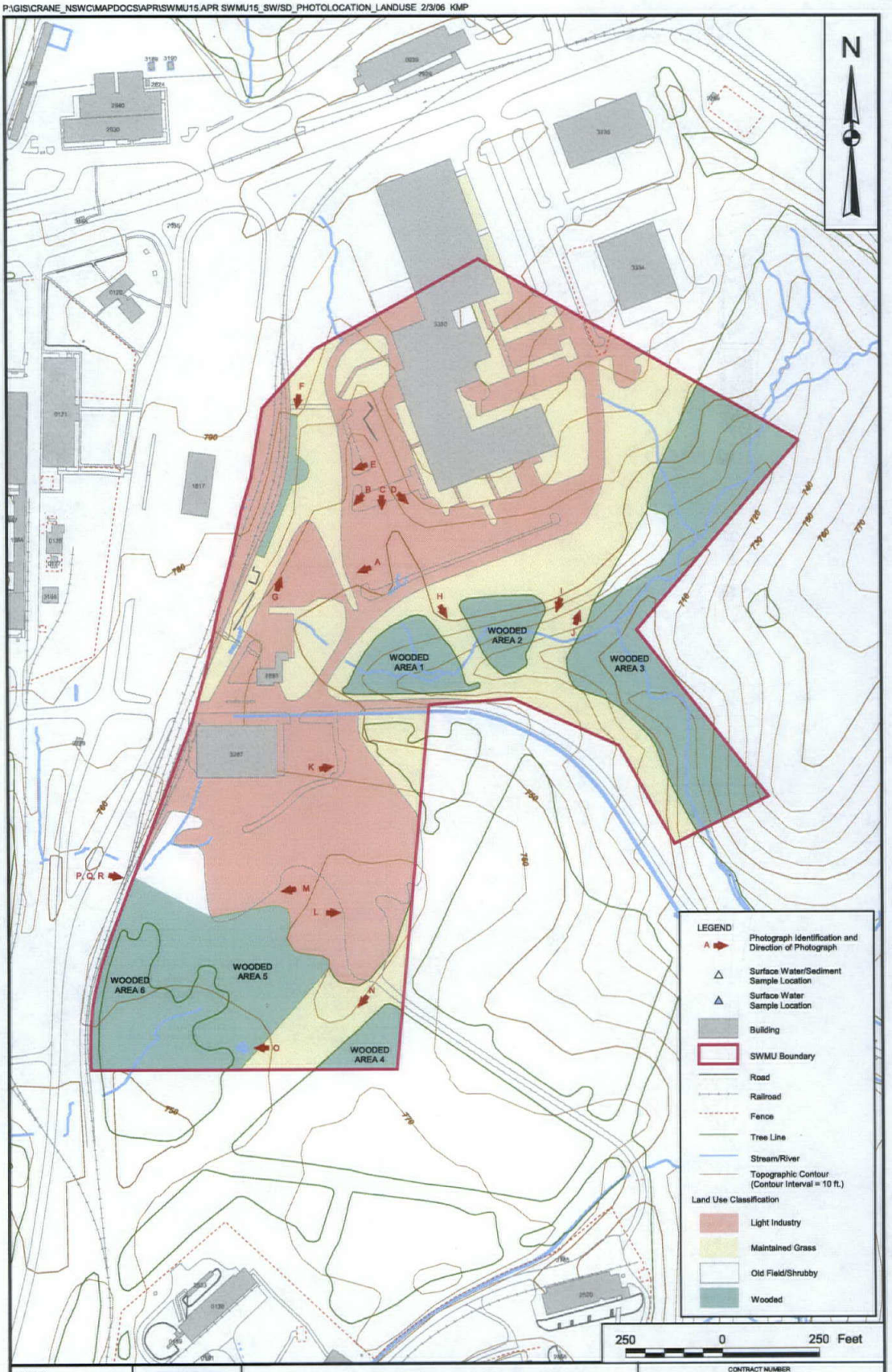
IRIS = Integrated Risk Information System.

NA = Not Available.

APPENDIX J

SUPPORTING DOCUMENTATION FOR THE ECOLOGICAL RISK ASSESSMENT SWMU 15

P:\GIS\CRANE_NSWC\MAPDOCS\APR\SWMU15.APR SWMU15_SW/SD_PHOTOLOCATION_LANDUSE 2/3/06 KMP



DRAWN BY	DATE
K. PEILA	2/2/06
CHECKED BY	DATE
T. ROJAHN	2/2/06
COST/SCHEDULE-AREA	
SCALE AS NOTED	

NAVFAC

PHOTOGRAPH DIRECTION MARKERS AND
LAND USE MAP
SWMU 15 - ROADS AND GROUNDS AREA
NSWC CRANE
CRANE, INDIANA

CONTRACT NUMBER CTO 0331	
APPROVED BY —	DATE —
APPROVED BY —	DATE —
DRAWING NO. FIGURE J-1	REV 0

PHOTO CAPTIONS FOR SWMU 15 ECOLOGICAL CHECKLIST

Photo A	Former asphalt plant
Photo B	Former asphalt plant (right), B-2693 (center), B-3287 (left)
Photo C	South parking lot of B-3330 and wooded area #1
Photo D	South parking lot of B-3330, wooded area #2, and transmission line corridor
Photo E	Tree line just east of the railroad tracks
Photo F	Same tree line as in Photo E (from the north)
Photo G	Tree line (left), area with large catch basin (hidden-low area photo center), and B-3330 (right)
Photo H	Transmission line corridor between wooded area #1 and #2
Photo I	Transmission line corridor between wooded area #2 and #3
Photo J	Maintained grassy area (former wooded area) in the area of the T-line corridor
Photo K	Maintained grassy area (in vicinity of T-line corridor) wooded area #3 (right) and B-3334 (left)
Photo L	Construction lay down area with the T-line corridor in the background
Photo M	Old field (shrubby area) adjacent to construction lay down area in foreground
Photo N	Transmission line corridor between wooded areas #4 and #5
Photo O	Dry pond with leaf litter
Photo P	Small Cattail area with soil pile in the background
Photo Q	Top of persimmon tree with fruit (popular wildlife food)
Photo R	Small cattail area (shown in Photo P) with persimmon tree in foreground

Checklist for Ecological Assessment/Sampling

I. SITE DESCRIPTION

1. Site Name: NSWC CRANE

   Location: SWMU 15 - ROADS AND GROUNDS AREA

   County: MARTIN City: CRANE State: INDIANA

2. Latitude: 38.8648204299 Longitude: -86.8179697861

3. What is the approximate area of the site? 44.5 ACRES

4. Is this the first site visit? ☑ yes ☐ no If no, attach trip report of previous site visit(s), if available.

   Date(s) of previous site visit(s): 1st VISIT FOR ECOLOGICAL ASSESSMENT. Other visits were made for groundwater, surface water, sediment & soil sampling (SEE RFI, OCTOBER 2005)

5. Please attach to the checklist USGS topographic map(s) of the site, if available.
   SEE FIGURE J-1 OF this REPORT.

6. Are aerial or other site photographs available? ☒ yes ☐ no If yes, please attach any available photo(s) to the site map at the conclusion of this section.

   AERIAL PHOTOS - SEE FIGURE J-2 (SWMU BOUNDARY) & FIGURE J-3 (1 MILE RADIUS) OF this REPORT

   GROUND PHOTOS = Attached to this REPORT & FIGURE A-2 OF the "RESOURCE CONSERVATION and RECOVERY ACT, FACILITY INVESTIGATION REPORT, ROADS and GROUNDS AREA (SWMU 15), NAVAL SURFACE WARFARE CENTER CRANE, CRANE, INDIANA" (RFI OCTOBER 2005).

7. The land use on the site is:

	The area surrounding the site is: ONE mile radius
- % Urban	- % Urban
- % Rural	- % Rural
- % Residential	- % Residential
48 % Industrial (☒ light ☐ heavy)	17 % Industrial (☒ light ☐ heavy)
- % Agricultural	- % Agricultural
(Crops:)	(Crops:)
- % Recreational	1 % Recreational
(Describe; note if it is a park, etc.)	(Describe; note if it is a park, etc.)
NA	LAKE GREENWOOD
- % Undisturbed	- % Undisturbed
52 % Other { 30% WOODED, 2% OLD FIELD /SHRUBBY, 20% MAINTAINED GRASS }	82 % Other { 74% WOODED, 8% MAINTAINED GRASS }

8. Has any movement of soil taken place at the site? ☒ yes ☐ no. If yes, please identify the most likely cause of this disturbance:

____ Agricultural Use	X Heavy Equipment	____ Mining
____ Natural Events	____ Erosion	____ Other

Please describe:

NEW -
BUILDING AND PARKING LOT CONSTRUCTION.

9. Do any potentially sensitive environmental areas exist adjacent to or in proximity to the site, e.g., Federal and State parks, National and State monuments, wetlands, prairie potholes? *Remember, flood plains and wetlands are not always obvious; do not answer "no" without confirming information.*

THERE IS A SMALL CLUSTER OF CATTAIL (< 1000 sq ft) JUST NORTH OF WOODED AREA #6 (SEE PHOTOS P&R OF this REPORT)

Please provide the source(s) of information used to identify these sensitive areas, and indicate their general location on the site map.

SWMU 15 is outside OF FEMAs Floodplain (ZONE A). MARTIN County Soil SURVEY considers this site AREA AS POOR to VERY POOR FOR WETLAND plants AND Wildlife.

10. What type of facility is located at the site?

☐ Chemical ☐ Manufacturing ☐ Mixing ☐ Waste disposal

☒ Other (specify) ROADS and GROUNDS SUPPORT ACTIVITIES; Also, SITE OF A FORMER ASPHALT PLANT - ALONG the NW boundary OF the SWMU.

11. What are the suspected contaminants of concern at the site? If known, what are the maximum concentration levels?

SEE SECTIONS 3, 5, etc. OF the RFI, October 2005.

---

12. Check any potential routes of off-site migration of contaminants observed at the site:

☑ Swales ☑ Depressions ☑ Drainage ditches

☑ Runoff ☐ Windblown particulates ☐ Vehicular traffic

☑ Other (specify) intermittent streams

13. If known, what is the approximate depth to the water table? ~ 2' in low elevations to ~ 12' in the higher elevations (based on 8 temporary wells sampled in 1/05).

14. Is the direction of surface runoff apparent from site observations? ☒ yes ☐ no If yes, to which of the following does the surface runoff discharge? Indicate all that apply.

☑ Surface water ☐ Groundwater ☑ Sewer ☐ Collection impoundment

15. Is there a navigable waterbody or tributary to a navigable waterbody? ☐ yes ☒ no

16. Is there a waterbody anywhere on or in the vicinity of the site? If yes, also complete Section III: Aquatic Habitat Checklist -- Non-Flowing Systems and/or Section IV: Aquatic Habitat Checklist -- Flowing Systems.

☐ yes (approx. distance_____) ☑ no

17. Is there evidence of flooding? ☐ yes ☑ no *Wetlands and flood plains are not always obvious; do not answer "no" without confirming information.* If yes, complete Section V: Wetland Habitat Checklist.

18. If a field guide was used to aid any of the identifications, please provide a reference. Also, estimate the time spent identifying fauna. [Use a blank sheet if additional space is needed for text.]

NA

19. Are any threatened and/or endangered species (plant or animal) known to inhabit the area of the site? ☐ yes ☑ no *If yes, you are required to verify this information with the U.S. Fish and Wildlife Service.* If species' identities are known, please list them next.

For additional information SEE section 8.2.1.1 of the RFI, October 2005.

20. Record weather conditions at the time this checklist was prepared:

DATE: 10/16/05

60°s Temperature (°C/°F) — Normal daily high temperature

CALM Wind (direction/speed) 0.0 Precipitation (rain, snow)

Mostly Sunny 0-10% Cloud cover

IA. SUMMARY OF OBSERVATIONS AND SITE SETTING

SWMU 15 – light industry comprises 48% (21.5 acres) and consists of several buildings, asphalt and gravel roads, parking lots, railroad and gravel storage lay down areas. Other comprises 52% of SWMU 15 and consists of 30% (13.0 acres) wooded, 20% (9.0 acres) maintained grass associated mainly with buildings and transmission line corridors and 2% (1.0 acres) old field/shrubby.

There are six distinct wooded areas within the boundary of SWMU 15 (See Figure J-1 attached to this Ecological Checklist). Wooded Area #1 (See Photo C attached to this Ecological Checklist) is a small strongly sloping riparian woodlot with white oak as the dominant species in the tree canopy, and shagbark hickory, sugar maple, black locust and sassafras as associated species. Sassafras, and sugar maple are common species in the understory. Wooded Area #2 (See Photo D attached to this Ecological Checklist) is also a small strongly sloping riparian woodlot with sugar maple as the dominant species in the tree canopy, and white oak, sassafras, black walnut and American beech as associated species. Sugar maple, sassafras, tulip poplar and flowering dogwood are common species in the understory. Wooded Area #3 (See Photo J attached to this Ecological Checklist) likewise is a strongly sloping riparian section of a much larger woodlot which extends outside the SWMU boundary with tulip poplar, sugar maple, and sycamore as the dominant species in the tree canopy, and white oak, black oak, shagbark hickory and black walnut as associated species. Sugar maple, sassafras, flowering dogwood, white oak and red oak are common species in the understory. Wooded Area #4 (small section of a larger gently sloping woodlot) is a thin stand of black locust, black walnut and sugar maple with a heavy underbrush of greenbrier, goldenrod sp., grasses and Japanese honeysuckle. Wooded Area #5 (See Photo N attached to this Ecological Checklist) is a gently sloping less mature woodlot with black locust, sassafras, ash, sycamore and cottonwood as the common species in the tree canopy. Hawthorn sp., American elm and sassafras are common species in the understory. Wooded Area #6 is a gently sloping woodlot with a well established stand of white pine. The dense tree canopy and heavy needle cover accounts for only a trace of an understory and herbaceous layer.

SWMU 15 generally drains to the south. Storm sewers with catch basins, drainage ditches/gullies and intermittent streams divert surface water from SWMU 15 to Turkey Creek tributaries. Turkey Creek flows into Boggs Creek. Boggs Creek in turn flows into Lake Gallimore near the southern boundary of NSWC Crane then continues to flow out of Lake Gallimore until it ultimately discharges into the East Fork of the White River.

Wildlife sign observed on site included whitetail deer and raccoon.

See attached aerials (Figures J-2 and J-3) and ground photographs (associated with Figure J-1) to enhance site familiarity; also, see ground photographs associated with site surface water drainage in Appendix A of the FIR, October 2005.

Completed by Terry Rosch Affiliation T+NUS

Additional Preparers

Site Manager – Ralph Basinski

Date: 2/02/2006

II. TERRESTRIAL HABITAT CHECKLIST

IIA. WOODED

1. Are there any wooded areas at the site? ☑ yes ☐ no If no, go to Section IIB: Shrub/Scrub.

2. What percentage or area of the site is wooded? (30 % 13 acres). Indicate the wooded area on the site map which is attached to a copy of this checklist. Please identify what information was used to determine the wooded area of the site. Combination of ground truthing and AERIAL photography (SEE FIGURE J-2 of this REPORT).

3. What is the dominant type of vegetation in the wooded area? (Circle one: Evergreen/Deciduous/ Mixed) Provide a photograph, if available. SEE photos C, D, H, I, J & N.

   Dominant plant, if known: Sugar maple, WHITE OAK, tulip poplar & SYCAMORE; WHITE PINE is the dominant species in Wooded AREA #6.

4. What is the predominant size of the trees at the site? Use diameter at breast height.

   ☐ 0-6 in. ☑ 6-12 in. ☑ > 12 in.

   Wooded AREAS #1-3 (>12in) & 4-6 (6-12in)

5. Specify type of understory present, if known. Provide a photograph, if available.

   Wood AREAS #1-5 · SASSAFRAS, sugar maple, tulip poplar flowering dogwood, hawthorn sp. and WHITE & black OAK types. Wooded AREA #6 - only a trace of understory under A WHITE PINE CANOPY.

IIB. SHRUB/SCRUB / OLD FIELD

1. Is shrub/scrub vegetation present at the site? ☑ yes ☐ no If no, go to Section IIC: Open Field.

2. What percentage of the site is covered by scrub/shrub vegetation? (2 % 1 acres). Indicate the areas of shrub/scrub on the site map. Please identify what information was used to determine this area.

   Ground truthing and/or AERIAL photograph (SEE FIGURE J-2)

3. What is the dominant type of scrub/shrub vegetation, if known? Provide a photograph, if available.

   SEE ABOVE FIGURE and Photo M of this REPORT.

4. What is the approximate average height of the scrub/shrub vegetation?

   ☐ 0-2 ft. ☑ 2-5 ft. ☐ > 5 ft.

5. Based on site observations, how dense is the scrub/shrub vegetation?

☑ Dense ☐ Patchy ☐ Sparse

IIC. OPEN FIELD - SEE II B
(Combination part old field transitioning into a shrubby area)

1. Are there open (bare, barren) field areas present at the site? ☐ yes ☐ no If yes, please indicate the type below:

☐ Prairie/plains ☐ Savannah ☐ Old field ☐ Other (specify)_____

2. What percentage of the site is open field? (_____% _____ acres). Indicate the open fields on the site map.

3. What is/are the dominant plant(s)? Provide a photograph, if available.

4. What is the approximate average height of the dominant plant?_____

5. Describe the vegetation cover: ☐ Dense ☐ Sparse ☐ Patchy

IID. MISCELLANEOUS

1. Are other types of terrestrial habitats present at the site, other than woods, scrub/shrub, and open field? ☑ yes ☐ no If yes, identify and describe them below.

Maintained grassy areas associated with buildings and transmission line corridors make up 20% (9.0 acres) of the site.

2. Describe the terrestrial miscellaneous habitat(s) and identify these area(s) on the site map.

Areas of dense maintained grass are shown on Figure J-1 of this report and can be seen on photos A, B, C, D, F, G, H, I, J, K and N.

3. What observations, if any, were made at the site regarding the presence and/or absence of insects, fish, birds, mammals, etc.?

WHITETAIL deer and RACCOON sign.

4. Review the questions in Section I to determine if any additional habitat checklists should be completed for this site.

IV. AQUATIC HABITAT CHECKLIST – FLOWING SYSTEMS

Note: *Aquatic systems are often associated with wetland habitats. Please refer to Section V, Wetland Habitat Checklist.*

1. What type(s) of flowing water system(s) is (are) present at the site?

☐ River	☐ Stream	☐ Creek
☐ Dry wash	☐ Arroyo	☐ Brook
☑ Artificially created (ditch, etc.)	☑ Intermittent Stream	☑ Channeling
	☐ Other (specify)_____	

2. If known, what is the name of the waterbody? NA - ALL UNNAMED

3. For natural systems, are there any indicators of physical alteration (e.g., channeling, debris, etc.)?
☑ yes ☐ no If yes, please describe indicators that were observed.
Some minor construction debris along a small stretch of intermittent stream within wooded Area #3.

4. What is the general composition of the substrate? Check all that apply.

☑ Bedrock	☑ Sand (coarse)	☐ Muck (fine/black)
☑ Boulder (>10 in.)	☑ Silt (fine)	☑ Debris
☑ Cobble (2.5-10 in.)	☐ Marl (shells)	☐ Detritus
☑ Gravel (0.1-2.5 in.)	☑ Clay (slick)	☐ Concrete
☐ Other (specify)_____		

5. What is the condition of the bank (e.g., height, slope, extent of vegetative cover)?
SEE SUPPLEMENTAL SURFACE WATER / SEDIMENT DOCUMENTATION SHEETS IN APPENDIX C.2 OF this RFI REPORT to WHICH this Ecological Checklist is attached.

6. Is the system influenced by tides? ☐ yes ☑ no What information was used to make this determination?

7. Is the flow intermittent? ☑ yes ☐ no If yes, please note the information that was used in making this determination.

Ground truthing and the Soil Survey of Martin County, Indiana

8. Is there a discharge from the site to the waterbody? ☑ yes ☐ no If yes, please describe the discharge and its path.

SEE Section 1A of this CHECKLIST.

9. Is there a discharge from the waterbody? ☑ yes ☐ no If yes, and the information is available, please identify what the waterbody discharges to and whether the discharge is on site or off site.

SEE SECTION 1A OF this CHECKLIST.

10. Identify any field measurements and observations of water quality that were made. For those parameters for which data were collected, provide the measurement and the units of measure in the appropriate space below:

____	Width (ft.)
____	Depth (ft.)
____	Velocity (specify units):_____
____	Temperature (depth of the water at which the reading was taken_____)
____	pH
____	Dissolved oxygen
NA	Salinity
____	Turbidity (clear, slightly turbid, turbid, opaque) (Secchi disk depth NA)
____	Other (specify)_____

SEE COMMENT #5 OF this SECTION. AND APPENDIX C.3 OF this RFI REPORT.

11. Describe observed color and area of coloration.

SEE comment FOR #10 OF this SEction.

12. Is any aquatic vegetation present? ☑ yes ☐ no If yes, please identify the type of vegetation present, if known.

☑ Emergent ☐ Submergent ☐ Floating

Small AREA OF CATTAILS - SEE PHOTOS P & R. And #9 OF Section I OF this Checklist.

13. Mark the flowing water system on the attached site map.

14. What observations were made at the waterbody regarding the presence and/or absence of benthic macroinvertebrates, fish, birds, mammals, etc.?

No FISH OR INVERTEBRATES WERE OBSERVED during this ASSESSMENT; WHITE tail deer & RACCOON SIGN WERE OBSERVED.

APPENDIX J.2

This appendix presents a discussion of the different chemical classes that were detected in environmental media at SWMU 15, including toxicity information, potential food chain and trophic transfer, and bioaccumulation potential. Appendix Table J.2-1 presents the bioaccumulation factors (BAFs) that were used in the surrogate species' food-chain models for the individual constituents that are detected at SWMU 15. The sources for most of the BAFs are presented in section 8.4.2.1 of the Ecological Risk Assessment (ERA), while the text below discusses some additional sources of the BAFs, where necessary. Additional text in this appendix discusses soil to earthworm BAFs for pesticides and polynuclear aromatic hydrocarbons (PAHs). Note that dry weight BAFs were used for this ERA.

Volatile Organic Compounds

VOCs are usually very mobile in the environment because they are poorly adsorbed to soil and sediment particles. Also, because they are very volatile, they typically are only detected in surface water, surface soil, and sediment at low concentrations.

Most VOCs have very little potential to bioaccumulate in ecological receptors; therefore, biomagnification through the food chain does not appear to be significant. VOCs are not expected to biomagnify in plants and are typically only toxic to ecological receptors at relatively high concentrations.

Semivolatile Organic Compounds

The most common semivolatile organic compounds that are found at naval facilities include PAHs and phthalates. PAHs are a diverse group of compounds consisting of two or more substituted and unsubstituted polynuclear aromatic rings formed by the incomplete combustion of carbonaceous materials. PAHs are ubiquitous in the modern environment and are common constituents of coal tar, soot, vehicle exhaust, cigarette smoke, certain petroleum products, road tar, mineral oils, creosote, and many cooked foods. PAHs also are released to the environment through natural sources such as volcanoes and forest fires.

PAHs are transferred from surface water by volatilization and sorption to settling particles. The compounds are transformed in surface water by photooxidation, chemical oxidation, and microbial metabolism (ATSDR, 1989a). In soil and sediments, microbial metabolism is the major process for degradation of PAHs (ATSDR, 1989a). Although PAHs accumulate in terrestrial and aquatic plants, many organisms are able to metabolize and eliminate these compounds.

Vertebrates can readily metabolize PAHs, but lower forms (insects and worms) cannot metabolize PAHs as quickly. However, food chain uptake does not appear to be a major exposure source to PAHs for aquatic animals (ATSDR, 1989a).

PAHs vary substantially in their toxicity to aquatic organisms. In general, toxicity increases as molecular weight increases, with the exception of some high molecular weight PAHs that have low acute toxicity. Most species of aquatic organisms rapidly accumulate PAHs that occur at low concentrations in the ambient medium. However, uptake of PAHs is highly species-specific, it is higher in algae, mollusks, and other species that are incapable of metabolizing PAHs (Eisler, 1987). The ability of fish to metabolize PAHs may explain why benzo(a)pyrene is frequently not detected or is found at only very low levels in fish from environments heavily contaminated with PAHs (ATSDR, 1989a).

Phthalates are semivolatile organic compounds that are used in production of plastics (ATSDR, 1993). Most phthalates are expected to sorb to soil or sediment particles after their release because of their high Log K_{OC} values (Howard, 1989). Some phthalates may bioconcentrate in aquatic organisms [Spectrum Laboratories, 1999; Howard, 1989; ATSDR, 1989].

Pesticides

Pesticides are used to control pestiferous invertebrates and, therefore, they are toxic to many soil and aquatic invertebrates. In addition, many pesticides are toxic to ecological receptors at higher trophic levels such as mammals and birds. For example, DDT compounds have been linked to eggshell thinning and subsequent decreased survival of several birds of prey (such as eagles and falcons). Other pesticides such as chlordanes, dieldrin, aldrin, endrin, and heptachlor are also very toxic to mammals and birds (Newell et al., 1987).

Organochlorine insecticides such as DDT, chlordane, aldrin, dieldrin, heptachlor, endosulfan, and endrin and their associated breakdown products generally degrade very slowly and tend to be soluble in lipids. These result in bioaccumulation and possible increases in concentrations through food webs (Newman, 1998). Pesticides have high Log K_{OC} values so they are expected to sorb strongly to soil and sediment particles when released to the environment. Consequently, these compounds may migrate from their site of application when the soil is eroded, although they will not have a tendency to leach to groundwater.

DDT, DDE, and DDD are highly lipid soluble, which combined with an extremely long half-life, results in bioaccumulation (ATSDR, 1989b). When present in ambient water, DDT and its

metabolites are concentrated in freshwater and marine plankton, insects, mollusks, and other invertebrates and fish (ATSDR, 1989b). A progressive accumulation of residues may result in high levels of residues in organisms at the top of the food chain (ATSDR, 1989b). Moderate to significant bioconcentration in aquatic species has been reported for dieldrin, with bioconcentration factors (BCFs) ranging from 100 to 10,000 (Howard, 1991). Heptachlor also has been reported to bioconcentrate in aquatic species, with bioconcentration factors in fish up to about 20,000 (Howard, 1991).

Soil to earthworm BAFs for pesticides were calculated from field studies summarized in various studies. The sources of the BAF are listed in the footnotes in Appendix Table J.2-1. BAFs were calculated by dividing the worm concentration by the soil concentration (if the BAFs were not calculated within the study). The BAFs were either presented on a wet-weight or dry weight basis. Wet weight BAFs were derived by multiplying the dry weight BAF by 0.16, which is the percent solids of soil invertebrates (Sample et. al., 1997), while dry-weight BAFs were derived by dividing the dry weight BAF by 0.16. An average BAF was calculated for each pesticide when data from more than one study were available. The compost studies (from Beyer 1990) were not used in the calculation of the average BAFs because properties of the compost may be different than soil. The average BAFs were used for both the conservative and average food chain models.

PCBs

The term polychlorinated biphenyls (PCBs) commonly refers to a variety of mixtures of individual biphenyl isomers, each consisting of two joined benzene rings and up to 10 chlorine atoms. Mixtures of these isomers are known by their commercial designation of Aroclor. This trade name is followed by a four-digit number; the first two numbers indicate the type of isomer mixture and the last two numbers indicate the approximate weight percent of chlorine in the mixture (U.S. EPA, 1985).

PCBs released into water adsorb to sediments and other organic matter. Typically, PCB concentrations are greater in the sediment and suspended material than in the water column. Substantial quantities of PCBs in aquatic sediments can act as an environmental reservoir from which PCBs may be released slowly over a long period of time (ATSDR, 1989c). For PCBs that exist in the dissolved state in water, volatilization becomes the primary fate process (U.S. EPA, 1985).

Degradation of PCBs in the environment is dependent upon the degree of chlorination. Generally, the more chlorinated the PCB molecule, the more persistent it will be in the

environment. Factors that determine biodegradability include the amount of chlorination, concentration, type of microbial population, available nutrients, and the temperature (ATSDR, 1989c).

Because PCBs are highly lipophilic, they can bioaccumulate in the lipid portions of animals. Bioconcentration factors in the thousands have been reported for various aquatic species (Eisler, 1986). PCBs can also accumulate in upper trophic level animals such as piscivorous birds and mammals that feed on contaminated prey items (Eisler, 1986).

Adverse effects of PCBs on terrestrial wildlife include increased mortality, reproductive effects, and behavioral effects (U.S. EPA, 1985). As a group, birds are more resistant to acutely toxic effects of PCBs than mammals (Eisler, 1986). Among sensitive avian species, PCBs disrupt the normal pattern of growth, reproduction, metabolism, and behavior (Eisler, 1986). Of the mammals, the mink is the most sensitive wildlife species tested for which data are available (Eisler, 1986). Impacts to mink include anorexia, weight loss, lethargy, reproductive effects, and death (Eisler, 1986).

Metals

Many metals occur naturally at various concentrations in the surface water and sediment primarily to chemical weathering of rocks and fallout from volcanoes. Most metals are toxic to aquatic (i.e., fish, invertebrates) and terrestrial (i.e., plants, invertebrates, vertebrates) ecological receptors above certain concentrations, with some metals being more toxic at lower concentrations than others. Also, different chemical forms of the metals may be more toxic than others. For example, hexavalent chromium is typically more toxic than trivalent chromium, and methylmercury is more toxic than inorganic mercury. In addition, the toxicity of several metals (cadmium, chromium, copper, lead, nickel, silver, and zinc) to aquatic receptors in freshwater systems decreases with increasing water hardness.

Many factors (e.g., pH, Eh, clay content, organic matter content) influence the bioavailability of metals to invertebrates in sediment. One way to estimate the bioavailable portion of certain divalent metals (cadmium, copper, lead, nickel, and zinc) in sediment is to measure the amount of acid volatile sulfides (AVS) and simultaneously extracted metals (SEM) in a sediment sample. If the molar concentration of AVS is higher than the molar concentration of SEM, then the SEM metals are expected to be unavailable and non-toxic to aquatic invertebrates. AVS plays little or no role in determining interstitial water concentrations of metals in aerobic systems or those with

low productivity (i.e., where the absence of organic carbon limits sulfate reduction) (Ankley et al., 1995), or when ingestion of sediments is the primary exposure route (Lee et al., 2000).

SOIL TO EARTHWORM BAFS FOR PESTICIDES AND PAHS

This section presents the literature-derived soil to earthworm BAFs that were incorporated into the food chain models for several pesticides and PAHs because values were not available in other sources.

The average BAFs for pesticides were calculated from field studies summarized in various studies. The sources of the BAFs are listed in the footnotes in Table J.2-2. BAFs were calculated by dividing the worm concentration by the soil concentration (if the BAFs were not calculated within the study). The BAFs were either presented on a wet-weight or dry weight basis. Wet weight BAFs were derived by multiplying the dry weight BAF by 0.16, which is the percent solids of soil invertebrates (Sample et. al., 1997), while dry-weight BAFs were derived by dividing the dry weight BAF by 0.16. For this ERA, the dry-weight BAFs were used in the food chain model.

An average BAF was calculated for each pesticide, when data from more than one study were available. The compost studies (from Beyer 1990) were not used in the calculation of the average BAFs because properties of the compost may be different than soil. The average BAF was used for both the conservative and average food chain models.

Table J.2-3 presents the soil to earthworm BAFs for PAHs. Two sets of BAF studies were found for PAHs. One study by Ma et al., (1998) calculated BAFs for PAHs in different soil types. The BAFs were presented as values for total PAHs. The second study, reported in Beyer (1990), presented average soil and earthworm concentrations for individual PAHs. That data were used to calculate the BAFs by dividing the PAH concentrations in the earthworm samples be the PAH concentrations in the soil samples. For the conservative food chain model, 1.606 [the maximum BAF from Ma et al. (1998)] was used while the average BAF of 0.609 was used for the average food chain model. The values from Ma et al., (1998) were used for the food chain model for this ERA because they are based on more data, and are slightly greater than the values reported from Beyer (1990), so they are more conservative (see Table J.2-3). These values are similar to the maximum and average BAFs reported from the Beyer (1990) study of 0.669 and 0.256, respectively.

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TABLE J.2-1

DRY WEIGHT BAFS AND/OR BSAFS FOR PLANTS, EARTHWORMS, FISH, SEDIMENT INVERTEBRATES, AND MAMMALS

Chemicals	Plant BAFs[1,2]		Earthworm BAFs[3]		Fish BSAFs[4]		Sediment Invertebrate BSAFs[5]	
	Conservative[6]	Average[6]	Conservative[6]	Average[6]	Conservative[6]	Average[6]	Conservative[6]	Average[6]
Semivolatile Organics								
Acenaphthene	1.20E-01	1.20E-01	6.69E-01	2.56E-01	2.90E-01	2.90E-01	1.00E+00	1.00E+00
Acenaphthylene	2.70E-01	2.70E-01	6.69E-01	2.56E-01	2.90E-01	2.90E-01	1.00E+00	1.00E+00
Anthracene	1.10E-01	1.10E-01	6.69E-01	2.56E-01	2.90E-01	2.90E-01	1.00E+00	1.00E+00
Benzo(a)anthracene	1.90E-02	1.90E-02	6.69E-01	2.56E-01	2.90E-01	2.90E-01	1.00E+00	1.00E+00
Benzo(a)pyrene	1.10E-02	1.10E-02	6.69E-01	2.56E-01	2.90E-01	2.90E-01	1.00E+00	1.00E+00
Benzo(g,h,i)perylene	5.60E-03	5.60E-03	6.69E-01	2.56E-01	2.90E-01	2.90E-01	1.00E+00	1.00E+00
Benzo(k)Fluoranthene	4.30E-03	4.30E-03	6.69E-01	2.56E-01	2.90E-01	2.90E-01	1.00E+00	1.00E+00
Chrysene	1.90E-02	1.90E-02	6.69E-01	2.56E-01	2.90E-01	2.90E-01	1.00E+00	1.00E+00
Dibenzo(a,h)Anthracene	4.30E-03	4.30E-03	6.69E-01	2.56E-01	2.90E-01	2.90E-01	1.00E+00	1.00E+00
Fluoranthene	5.50E-02	5.50E-02	6.69E-01	2.56E-01	2.90E-01	2.90E-01	1.00E+00	1.00E+00
Fluorene	1.10E-01	1.10E-01	6.69E-01	2.56E-01	2.90E-01	2.90E-01	1.00E+00	1.00E+00
Indeno(1,2,3-cd)pyrene	5.60E-03	5.60E-03	6.69E-01	2.56E-01	2.90E-01	2.90E-01	1.00E+00	1.00E+00
Naphthalene	4.60E-01	4.60E-01	6.69E-01	2.56E-01	2.90E-01	2.90E-01	1.00E+00	1.00E+00
Pentachlorophenol	1.40E-02	1.40E-02	1.00E+00	1.00E+00			1.00E+00	1.00E+00
Phenanthrene	8.20E-02	8.20E-02	6.69E-01	2.56E-01	2.90E-01	2.90E-01	1.00E+00	1.00E+00
Pyrene	5.50E-02	5.50E-02	6.69E-01	2.56E-01	2.90E-01	2.90E-01	1.00E+00	1.00E+00
Pesticides/ PCBs								
4,4'-DDD	1.60E-02	1.60E-02	1.30E+01	1.30E+01	2.80E-01	2.80E-01	1.00E+00	1.00E+00
4,4'-DDE	1.90E-02	1.90E-02	1.30E+01	1.30E+01	7.70E+00	7.70E+00	1.00E+00	1.00E+00
4,4'-DDT	7.80E-03	7.80E-03	1.30E+01	1.30E+01	1.67E+00	1.67E+00	1.00E+00	1.00E+00
Alpha-Chlordane	2.50E-02	2.50E-02	5.00E+00	5.00E+00	4.77E+00	4.77E+00	1.00E+00	1.00E+00
Aroclor-1254	1.30E-02	1.30E-02	1.59E+01	6.67E+00	1.85E+00	1.85E+00	6.41E+01	3.62E+01
Aroclor-1260	2.90E-03	2.90E-03	1.59E+01	6.67E+00	1.85E+00	1.85E+00	6.41E+01	3.62E+01
Gamma-Chlordane	2.50E-02	2.50E-02	5.00E+00	5.00E+00	2.22E+00	2.22E+00	1.00E+00	1.00E+00
Heptachlor	1.20E-01	1.20E-01	1.00E+01	1.00E+01	1.80E+00	1.80E+00	1.00E+00	1.00E+00
Inorganics								
Arsenic	1.10E+00	3.75E-02	5.23E-01	2.24E-01	1.00E+00	1.00E+00	6.90E-01	1.43E-01
Cadmium	3.25E+00	5.86E-01	4.07E+01	7.71E+00	1.00E+00	1.00E+00	7.99E+00	6.00E-01
Chromium	8.39E-02	4.10E-02	3.16E+00	3.06E-01	1.00E+00	1.00E+00	4.68E-01	1.00E-01
Copper	6.25E-01	1.24E-01	1.53E+00	5.15E-01	1.00E+00	1.00E+00	5.25E+00	1.56E+00
Lead	4.68E-01	3.89E-02	1.52E+00	2.66E-01	1.00E+00	1.00E+00	6.07E-01	7.10E-02
Mercury	5.00E+00	6.52E-01	2.06E+01	1.69E+00	1.00E+00	1.00E+00	2.87E+00	1.14E+00
Nickel	1.41E+00	1.80E-02	4.73E+00	1.06E+00	1.00E+00	1.00E+00	2.32E+00	4.86E-01
Selenium	3.01E+00	6.72E-01	1.34E+00	9.85E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00
Zinc	1.82E+00	3.66E-01	1.29E+01	3.20E+00	1.00E+00	1.00E+00	7.53E+00	1.94E+00

Notes:

BAF - Bioaccumulation Factor

BSAF - Biota Sediment Accumulation Factor

1 - ORNL (2001) for organics; only one value is available for conservative and average exposures

2 - Sample et al., (1997) for inorganics; conservative value is 90th percentile; average value is median value

3 - Sample et al., (February, 1998) for all chemicals; conservative value is 90th percentile; average value is median value

4 - U.S. EPA, September 1997; only one value is available for conservative and average exposures. Values for organic chemicals are the same for wet-weight and dry weight.

5 - ORNL (August, 1998) for all chemicals; conservative value is 90th percentile; average value is median value

6 - Conservative and average refers to the exposure scenarios for which the uptake factors are used

7 - Values are from Sample et al., (1998) as cited in the Draft Eco SSL Guidance (EPA, July 2000). The conservative values for metals were not cited in the Draft Eco SSLs so they were obtained directly from Sample et al., (1998).

Default value of 1 is assigned to parameters without uptake factors

TABLE J.2-2

EARTHWORM BAFS FOR PESTICIDES

Parameter	Study Values					Calculated Values		Reference	Comments
	Worm Concentration		Soil Conc. (dry weight)	Dry Weight BAF	Wet Weight BAF	Final Dry Weight[1] BAF	Final Wet Weight[2] BAF		
	Dry Weight	Wet Weight							
DDT	NA	NA	NA	5	NA	5	0.80	1	soil type unknown (11-year field study)
	0.5	NA	1	0.5	NA	0.5	0.080	2	compost (lab)
	6.9	NA	4	1.7	NA	1.7	0.28	2	compost (lab)
	37	NA	16	2.3	NA	2.3	0.37	2	compost (lab)
	159	NA	64	2.5	NA	2.5	0.40	2	compost (lab)
	NA	NA	NA	9	NA	9.0	1.44	3	from data collected in 67 agricultural fields
	NA	NA	NA	NA	1.2-4.9	7.5-31	1.2-4.9	4	agricultural soil (0.94 ppm DDT in soil)
Average dry/wet weight BAF from field studies[3]				***NA***	***NA***	***13.0***	***2.1***		
Dieldrin	NA	NA	NA	8	NA	8	1.28	1	soil type unknown (11-year field study)
	NA	NA	NA	2.4	NA	2.4	0.38	2	compost (lab) (17 ppm dieldrin in compost)
	NA	NA	NA	5.6	NA	5.6	0.90	2	compost (lab) (17 ppm dieldrin in compost)
	NA	18.4	25	NA	0.74	4.6	0.7	5	compost (20-day lab study)
	NA	24.4	25	NA	0.98	6.1	1.0	5	compost (20-day lab study)
	NA	4.6	10	NA	0.46	2.9	0.5	6	90-day lab study
	NA	9.7	30	NA	0.32	2.0	0.3	6	90-day lab study
	NA	12.4	50	NA	0.25	1.6	0.2	6	90-day lab study
	NA	13.9	100	NA	0.14	0.87	0.1	6	90-day lab study
	NA	NA	NA	NA	0.97-4	6.16-25	0.97-4	4	agricultural soil (1.36 ppm total aldrin and dieldrin in soil)
Average dry/wet weight BAF from field studies[3]				***NA***	***NA***	***6.64***	***1.06***		
gamma-BHC	NA	NA	NA	5	1.5-4.2	5	1.5-4.2	4	agricultural soil (0.004 ppm gamma-BHC in soil)
Average dry/wet weight BAF from field studies[3]				***NA***	***NA***	***5***	***2.85***		
Heptachlor	NA	NA	NA	10	NA	10	1.60	4	soil type unknown (11-year field study)
Average dry/wet weight BAF from field studies[3]				***NA***	***NA***	***10***	***1.6***		
Aldrin	NA	NA	NA	3.3	NA	3.3	0.528	3	from data collected in 7 agricultural fields
Chlordane	NA	NA	NA	5	NA	5.0	0.8	3	from data collected in 7 agricultural fields
Endrin	NA	NA	NA	3.6	NA	3.6	0.576	3	from data collected in 26 agricultural fields
Heptachlor epoxide	NA	NA	NA	3	NA	3.0	0.48	3	from data collected in 9 agricultural fields

Notes:
BAF - bioaccumulation factor = worm concentration/soil concentration
NA - Not applicable
The percent solids of earthworms is assummed to be 0.16 [Sample et al., 1997])

TABLE J.2-2

EARTHWORM BAFS FOR PESTICIDES

1 - The calculated dry weight BAF was either obtained directly from the study or was calculated by dividing the wet weight BAF by 0.16
2 - The calculated wet weight BAF was either obtained directly from the study or was calculated by multiplying the dry weight BAF by 0.16
3 - The compost studies were not used in calculation of average BAF because the properties of the compost may be different than soil. The compost studies were presented for informational purposes only.

References

1 - Beyer and Gish, 1980 and Beyer and Krynitsky, 1989
2 - Davis, 1971
3 - Gish, 1970
4 - Wheatly and Hardman, 1968
5 - Jeffries and Davis, 1968
6 - Venter and Reinecke, 1985

TABLE J.2-3
SOIL TO EARTHWORM BIOACCUMULATION FACTORS FOR PAHS

Soil	Wet-Weight BAFs[1]	Dry-Weight BAFs[2]	Soil Type
OT1	0.081	0.506	Silty clay loam
OT2	0.026	0.163	Light sandy loam
OT3	0.105	0.656	Silty clay loam
OT4	0.257	1.606	Silty clay loam
OT5	0.192	1.200	Silty clay loam
OT6	0.091	0.569	Silty clay loam
GP1	0.069	0.431	Silty clay loam
GP2	0.072	0.450	Silty clay loam
GP3	0.062	0.388	Silty clay loam
GP4	0.11	0.688	Silty clay
GP5	0.042	0.263	Silty clay
GP6	0.062	0.388	Silty clay
Minimum BAF	**0.026**	**0.163**	
Maximum BAF	**0.257**	**1.606**	
Average BAF	**0.097**	**0.609**	

Notes:
Source of data is Ma et al., (1998)
1 - BAFs from the study are based on wet weight and normalized to the percent of organic carbon and percent lipids.
2 - These BAFs were calculated by dividing the wet weight BAF by 0.16 (percent solids of an earthworm)

Chemical	Earthworm Bioaccuumulation Factors[1]			
	Soil Concentration (mg/kg)	Earthworm Concentration (mg/kg)	BAF (dry weight)	BAF (wet weight)[2]
Acenaphthylene	ND	ND	ND	ND
Anthanthrene	1.2	0.11	0.092	0.015
Anthracene	0.92	0.047	0.051	0.008
Benzo(a)anthracene	2	0.25	0.13	0.020
Benzo(a)pyrene	3.8	1.3	0.34	0.055
Benzo(b)fluoranthene	2.6	0.83	0.32	0.051
Benzo(e)pryene	2.1	0.91	0.43	0.069
Benzo(g,h,i)perylene	4.5	1.1	0.24	0.039
Benzo(k)fluoranthene	1.5	0.38	0.25	0.041
Chrysene	2	0.35	0.18	0.028
Dibenzo(a,i)pyrene	1.4	0.44	0.31	0.050
Dibenzo(a,j)anthracene	0.87	0.32	0.37	0.059
Fluoranthene	2.4	0.19	0.079	0.013
Fluorene	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	3.1	1.3	0.42	0.067
Naphthalene	ND	ND	ND	ND
Perylene	1.2	0.3	0.25	0.040
Phenanthrene	2.3	0.28	0.12	0.019
Pyrene	2.5	0.23	0.092	0.015
Triphenylene	1.3	0.87	0.67	0.107
		Minimum BAF	**0.051**	**0.0082**
		Maximum BAF	**0.669**	**0.107**
		Average BAF	**0.256**	**0.041**

Notes:
ND - No data available
1 - Source of data is Table 25 in Beyer (1990)
2 - Wet weight BAF was calculated by multiplying the dry weight BAF by 0.16 (percent solids of an earthworm)

The following sections present the receptor profiles for the representative herbivorous, insectivorous, and piscivorous receptors chosen for foodchain modeling at SWMU 15. The majority of the information for the profiles was obtained from the Wildlife Exposure Factors Handbook (U.S. EPA, 1993). The data for the incidental soil ingestion rates were obtained from the Estimates of Soil Ingestion by Wildlife (Beyer, 1994) or the USEPA Ecological Soil Screening Guidance (U.S. EPA, 2005).

The food and water ingestion rates are listed in g/g (of body weight)-day on a wet weight basis but were converted to dry weight for the ERA using the exposure factors presented below. The home ranges are presented in hectares in U.S. EPA (1993) but were converted to acres by multiplying the number of hectares by 2.471. The only exception is the kingfisher's range, which is presented in km of shoreline. Also note that the estimated percent of soil in the diets are listed in dry weight.

Short-Tailed Shrew (*Blarina brevicauda*)

Shrews inhabit a wide variety of habitats and are common in areas with abundant vegetative cover. They need cool, moist habitats because of their high metabolic and water-loss rates. The short-tailed shrew is primarily carnivorous, eating insects such as earthworms, slugs, and snails.

The adult body weight for the short-tailed shrew in various habitats ranged from 0.015 to 0.01921 kg with an average of 0.0169 kg. The listed food ingestion rates for shrews are between 0.43 and 0.96 g/g-day (wet-weight). The water ingestion rate was listed as 0.223 g/g-day. The food and water ingestion rates in kg/day and L/day, respectively, were calculated as shown on Table J.3-1. The food ingestion rates were then multiplied by 0.16 in the food chain model, which is the percent solids of worms (Sample et al., 1997) to convert the ingestion rate from a wet-weight value to a dry-weight value. The incidental soil ingestion rate was calculated by multiplying the ingestion rate by the percentage of soil that is incidentally ingested (3% for conservative food chain model and 0.9% for the average food chain model) from U.S. EPA (February 2005). 3% is the 90th percentile value and 0.9% is the 50th percentile value from U.S. EPA (February 2005). The home range for the shrew (0. 9699 acres) was calculated using data from a tamarek bog in Manitoba (only value available).

American Woodcock (*Scolopax minor*)

Woodcocks inhabit both woodlands and abandoned fields, particularly those with risk and moderately to poorly drained loamy soils, which tend to support abundant earthworm populations. They feed primarily on invertebrates found in moist upland soils by probing the soil with their long prehensile-tipped bill. Earthworms are their preferred diet, but seeds and other plant matter may also be consumed.

The adult body weight for the woodcock ranges from 0.166 to 0.213 kg with an average of 0.190 kg. The listed food ingestion rates for the woodcock are between 0.73 and 1.0 g/g-day (wet-weight). The water

ingestion rate is listed as 0.1 g/g-day. The food and water ingestion rates in kg/day and L/day, respectively, were calculated as shown in Table 8-9. The food ingestion rates were then multiplied by 0.16 in the food chain model, which is the percent solids of worms (Sample et al., 1997) to convert the ingestion rate from a wet-weight value to a dry-weight value. The incidental soil ingestion rate was calculated by multiplying the ingestion rate by the percentage of soil that is incidentally ingested (assumed 16.4% for conservative food chain model and 6.4% for the average food chain model) from U.S. EPA (February 2005). 16.4% is the 90th percentile value and 6.4% is the 50th percentile value from U.S. EPA (February 2005).

The range of home range sizes for the woodcock is 7.66 to 182 acres with an average home range of 61 acres.

Meadow Vole (*Microtus pennsylvanicus*)

Meadow voles inhabit grassy fields, marshes, and bogs; however, they prefer fields with more grass, more cover, and fewer woody plants. They typically consume green succulent vegetation, sedges, seeds, roots, bark, fungi, insects, and animal matter. However, green succulent vegetation makes up the majority of their diet.

The adult body weight for the vole ranges from 0.0329 to 0.0391 kg with an average of 0.0366 kg. The only listed food ingestion rates for voles range from 0.30 to 0.35 g/g-day (wet-weight), with an average of 0.325 g/g-day. The water ingestion rates are 0.14 (estimated) and 0.21 g/g-day, with an average of 0.175 g/g-day. The food and water ingestion rates in kg/day and L/day, respectively, were calculated as shown in Table 8-9. The food ingestion rates were then multiplied by 0.15 in the food chain model, which is the percent solids of plant foliage (U.S. EPA, February 2005), to convert the ingestion rate from a wet-weight value to a dry-weight value. The incidental soil ingestion rate was calculated by multiplying the ingestion rate by the percentage of soil that is incidentally ingested (assumed 3.2% for conservative food chain model and 1.2% for the average food chain model) from U.S. EPA (February 2005). 3.2% is the 90th percentile value and 1.2% is the 50th percentile value from U.S. EPA (February 2005).

Northern Bobwhite Quail (*Colinus virginianus*)

Quails inhabit grasslands, idle fields, pastures, and large clumps of grasses. Bobwhite quails forage in areas with open vegetation, some bare ground, and light litter. Seeds from weeds, woody plants, and grasses comprise the majority of an adult's diet, although green vegetation has been found to dominate the diet of this species in winter in the southern areas of the United States.

The adult body weight for the bobwhite quail ranges from 0.162 to 0.186 kg with an average of 0.177 kg. The listed food ingestion rates for quails range from 0.067 to 0.093 g/g-day (wet-weight), with an average of 0.082 g/g-day. The water ingestion rate ranges from 0.086 to 0.131 g/g-day, with an average water ingestion rate of

0.104 g/g-day. The food and water ingestion rates in kg/day and L/day, respectively, were calculated as shown on Table 8-9. The food ingestion rates were then multiplied by 0.15 in the food chain model, which is the percent solids of plant foliage (U.S. EPA, February 2005), to convert the ingestion rate from a wet-weight value to a dry-weight value. The incidental soil ingestion rate was calculated by multiplying the ingestion rate by the percentage of soil that is incidentally ingested (assumed 13.9% for conservative food chain model and 6.1% for the average food chain model) from U.S. EPA (February 2005). 13.9% is the 90th percentile value and 6.1% is the 50th percentile value for the mourning dove from U.S. EPA (February 2005).

The home range for the quail ranges from 16 to 41 acres with an average home range of 29 acres.

Belted Kingfisher *Ceryle alcyon)*

Belted kingfishers are typically found along rivers, streams, and the edges of lakes and ponds. They are also common along seacoasts and estuaries. They prefer water that is free of thick vegetation and overhanging trees that obscure the view of the water. Because kingfishers eat primarily fish that swim near the surface or in shallow water, they require relatively clear water to see and catch their prey. Although kingfishers feed predominantly on fish, they have been know to consume crayfish, crabs, mussels, lizards, frogs, toads, small snakes, turtles, insects, salamanders, newts, young birds, mice, and berries.

Based on data from Michigan, Pennsylvania, Ohio, and Minnesota, the adult body weights range from 0.136 to 0.170 kg, with an average of 0.152 kg. The listed food ingestion rates, based on data from Michigan, ranges from 0.41 to 0.5 g/g-day. The water ingestion rate is estimated as 0.11 g/g-day. The food ingestion rates were then multiplied by 0.25 in the food chain model, which is the percent solids of fish (Sample et al., 1997) to convert the ingestion rate from a wet-weight value to a dry-weight value. The incidental sediment ingestion rate was calculated by multiplying the ingestion rate by the percentage of soil that is incidentally ingested (3.3 percent), based on the mallard in Beyer (1994).

The home range for the kingfisher ranges from 0.39 to 2.185 km of shoreline, based on data from streams in Pennsylvania and Ohio.

Mink (Mustela vison)

Minks are the most abundant and widespread carnivorous mammals in North America. They are found associated with every type of aquatic habitat including waterways such as rivers, streams, lakes, ditches, swamps, marshes, and backwater areas. Minks prefer irregular shorelines and tend to use brushy or wooded cover adjacent to the water, where prey is abundant and downfall and debris provide den sites. Mammals are minks' most important prey year round in many parts of their range, but they also hunt aquatic species such as fish, amphibians, and crustaceans.

The adult body weight for the mink in various habitats ranged from 0.55 to 1.734 kg with an average of 1.02 kg. The listed food ingestion rates for minks range from 0.12 to 0.22 g/g-day (wet-weight). The water ingestion rates range from 0.028 to 0.11 g/g-day. The food and water ingestion rates in kg/day and L/day, respectively, were calculated as shown in Table J.3-1. The food ingestion rates were then multiplied by 0.25 in the food chain model, which is the percent solids of fish (Sample et al., 1997) to convert the ingestion rate from a wet-weight value to a dry-weight value. The incidental sediment ingestion rate was calculated by multiplying the ingestion rate by the percentage of sediment that is incidentally ingested (4.3% for conservative food chain model and 1.3% for the average food chain model) from U.S. EPA (February 2005). 4.3% is the 90th percentile value and 1.3% is the 50th percentile value for the weasel from U.S. EPA (February 2005), because an incidental sediment ingestion rate is not available for the mink.

The home range for the mink in riverine areas ranged from 19.3 to 50.4 acres, with an average of 34.85 acres. (U.S. EPA, 1993).

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U.S. EPA (U.S. Environmental Protection Agency), 1993. Wildlife Exposure Factors Handbook. U.S. Environmental Protection Agency. Office of Research and Development. Washington, D.C. December 1993. EPA/600/R-93/187a.

U.S. EPA (U.S. Environmental Protection Agency), 2005. Ecological Soil Screening Level Guidance, Office of Emergency and Remedial Response. February

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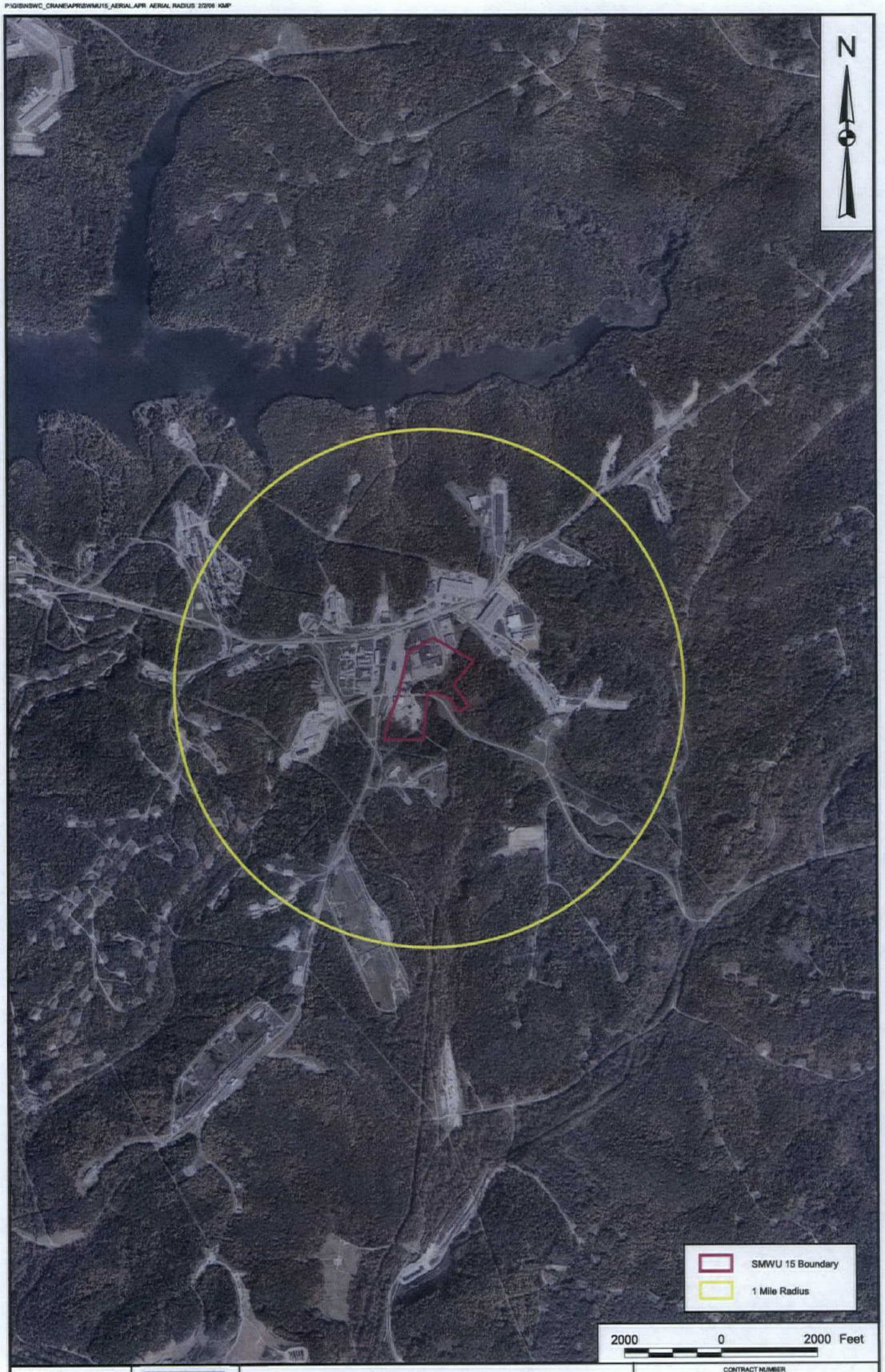

DRAWN BY K. PEILA	DATE 2/2/06	AERIAL PHOTOGRAPH SHOWING ONE MILE RADIUS SWMU 15 - ROADS AND GROUNDS AREA NSWC CRANE CRANE, INDIANA	CONTRACT NUMBER CTO 0331
CHECKED BY T. ROJAHN	DATE 2/2/06		APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED			DRAWING NO. FIGURE J-3 REV 0

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TABLE J.3-1

CALCULATION OF EXPOSURE PARAMETERS FOR SURROGATE WILDLIFE RECEPTORS

Exposure Parameters	Meadow Vole		Short-Tailed Shrew		American Woodcock	Bobwhite Quail		Belted Kingfisher	Mink
Body Weights (g)	32.9		17.61	16.87	168	180	181	150	1734
	39.1		17.33	15.58	209	168	183	136	974
	35.5		19.21	15.7	166	162	179	158	1040
	39		17.4	15.25	212	175	175	147	1233
					169	178	183.2	148	550
					213	179	185.5	170	586
						180	173		
						162.8	180.4		
Minimum	***32.9***		***15.25***		***166***	***162***		***136***	***550***
Maximum	***39.1***		***19.21***		***213***	***186***		***170.0***	***1734***
Average	***36.6***		***16.87***		***190***	***177***		***152***	***1019.5***
Food Ingestion Rate (g/g-day) (1)	0.3		0.49	0.77	1.0	0.067	0.079	0.5	0.13
	0.35		0.62	0.55	0.77	0.072	0.093	0.41	0.12
			0.43	0.96	0.73	0.09	0.089		0.16
			0.52	0.54					0.22
Minimum	***0.3***		***0.43***		***0.73***	***0.067***		***0.41***	***0.12***
Maximum	***0.35***		***0.96***		***1.0***	***0.093***		***0.5***	***0.22***
Average	***0.325***		***0.61***		***0.8***	***0.082***		***0.455***	***0.1575***
Food Ingestion Rate (kg/day)									
Conservative	***1.28E-02***		***1.62E-02***		***1.90E-01***	***1.64E-02***		***0.0758***	***0.2243***
Average	***1.19E-02***		***1.03E-02***		***1.58E-01***	***1.44E-02***		***0.0689***	***0.1606***
Water Ingestion Rate (g/g-day) (1)	0.14	0.21	0.223		0.1	0.115	0.1	0.11	0.11
					0.1	0.106	0.131		0.099
						0.093	0.101		0.028
						0.086	0.102		
						0.11	0.1		
Minimum	***0.14***		***0.223***		***0.1***	***0.086***		***0.11***	***0.028***
Maximum	***0.21***		***0.223***		***0.1***	***0.131***		***0.11***	***0.11***
Average	***0.175***		***0.223***		***0.1***	***0.104***		***0.110***	***0.079***
Water Ingestion Rate (L/day)									
Conservative	***7.69E-03***		***4.28E-03***		***2.13E-02***	***2.31E-02***		***0.0187***	***0.1907***
Average	***6.41E-03***		***3.76E-03***		***1.90E-02***	***1.84E-02***		***0.0167***	***0.0805***
Home Range (Ha)	0.43	0.097	0.3925		4.5	7.6		2.185	7.8
	0.019	0.041			32.4	16.7		1.028	20.4
	0.013	0.033			3.1	6.4		1.03	
	0.012	0.013			73.6	15.6		0.39	
	0.043	0.057			10.5				
	0.023	0.032							
	0.051	0.078							
	0.058	0.061							
Minimum (acres)	***0.0297***		***0.97***		***7.7***	***16***		***0.39***	***19***
Maximum (acres)	***1.06***		***0.97***		***182***	***41***		***2.19***	***50***
Average (acres)	***0.16***		***0.97***		***61***	***29***		***1.16***	***35***

Notes:
Source of data is U.S. EPA (1993).

Footnotes:
(1) - Ingestion Rates (kg/day or L/day) (if more than 1 ingestion rate is available)
- Conservative value = Max Ingestion Rate (g/g-day) * Avg. Body Weight
- Average value = Avg. Ingestion Rate (g/g-day) * Avg. Body Weight

Ingestion Rates (L/day) (if only 1 ingestion rate is available)
- Conservative value = Ingestion Rate (g/g-day) * Max. Body Weight
- Average value = Ingestion Rate (g/g-day) * Avg. Body Weight

ESI

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July 28, 2005

Mr. Aaron Bernhardt
Tetra Tech NUS, Inc.
Foster Plaza 7
661 Andersen Drive
Pittsburgh, PA 15220

Dear Mr. Bernhardt;

Enclosed, please find two (2) copies of our final report evaluating the toxicity of sediment samples collected as part of the US Navy NSWC Crane Sediment Evaluation. Sediment toxicity was evaluated during June 2005 using the freshwater amphipod, *Hyalella azteca*.

Please do not hesitate to call me or Brian Buzby should you have any questions or comments on the report.

Sincerely,

EnviroSystems, Incorporated

Kenneth A. Simon
President

Enclosure
Two (2) Copies: One (1) Bound, One (1) Unbound
Report Number 13373-05-06

TOXICOLOGICAL EVALUATION OF SEDIMENT SAMPLES

US Navy NSWC Crane CTO-0331
Hyalella azteca
Survival and Growth Tests
Project Number 1245

Prepared For

Tetra Tech NUS
Foster Plaza 7
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By

EnviroSystems, Incorporated
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June 2005
Reference Number 13373-05-06

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TOXICOLOGICAL EVALUATION OF SEDIMENT SAMPLES

US Navy NSWC Crane CTO-0331
Sediment Evaluation
Hyalella azteca
Acute Exposure Sediment Toxicity Tests

Project Number 1245

1.0 INTRODUCTION

Toxicity tests expose groups of organisms to environmental samples, a laboratory control and/or a field reference site for a specified period to assess potential impacts on a variety of endpoints, such as survival, growth or reproduction. Analysis of variance techniques are used to determine the relative toxicity of the samples as compared to the laboratory control and/or field reference site.

This report presents the results of chronic exposure, survival and growth, toxicity tests conducted on six samples collected from the US Navy NSWC Crane, CTO-0331 project site. The samples were provided byTetra Tech NUS, Pittsburgh, PA . Testing was based on programs and protocols developed by the ASTM (2001) and US EPA (2000). The toxicity of the samples was assessed by conducting toxicity tests using the freshwater amphipod *Hyalella azteca*. Assays and supporting analyses were performed at EnviroSystems, Incorporated (ESI), Hampton, New Hampshire.

2.0 MATERIALS AND METHODS

2.1 General Methods, Biological Evaluations

Toxicological and analytical protocols used in this program follow procedures outlined in *Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Freshwater Invertebrates* (ASTM 2004), *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates* (US EPA 2000) and *Standard Methods for the Examination of Water and Wastewater*, 20th Edition (APHA 1998). These protocols provide standard approaches for physical and chemical analysis and for the evaluation of toxicological effects of sediments on aquatic invertebrates.

2.2 Test Species

H. azteca were obtained from Aquatic Research Organisms (ARO), Hampton, New Hampshire. Organisms were approximately 8 days old at the start of the assay. Organisms were received at ESI the day prior to starting the assays. Organisms were held in a mix of moderately hard and natural surface water prior to the start of the assay.

2.3 Test Samples and Laboratory Control Sediment

A total of seven (7) sediment samples from the US Navy NSWC Crane, CTO-0331 project site were received by ESI on June 9, 2005. Once received, samples were inspected, to determine integrity, given unique sample numbers and logged into the laboratory sample management database. Once logged into the sample management database samples were placed in a secure refrigerated, 2 - 4 °C, storage area until required. A listing of sample description, collection and receipt information is summarized in Table 1.

The amphipod assay laboratory control substrate was an artificial sediment consisting primarily of silica sand, with approximately 2-3%, by weight, of a field collected natural detritus. The detritus was collected above the water line in the pond but in a damp area. The top 0.5 to 1.0 cm of the sediment was collected. The organic detritus was mixed into the silica sand.

Overlying water was a mix of moderately hard synthetic and natural surface water. The surface water was collected from Bow Lake, Strafford, New Hampshire. Use of synthetic/natural surface water over an artificial reconstituted water is recommended by the protocol (EPA 2000, ASTM 2001).

2.4 *Hyalella azteca* Survival and Growth Assays

The 10 day amphipod survival and growth tests were conducted according to ASTM Method E 1706-95 (ASTM 2004) and EPA method 100.4 (EPA 2000). Endpoints of the 10 day exposure were survival and growth, measured as dry weight. The tests were started on June 22 and terminated on July 2, 2005.

The site sediment and laboratory control sediment treatments consisted of 8 replicates with 10 organisms/replicate. Test vessels were 400 mL glass beakers containing approximately 100 mL of sediment and 250 mL of overlying water. The overlying water volume to sediment surface area ratio was approximately 7:1. Test vessels were drilled at a consistent height above their bases and the hole covered with Nytex® screen. The screened hole facilitated water exchange without compromising organisms. Vessels were maintained in a water bath during the assay. Depth of the water in the bath was set to be approximately 1 cm below the drain hole in the test vessel to eliminate flow of water from the bath into the test vessel. The water bath was maintained in a limited-access temperature controlled room. Temperatures in the room and water bath were independently maintained at 23 ±1°C. The photoperiod in the test chamber was set at 16:8 hour light:dark. Light was provided by cool white flourescent bulbs.

One day prior to test initiation (Day -1), control and test sediments were sieved using a 4 mm sieve to remove rocks, twigs, and other debris. Sediments were placed in the test vessels. Overlying water was immediately added, and the vessels were left undisturbed overnight to settle. Floating detritus was removed the next morning. On Day 0, organisms were added below the water surface of each test vessel.

Overlying water in each replicate was renewed daily after collection of water quality data. The volume of water added to each test chamber was approximately 500 mL or two volumes. Water exchanges were facilitated by use of a distribution system designed to provide equal, regulated, flow to each chamber. The system was activated manually by the addition of water during the assay.

Prior to the daily overlying water renewal, temperature, specific conductance, pH, and dissolved oxygen were measured in one replicate of each treatment. Temperature data was collected in a surrogate test chamber collected on a hourly basis during the 10 day exposure period. Alkalinity, and hardness of the overlying water were measured at the beginning and end of the assay. Ammonia of the overlying water was measured daily. Water quality data are presented in Table 4. Daily overlying water quality records are available in Appendix A. Each replicate was fed 1.0 mL of a yeast/trout chow/alfalfa suspension after the daily renewal.

After 10 days exposure, all replicates of each test treatment were terminated to collect data for the survival and growth endpoints. Each test chamber was gently swirled to loosen the sediments and the test material was dumped into an 8" stainless steel sieve with a 0.35 mm mesh screen. The sediments were washed through the sieve using synthetic, moderately hard reconstituted water and material left on the screen was sorted to recover of the organisms. This process was continued until the entire sample was evaluated. Organisms recovered were set aside to determine growth. Surviving amphipods were counted and placed on tared weighing pans. Pans were dried overnight at 70°C to obtain dry weight to the nearest 0.01 mg. The mean dry weight of surviving organisms was determined to assess growth.

2.5 Statistical Analysis

Endpoints were analyzed using CETIS® (Comprehensive Environmental Toxicity Information System) software to determine significant differences between the test sediments and the laboratory control sediment. Data sets were evaluated to determine normality of distribution and homogeneity of sample variance. Data sets were subsequently evaluated using the appropriate parametric or non-parametric Analysis of Variance (ANOVA) statistic. Pair-wise comparisons were made using the most appropriate two sample analysis. Statistical difference was evaluated at $\alpha=0.05$. Statistical comparisons were made against the laboratory control treatment and the project's reference site.

2.6 Quality Control

As part of the laboratory quality control program, reference toxicant evaluations are conducted by ESI on a regular basis for each test species. These results provide relative health and response data while allowing for comparison with historic data sets. Results were within two standard deviations of ESI's historic mean for the species. Results are summarized in Table 5.

2.7 Protocol Deviations

Review of data collected during this series of assays documented the following deviations from the prescribed protocol. Review of water quality parameters collected at the beginning and end of the assays documented a greater than 50% change in the alkalinity, hardness, and ammonia levels of the overlying water between the start and end of the assay. Review of the water quality data collected on the renewal water used in the assays documented that prior to being added to the test chambers, there was less than a 50% change in concentration for the identified parameters between the start and end of the assay. The changes reported in the test chambers reflect the influence of the substrate on the water quality parameters. Temperature data from the hourly data logger is unavailable due to a malfunction of the device.

It is the opinion of the study director that the protocol deviations recorded as part of a review of the project data had no significant impact on the overall outcome of the assays.

3.0 TOXICOLOGICAL TESTING RESULTS AND DISCUSSION

Amphipod survival and growth data are summarized in Tables 2 and 3, respectively. Water quality data collected during the assays is summarized in Table 4. Reference toxicant data is summarized in Table 5. Support data, including copies of laboratory bench sheets, individual endpoint summaries and statistical analysis data printouts are provided in Appendix A.

3.1 *Hyalella azteca* Survival and Growth Evaluation

At the end of the 10 day exposure period, mean survival in laboratory control sediment was 88.8%. Amphipods recovered from laboratory control sediment had a mean dry weight of 0.199 mg/amphipod. The dry weight of a representative group of amphipods at the start of the assay was 0.035 mg/individual. The minimum test acceptability criteria for survival in the laboratory control is 80%. The minimum acceptable criteria for growth is a demonstration of increased dry weight after 10 days exposure. These data indicate that the organisms were healthy and not stressed by handling.

Amphipod survival in the project site sediments at the end of the 10-day exposure period ranged from 86.3% to 98.8%, sites 15SD022-0006 and 15SD024-0006, respectively. Mean dry weights of the surviving amphipods ranged from 0.178 to 0.230 mg/amphipod for sites 15SD022-0006 and 15SD024-0006, respectively. Survival and growth of the amphipods maintained in the reference site sediment, 15SD026-0006 was 93.8% and 0.215 mg/amphipod.

3.2 *Hyalella azteca* Test Summary

Review of survival data showed that after 10 days exposure survival and growth of amphipods maintained in the site sediments from the US Navy NSWC Crane project site was not significantly less than survival observed in the laboratory control. Statistical comparisons of survival made against the project reference site, 15SD026-0006, showed no statistically significant reductions in survival for any of the project sites. Analysis of growth data showed that amphipods maintained in sediment from project sites 15SD022-0006 and 15SD023-0006 exhibited statistically significant lower growth as compared to the project reference site sediment.

4.0 REFERENCES

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ASTM. 2004. Annual Book of ASTM Standards. Volume 11.05. *Test Methods for Measuring the Toxicity of sediment-Associated Contaminants with Freshwater Invertebrates.* E 1706-00. ASTM, Philadelphia.

U.S. EPA. 2000. *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates.* Second Edition. EPA/600-R-99/064.

Table 1. Sample Collection and Receipt Summary. US Navy NSWC Crane Project Site Ecological Risk Evaluation. Tetra Tech NUS. June 2005.

Sample Station		ESI Ref#	Matrix	Sample Collected Date	Sample Collected Time	Sample Received Date	Sample Received Time
15SD020-0006		001	Sediment	06/07/05	1215	06/09/05	1100
15SD021-0006	NA	002	Sediment	06/07/05	1305	06/09/05	1100
15SD022-0006		003	Sediment	06/07/05	1340	06/09/05	1100
15SD023-0006		004	Sediment	06/07/05	1430	06/09/05	1100
15SD026-0006		005	Sediment	06/07/05	1435	06/09/05	1100
15SD025-0006	NA	006	Sediment	06/07/05	1500	06/09/05	1100
15SD024-0006		007	Sediment	06/07/05	1510	06/09/05	1100

NA - Not Analyzed for toxicity.

Table 2. *Hyalella azteca* Survival Summary. US Navy NSWC Crane Project Site Ecological Risk Evaluation. Tetra Tech NUS. June 2005.

Site Reference	ESI Ref #	Mean Survival (%)	Statistical Summary: Distribution	Variance	Statistic	Critical Value	p Value	Significant Difference
Statistical Comparison of Survival Against Laboratory Control								
Lab Control	-000	88.8%	-	-	-	-	-	-
15SD020-0006	-001	88.8%	Normal	Equal	0.0000	1.7613	0.5000	NO
15SD022-0006	-003	86.3%	Normal	Equal	0.3457	1.7613	0.3674	NO
15SD023-0006	-004	93.8%	Normal	Equal	-0.9687	1.7613	0.8232	NO
15SD026-0006	-005	93.8%	Normal	Equal	-0.9596	1.7613	0.8254	NO
15SD024-0006	-007	98.8%	Normal	Equal	-2.4402	1.7613	0.9857	NO
Statistical Comparison of Survival Against Project Reference Site - 155D026-0006								
15SD026-0006	-005	93.8%	-	-	-	-	-	-
15SD020-0006	-001	88.8%	Normal	Equal	0.9596	1.7613	0.1768	NO
15SD022-0006	-003	86.3%	Normal	Equal	1.2312	1.7613	0.1193	NO
15SD023-0006	-004	93.8%	Non-normal	Equal	31.5000		0.4796	NO
15SD024-0006	-007	98.8%	Non-normal	Equal	23.0000		0.8089	NO

Table 3. ***Hyalella azteca* Growth Summary. US Navy NSWC Crane Project Site Ecological Risk Evaluation. Tetra Tech NUS. June 2005.**

Site Reference	ESI Ref #	Mean Dry Weight (mg/amphipod)	Distribution	Variance	Statistical Summary: Statistic	Critical Value	p Value	Significant Difference
Statistical Comparison of Growth Against Laboratory Control								
Lab Control	-000	0.199	-	-	-	-	-	-
15SD020-0006	-001	0.192	Normal	Equal	0.4053	1.7613	0.3457	NO
15SD022-0006	-003	0.178	Normal	Equal	1.2403	1.7613	0.1176	NO
15SD023-0006	-004	0.184	Normal	Equal	0.8745	1.7613	0.1983	NO
15SD026-0006	-005	0.215	Normal	Equal	-0.8540	1.7613	0.7963	NO
15SD024-0006	-007	0.230	Normal	Equal	-1.9006	1.7613	0.9609	NO
Statistical Comparison of Growth Against Project Reference Site - 155D026-0006								
15SD026-0006	-005	0.215	-	-	-	-	-	-
15SD020-0006	-001	0.192	Normal	Equal	1.5451	1.7613	0.0723	NO
15SD022-0006	-003	0.178	Normal	Equal	2.8378	1.7613	0.0066	YES
15SD023-0006	-004	0.184	Normal	Equal	2.3438	1.7613	0.0172	YES
15SD024-0006	-007	0.230	Normal	Equal	-1.3747	1.7613	0.9046	NO

Table 4. ***Hyalella azteca* Water Quality Summary. US Navy NSWC Crane Project Site Ecological Risk Evaluation. Tetra Tech NUS. June 2005.**

Site ID	ESI Reference	Day	Alkalinity (mg/L)	Ammonia (mg/L)	Hardness (mg/L)	pH (SU)	Conductivity (µmhos/cm)
MHR/POND		Day 0	<10	<0.1	26	ND	ND
		Day 10	<10	<0.1	23	ND	ND
Lab Control	-000	Day 0	23	<0.1	27	6.90	91
		Day 10	34	1.2	35	7.12	134
15SD020-0006	-001	Day 0	<10	<0.1	45	7.52	120
		Day 10	54	<0.1	76	7.57	167
15SD022-0006	-003	Day 0	12	<0.1	38	7.71	130
		Day 10	68	0.1	84	7.78	198
15SD023-0006	-004	Day 0	<10	<0.1	41	7.87	148
		Day 10	57	<0.1	84	7.77	200
15SD026-0006	-005	Day 0	<10	<0.1	39	7.74	104
		Day 10	28	<0.1	59	7.53	148
15SD024-0006	-007	Day 0	13	0.2	41	7.67	140
		Day 10	73	<0.1	100	7.87	205

Comments: ND- No data available for this parameter.

TABLE 5. Reference Toxicant Evaluation. US Navy NSWC Crane Project Site Ecological Risk Evaluation. Tetra Tech NUS. June 2005.

REFERENCE TOXICANT EVALUATION
(Results are expressed as µg/L Cadmium)

Species	Start Date	LC-50	Historic Mean	Number of Tests	±1 Std Deviation	±2 Std Deviation
H. azteca	06/22/05	0.0020	0.013	43	0.030	0.059

Note: Reference toxicant testing was conducted at ESI. The historic mean for survival represents the mean determined from the ESI-conducted reference toxicant testing database.

APPENDIX A
RAW DATA
STATISTICAL SUPPORT

Contents	Number of Pages
H. Azteca Sediment Evaluation	
Daily Water Quality Measurements and Feeding Record	2
Day 10 Survival Summary	1
Day 10 Organism Recovery Bench Sheets	4
Day 10 Survival Statistical Analysis	10
Day 10 Dry Weight Summary	1
Day 10 Growth Data Bench Sheets	1
Initial Dry Weight Data	1
Day 10 Growth Statistical Analysis	10
Organism History	1
Daily Ammonia Values	7
Sample Receipt and Chain of Custody Records	2
Total Pages	40

H. azteca 10 DAY EXPOSURE SEDIMENT ASSAY

STUDY #	CLIENT:	OVERLYING WATER:	START DATE:
13373	TTNUS	MHR/POND	06/22/05

DAY	Lab				-001				-003			
	DO (mg/L)	S/C (umhos/cm)	pH (SU)	TEMP (°C)	DO (mg/L)	S/C (umhos/cm)	pH (SU)	TEMP (°C)	DO (mg/L)	S/C (umhos/cm)	pH (SU)	TEMP (°C)
0	7.8	91	6.90	24	8.2	120	7.52	24	8.4	130	7.71	24
1	6.8	127	6.87	24	7.5	208	7.74	24	8.1	212	7.99	24
2	6.3	143	6.93	23	7.0	213	7.73	23	7.4	249	7.92	23
3	5.2	147	7.06	24	6.0	230	7.74	25	6.4	271	7.96	25
4	6.1	154	7.14	25	6.5	228	7.83	25	6.8	278	7.99	25
5	6.7	136	7.47	25	7.1	200	8.09	25	7.0	240	8.17	25
6	6.1	130	7.15	24	6.9	200	7.78	25	7.1	235	7.98	25
7	6.6	118	7.20	25	7.0	184	7.74	25	7.0	216	7.93	25
8	5.9	129	7.11	25	6.6	192	7.62	25	6.8	235	7.83	25
9	6.4	123	7.30	24	6.6	177	7.83	24	6.9	211	8.08	24
10	7.0	134	7.12	24	6.8	167	7.57	24	7.1	198	7.78	24

DAY	-004				-005				Water Quality Station #	S/C Meter #	ΔH_2O fed	DATE	INIT
	DO (mg/L)	S/C (umhos/cm)	pH (SU)	TEMP (°C)	DO (mg/L)	S/C (umhos/cm)	pH (SU)	TEMP (°C)					
0	8.4	148	7.87	24	8.5	104	7.74	24	1	330i	✓	6/22/05	BB
1	7.9	225	8.00	24	7.9	164	7.76	24	1	330i	✓	6/23/05	DABB
2	7.6	276	7.96	23	7.6	178	7.73	23	1	330i	✓	6/24/05	BB
3	6.5	291	7.99	25	6.6	194	7.86	25	1	330i	✓	6/25	BB
4	6.8	287	8.08	25	7.1	190	7.88	25	1	330i	✓	6/26/05	DABB
5	7.2	243	8.20	25	7.3	171	7.97	25	2	330i	✓	6/27/05	DABB
6	6.9	235	8.00	25	6.9	168	7.65	25	1	330i	✓	6/28/05	DABB
7	7.0	212	7.95	25	7.1	154	7.76	25	1	330i	✓	6/29/05	DABB
8	7.0	231	7.87	25	6.8	161	7.71	25	1	330i	✓	6/30/05	DABB
9	7.1	205	7.96	24	7.3	150	7.89	24	2	330i	✓	7/1/05	DABB
10	7.3	200	7.77	24	7.3	148	7.53	24	1	330i		7/2/05	DABB

Date & Initial Chemistry Sampling

DAY 0 Alkalinity, Hardness & Ammonia in MHR/POND	DAY 0 Alkalinity, Hardness & Ammonia in each treatment	DAY 10 Alkalinity, Hardness & Ammonia in each treatment
BB	BB	

FEED 1 mL of YCT food mixture/replicate Two Volume additions Daily 23 °C

X Daily Amm X

~~0.1.2.3.4.5.6.7.8.9.10~~

H. azteca 10 DAY EXPOSURE SEDIMENT ASSAY

STUDY #	CLIENT:	OVERLYING WATER:	START DATE:
13373	TTNUS	MHR/POND	06/22/05

DAY	-007 DO (mg/L)	-007 S/C (umhos/cm)	-007 pH (SU)	-007 TEMP (°C)	DO (mg/L)	S/C (umhos/cm)	pH (SU)	TEMP (°C)	DO (mg/L)	S/C (umhos/cm)	pH (SU)	TEMP (°C)
0	8.4	140	7.67	24								
1	8.2	260	7.91	24								
2	7.4	314	7.90	23								
3	6.5	331	7.96	25								
4	7.2	321	8.11	25								
5	7.5	279	8.21	25								
6	7.0	266	7.99	25								
7	7.1	230	7.97	25								
8	7.1	245	7.89	25								
9	7.4	214	8.09	24								
10	7.6	205	7.87	24								

DAY	DO	S/C	pH	TEMP	DO	S/C	pH	TEMP	Water Quality Station #	S/C Meter #	ΔH_2O fed	DATE	INIT
0									1	330i	✓	6/22/05	BB
1									1	330i	✓	6/23/05	DHGS
2									1	330i	✓	6/24/05	BB
3									1	330i	✓	6/25/05	DHGS
4									1	330i	✓	6/26/05	DHGS
5									2	330i	✓	6/27/05	DHGS
6									1	330i	✓	6/28/05	DHGS
7									1	330i	✓	6/29/05	DHGS
8									1	330i	✓	6/30/05	DHGS
9									2	330i	✓	7/1/05	DHGS
10									1	330i		7/2/05	DHGS

Date & Initial Chemistry Sampling

DAY 0 Alkalinity, Hardness & Ammonia in MHR/POND	DAY 0 Alkalinity, Hardness & Ammonia in each treatment	DAY 10 Alkalinity, Hardness & Ammonia in each treatment
BB	BB	

FEED 1 mL of YCT food mixture/replicate Two Volume additions Daily 23 °C

Daily Amm*
2, 3, 4, 5, 6, 7, 8, 9, 10

STUDY: 13373
CLIENT: Tetra Tech NUS, Inc.
PROJECT: NSWC CRANE - CTO-0331
TASK: H. azteca 10 Day Survival and Growth
DATA: Survival
START DATE: 06/22/05
DATE ENDED: 07/02/05

Project Site	Replicate	Larvae @ Start	Day 10 Surviving Organisms	Percent Survival	Mean % Survival/ Site	Distribution	Variance	Statistic	Critical Value	p Value	Significant Difference in Survival	
Lab Control	A	10	8	80.0%	88.8%							
	B	10	10	100.0%								
	C	10	9	90.0%								
	D	10	8	80.0%								
	E	10	9	90.0%								
	F	10	10	100.0%								
	G	10	7	70.0%								
	H	10	10	100.0%								
155D020-0006	A	10	7	70.0%	88.8%	Normal	Equal	0.0000	1.7613	0.5000	NO	Lab
ESI-001	B	10	9	90.0%		Normal	Equal	0.9596	1.7613	0.1768	NO	155D026
	C	10	10	100.0%								
	D	10	10	100.0%								
	E	10	8	80.0%								
	F	10	8	80.0%								
	G	10	9	90.0%								
	H	10	10	100.0%								
155D022-0006	A	10	8	80.0%	86.3%	Normal	Equal	0.3457	1.7613	0.3674	NO	Lab
ESI-003	B	10	8	80.0%		Normal	Equal	1.2312	1.7613	0.1193	NO	155D026
	C	10	10	100.0%								
	D	10	9	90.0%								
	E	10	8	80.0%								
	F	10	10	100.0%								
	G	10	6	60.0%								
	H	10	10	100.0%								
155D023-0006	A	10	9	90.0%	93.8%	Normal	Equal	-0.9687	1.7613	0.8254	NO	Lab
ESI-004	B	10	7	70.0%		Non-normal	Equal	31.5000		0.4796	NO	155D026
	C	10	10	100.0%								
	D	10	10	100.0%								
	E	10	10	100.0%								
	F	10	10	100.0%								
	G	10	10	100.0%								
	H	10	9	90.0%								
155D026-0006	A	10	10	100.0%	93.8%	Normal	Equal	-0.9596	1.7613	0.8232	NO	Lab
ESI-005	B	10	10	100.0%								
	C	10	10	100.0%								
	D	10	10	100.0%								
	E	10	8	80.0%								
	F	10	10	100.0%								
	G	10	8	80.0%								
	H	10	9	90.0%								
155D024-0006	A	10	10	100.0%	98.8%	Normal	Equal	-2.4402	1.7613	0.9857	NO	Lab
ESI-007	B	10	9	90.0%		Non-normal	Equal	23.0000		0.8089	NO	155D026
	C	10	10	100.0%								
	D	10	10	100.0%								
	E	10	10	100.0%								
	F	10	10	100.0%								
	G	10	10	100.0%								
	H	10	10	100.0%								

ESI STUDY # 13373

Hyalella azteca SEDIMENT ASSAY

DAY10:

SAMPLE ID	TIME	#LIVE ADULTS	COMMENTS	
1A	1045	7		
1B	1048	9		
1C	1052	10		
1D	1054	10		
1E	1055	8		
1F	1056	8		
1G	1057	9		
1H	1058	10		
Lab A	1020	8		
Lab B	1025	10		9 fa wt. lost 1 in transfer
Lab C	1035	9		
Lab D	1043	8		
Lab E	1050	9		
Lab F	1055	10		
Lab G	1205	7		
Lab H	120	10		

ANALYST: CLS

DATE: 7/2/05

ESI STUDY # 13373

Hyalella azteca SEDIMENT ASSAY

DAY10:

SAMPLE ID	TIME	#LIVE ADULTS	COMMENTS	
003A	1002	8		
003 B	1004	~~9~~ 8		
003 C	1006	10		
003 D	1008	9		
003 E	1010	8		
003 F	1012	10		
003 G	1014	6		
003 H	1016	10		

ANALYST: KCAS

DATE: 7/2/05

ESI STUDY # 13373

Hyalella azteca SEDIMENT ASSAY

DAY10:

SAMPLE ID	TIME	#LIVE ADULTS	COMMENTS	
-004A	1125	9		
-004B	1127	7		
-004C	1129	10		
-004D	1132	10		
-004E	1134	10		
-004F	1136	10		
-004G	1139	10		
-004H	1142	9		
-005A	1145	10		
-005B	1148	10		
-005C	1150	10		
-005D	1152	10		
-005E	1155	8		
-005F	1157	10		
-005G	1159	8		
-005H	1200	9		

ANALYST: BB

DATE: 7/2/05

ESI STUDY # 13373

Hyalella azteca SEDIMENT ASSAY

DAY10:

SAMPLE ID	TIME	#LIVE ADULTS	COMMENTS	
-007 A	1202	10		
-007 B	1203	9		
-007 C	1205	10		
-007 D	1206	10		
-007 E	1208	10		
-007 F	1210	10		
-007 G	1211	10		
-007 H	1214	10		
			BB 7/2/05	

ANALYST: BB

DATE: 7/2/05

CETIS Test Summary

Report Date: 05 Jul-05 11:42 AM
Link: 09-7361-7778

Hyalella 10-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Proportion Survived Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
13373-000	8	0.88750	0.70000	1.00000	0.03981	0.11260	12.69%
13373-005	8	0.93750	0.80000	1.00000	0.03239	0.09161	9.77%
13373-001	8	0.88750	0.70000	1.00000	0.03981	0.11260	12.69%
13373-003	8	0.86250	0.60000	1.00000	0.04978	0.14079	16.32%
13373-004	8	0.93750	0.70000	1.00000	0.03750	0.10607	11.31%
13373-007	8	0.98750	0.90000	1.00000	0.01250	0.03536	3.58%

Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
13373-000	0.80000	1.00000	0.90000	0.80000	0.90000	1.00000	0.70000	1.00000
13373-005	1.00000	1.00000	1.00000	1.00000	0.80000	1.00000	0.80000	0.90000
13373-001	0.70000	0.90000	1.00000	1.00000	0.80000	0.80000	0.90000	1.00000
13373-003	0.80000	0.80000	1.00000	0.90000	0.80000	1.00000	0.60000	1.00000
13373-004	0.90000	0.70000	1.00000	1.00000	1.00000	1.00000	1.00000	0.90000
13373-007	1.00000	0.90000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Hyalella azteca Assay
GROWTH DATA

STUDY NUMBER: 13373 **CLIENT:** TTNUS

ESI SAMPLE ID	REP	FOIL TARE WEIGHT (g)	*H. azteca* + FOIL (g)
Lab	A	0.20859	0.21020
	B	0.20841	0.21014
	C	0.20915	0.21025
	D	0.20823	0.20959
	E	0.20784	0.20993
	F	0.20907	0.21103
	G	0.20955	0.21139
	H	0.20800	0.21017
-001	A	0.20754	0.20910
	B	0.20835	0.20956
	C	0.20871	0.21074
	D	0.20892	0.21067
	E	0.20887	0.21045
	F	0.20842	0.21028
	G	0.20942	0.21122
	H	0.20872	0.21045
-003	A	0.20991	0.21148
	B	0.20887	0.21065
	C	0.20868	0.21028
	D	0.20851	0.21016
	E	0.20778	0.20930
	F	0.20815	0.20977
	G	0.20833	0.20926
	H	0.20841	0.20993
-004	A	0.20846	0.21014
	B	0.20857	0.21018
	C	0.20753	0.20910
	D	0.20770	0.20933
	E	0.20840	0.21002
	F	0.20757	0.20941
	G	0.20780	0.20966
	H	0.20808	0.20992
RECORDED BY:		BB	
DATE:		7/2/05	7/5/05

ESI SAMPLE ID	REP	FOIL TARE WEIGHT (g)	*H. azteca* + FOIL (g)
-005	A	0.20740	0.20942
	B	0.20828	0.21050
	C	0.21049	0.21278
	D	0.20833	0.21072
	E	0.20901	0.21032
	F	0.20815	0.21011
	G	0.20899	0.21094
	H	0.20710	0.20911
-007	A	0.20755	0.20954
	B	0.20803	0.21017
	C	0.20826	0.21066
	D	0.20903	0.21168
	E	0.20776	0.21007
	F	0.20815	0.21031
	G	0.20847	0.21097
	H	0.20638	0.20837
RECORDED BY:		BB	
DATE:		7/2/05	7/5/05

NOTES:

Hyalella azteca Assay

STUDY NUMBER: 13373 **CLIENT:** TTNUS

ESI SAMPLE ID	REP	TARE WEIGHT (G)	*H. azteca* + FOIL (G)	NET WEIGHT (MG)	# *H. azteca*	MEAN DRY WEIGHT PER *H. azteca* (MG)
START ORGANISMS	A	0.20836	0.20869			
	B	0.20852	0.20888			
	C	0.20880	0.20918			
	D	0.20802	0.20837			
RECORDED BY:		[illegible]	[illegible]			
DATE:		6/22/05	6/24/05			

NOTES:

CETIS Test Summary

Report Date: 05 Jul-05 4:42 PM
Link: 09-7361-7778

Hyalella 10-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Mean Dry Weight-mg Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
13373-000	8	0.19875	0.12000	0.26000	0.01481	0.04190	21.08%
13373-005	8	0.21375	0.16000	0.24000	0.00944	0.02669	12.49%
13373-001	8	0.19125	0.13000	0.23000	0.01109	0.03137	16.40%
13373-003	8	0.17750	0.15000	0.22000	0.00861	0.02435	13.72%
13373-004	8	0.18375	0.16000	0.23000	0.00865	0.02446	13.31%
13373-007	8	0.23125	0.20000	0.27000	0.00854	0.02416	10.45%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
13373-000	0.20000	0.19000	0.12000	0.17000	0.23000	0.20000	0.26000	0.22000
13373-005	0.20000	0.22000	0.23000	0.24000	0.16000	0.20000	0.24000	0.22000
13373-001	0.22000	0.13000	0.20000	0.18000	0.20000	0.23000	0.20000	0.17000
13373-003	0.20000	0.22000	0.16000	0.18000	0.19000	0.16000	0.16000	0.15000
13373-004	0.19000	0.23000	0.16000	0.16000	0.16000	0.18000	0.19000	0.20000
13373-007	0.20000	0.24000	0.24000	0.27000	0.23000	0.22000	0.25000	0.20000

CETIS Analysis Detail

Hyalella 10-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	09-7361-7778	09-7361-7778	05 Jul-05 4:40 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.78403	8.88539	0.46287	Equal Variances
Distribution	Shapiro-Wilk W	0.95833	0.84420	0.60307	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.000225	0.000225	1	0.16	0.69138	Non-Significant Effect
Error	0.019175	0.0013696	14			
Total	0.01940000	0.0015946	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13373-000		13373-001	0.40531	1.76131	0.3457	0.03259	Non-Significant Effect

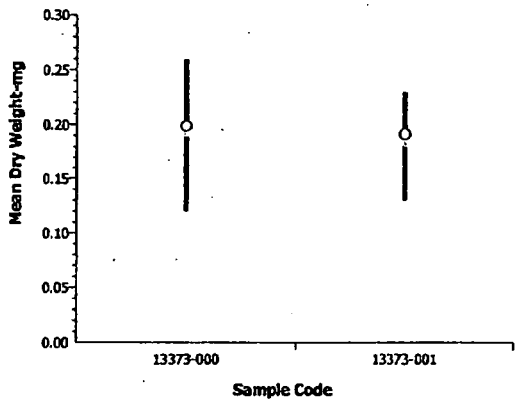
Data Summary

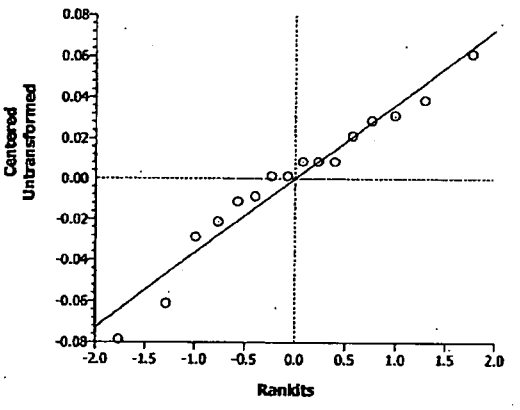
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13373-000	8	0.19875	0.12000	0.26000	0.04190				
13373-001	8	0.19125	0.13000	0.23000	0.03137				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
13373-000	0.20000	0.19000	0.12000	0.17000	0.23000	0.20000	0.26000	0.22000		
13373-001	0.22000	0.13000	0.20000	0.18000	0.20000	0.23000	0.20000	0.17000		

Graphics





STUDY: 13373
CLIENT: Tetra Tech NUS, Inc.
PROJECT: NSWC CRANE - CTO-0331
TASK: H. azteca 10 Day Survival and Growth
DATA: Growth - Dry Weight
START DATE: 06/22/05
DATE ENDED: 07/02/05
START WEIGHT: 0.035 mg

Project Site	Replicate	Tare Weight	Total Weight	Total Dry Weight	Number Larvae	Mean Dry Weight (mg)	Site Mean Dry Weight (mg)	Distribution	Variance	Statistic	Critical Value	p Value	Significant Difference in Survival
Lab Control	A	0.20859	0.21020	0.00161	8	0.20	0.199						
	B	0.20841	0.21014	0.00173	9	0.19							
	C	0.20915	0.21025	0.00110	9	0.12							
	D	0.20823	0.20959	0.00136	8	0.17							
	E	0.20784	0.20993	0.00209	9	0.23							
	F	0.20907	0.21103	0.00196	10	0.20							
	G	0.20955	0.21139	0.00184	7	0.26							
	H	0.20800	0.21017	0.00217	10	0.22							
155D020-0006	A	0.20754	0.20910	0.00156	7	0.22	0.192	Normal	Equal	0.4053	1.7613	0.3457	NO
ESI-001	B	0.20835	0.20956	0.00121	9	0.13		Normal	Equal	1.5451	1.7613	0.0723	NO
	C	0.20871	0.21074	0.00203	10	0.20							
	D	0.20892	0.21067	0.00175	10	0.18							
	E	0.20887	0.21045	0.00158	8	0.20							
	F	0.20842	0.21028	0.00186	8	0.23							
	G	0.20942	0.21122	0.00180	9	0.20							
	H	0.20872	0.21045	0.00173	10	0.17							
155D022-0006	A	0.20991	0.21148	0.00157	8	0.20	0.178	Normal	Equal	1.2403	1.7613	0.1176	NO
ESI-003	B	0.20887	0.21065	0.00178	8	0.22		Normal	Equal	2.8378	1.7613	0.0066	YES
	C	0.20868	0.21028	0.00160	10	0.16							
	D	0.20851	0.21016	0.00165	9	0.18							
	E	0.20778	0.20930	0.00152	8	0.19							
	F	0.20815	0.20977	0.00162	10	0.16							
	G	0.20833	0.20926	0.00093	6	0.16							
	H	0.20841	0.20993	0.00152	10	0.15							
155D023-0006	A	0.20846	0.21014	0.00168	9	0.19	0.184	Normal	Equal	0.8745	1.7613	0.1983	NO
ESI-004	B	0.20857	0.21018	0.00161	7	0.23		Normal	Equal	2.3438	1.7613	0.0172	YES
	C	0.20753	0.20910	0.00157	10	0.16							
	D	0.20770	0.20933	0.00163	10	0.16							
	E	0.20840	0.21002	0.00162	10	0.16							
	F	0.20757	0.20941	0.00184	10	0.18							
	G	0.20780	0.20966	0.00186	10	0.19							
	H	0.20808	0.20992	0.00184	9	0.20							
155D026-0006	A	0.20740	0.20942	0.00202	10	0.20	0.215	Normal	Equal	-0.8540	1.7613	0.7963	NO
ESI-005	B	0.20828	0.21050	0.00222	10	0.22							
	C	0.21049	0.21278	0.00229	10	0.23							
	D	0.20833	0.21072	0.00239	10	0.24							
	E	0.20901	0.21032	0.00131	8	0.16							
	F	0.20815	0.21011	0.00196	10	0.20							
	G	0.20899	0.21094	0.00195	8	0.24							
	H	0.20710	0.20911	0.00201	9	0.22							
155D024-0006	A	0.20755	0.20954	0.00199	10	0.20	0.230	Normal	Equal	-1.9006	1.7613	0.9509	NO
ESI-007	B	0.20803	0.21017	0.00214	9	0.24		Normal	Equal	-1.3747	1.7613	0.9046	NO
	C	0.20826	0.21066	0.00240	10	0.24							
	D	0.20903	0.21168	0.00265	10	0.27							
	E	0.20776	0.21007	0.00231	10	0.23							
	F	0.20815	0.21031	0.00216	10	0.22							
	G	0.20847	0.21097	0.00250	10	0.25							
	H	0.20638	0.20837	0.00199	10	0.20							

CETIS Analysis Detail

Hyalella 10-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	09-7361-7778	09-7361-7778	05 Jul-05 11:41 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	5.93016	8.88539	0.03162	Equal Variances
Distribution	Shapiro-Wilk W	0.79299	0.84420	0.00145	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0232360	0.0232360	1	2.02	0.17714	Non-Significant Effect
Error	0.1610529	0.0115038	14			
Total	0.18428889	0.0347398	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
13373-005		13373-007	23		0.8089	3	Non-Significant Effect

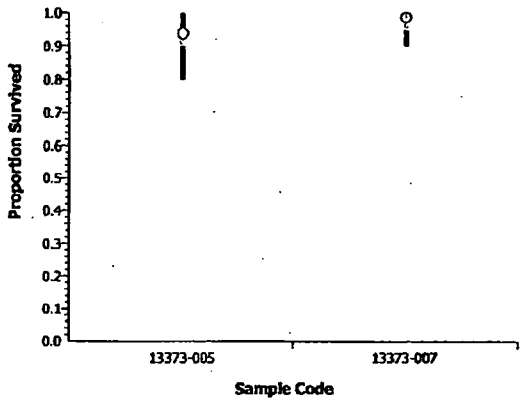
Data Summary

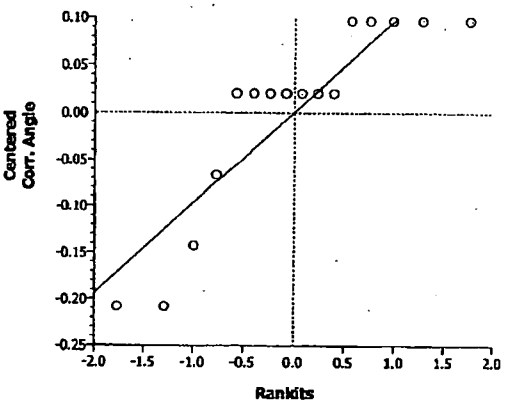
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13373-005	8	0.93750	0.80000	1.00000	0.09161	1.31543	1.10715	1.41202	0.14031
13373-007	8	0.98750	0.90000	1.00000	0.03536	1.39164	1.24905	1.41202	0.05762

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
13373-005	1.00000	1.00000	1.00000	1.00000	0.80000	1.00000	0.80000	0.90000		
13373-007	1.00000	0.90000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000		

Graphics





CETIS Analysis Detail

Hyalella 10-d Survival and Growth Sediment Test — **EnviroSystems, Inc.**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	09-7361-7778	09-7361-7778	05 Jul-05 11:41 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.15934	8.88539	0.85035	Equal Variances
Distribution	Shapiro-Wilk W	0.89755	0.84420	0.07356	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0232360	0.0232360	1	0.94	0.34911	Non-Significant Effect
Error	0.3466339	0.0247596	14			
Total	0.36986988	0.0479956	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13373-000		13373-004	-0.9687	1.76131	0.8254	0.13857	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13373-000	8	0.88750	0.70000	1.00000	0.11260	1.24245	0.99116	1.41202	0.16305
13373-004	8	0.93750	0.70000	1.00000	0.10607	1.31867	0.99116	1.41202	0.15143

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
13373-000	0.80000	1.00000	0.90000	0.80000	0.90000	1.00000	0.70000	1.00000		
13373-004	0.90000	0.70000	1.00000	1.00000	1.00000	1.00000	1.00000	0.90000		

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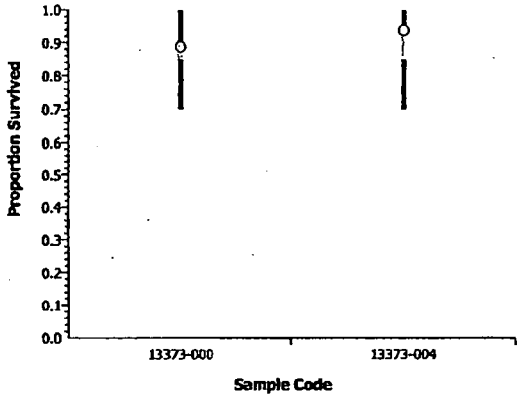
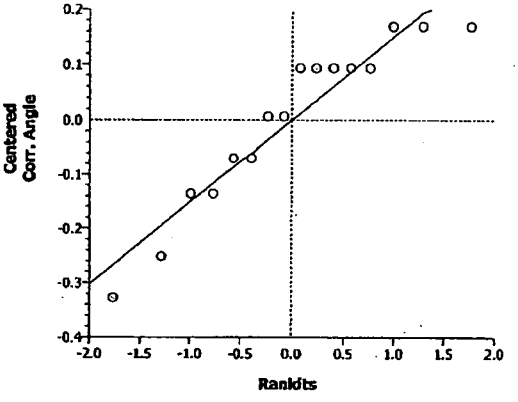




CETIS Analysis Detail

Hyalella 10-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	09-7361-7778	09-7361-7778	05 Jul-05 11:41 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.35042	8.88539	0.70185	Equal Variances
Distribution	Shapiro-Wilk W	0.88148	0.84420	0.04042	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0213036	0.0213036	1	0.92	0.35356	Non-Significant Effect
Error	0.3239197	0.0231371	14			
Total	0.34522326	0.0444407	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13373-000		13373-005	-0.9596	1.76131	0.8232	0.13396	Non-Significant Effect

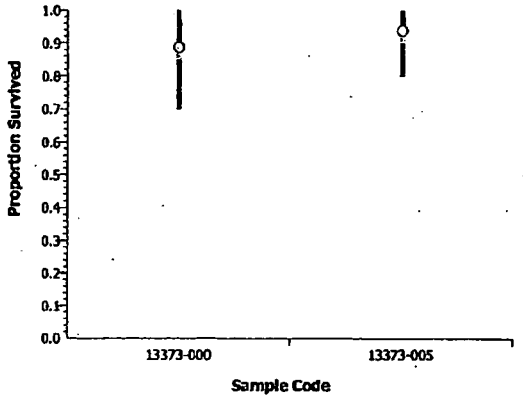
Data Summary

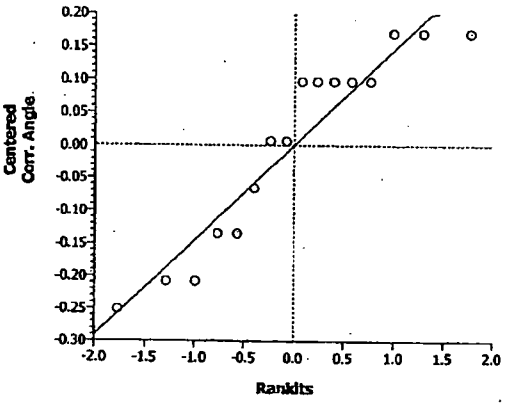
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13373-000	8	0.88750	0.70000	1.00000	0.11260	1.24245	0.99116	1.41202	0.16305
13373-005	8	0.93750	0.80000	1.00000	0.09161	1.31543	1.10715	1.41202	0.14031

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
13373-000	0.80000	1.00000	0.90000	0.80000	0.90000	1.00000	0.70000	1.00000		
13373-005	1.00000	1.00000	1.00000	1.00000	0.80000	1.00000	0.80000	0.90000		

Graphics





CETIS Analysis Detail

Hyalella 10-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	09-7361-7778	09-7361-7778	05 Jul-05 11:41 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.40026	8.88539	0.66806	Equal Variances
Distribution	Shapiro-Wilk W	0.89950	0.84420	0.07909	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0038123	0.0038123	1	0.12	0.73474	Non-Significant Effect
Error	0.4467036	0.0319074	14			
Total	0.45051598	0.0357197	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13373-000		13373-003	0.34566	1.76131	0.3674	0.15731	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13373-000	8	0.88750	0.70000	1.00000	0.11260	1.24245	0.99116	1.41202	0.16305
13373-003	8	0.86250	0.60000	1.00000	0.14079	1.21158	0.88608	1.41202	0.19295

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
13373-000	0.80000	1.00000	0.90000	0.80000	0.90000	1.00000	0.70000	1.00000		
13373-003	0.80000	0.80000	1.00000	0.90000	0.80000	1.00000	0.60000	1.00000		

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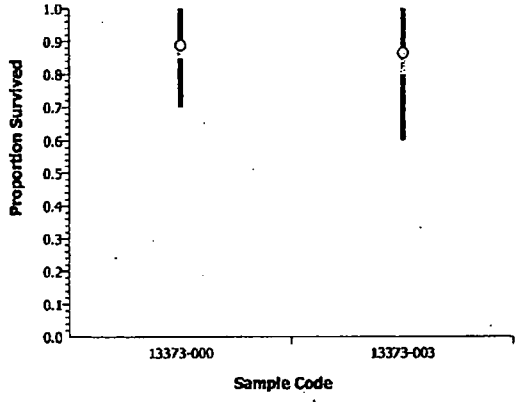
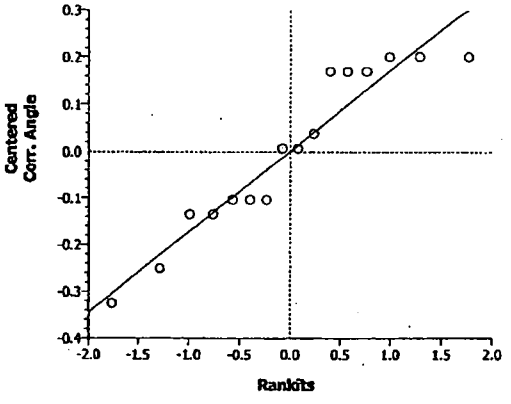




CETIS Analysis Detail

Hyalella 10-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	09-7361-7778	09-7361-7778	05 Jul-05 11:41 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.00000	8.88539	1.00000	Equal Variances
Distribution	Shapiro-Wilk W	0.84848	0.84420	0.01174	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0	0	1	0.00	1.00000	Non-Significant Effect
Error	0.3722125	0.0265866	14			
Total	0.37221253	0.0265866	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13373-000		13373-001	0	1.76131	0.5000	0.14359	Non-Significant Effect

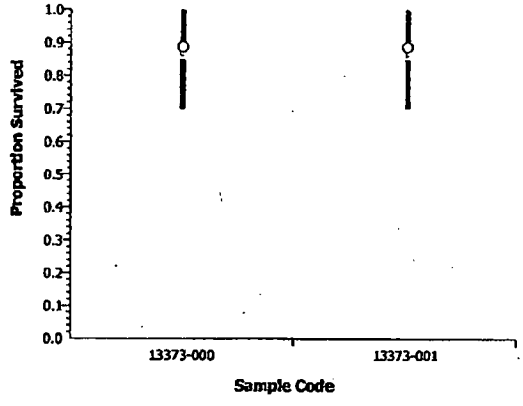
Data Summary

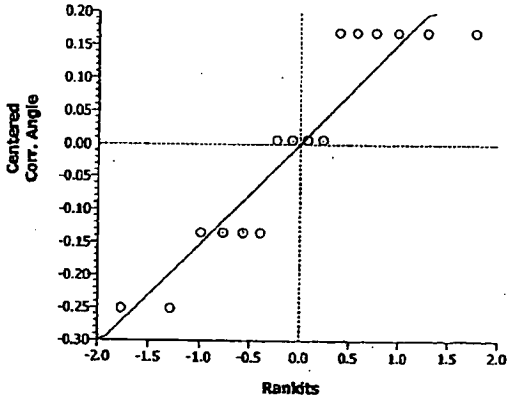
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13373-000	8	0.88750	0.70000	1.00000	0.11260	1.24245	0.99116	1.41202	0.16305
13373-001	8	0.88750	0.70000	1.00000	0.11260	1.24245	0.99116	1.41202	0.16305

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
13373-000	0.80000	1.00000	0.90000	0.80000	0.90000	1.00000	0.70000	1.00000		
13373-001	0.70000	0.90000	1.00000	1.00000	0.80000	0.80000	0.90000	1.00000		

Graphics





CETIS Analysis Detail

Hyalella 10-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	09-7361-7778	09-7361-7778	05 Jul-05 4:41 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.96084	8.88539	0.17542	Equal Variances
Distribution	Shapiro-Wilk W	0.96709	0.84420	0.75485	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0018063	0.0018063	1	1.54	0.23524	Non-Significant Effect
Error	0.0164375	0.0011741	14			
Total	0.01824375	0.0029804	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13373-000		13373-003	1.24032	1.76131	0.1176	0.03018	Non-Significant Effect

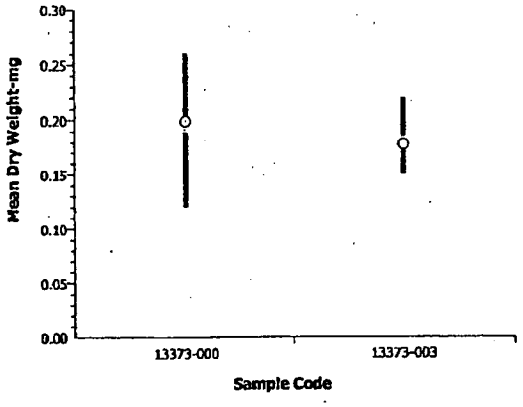
Data Summary

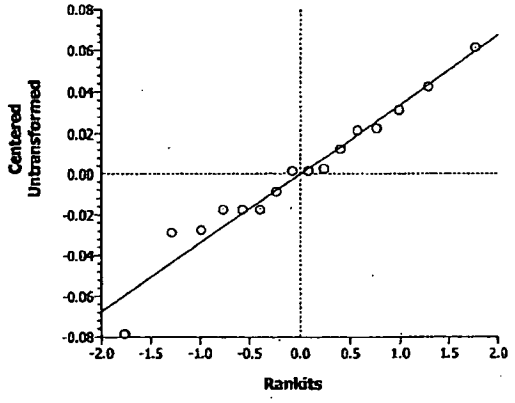
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13373-000	8	0.19875	0.12000	0.26000	0.04190				
13373-003	8	0.17750	0.15000	0.22000	0.02435				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
13373-000	0.20000	0.19000	0.12000	0.17000	0.23000	0.20000	0.26000	0.22000		
13373-003	0.20000	0.22000	0.16000	0.18000	0.19000	0.16000	0.16000	0.15000		

Graphics





CETIS Analysis Detail

Hyalella 10-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	09-7361-7778	09-7361-7778	05 Jul-05 4:41 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.93433	8.88539	0.17887	Equal Variances
Distribution	Shapiro-Wilk W	0.96270	0.84420	0.67838	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0009	0.0009	1	0.76	0.39659	Non-Significant Effect
Error	0.016475	0.0011768	14			
Total	0.017375	0.0020768	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13373-000		13373-004	0.87453	1.76131	0.1983	0.03021	Non-Significant Effect

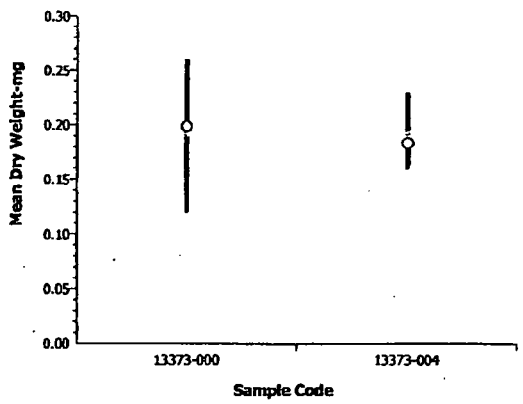
Data Summary

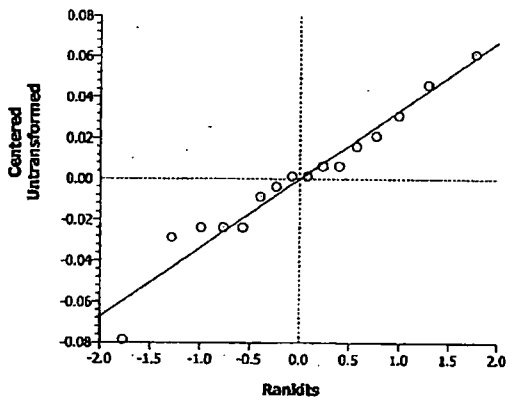
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13373-000	8	0.19875	0.12000	0.26000	0.04190				
13373-004	8	0.18375	0.16000	0.23000	0.02446				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
13373-000	0.20000	0.19000	0.12000	0.17000	0.23000	0.20000	0.26000	0.22000		
13373-004	0.19000	0.23000	0.16000	0.16000	0.16000	0.18000	0.19000	0.20000		

Graphics





CETIS Analysis Detail

Hyalella 10-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	09-7361-7778	09-7361-7778	05 Jul-05 4:40 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.46366	8.88539	0.25717	Equal Variances
Distribution	Shapiro-Wilk W	0.95350	0.84420	0.52384	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0009	0.0009	1	0.73	0.40746	Non-Significant Effect
Error	0.017275	0.0012339	14			
Total	0.018175	0.0021339	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13373-000		13373-005	-0.8540	1.76131	0.7963	0.03094	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13373-000	8	0.19875	0.12000	0.26000	0.04190				
13373-005	8	0.21375	0.16000	0.24000	0.02669				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
13373-000	0.20000	0.19000	0.12000	0.17000	0.23000	0.20000	0.26000	0.22000		
13373-005	0.20000	0.22000	0.23000	0.24000	0.16000	0.20000	0.24000	0.22000		

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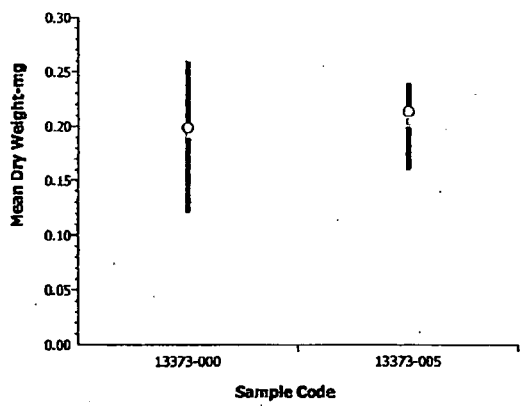
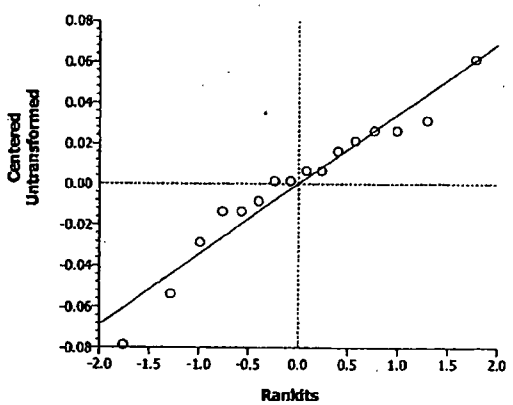




CETIS Analysis Detail

Hyalella 10-d Survival and Growth Sediment Test

EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	09-7361-7778	09-7361-7778	05 Jul-05 4:41 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	3.00612	8.88539	0.16971	Equal Variances
Distribution	Shapiro-Wilk W	0.96888	0.84420	0.78547	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.004225	0.004225	1	3.61	0.07815	Non-Significant Effect
Error	0.016375	0.0011696	14			
Total	0.0206	0.0053946	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13373-000		13373-007	-1.9006	1.76131	0.9609	0.03012	Non-Significant Effect

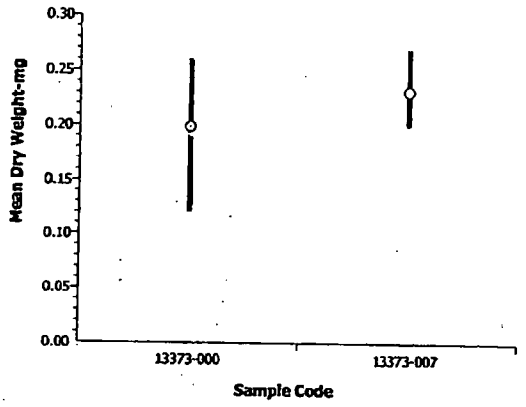
Data Summary

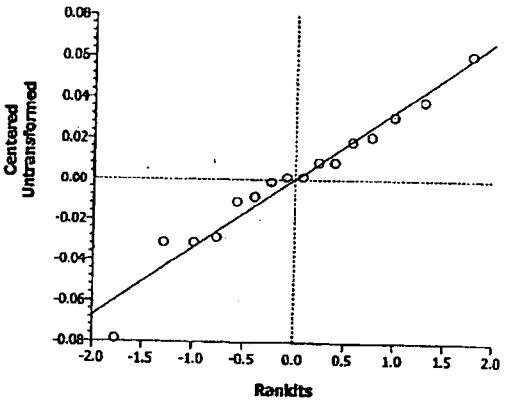
Sample Code	Count	Original Data Mean	Minimum	Maximum	SD	Transformed Data Mean	Minimum	Maximum	SD
13373-000	8	0.19875	0.12000	0.26000	0.04190				
13373-007	8	0.23125	0.20000	0.27000	0.02416				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
13373-000	0.20000	0.19000	0.12000	0.17000	0.23000	0.20000	0.26000	0.22000		
13373-007	0.20000	0.24000	0.24000	0.27000	0.23000	0.22000	0.25000	0.20000		

Graphics





CETIS Analysis Detail

Hyalella 10-d Survival and Growth Sediment Test					EnviroSystems, Inc.
Endpoint	**Analysis Type**	**Sample Link**	**Control Link**	**Date Analyzed**	**Version**
Mean Dry Weight-mg	Comparison	09-7361-7778	09-7361-7778	05 Jul-05 4:41 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.38095	8.88539	0.68092	Equal Variances
Distribution	Shapiro-Wilk W	0.91050	0.84420	0.11870	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.002025	0.002025	1	2.39	0.14462	Non-Significant Effect
Error	0.011875	0.0008482	14			
Total	0.01390000	0.0028732	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13373-005		13373-001	1.54511	1.76131	0.0723	0.02565	Non-Significant Effect

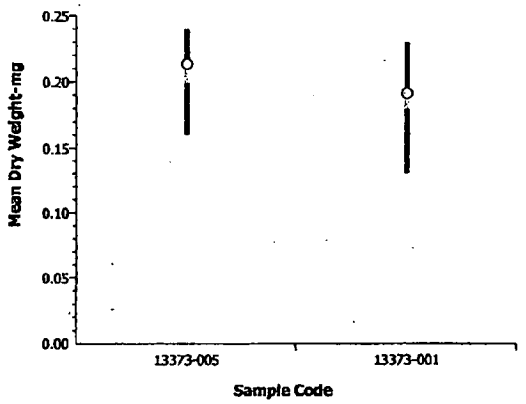
Data Summary

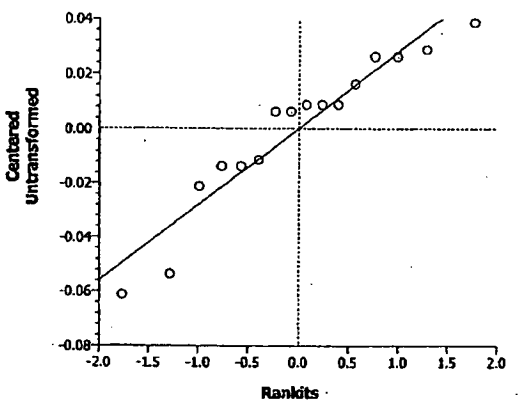
		Original Data				Transformed Data			
Sample Code	**Count**	**Mean**	**Minimum**	**Maximum**	**SD**	**Mean**	**Minimum**	**Maximum**	**SD**
13373-005	8	0.21375	0.16000	0.24000	0.02669				
13373-001	8	0.19125	0.13000	0.23000	0.03137				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
13373-005	0.20000	0.22000	0.23000	0.24000	0.16000	0.20000	0.24000	0.22000		
13373-001	0.22000	0.13000	0.20000	0.18000	0.20000	0.23000	0.20000	0.17000		

Graphics





CETIS Analysis Detail

Hyalella 10-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	09-7361-7778	09-7361-7778	05 Jul-05 4:41 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.20181	8.88539	0.81458	Equal Variances
Distribution	Shapiro-Wilk W	0.96524	0.84420	0.72281	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0052563	0.0052563	1	8.05	0.01316	Significant Effect
Error	0.0091375	0.0006527	14			
Total	0.01439375	0.0059089	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13373-005		13373-003	2.83784	1.76131	0.0066	0.0225	Significant Effect

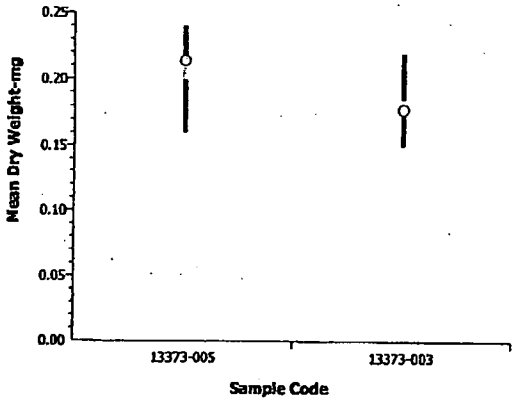
Data Summary

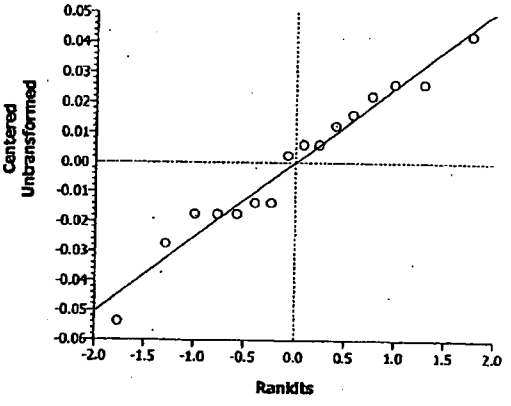
Sample Code	Count	Original Data Mean	Original Data Minimum	Original Data Maximum	Original Data SD	Transformed Data Mean	Transformed Data Minimum	Transformed Data Maximum	Transformed Data SD
13373-005	8	0.21375	0.16000	0.24000	0.02669				
13373-003	8	0.17750	0.15000	0.22000	0.02435				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
13373-005	0.20000	0.22000	0.23000	0.24000	0.16000	0.20000	0.24000	0.22000		
13373-003	0.20000	0.22000	0.16000	0.18000	0.19000	0.16000	0.16000	0.15000		

Graphics





CETIS Analysis Detail

Hyalella 10-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	09-7361-7778	09-7361-7778	05 Jul-05 4:41 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.19104	8.88539	0.82349	Equal Variances
Distribution	Shapiro-Wilk W	0.96952	0.84420	0.79617	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0036	0.0036	1	5.49	0.03437	Significant Effect
Error	0.0091750	0.0006554	14			
Total	0.01277500	0.0042554	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13373-005		13373-004	2.34376	1.76131	0.0172	0.02254	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13373-005	8	0.21375	0.16000	0.24000	0.02669				
13373-004	8	0.18375	0.16000	0.23000	0.02446				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
13373-005	0.20000	0.22000	0.23000	0.24000	0.16000	0.20000	0.24000	0.22000		
13373-004	0.19000	0.23000	0.16000	0.16000	0.16000	0.18000	0.19000	0.20000		

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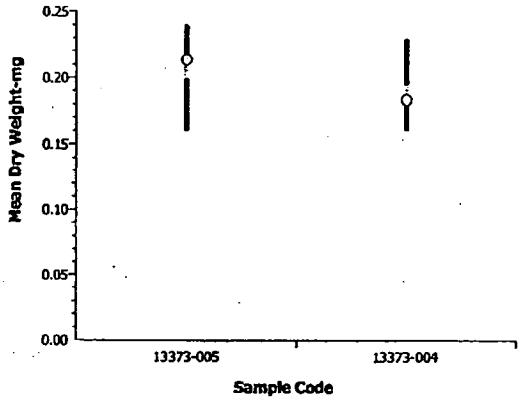

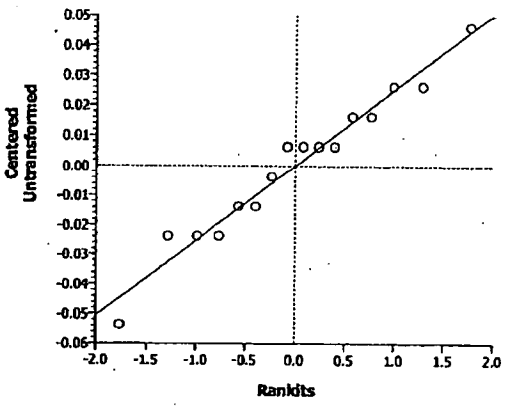

CETIS Analysis Detail

Hyalella 10-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Weight-mg	Comparison	09-7361-7778	09-7361-7778	05 Jul-05 4:41 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.22018	8.88539	0.79961	Equal Variances
Distribution	Shapiro-Wilk W	0.96183	0.84420	0.66318	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.001225	0.001225	1	1.89	0.19083	Non-Significant Effect
Error	0.009075	0.0006482	14			
Total	0.01030000	0.0018732	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13373-005		13373-007	-1.3747	1.76131	0.9046	0.02242	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13373-005	8	0.21375	0.16000	0.24000	0.02669				
13373-007	8	0.23125	0.20000	0.27000	0.02416				

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
13373-005	0.20000	0.22000	0.23000	0.24000	0.16000	0.20000	0.24000	0.22000		
13373-007	0.20000	0.24000	0.24000	0.27000	0.23000	0.22000	0.25000	0.20000		

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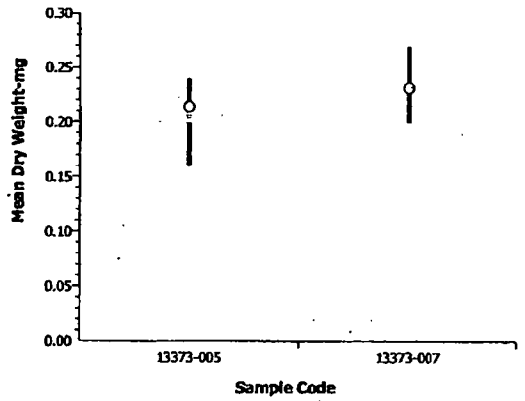
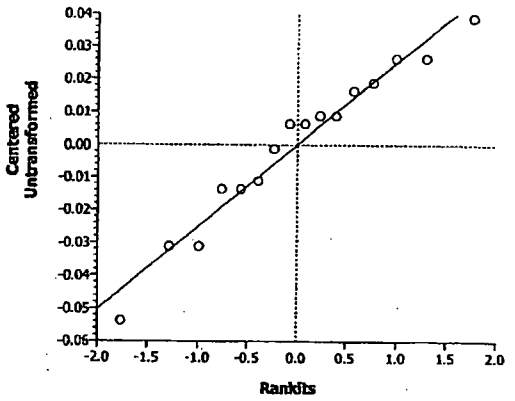




Aquatic Research Organisms

DATA SHEET

I. **Organism History**

Species: Hyalella azteca

Source: Lab reared ✓ Hatchery reared____ Field collected____

Hatch date 6/15/05 Receipt date____

Lot number 061505HA Strain____

Brood Origination USFWS MO

II. **Water Quality**

Temperature 24 °C Salinity — ppt DO Sat

pH 7.2 Hardness ~120 ppm

III. **Culture Conditions**

System: RW static renewal

Diet: Flake Food ✓ Phytoplankton____ Trout Chow ✓

Brine Shrimp____ Rotifers____ Other____

Prophylactic Treatments:____

Comments:____

IV. **Shipping Information**

Client: ESI # of Organisms: 700+

Carrier: Pick up Date Shipped: 6/22/05

Biologist: Stan Kinitski

1 - 800 - 927 - 1650

PO Box 1271 • One Lafayette Road • Hampton, NH 03842 • (603) 926-1650

Report No: 13373
Project: TTNUS Ammonia

Sample ID: Lab
Matrix: Water

Parameter	Lab ID	Result	Quant Limit	Units	Date Sampled	Date of Analysis	Method/Reference
Ammonia-N	13373-013	ND	0.1	mg/L as N	06/22/05	06/28/05 1327	APHA 4500-NH3 G
Ammonia-N	13373-029	1.1	0.1	mg/L as N	06/23/05	06/28/05 1334	APHA 4500-NH3 G
Ammonia-N	13373-035	1.5	0.1	mg/L as N	06/24/05	06/28/05 1341	APHA 4500-NH3 G
Ammonia-N	13373-041	2	0.1	mg/L as N	06/25/05	06/28/05 1351	APHA 4500-NH3 G
Ammonia-N	13373-047	2.3	0.1	mg/L as N	06/26/05	06/28/05 1534	APHA 4500-NH3 G
Ammonia-N	13373-053	2	0.1	mg/L as N	06/27/05	06/28/05 1539	APHA 4500-NH3 G
Ammonia-N	13373-059	1.7	0.1	mg/L as N	06/28/05	07/06/05 1200	APHA 4500-NH3 G
Ammonia-N	13373-065	1.3	0.1	mg/L as N	06/29/05	07/06/05 1211	APHA 4500-NH3 G
Ammonia-N	13373-071	2	0.1	mg/L as N	06/30/05	07/06/05 1216	APHA 4500-NH3 G
Ammonia-N	13373-077	1.4	0.1	mg/L as N	07/01/05	07/06/05 1224	APHA 4500-NH3 G
Ammonia-N	13373-088	1.2	0.1	mg/L as N	07/02/05	07/13/05 1106	APHA 4500-NH3 G

Report No: 13373
Project: TTNUS Ammonia

Sample ID: -001
Matrix: Water

Parameter	Lab ID	Result	Quant Limit	Units	Date Sampled	Date of Analysis	Method/Reference
Ammonia-N	13373-016	ND	0.1	mg/L as N	06/22/05	06/28/05 1329	APHA 4500-NH3 G
Ammonia-N	13373-030	ND	0.1	mg/L as N	06/23/05	06/28/05 1337	APHA 4500-NH3 G
Ammonia-N	13373-036	ND	0.1	mg/L as N	06/24/05	06/28/05 1342	APHA 4500-NH3 G
Ammonia-N	13373-042	0.21	0.1	mg/L as N	06/25/05	06/28/05 1526	APHA 4500-NH3 G
Ammonia-N	13373-048	0.22	0.1	mg/L as N	06/26/05	06/28/05 1535	APHA 4500-NH3 G
Ammonia-N	13373-054	ND	0.1	mg/L as N	06/27/05	06/28/05 1540	APHA 4500-NH3 G
Ammonia-N	13373-060	0.24	0.1	mg/L as N	06/28/05	07/06/05 1200	APHA 4500-NH3 G
Ammonia-N	13373-066	0.11	0.1	mg/L as N	06/29/05	07/06/05 1212	APHA 4500-NH3 G
Ammonia-N	13373-072	ND	0.1	mg/L as N	06/30/05	07/06/05 1217	APHA 4500-NH3 G
Ammonia-N	13373-078	0.18	0.1	mg/L as N	07/01/05	07/06/05 1225	APHA 4500-NH3 G
Ammonia-N	13373-091	ND	0.1	mg/L as N	07/02/05	07/13/05 1107	APHA 4500-NH3 G

Report No: 13373
Project: TTNUS Ammonia

Sample ID: -003
Matrix: Water

Parameter	Lab ID	Result	Quant Limit	Units	Date Sampled	Date of Analysis	Method/Reference
Ammonia-N	13373-019	ND	0.1	mg/L as N	06/22/05	06/28/05 1330	APHA 4500-NH3 G
Ammonia-N	13373-031	ND	0.1	mg/L as N	06/23/05	06/28/05 1338	APHA 4500-NH3 G
Ammonia-N	13373-037	ND	0.1	mg/L as N	06/24/05	06/28/05 1343	APHA 4500-NH3 G
Ammonia-N	13373-043	ND	0.1	mg/L as N	06/25/05	06/28/05 1528	APHA 4500-NH3 G
Ammonia-N	13373-049	ND	0.1	mg/L as N	06/26/05	06/28/05 1536	APHA 4500-NH3 G
Ammonia-N	13373-055	ND	0.1	mg/L as N	06/27/05	06/28/05 1543	APHA 4500-NH3 G
Ammonia-N	13373-061	0.14	0.1	mg/L as N	06/28/05	07/06/05 1201	APHA 4500-NH3 G
Ammonia-N	13373-067	ND	0.1	mg/L as N	06/29/05	07/06/05 1213	APHA 4500-NH3 G
Ammonia-N	13373-073	ND	0.1	mg/L as N	06/30/05	07/06/05 1218	APHA 4500-NH3 G
Ammonia-N	13373-079	0.14	0.1	mg/L as N	07/01/05	07/06/05 1226	APHA 4500-NH3 G
Ammonia-N	13373-094	0.11	0.1	mg/L as N	07/02/05	07/13/05 1108	APHA 4500-NH3 G

Report No: 13373
Project: TTNUS Ammonia

Sample ID: -004
Matrix: Water

Parameter	Lab ID	Result	Quant Limit	Units	Date Sampled	Date of Analysis	Method/Reference
Ammonia-N	13373-022	ND	0.1	mg/L as N	06/22/05	06/28/05 1331	APHA 4500-NH3 G
Ammonia-N	13373-032	ND	0.1	mg/L as N	06/23/05	06/28/05 1339	APHA 4500-NH3 G
Ammonia-N	13373-038	ND	0.1	mg/L as N	06/24/05	06/28/05 1344	APHA 4500-NH3 G
Ammonia-N	13373-044	0.19	0.1	mg/L as N	06/25/05	06/28/05 1529	APHA 4500-NH3 G
Ammonia-N	13373-050	0.13	0.1	mg/L as N	06/26/05	06/28/05 1537	APHA 4500-NH3 G
Ammonia-N	13373-056	ND	0.1	mg/L as N	06/27/05	06/28/05 1544	APHA 4500-NH3 G
Ammonia-N	13373-062	ND	0.1	mg/L as N	06/28/05	07/06/05 1202	APHA 4500-NH3 G
Ammonia-N	13373-068	0.15	0.1	mg/L as N	06/29/05	07/06/05 1214	APHA 4500-NH3 G
Ammonia-N	13373-074	0.12	0.1	mg/L as N	06/30/05	07/06/05 1221	APHA 4500-NH3 G
Ammonia-N	13373-080	0.12	0.1	mg/L as N	07/01/05	07/06/05 1226	APHA 4500-NH3 G
Ammonia-N	13373-097	ND	0.1	mg/L as N	07/02/05	07/13/05 1111	APHA 4500-NH3 G

Report No: 13373
Project: TTNUS Ammonia

Sample ID: -005
Matrix: Water

Parameter	Lab ID	Result	Quant Limit	Units	Date Sampled	Date of Analysis	Method/Reference
Ammonia-N	13373-025	ND	0.1	mg/L as N	06/22/05	06/28/05 1332	APHA 4500-NH3 G
Ammonia-N	13373-033	ND	0.1	mg/L as N	06/23/05	06/28/05 1340	APHA 4500-NH3 G
Ammonia-N	13373-039	ND	0.1	mg/L as N	06/24/05	06/28/05 1345	APHA 4500-NH3 G
Ammonia-N	13373-045	0.23	0.1	mg/L as N	06/25/05	06/28/05 1532	APHA 4500-NH3 G
Ammonia-N	13373-051	ND	0.1	mg/L as N	06/26/05	06/28/05 1537	APHA 4500-NH3 G
Ammonia-N	13373-057	ND	0.1	mg/L as N	06/27/05	06/28/05 1545	APHA 4500-NH3 G
Ammonia-N	13373-063	0.19	0.1	mg/L as N	06/28/05	07/06/05 1203	APHA 4500-NH3 G
Ammonia-N	13373-069	ND	0.1	mg/L as N	06/29/05	07/06/05 1215	APHA 4500-NH3 G
Ammonia-N	13373-075	ND	0.1	mg/L as N	06/30/05	07/06/05 1222	APHA 4500-NH3 G
Ammonia-N	13373-081	0.15	0.1	mg/L as N	07/01/05	07/06/05 1227	APHA 4500-NH3 G
Ammonia-N	13373-100	ND	0.1	mg/L as N	07/02/05	07/13/05 1116	APHA 4500-NH3 G

Report No: 13373
Project: TTNUS Ammonia

Sample ID: -007
Matrix: Water

Parameter	Lab ID	Result	Quant Limit	Units	Date Sampled	Date of Analysis	Method/Reference
Ammonia-N	13373-028	0.2	0.1	mg/L as N	06/22/05	06/28/05 1333	APHA 4500-NH3 G
Ammonia-N	13373-034	ND	0.1	mg/L as N	06/23/05	06/28/05 1340	APHA 4500-NH3 G
Ammonia-N	13373-040	0.15	0.1	mg/L as N	06/24/05	06/28/05 1348	APHA 4500-NH3 G
Ammonia-N	13373-046	0.36	0.1	mg/L as N	06/25/05	06/28/05 1533	APHA 4500-NH3 G
Ammonia-N	13373-052	ND	0.1	mg/L as N	06/26/05	06/28/05 1538	APHA 4500-NH3 G
Ammonia-N	13373-058	ND	0.1	mg/L as N	06/27/05	06/28/05 1546	APHA 4500-NH3 G
Ammonia-N	13373-064	ND	0.1	mg/L as N	06/28/05	07/06/05 1206	APHA 4500-NH3 G
Ammonia-N	13373-070	ND	0.1	mg/L as N	06/29/05	07/06/05 1215	APHA 4500-NH3 G
Ammonia-N	13373-076	0.24	0.1	mg/L as N	06/30/05	07/06/05 1223	APHA 4500-NH3 G
Ammonia-N	13373-082	0.1	0.1	mg/L as N	07/01/05	07/06/05 1233	APHA 4500-NH3 G
Ammonia-N	13373-103	ND	0.1	mg/L as N	07/02/05	07/13/05 1117	APHA 4500-NH3 G

Report No: 13373
Project: TTNUS Ammonia

Sample ID: MHR/POND
Matrix: Water

Parameter	Lab ID	Result	Quant Limit	Units	Date Sampled	Date of Analysis	Method/Reference
Ammonia-N	13373-010	ND	0.1	mg/L as N	06/22/05	06/28/05 1321	APHA 4500-NH3 G
Ammonia-N	13373-085	ND	0.1	mg/L as N	07/02/05	07/13/05 1105	APHA 4500-NH3 G

CETIS Analysis Detail

Hyalella 10-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	09-7361-7778	09-7361-7778	05 Jul-05 11:41 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	8.00822	8.88539	0.01356	Equal Variances
Distribution	Shapiro-Wilk W	0.86650	0.84420	0.02307	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0890373	0.0890373	1	5.95	0.02858	Significant Effect
Error	0.2093457	0.0149533	14			
Total	0.29838297	0.1039905	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13373-000		13373-007	-2.4402	1.76131	0.9857	0.10769	Non-Significant Effect

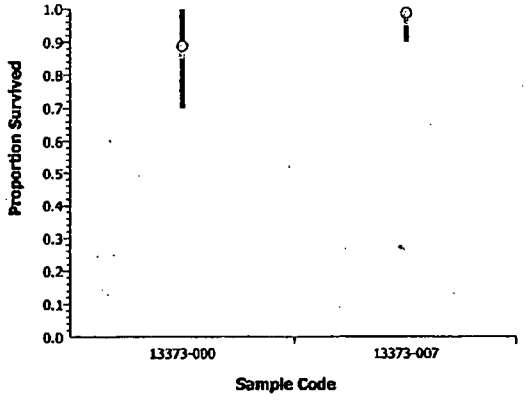
Data Summary

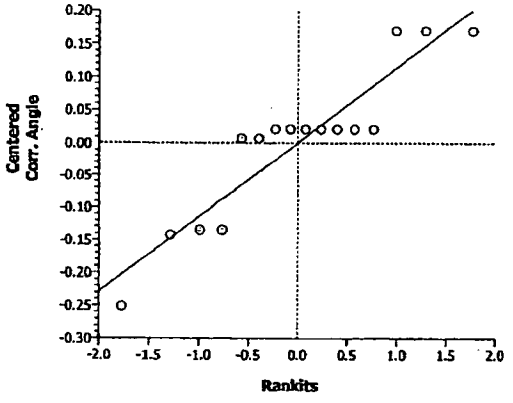
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13373-000	8	0.88750	0.70000	1.00000	0.11260	1.24245	0.99116	1.41202	0.16305
13373-007	8	0.98750	0.90000	1.00000	0.03536	1.39164	1.24905	1.41202	0.05762

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
13373-000	0.80000	1.00000	0.90000	0.80000	0.90000	1.00000	0.70000	1.00000		
13373-007	1.00000	0.90000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000		

Graphics





CETIS Analysis Detail

Hyalella 10-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	09-7361-7778	09-7361-7778	05 Jul-05 11:41 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.35042	8.88539	0.70185	Equal Variances
Distribution	Shapiro-Wilk W	0.88148	0.84420	0.04042	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0213036	0.0213036	1	0.92	0.35356	Non-Significant Effect
Error	0.3239197	0.0231371	14			
Total	0.34522326	0.0444407	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13373-005		13373-001	0.95956	1.76131	0.1768	0.13396	Non-Significant Effect

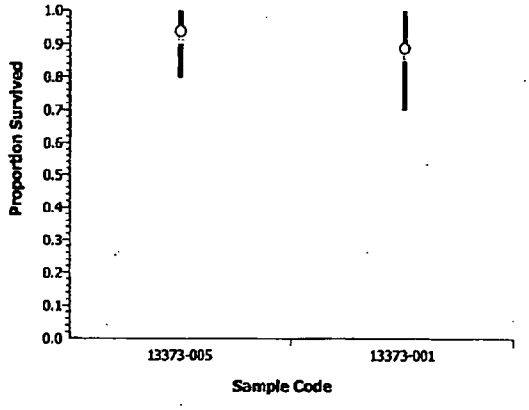
Data Summary

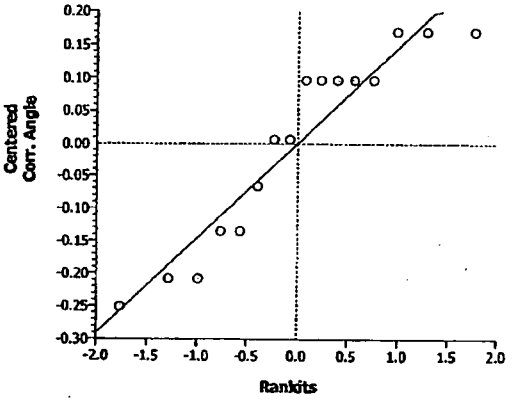
		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13373-005	8	0.93750	0.80000	1.00000	0.09161	1.31543	1.10715	1.41202	0.14031
13373-001	8	0.88750	0.70000	1.00000	0.11260	1.24245	0.99116	1.41202	0.16305

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
13373-005	1.00000	1.00000	1.00000	1.00000	0.80000	1.00000	0.80000	0.90000		
13373-001	0.70000	0.90000	1.00000	1.00000	0.80000	0.80000	0.90000	1.00000		

Graphics





CETIS Analysis Detail

Hyalella 10-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	09-7361-7778	09-7361-7778	05 Jul-05 11:41 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.89094	8.88539	0.41976	Equal Variances
Distribution	Shapiro-Wilk W	0.91117	0.84420	0.12166	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.04314	0.04314	1	1.52	0.23852	Non-Significant Effect
Error	0.3984108	0.0284579	14			
Total	0.44155078	0.0715979	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13373-005		13373-003	1.23123	1.76131	0.1193	0.14856	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13373-005	8	0.93750	0.80000	1.00000	0.09161	1.31543	1.10715	1.41202	0.14031
13373-003	8	0.86250	0.60000	1.00000	0.14079	1.21158	0.88608	1.41202	0.19295

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
13373-005	1.00000	1.00000	1.00000	1.00000	0.80000	1.00000	0.80000	0.90000		
13373-003	0.80000	0.80000	1.00000	0.90000	0.80000	1.00000	0.60000	1.00000		

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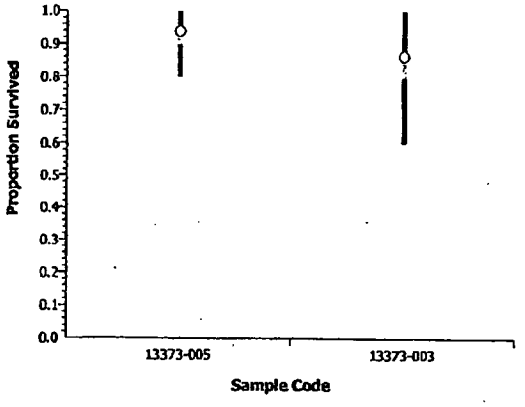

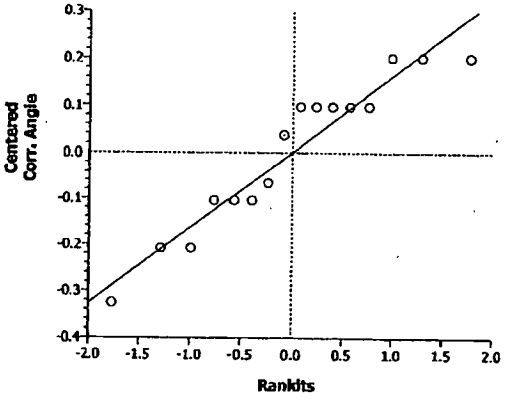

CETIS Analysis Detail

Hyalella 10-d Survival and Growth Sediment Test — EnviroSystems, Inc.

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	09-7361-7778	09-7361-7778	05 Jul-05 11:41 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.16482	8.88539	0.84565	Equal Variances
Distribution	Shapiro-Wilk W	0.72137	0.84420	0.00009	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	4.194E-05	4.194E-05	1	0.00	0.96524	Non-Significant Effect
Error	0.298341	0.0213101	14			
Total	0.29838298	0.0213520	15			

Group Comparisons

Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
13373-005		13373-004	31.5		0.4796	3	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13373-005	8	0.93750	0.80000	1.00000	0.09161	1.31543	1.10715	1.41202	0.14031
13373-004	8	0.93750	0.70000	1.00000	0.10607	1.31867	0.99116	1.41202	0.15143

Data Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
13373-005	1.00000	1.00000	1.00000	1.00000	0.80000	1.00000	0.80000	0.90000		
13373-004	0.90000	0.70000	1.00000	1.00000	1.00000	1.00000	1.00000	0.90000		

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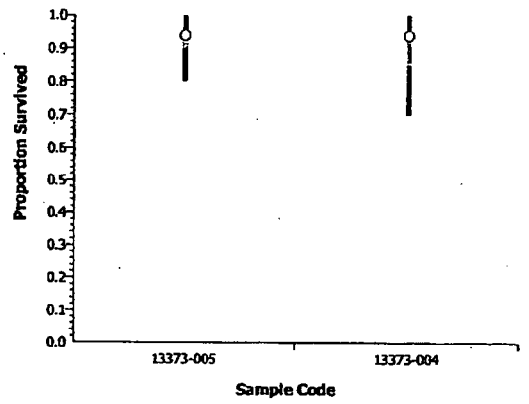

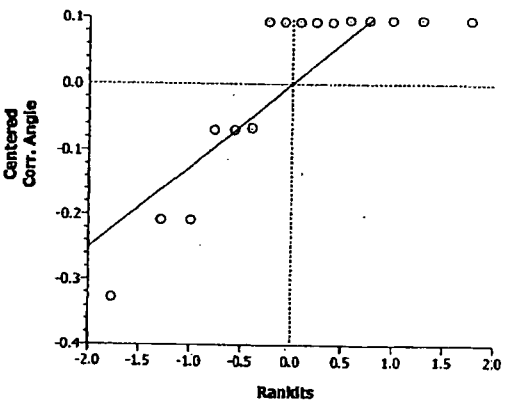

LABORATORY SAMPLE RECEIVING LOG

ESI Project Number: 13373 Date/Time Received: 6/9/05 1100

Client Name and Address: TTNUS

Method of Shipment/ Pick Up: From: Client

Via: Fed Ex

Description of Shipping / Packing Containers(s)
(Number, Type, Size)

Sample ID	ESI #	# Containers/Vol/Wt	Other	Sampled
155D020	-001	1x1g		6/7/05
155D021	-002			
155D022	-003			
155D023	-004			
155D026	-005			
155D025	-006			
155D024	-007			

Sample Storage Location and Required Storage Conditions Refrigerator "F" Locked, 4°C & Dark

Signature: Date: 6/9/05

Notes:

Date and Description of Final Sample Removal / Disposal:

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER 3258 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO 0331 1245	NSWC CRAN	RALPH BASINSKI	(412) 921-8308	ENVIROSYSTEMS, INC / PETRA KARBE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
Terry Rojahn		TERRY ROJAHN	(412) 921-8857	1 LAFAYETTE ROAD
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB# 8447 8135 4848		HAMPTON, NH 03843

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH ~~(FT)~~ INCHES	BOTTOM DEPTH ~~(FT)~~ INCHES	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: Toxicity * (CONTAINER TYPE: PLASTIC (P) or GLASS (G): G; PRESERVATIVE USED: 4°C)								COMMENTS
6/7	1215	15SD020 0006 ~~08~~ (R)	15SW SD020	0	4	SD	G	1	1								13373-001
6/7	1305	15SD021 0006	15SW SD21	0	4	SD	G	1	1								-002
6/7	1340	15SD022 0006	15SW SD 22	0	4	SD	G	1	1								-003
6/7	1430	15SD023 0006	15SW SD 23	0	4	SD	G	1	1								-004
6/7	1435	15SD026 0006	15SW SD26	0	4	SD	G	1	1								-005
6/7	1500	15SD025 0006	15SW SD25	0	4	SD	G	1	1								-006
6/7	1510	15SD024 0006	15SW SD24	0	4	SD	G	1	1								-007

1. RELINQUISHED BY Terry Rojahn	DATE 6/08/05	TIME 1030	1. RECEIVED BY FEDERAL EXPRESS	DATE 6/08/05	TIME 1030
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY [signature]	DATE 6/9/05	TIME 1100
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS * 10-DAY HYALELLA AZTECA SEDIMENT TOXICITY Rec'd on ice 4°C

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

TABLE J.5-1

EXPOSURE PARAMETERS FOR TEST SPECIES AND SURROGATE WILDLIFE SPECIES
NAVAL SURFACE WARFARE CENTER, CRANE, INDIANA

Species	Body Weight (kg)			Food Ingestion Rate (kg/day)		Water Ingestion Rate (L/day)		Soil Ingestion Rate (kg/day)		Home Range (acres)		
	Avg.	Min.	Max.	Avg.	Conserv.	Avg.	Conserv.	Avg.	Conserv.	Avg.	Min.	Max.
Potential Test Species[1]												
Rat[2]	0.35	NA	NA	NA		NA		NA		NA		
Old field mouse[3]	0.014	NA	NA	NA		NA		NA		NA		
Mouse[2]	0.03	NA	NA	NA		NA		NA		NA		
Rabbit	3.8	NA	NA	NA		NA		NA		NA		
Mink[4]	1	NA	NA	NA		NA		NA		NA		
Rhesus monkey[4]	5	NA	NA	NA		NA		NA		NA		
Beagle[2]	10	NA	NA	NA		NA		NA		NA		
Surrogate Wildlife Species[5]												
Short-Tailed Shrew	0.01687	0.01525	0.01921	0.0103	0.0162	0.0038	0.0043	0.0002142	0.000337	0.97	0.97	0.97
Meadow Vole	0.03663	0.0329	0.0391	0.0119	0.0128	0.0064	0.0077	0.00008568	0.00009216	0.16	0.03	1.06
Mink	1.02	0.55	1.734	0.1606	0.2243	0.0805	0.1907	0.000522	0.002411	35	19	50

Notes:
See Table 8-9 for the exposure factors.
NA - Not Applicable
1 - Only one value was provided so it was placed in the average column and some generic body weights may have been replaced by study-specific body weights.
2 - U.S. EPA, 1998
3 - Silva and Downing, 1996
4 - U.S. EPA 1993
5 - Source is U.S. EPA, 1993 for all factors except soil ingestion; Beyer (1993).

TABLE J.5-2

MAMMALIAN TRVS USED IN THE CONSERVATIVE SCENARIO FOOD-CHAIN MODELS

Parameter	Mammals				Short-tailed Shrew		Meadow Vole		Mink	
	NOAEL	LOAEL	Test Species	Body Weight (kg)	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
SEMIVOLATILES (mg/kg)										
Acenaphthene	17.5	35	mouse	0.03	27.3	54.7	13.4	26.9	0.3	0.6
Acenaphthylene	70	700	mouse	0.03	109.3	1093.2	53.7	537.1	1.2	12.1
Anthracene	100	1000	mouse	0.03	156	1562	77	767.3	2	17
Benzo(a)anthracene	0.17	1.7	mouse	0.03	0.3	2.7	0.13	1.3	0.00	0.0
Benzo(a)pyrene	1	10	mouse	0.03	1.6	15.6	0.77	7.7	0.02	0.2
Benzo(g,h,i)perylene	7.2	72	mouse	0.03	11.2	112.4	5.52	55.2	0.12	1.2
Benzo(k)fluoranthene	7.2	72	mouse	0.03	11.2	112.4	5.52	55.2	0.12	1.2
Chrysene	0.17	1.7	mouse	0.03	0.3	2.7	0.13	1.3	0.00	0.0
Dibenzo(a,h)anthracene	1.33	13.3	mouse	0.03	2.1	20.8	1.02	10.2	0.02	0.2
Fluoranthene	12.5	25	mouse	0.03	19.5	39.0	9.6	19.2	0.2	0.4
Fluorene	12.5	25	mouse	0.03	19.5	39.0	9.6	19.2	0.2	0.4
Indeno(1,2,3-cd)pyrene	7.2	72	mouse	0.03	11.2	112.4	5.52	55.2	0.12	1.2
Pentachlorophenol	0.24	2.4	rat	0.35	4.4	43.7	2.1	21.5	0.0	0.5
Phenanthrene	1	10	mouse	0.03	1.6	15.6	0.8	7.7	0.0	0.2
Pyrene	7.5	12.5	mouse	0.03	11.7	19.5	5.8	9.6	0.1	0.2
PESTICIDES/PCBs (mg/kg)										
4,4'-DDD	0.8	4	rat	0.35	14.6	72.9	7.2	35.8	0.16	0.8
4,4'-DDE	0.8	4	rat	0.35	14.6	72.9	7.2	35.8	0.16	0.8
4,4'-DDT	0.8	4	rat	0.35	14.6	72.9	7.2	35.8	0.16	0.8
Alpha-Chlordane	4.58	9.16	mouse	0.03	7.2	14.3	3.5	7.0	0.1	0.2
Aroclor-1254	0.068	0.68	Oldfield mouse	0.014	0.05	0.50	0.02	0.2	0.00	0.01
Aroclor-1260	0.068	0.68	Oldfield mouse	0.014	0.05	0.50	0.02	0.2	0.00	0.01
Gamma-Chlordane	4.58	9.16	mouse	0.03	7.2	14.3	3.5	7.0	0.1	0.2
INORGANICS (mg/kg)										
Arsenic	0.126	1.26	mouse	0.03	0.20	2.0	0.10	1.0	0.00	0.02
Cadmium	1	10	rat	0.303	15.77	157.7	7.7	77.5	0.2	1.7
Chromium	3.28	13.14	rat	0.35	59.8	239.4	29.4	117.6	0.7	2.7
Copper	11.71	15.14	mink	1	609.6	788.1	299.5	387.2	6.8	8.7
Lead	8	80	rat	0.35	145.8	1458	71.6	716.1	1.6	16.1
Mercury	0.032	0.16	mink	1	1.7	8.3	0.8	4.1	0.0	0.1
Nickel	40	80	rat	0.35	728.8	1458	358.1	716.1	8.1	16.1
Selenium	0.2	0.33	rat	0.35	3.6	6.0	1.8	3.0	0.0	0.1
Zinc	160	320	rat	0.35	2915.1	5830	1432	2864.5	32.3	65

Acronyms:
NA = Not Applicable or Not Available
NV = No value available
NOAEL = No Observed Adverse Effect Level
LOAEL = Lowest Observed Adverse Effect Level

Maximum Body Weights (kg)

Shrew:	0.01921
Vole:	0.0391
Mink:	1.734

Derivation NOAEL/LOAEL Equation:
Derived NOAEL = NOAEL*(test species body weight/surrogate species maximum body weight
Derived LOAEL = LOAEL*(test species body weight/surrogate species maximum body weight)

Only the chemicals for which NOAELs and LOAELs are available are shown. Chemicals not having NOAELs and LOAELs are not included in this table.

TABLE J.5-3

MAMMALIAN TRVS USED IN THE AVERAGE EXPOSURE SCENARIO FOOD-CHAIN MODELS

Parameter	Mammals				Short-tailed Shrew		Meadow Vole		Mink	
	NOAEL	LOAEL	Test Species	Body Weight (kg)	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
SEMIVOLATILES (mg/kg)										
Acenaphthene	17.5	35	mouse	0.03	31.1	62.2	14.3	28.7	0.5	1.0
Acenaphthylene	70	700	mouse	0.03	124.5	1244.8	57.3	573.3	2.1	20.6
Anthracene	100	1000	mouse	0.03	178	1778	82	819	3	29
Benzo(a)anthracene	0.17	1.7	mouse	0.03	0.3	3.0	0.14	1.4	0.01	0.1
Benzo(a)pyrene	1	10	mouse	0.03	1.8	17.8	0.82	8.2	0.03	0.3
Benzo(g,h,i)perylene	7.2	72	mouse	0.03	12.8	128.0	5.90	59.0	0.21	2.1
Benzo(k)fluoranthene	7.2	72	mouse	0.03	12.8	128.0	5.90	59.0	0.21	2.1
Chrysene	0.17	1.7	mouse	0.03	0.3	3.0	0.14	1.4	0.01	0.1
Dibenzo(a,h)anthracene	1.33	13.3	mouse	0.03	2.4	23.7	1.09	10.9	0.04	0.4
Fluoranthene	12.5	25	mouse	0.03	22.2	44.5	10.2	20.5	0.4	0.7
Fluorene	12.5	25	mouse	0.03	22.2	44.5	10.2	20.5	0.4	0.7
Indeno(1,2,3-cd)pyrene	7.2	72	mouse	0.03	12.8	128.0	5.9	59.0	0.2	2.1
Pentachlorophenol	0.24	2.4	rat	0.35	5.0	49.8	2.3	22.9	0.1	0.8
Phenanthrene	1	10	mouse	0.03	1.8	17.8	0.8	8.2	0.0	0.3
Pyrene	7.5	12.5	mouse	0.03	13.3	22.2	6.1	10.2	0.2	0.4
PESTICIDES/PCBs (mg/kg)										
4,4'-DDD	0.8	4	rat	0.35	16.6	83.0	7.6	38.2	0.27	1.4
4,4'-DDE	0.8	4	rat	0.35	16.6	83.0	7.6	38.2	0.27	1.4
4,4'-DDT	0.8	4	rat	0.35	16.6	83.0	7.6	38.2	0.27	1.4
Alpha-Chlordane	4.58	9.16	mouse	0.03	8.1	16.3	3.8	7.5	0.1	0.3
Aroclor-1254	0.068	0.68	Oldfield mouse	0.014	0.06	0.56	0.03	0.3	0.00	0.01
Aroclor-1260	0.068	0.68	Oldfield mouse	0.014	0.06	0.56	0.03	0.3	0.00	0.01
Gamma-Chlordane	4.58	9.16	mouse	0.03	8.1	16.3	3.8	7.5	0.1	0.3
INORGANICS (mg/kg)										
Arsenic	0.126	1.26	mouse	0.03	0.22	2.2	0.10	1.0	0.00	0.04
Cadmium	1	10	rat	0.303	18.0	179.6	8.3	82.7	0.3	3.0
Chromium	3.28	13.14	rat	0.35	68.0	272.6	31.3	125.6	1.1	4.5
Copper	11.71	15.14	mink	1	694.1	897.5	319.7	413.3	11.5	14.9
Lead	8	80	rat	0.35	166.0	1660	76.4	764	2.7	27.5
Mercury	0.032	0.16	mink	1	1.90	9.48	0.87	4.37	0.03	0.16
Nickel	40	80	rat	0.35	829.9	1660	382.2	764	13.7	27.5
Selenium	0.2	0.33	rat	0.35	4.15	6.85	1.91	3.15	0.07	0.11
Zinc	160	320	rat	0.35	3320	6639	1529	3058	54.9	110

Acronyms:
NA = Not Applicable or Not Available
NV = No value available
NOAEL = No Observed Adverse Effect Level
LOAEL = Lowest Observed Adverse Effect Level

Average Body Weights (kg)

Shrew:	0.01687
Vole:	0.03663
Mink:	1.0195

Derivation NOAEL/LOAEL Equation:
Derived NOAEL = NOAEL*(test species body weight/surrogate species average body weight)
Derived LOAEL = LOAEL*(test species body weight/surrogate species average body weight)

Only the chemicals for which NOAELs and LOAELs are available are shown. Chemicals not having NOAELs and LOAELs are not included in this table.

TABLE J.5-4

NOAELS AND LOAELS FOR BIRDS
NAVAL SURFACE WARFARE CENTER CRANE, INDIANA

Parameter	NOAEL	LOAEL
SEMIVOLATILES (mg/kg)		
Acenaphthene	2	20
Acenaphthylene	2	20
Anthracene	2	20
Benzo(a)anthracene	2	20
Benzo(a)pyrene	2	20
Benzo(g,h,i)perylene	2	20
Benzo(k)fluoranthene	2	20
Chrysene	2	20
Dibenzo(a,h)anthracene	2	20
Fluoranthene	2	20
Fluorene	2	20
Indeno(1,2,3-cd)pyrene	2	20
Pentachlorophenol	NV	NV
Phenanthrene	2	20
Pyrene	2	20
PESTICIDES/PCBs (mg/kg)		
4,4'-DDD	0.009	0.052
4,4'-DDE	0.009	0.052
4,4'-DDT	0.009	0.052
Alpha-Chlordane	2.14	10.7
Aroclor-1254	0.18	1.8
Aroclor-1260	0.18	1.8
Gamma-Chlordane	2.14	10.7
INORGANICS (mg/kg)		
Arsenic	2.46	7.38
Cadmium	1.45	20
Chromium	1	5
Copper	46.97	61.72
Lead	1.13	11.3
Mercury	0.0064	0.064
Nickel	77.4	107
Selenium	0.4	0.8
Zinc	14.49	130.9

Footnotes:
1 - The sources of these NOAELS and LOAELS are presented in the table J.4-5.
The NOAELS and LOAELS in the source table were divided by 10 if a subchronic study was the basis for the value.
Also, if only a NOAEL was available, the value was multiplied by 10 to estimate the LOAEL and if only a LOAEL was available, the value was divided by 10 to estimate the NOAEL.

Acronyms:
NOAEL = No Observed Adverse Effect Level
LOAEL = Lowest Observed Adverse Effect Level
NV = No value available

TABLE J.5-5

SOURCES AND ENDPOINTS FOR NOAELS AND LOAELS FOR TERRESTRIAL WILDLIFE
NAVAL WARFARE CENTER, CRANE, INDIANA

Parameters	Concentration (mg/kg-day)	Endpoint	Effect	Chronic/ Subchronic	Species	Primary Reference	Source of Reference
Semivolatiles Organics							
Acenaphthene	175	NOAEL	systemic	subchronic	mouse	USEPA, 1989a	IRIS, 2002
Acenaphthene	350	LOAEL	systemic	subchronic	mouse	USEPA, 1989a	IRIS, 2002
Acenaphthylene	700	NOAEL	mortality/BW	subchronic	mouse	USEPA, 1989a	PRC, 1996
Anthracene	1000	NOAEL	systemic	subchronic	mouse	USEPA, 1989b	IRIS, 2002
Anthracene	1000	NOAEL	reproductive	Subchronic	mouse	USEPA, 1989b	IT Corp, 1997
Benzo(a)anthracene	17.1	NOAEL	carcinogenic	acute	mouse	Clayson et al., 1968	PRC, 1996
Benzo(a)pyrene	10	LOAEL	reproductive	chronic	mouse	Mackenzie and Angevine, 1981	Sample et.al., 1996
Benzo(g,h,I)perylene	72	LOAEL	carcinogenic	chronic	rodent	Simms and Overcash, 1983	PRC, 1996
Benzo(k)fluoranthene	72	LOAEL	carcinogenic	chronic	rodent	Lo and Sandi, 1978	PRC, 1996
Chrysene	17.1	NOAEL	carcinogenic	acute	mouse	Clayson et al., 1968	PRC, 1996
Dibenzo(a,h)anthracene	13.3	LOAEL	carcinogenic	chronic	mouse	Lorenz and Stewart, 1948	PRC, 1996
Fluoranthene	125	NOAEL	systemic	subchronic	mouse	USEPA, 1988	IRIS, 2002
Fluoranthene	250	LOAEL	systemic	subchronic	mouse	USEPA, 1988	IRIS, 2002
Fluorene	125	NOAEL	systemic	subchronic	mouse	USEPA, 1989c	IRIS, 2002
Fluorene	250	LOAEL	systemic	subchronic	mouse	USEPA, 1989c	IRIS, 2002
Indeno(1,2,3-cd)pyrene	72	LOAEL	carcinogenic	chronic	rodent	Simms and Overcash, 1983	PRC, 1996
Pentachlorophenol	0.24	NOAEL	reproductive	chronic	rat	Schwetz et al., 1978	Sample et.al., 1996
Pentachlorophenol	2.4	LOAEL	reproductive	chronic	rat	Schwetz et al., 1978	Sample et.al., 1996
Pyrene	75	NOAEL	systemic	subchronic	mouse	USEPA, 1989c	IRIS, 2002
Pyrene	125	LOAEL	systemic	subchronic	mouse	USEPA, 1989c	IRIS, 2002
Pesticides							
Chlordane	2.14	NOAEL	mortality	chronic	red-winged blackbird	Stickel et al., 1983	Sample et.al., 1996
Chlordane	10.7	LOAEL	mortality	chronic	red-winged blackbird	Stickel et al., 1983	Sample et.al., 1996
Chlordane	4.58	NOAEL	reproduction	chronic	mouse	WHO, 1984	Sample et.al., 1996
Chlordane	9.16	LOAEL	reproduction	chronic	mouse	WHO, 1984	Sample et.al., 1996
4,4'-DDT	0.8	NOAEL	reproductive	chronic	rat	Fitzhugh, 1948	Sample et.al., 1996
4,4'-DDT	4	LOAEL	reproductive	chronic	rat	Fitzhugh, 1948	Sample et.al., 1996
4,4'-DDT	0.052[1]	LOAEL	reproduction	chronic	brown pelican	Anderson et al., 1975	USEPA, 1995
4,4'-DDT	0.009[1]	NOAEL	reproduction	chronic	brown pelican	Anderson et al., 1975	USEPA, 1995
Aroclor-1254	1.8	LOAEL	reproductive	chronic	pheasant	Dahlgren et al., 1972	Sample et.al., 1996
Aroclor-1254	0.68	LOAEL	reproduction	chronic	mouse	McCoy et al., 1995	Sample et.al., 1996
Inorganics							
Arsenic	1.261	LOAEL	reproductive	chronic	mouse	Schroeder and Mitchner, 1971	Sample et.al., 1996
Arsenic	2.46	NOAEL	mortality	chronic	brown-headed cowbird	USFWS, 1969	Sample et.al., 1996
Arsenic	7.38	LOAEL	mortality	chronic	brown-headed cowbird	USFWS, 1969	Sample et.al., 1996
Cadmium	1	NOAEL	reproductive	chronic	rat	Sutou et al., 1980	Sample et.al., 1996
Cadmium	10	LOAEL	reproductive	chronic	rat	Sutou et al., 1980	Sample et.al., 1996
Cadmium	1.45	NOAEL	reproductive	chronic	mallard duck	White and Finely, 1978	Sample et.al., 1996
Cadmium	20	LOAEL	reproductive	chronic	mallard duck	White and Finely, 1978	Sample et.al., 1996
Chromium(III)	1	NOAEL	reproductive	chronic	black duck	Haseltine et al., 1985	Sample et.al., 1996
Chromium(III)	5	LOAEL	reproductive	chronic	black duck	Haseltine et al., 1985	Sample et.al., 1996
Copper	11.71	NOAEL	reproductive	chronic	mink	Aulerich et al., 1982	ATSDR, 1989
Copper	15.14	LOAEL	reproductive	chronic	mink	Aulerich et al., 1982	ATSDR, 1989
Copper	46.97	NOAEL	mortality	chronic	chicks	Mehring et al., 1960	Sample et.al., 1996
Copper	61.72	LOAEL	mortality	chronic	chicks	Mehring et al., 1960	Sample et.al., 1996
Lead	8	NOAEL	reproductive	chronic	rat	Azar et al., 1973	Sample et.al., 1996
Lead	80	LOAEL	reproductive	chronic	rat	Azar et al., 1973	Sample et.al., 1996
Lead	1.13	NOAEL	reproductive	chronic	Japanese quail	Edens et al., 1976	Sample et.al., 1996
Lead	11.3	LOAEL	reproductive	chronic	Japanese quail	Edens et al., 1976	Sample et.al., 1996
Mercury	0.064	LOAEL	reproductive	chronic	mallard duck	Heinz, 1979	Sample et.al., 1996
Mercury	0.032	NOAEL	reproductive	chronic	rat	Verschuuren et al., 1976	Sample et.al., 1996
Mercury	0.16	LOAEL	reproductive	chronic	rat	Verschuuren et al., 1976	Sample et.al., 1996
Nickel	40	NOAEL	reproductive	chronic	rat	Ambrose et al., 1976	Sample et.al., 1996
Nickel	80	LOAEL	reproductive	chronic	rat	Ambrose et al., 1976	Sample et.al., 1996
Nickel	77.4	NOAEL	mortality	chronic	mallard duck	Cain and Pafford, 1981	Sample et.al., 1996
Nickel	107	LOAEL	mortality	chronic	mallard duck	Cain and Pafford, 1981	Sample et.al., 1996
Selenium	0.4	NOAEL	reproductive	chronic	mallard duck	Heinz et al., 1989	Sample et.al., 1996
Selenium	0.8	LOAEL	reproductive	chronic	mallard duck	Heinz et al., 1989	Sample et.al., 1996
Selenium	0.2	NOAEL	reproductive	chronic	rat	Rosenfeld and Beath, 1954	Sample et.al., 1996
Selenium	0.33	LOAEL	reproductive	chronic	rat	Rosenfeld and Beath, 1954	Sample et.al., 1996
Zinc	160	NOAEL	reproductive	chronic	rat	Schlicker and Cox, 1968	Sample et.al., 1996
Zinc	320	LOAEL	reproductive	chronic	rat	Schlicker and Cox, 1968	Sample et.al., 1996
Zinc	14.49	NOAEL	reproductive	chronic	white leghorn hen	Stahl et al., 1990	Sample et.al., 1996
Zinc	130.9	LOAEL	reproductive	chronic	white leghorn hen	Stahl et al., 1990	Sample et.al., 1996

Notes: The NOAELS and LOAELS for the PAHs that do not have values are based on the benzo(a)pyrene values
The NOAELS and LOAELS for the PAHs for birds were based on 7,12-dimethylbenz(a)anthracene.

1 - The LOAEL of 0.052 mg/kg-day was the recalculated LOAEL for the referenced study by assumming a lag time for the reduction of DDT (see USEPA, 1995)
The NOAEL of 0.009 was calculated by dividing the original LOAEL of the referenced study (0.027 mg/kg-day by an uncertainty factor of 3.

NOAEL = No Observed Adverse Effect Level
LOAEL = Lowest Observed Adverse Effect Level

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT SWMU 15, Crane	JOB NUMBER
SUBJECT percent lipid calculation	
BASED ON USEPA, 1997. (EPA 823-R-97-006).	DRAWING NUMBER
BY R. Young / CHECKED BY A. Bernhardt	APPROVED BY / DATE 9/23/05

Percent lipid content in fish:

Species	Whole fish % lipid content *
Redbreast sunfish	3.6
Green sunfish	3.2
Pumpkinseed	3.9
Longear sunfish	2.8
Bluegill sunfish	3.5
Bluegill sunfish	4.4
	3.566 ≈ 3.6%

wet-weight lipid for fish

To adjust lipid for fish to dry-weight, divide by 25%, which is the percent solids of fish from Sample et al., 1997.

$$\frac{3.6}{25} \times 100 = 14.4\%$$ dry-weight lipid for fish

* Values taken from Appendix C, Table C-3b, USEPA, 1997 The Incidence and Severity of Sediment Contamination in Surface Waters of the United States.

Sample, BE, MS Aplin, RA Efroymson, GW Suter + CJE Welsh, 1997. Methods and Tools for Estimation of the Exposure of Terrestrial Wildlife to Contaminants. Oak Ridge National Laboratory. October. ORNL/TM-13391

MEADOW VOLE - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, INDIANA

Parameter	Max Soil Concentration (mg/kg)	Max SW Concentration (mg/L)	Biotransfer Factor (soil to veg.)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day) from: Surface Soil	Surface Water	Vegetation	Total Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Semivolatiles												
BENZO(A)ANTHRACENE	8.50E-01	1.84E-03	1.90E-02	1.62E-02	1.59E-03	4.31E-04	9.42E-04	2.96E-03	1.30E-01	1.30E+00	2.27E-02	2.27E-03
BENZO(A)PYRENE	1.10E+00	2.38E-03	1.10E-02	1.21E-02	2.05E-03	5.57E-04	7.06E-04	3.32E-03	7.67E-01	7.67E+00	4.32E-03	4.32E-04
BENZO(K)FLUORANTHENE	2.20E+00	1.72E-03	4.30E-03	9.46E-03	4.11E-03	4.03E-04	5.52E-04	5.06E-03	5.52E+00	5.52E+01	9.17E-04	9.17E-05
CHRYSENE	1.10E+00	4.46E-03	1.90E-02	2.09E-02	2.05E-03	1.04E-03	1.22E-03	4.32E-03	1.30E-01	1.30E+00	3.31E-02	3.31E-03
DIBENZO(A,H)ANTHRACENE	2.50E-01	4.60E-04	4.30E-03	1.08E-03	4.67E-04	1.08E-04	6.27E-05	6.37E-04	1.02E+00	1.02E+01	6.24E-04	6.24E-05
FLUORANTHENE	9.40E-01	1.19E-02	5.50E-02	5.17E-02	1.76E-03	2.79E-03	3.02E-03	7.56E-03	9.59E+00	1.92E+01	7.88E-04	3.94E-04
PHENANTHRENE	5.20E-01	4.73E-03	8.20E-02	4.26E-02	9.71E-04	1.11E-03	2.49E-03	4.57E-03	7.67E-01	7.67E+00	5.95E-03	5.95E-04
PYRENE	1.60E+00	8.61E-03	5.50E-02	8.80E-02	2.99E-03	2.02E-03	5.14E-03	1.01E-02	5.75E+00	9.59E+00	1.76E-03	1.06E-03
Pesticides												
4,4'-DDT	1.40E-02	0.00E+00	7.80E-03	1.09E-04	2.61E-05	0.00E+00	6.37E-06	3.25E-05	7.16E+00	3.58E+01	4.54E-06	9.08E-07
PCBs												
AROCLOR-1260	3.20E-02	0.00E+00	2.90E-03	9.28E-05	5.98E-05	0.00E+00	5.42E-06	6.52E-05	2.43E-02	2.43E-01	2.68E-03	2.68E-04
Herbicides												
PENTACHLOROPHENOL	2.80E-02	7.50E-05	1.40E-02	3.92E-04	5.23E-05	1.76E-05	2.29E-05	9.27E-05	2.15E+00	2.15E+01	4.32E-05	4.32E-06
Inorganics												
ARSENIC	2.07E+01	1.40E-03	1.10E+00	2.28E+01	3.87E-02	3.28E-04	1.33E+00	1.37E+00	9.67E-02	9.67E-01	1.42E+01	1.42E+00
CADMIUM	6.90E+00	3.60E-04	3.25E+00	2.24E+01	1.29E-02	8.43E-05	1.31E+00	1.32E+00	7.75E+00	7.75E+01	1.71E-01	1.71E-02
CHROMIUM	4.97E+01	3.60E-03	8.39E-02	4.17E+00	9.28E-02	8.43E-04	2.43E-01	3.37E-01	2.94E+01	1.18E+02	1.15E-02	2.87E-03
COPPER	2.01E+01	8.10E-03	6.25E-01	1.26E+01	3.75E-02	1.90E-03	7.33E-01	7.73E-01	2.99E+02	3.87E+02	2.58E-03	2.00E-03
LEAD	1.55E+02	2.90E-03	4.68E-01	7.25E+01	2.89E-01	6.79E-04	4.23E+00	4.52E+00	7.16E+01	7.16E+02	6.32E-02	6.32E-03
MERCURY	1.30E-01	0.00E+00	5.00E+00	6.50E-01	2.43E-04	0.00E+00	3.79E-02	3.82E-02	8.18E-01	4.09E+00	4.66E-02	9.33E-03
NICKEL	3.16E+01	8.00E-03	1.41E+00	4.46E+01	5.90E-02	1.87E-03	2.60E+00	2.66E+00	3.58E+02	7.16E+02	7.44E-03	3.72E-03
SELENIUM	1.10E+00	1.30E-03	3.01E+00	3.31E+00	2.05E-03	3.04E-04	1.93E-01	1.96E-01	1.79E+00	2.95E+00	1.09E-01	6.63E-02
ZINC	6.26E+02	1.02E-01	1.82E+00	1.14E+03	1.17E+00	2.39E-02	6.65E+01	6.77E+01	1.43E+03	2.86E+03	4.73E-02	2.36E-02

Cells are shaded if the EEQ is greater than 1.0.
Benzo(a)anthracene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, phenanthrene, and pyrene were COPCs in surface water only.
Cadmium was detected in the dissolved metals samples only.

Body Weight = (BW)	3.290E-02	kg
Food Ingestion Rate = (If)	1.920E-03	kg/day
Water Ingestion Rate = (Iw)	7.700E-03	L/day
Soil Ingestion Rate = (Is)	6.144E-05	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

H=HR/CA (Assume = to 1 for maximum exposure)

Dose (surface soil) = (Cs * Is)(H)/BW
Dose (surface water) = (Cw * Iw)(H)/BW
Dose (vegetation) = (Cv * If)(H)/BW
Total Dose = Dose (surface soil) + Dose (surface water) + Dose (vegetation)

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Cv = Contaminant conc. in vegetation (=soil conc. * Biotransfer Factor)
NV = No Value is available

MEADOW VOLE - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, INDIANA

Parameter	Avg Soil Concentration (mg/kg)	Avg SW Concentration (mg/L)	Biotransfer Factor (soil to veg.)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day) from: Surface Soil	Surface Water	Vegetation	Total Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Inorganics												
ARSENIC	8.62E+00	4.08E-04	3.75E-02	3.23E-01	5.04E-03	7.12E-05	1.58E-02	2.09E-02	1.03E-01	1.03E+00	2.02E-01	2.02E-02

Cells are shaded if the EEQ is greater than 1.0.
Benzo(a)anthracene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, phenanthrene, and pyrene were COPCs in surface water only.
Cadmium was detected in the dissolved metals samples only.

Body Weight = (BW)	3.663E-02	kg
Food Ingestion Rate = (If)	1.785E-03	kg/day
Water Ingestion Rate = (Iw)	6.400E-03	L/day
Soil Ingestion Rate = (Is)	2.142E-05	kg/day
Home Range = (HR)	1.640E-01	acres
Contaminated Area = (CA)	Assume equal to home range	

H=HR/CA (Assume = to 1 for maximum exposure)

Dose (surface soil) = (Cs * Is)(H)/BW
Dose (surface water) = (Cw * Iw)(H)/BW
Dose (vegetation) = (Cv * If)(H)/BW
Total Dose = Dose (surface soil) + Dose (surface water) + Dose (vegetation)

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Cv = Contaminant conc. in vegetation (=soil conc. * Biotransfer Factor)
NV = No Value is available

SHORT-TAILED SHREW - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, INDIANA

Parameter	Max Soil Concentration (mg/kg)	Max SW Concentration (mg/L)	Biotransfer Factor (soil to inv.)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day) from: Surface Soil	Surface Water	Inverts.	Total Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Semivolatiles												
BENZO(A)ANTHRACENE	8.50E-01	1.84E-03	6.69E-01	5.69E-01	4.33E-03	5.19E-04	9.67E-02	1.02E-01	2.65E-01	2.65E+00	3.82E-01	3.82E-02
BENZO(A)PYRENE	1.10E+00	2.38E-03	6.69E-01	7.36E-01	5.61E-03	6.71E-04	1.25E-01	1.31E-01	1.56E+00	1.56E+01	8.41E-02	8.41E-03
BENZO(K)FLUORANTHENE	2.20E+00	1.72E-03	6.69E-01	1.47E+00	1.12E-02	4.85E-04	2.50E-01	2.62E-01	1.12E+01	1.12E+02	2.33E-02	2.33E-03
CHRYSENE	1.10E+00	4.46E-03	6.69E-01	7.36E-01	5.61E-03	1.26E-03	1.25E-01	1.32E-01	2.65E-01	2.65E+00	4.97E-01	4.97E-02
DIBENZO(A,H)ANTHRACENE	2.50E-01	4.60E-04	6.69E-01	1.67E-01	1.27E-03	1.30E-04	2.84E-02	2.98E-02	2.08E+00	2.08E+01	1.44E-02	1.44E-03
FLUORANTHENE	9.40E-01	1.19E-02	6.69E-01	6.29E-01	4.79E-03	3.36E-03	1.07E-01	1.15E-01	1.95E+01	3.90E+01	5.89E-03	2.95E-03
PHENANTHRENE	5.20E-01	4.73E-03	6.69E-01	3.48E-01	2.65E-03	1.33E-03	5.91E-02	6.31E-02	1.56E+00	1.56E+01	4.04E-02	4.04E-03
PYRENE	1.60E+00	8.61E-03	6.69E-01	1.07E+00	8.16E-03	2.43E-03	1.82E-01	1.93E-01	1.17E+01	1.95E+01	1.64E-02	9.86E-03
Pesticides												
4,4'-DDT	1.40E-02	0.00E+00	1.30E+01	1.82E-01	7.14E-05	0.00E+00	3.09E-02	3.10E-02	1.46E+01	7.29E+01	2.13E-03	4.25E-04
PCBs												
AROCLOR-1260	3.20E-02	0.00E+00	1.59E+01	5.09E-01	1.63E-04	0.00E+00	8.65E-02	8.67E-02	4.96E-02	4.96E-01	1.75E+00	1.75E-01
Herbicides												
PENTACHLOROPHENOL	2.80E-02	7.50E-05	1.00E+00	2.80E-02	1.43E-04	2.11E-05	4.76E-03	4.92E-03	4.37E+00	4.37E+01	1.13E-03	1.13E-04
Inorganics												
ARSENIC	2.07E+01	1.40E-03	5.23E-01	1.08E+01	1.06E-01	3.95E-04	1.84E+00	1.95E+00	1.97E-01	1.97E+00	9.89E+00	9.89E-01
CADMIUM	6.90E+00	3.60E-04	4.07E+01	2.81E+02	3.52E-02	1.02E-04	4.77E+01	4.78E+01	1.58E+01	1.58E+02	3.03E+00	3.03E-01
CHROMIUM	4.97E+01	3.60E-03	3.16E+00	1.57E+02	2.53E-01	1.02E-03	2.67E+01	2.70E+01	5.98E+01	2.39E+02	4.51E-01	1.13E-01
COPPER	2.01E+01	8.10E-03	1.53E+00	3.08E+01	1.02E-01	2.28E-03	5.23E+00	5.34E+00	6.10E+02	7.88E+02	8.75E-03	6.77E-03
LEAD	1.55E+02	2.90E-03	1.52E+00	2.36E+02	7.90E-01	8.18E-04	4.01E+01	4.09E+01	1.46E+02	1.46E+03	2.81E-01	2.81E-02
MERCURY	1.30E-01	0.00E+00	2.06E+01	2.68E+00	6.63E-04	0.00E+00	4.56E-01	4.56E-01	1.67E+00	8.33E+00	2.74E-01	5.48E-02
NICKEL	3.16E+01	8.00E-03	4.73E+00	1.49E+02	1.61E-01	2.26E-03	2.54E+01	2.56E+01	7.29E+02	1.46E+03	3.51E-02	1.75E-02
SELENIUM	1.10E+00	1.30E-03	1.34E+00	1.47E+00	5.61E-03	3.67E-04	2.51E-01	2.57E-01	3.64E+00	6.01E+00	7.04E-02	4.27E-02
ZINC	6.26E+02	1.02E-01	1.29E+01	8.07E+03	3.19E+00	2.88E-02	1.37E+03	1.37E+03	2.92E+03	5.83E+03	4.71E-01	2.36E-01

Cells are shaded if the EEQ is greater than 1.0.
Benzo(a)anthracene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, phenanthrene, and pyrene were COPCs in surface water only.
Cadmium was detected in the dissolved metals samples only.

Body Weight = (BW)	1.525E-02	kg
Food Ingestion Rate = (If)	2.592E-03	kg/day
Water Ingestion Rate = (Iw)	4.300E-03	L/day
Soil Ingestion Rate = (Is)	7.776E-05	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

H=HR/CA (Assume = to 1 for maximum exposure)

Dose (surface soil) = (Cs * Is)(H)/BW
Dose (surface water) = (Cw * Iw)(H)/BW
Dose (invertebrates) = (Ci * If)(H)/BW
Total Dose = Dose (surface soil) + Dose (surface water) + Dose (invertebrates)

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Ci = Contaminant conc. in soil invertebrates (=soil conc. * Biotransfer Factor)
NV = No Value is available

SHORT-TAILED SHREW - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, INDIANA

Parameter	Avg Soil Concentration (mg/kg)	Avg SW Concentration (mg/L)	Biotransfer Factor (soil to inv.)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day) from: Surface Soil	Surface Water	Inverts.	Total Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
PCBs												
AROCLOR-1260	7.54E-03	0.00E+00	6.67E+00	5.03E-02	6.63E-06	0.00E+00	4.91E-03	4.92E-03	5.64E-02	5.64E-01	8.71E-02	8.71E-03
Inorganics												
ARSENIC	8.62E+00	4.08E-04	2.24E-01	1.93E+00	7.58E-03	9.18E-05	1.89E-01	1.96E-01	2.24E-01	2.24E+00	8.76E-01	8.76E-02
CADMIUM	6.85E-01	7.45E-05	7.71E+00	5.28E+00	6.02E-04	1.68E-05	5.16E-01	5.16E-01	1.80E+01	1.80E+02	2.87E-02	2.87E-03

Cells are shaded if the EEQ is greater than 1.0.
Benzo(a)anthracene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, phenanthrene, and pyrene were COPCs in surface water only.
Cadmium was detected in the dissolved metals samples only.

Body Weight = (BW)	1.687E-02	kg
Food Ingestion Rate = (If)	1.648E-03	kg/day
Water Ingestion Rate = (Iw)	3.800E-03	L/day
Soil Ingestion Rate = (Is)	1.483E-05	kg/day
Home Range = (HR)	9.700E-01	acres
Contaminated Area = (CA)	Assume equal to home range	

H=HR/CA (Assume = to 1 for maximum exposure)

Dose (surface soil) = (Cs * Is)(H)/BW
Dose (surface water) = (Cw * Iw)(H)/BW
Dose (invertebrates) = (Ci * If)(H)/BW
Total Dose = Dose (surface soil) + Dose (surface water) + Dose (invertebrates)

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Ci = Contaminant conc. in soil invertebrates (=soil conc. * Biotransfer Factor)
NV = No Value is available

BOBWHITE QUAIL - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, INDIANA

Parameter	Max Soil Concentration (mg/kg)	Max SW Concentration (mg/L)	Biotransfer Factor (soil to veg.)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day) from: Surface Soil	Surface Water	Vegetation	Total Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Semivolatiles												
BENZO(A)ANTHRACENE	8.50E-01	1.84E-03	1.90E-02	1.62E-02	1.79E-03	2.62E-04	2.45E-04	2.30E-03	2.00E+00	2.00E+01	1.15E-03	1.15E-04
BENZO(A)PYRENE	1.10E+00	2.38E-03	1.10E-02	1.21E-02	2.32E-03	3.39E-04	1.84E-04	2.84E-03	2.00E+00	2.00E+01	1.42E-03	1.42E-04
BENZO(K)FLUORANTHENE	2.20E+00	1.72E-03	4.30E-03	9.46E-03	4.64E-03	2.45E-04	1.44E-04	5.03E-03	2.00E+00	2.00E+01	2.52E-03	2.52E-04
CHRYSENE	1.10E+00	4.46E-03	1.90E-02	2.09E-02	2.32E-03	6.36E-04	3.17E-04	3.28E-03	2.00E+00	2.00E+01	1.64E-03	1.64E-04
DIBENZO(A,H)ANTHRACENE	2.50E-01	4.60E-04	4.30E-03	1.08E-03	5.28E-04	6.56E-05	1.63E-05	6.10E-04	2.00E+00	2.00E+01	3.05E-04	3.05E-05
FLUORANTHENE	9.40E-01	1.19E-02	5.50E-02	5.17E-02	1.98E-03	1.70E-03	7.85E-04	4.47E-03	2.00E+00	2.00E+01	2.23E-03	2.23E-04
PHENANTHRENE	5.20E-01	4.73E-03	8.20E-02	4.26E-02	1.10E-03	6.74E-04	6.47E-04	2.42E-03	2.00E+00	2.00E+01	1.21E-03	1.21E-04
PYRENE	1.60E+00	8.61E-03	5.50E-02	8.80E-02	3.38E-03	1.23E-03	1.34E-03	5.94E-03	2.00E+00	2.00E+01	2.97E-03	2.97E-04
Pesticides												
4,4'-DDT	1.40E-02	0.00E+00	7.80E-03	1.09E-04	2.96E-05	0.00E+00	1.66E-06	3.12E-05	9.00E-03	5.20E-02	3.47E-03	6.00E-04
PCBs												
AROCLOR-1260	3.20E-02	0.00E+00	2.90E-03	9.28E-05	6.75E-05	0.00E+00	1.41E-06	6.90E-05	1.80E-01	1.80E+00	3.83E-04	3.83E-05
Herbicides												
PENTACHLOROPHENOL	2.80E-02	7.50E-05	1.40E-02	3.92E-04	5.91E-05	1.07E-05	5.95E-06	7.57E-05	NV	NV	NA	NA
Inorganics												
ARSENIC	2.07E+01	1.40E-03	1.10E+00	2.28E+01	4.37E-02	2.00E-04	3.47E-01	3.91E-01	2.46E+00	7.38E+00	1.59E-01	5.29E-02
CADMIUM	6.90E+00	3.60E-04	3.25E+00	2.24E+01	1.46E-02	5.13E-05	3.41E-01	3.55E-01	1.45E+00	2.00E+01	2.45E-01	1.78E-02
CHROMIUM	4.97E+01	3.60E-03	8.39E-02	4.17E+00	1.05E-01	5.13E-04	6.33E-02	1.69E-01	1.00E+00	5.00E+00	1.69E-01	3.37E-02
COPPER	2.01E+01	8.10E-03	6.25E-01	1.26E+01	4.24E-02	1.16E-03	1.91E-01	2.34E-01	4.70E+01	6.17E+01	4.99E-03	3.80E-03
LEAD	1.55E+02	2.90E-03	4.68E-01	7.25E+01	3.27E-01	4.14E-04	1.10E+00	1.43E+00	1.13E+00	1.13E+01	1.26E+00	1.26E-01
MERCURY	1.30E-01	0.00E+00	5.00E+00	6.50E-01	2.74E-04	0.00E+00	9.87E-03	1.01E-02	6.40E-03	6.40E-02	1.59E+00	1.59E-01
NICKEL	3.16E+01	8.00E-03	1.41E+00	4.46E+01	6.67E-02	1.14E-03	6.77E-01	7.45E-01	7.74E+01	1.07E+02	9.62E-03	6.96E-03
SELENIUM	1.10E+00	1.30E-03	3.01E+00	3.31E+00	2.32E-03	1.85E-04	5.03E-02	5.28E-02	4.00E-01	8.00E-01	1.32E-01	6.60E-02
ZINC	6.26E+02	1.02E-01	1.82E+00	1.14E+03	1.32E+00	1.45E-02	1.73E+01	1.86E+01	1.45E+01	1.31E+02	1.29E+00	1.42E-01

Cells are shaded if the EEQ is greater than 1.0.
Benzo(a)anthracene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, phenanthrene, and pyrene were COPCs in surface water only.
Cadmium was detected in the dissolved metals samples only.
NA = Not Applicable
NV = No Value Available

Body Weight = (BW)	1.620E-01	kg
Food Ingestion Rate = (If)	2.460E-03	kg/day
Water Ingestion Rate = (Iw)	2.310E-02	L/day
Soil Ingestion Rate = (Is)	3.419E-04	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

H=HR/CA (Assume = to 1 for maximum exposure)

Dose (surface soil) = (Cs * Is)(H)/BW
Dose (surface water) = (Cw * Iw)(H)/BW
Dose (vegetation) = (Cv * If)(H)/BW
Total Dose = Dose (surface soil) + Dose (surface water) + Dose (vegetation)

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Cv = Contaminant conc. in vegetation (=soil conc. * Biotransfer Factor)
NV = No Value is available

BOBWHITE QUAIL - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, INDIANA

Parameter	Avg Soil Concentration (mg/kg)	Avg SW Concentration (mg/L)	Biotransfer Factor (soil to veg.)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day) from: Surface Soil	Surface Water	Vegetation	Total Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Inorganics												
LEAD	2.34E+01	1.15E-03	3.89E-02	9.09E-01	1.74E-02	1.20E-04	1.11E-02	2.86E-02	1.13E+00	1.13E+01	2.53E-02	2.53E-03
MERCURY	3.66E-02	0.00E+00	6.52E-01	2.38E-02	2.72E-05	0.00E+00	2.91E-04	3.18E-04	6.40E-03	6.40E-02	4.97E-02	4.97E-03
ZINC	7.24E+01	2.75E-02	3.66E-01	2.65E+01	5.39E-02	2.85E-03	3.23E-01	3.80E-01	1.45E+01	1.31E+02	2.62E-02	2.90E-03

Cells are shaded if the EEQ is greater than 1.0.
Benzo(a)anthracene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, phenanthrene, and pyrene were COPCs in surface water only.
Cadmium was detected in the dissolved metals samples only.
NA = Not Applicable
NV = No Value Available

Body Weight = (BW)	1.770E-01	kg
Food Ingestion Rate = (If)	2.160E-03	kg/day
Water Ingestion Rate = (Iw)	1.840E-02	L/day
Soil Ingestion Rate = (Is)	1.318E-04	kg/day
Home Range = (HR)	2.860E+01	acres
Contaminated Area = (CA)	Assume equal to home range	

H=HR/CA (Assume = to 1 for maximum exposure)

Dose (surface soil) = (Cs * Is)(H)/BW
Dose (surface water) = (Cw * Iw)(H)/BW
Dose (vegetation) = (Cv * If)(H)/BW
Total Dose = Dose (surface soil) + Dose (surface water) + Dose (vegetation)

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Cv = Contaminant conc. in vegetation (=soil conc. * Biotransfer Factor)
NV = No Value is available

AMERICAN WOODCOCK - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, INDIANA

Parameter	Max Soil Concentration (mg/kg)	Max SW Concentration (mg/L)	Biotransfer Factor (soil to inv.)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day) from: Surface Soil	Surface Water	Inverts.	Total Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Semivolatiles												
BENZO(A)ANTHRACENE	8.50E-01	1.84E-03	6.69E-01	5.69E-01	2.55E-02	2.36E-04	1.04E-01	1.30E-01	2.00E+00	2.00E+01	6.48E-02	6.48E-03
BENZO(A)PYRENE	1.10E+00	2.38E-03	6.69E-01	7.36E-01	3.30E-02	3.05E-04	1.34E-01	1.68E-01	2.00E+00	2.00E+01	8.38E-02	8.38E-03
BENZO(K)FLUORANTHENE	2.20E+00	1.72E-03	6.69E-01	1.47E+00	6.59E-02	2.21E-04	2.69E-01	3.35E-01	2.00E+00	2.00E+01	1.67E-01	1.67E-02
CHRYSENE	1.10E+00	4.46E-03	6.69E-01	7.36E-01	3.30E-02	5.72E-04	1.34E-01	1.68E-01	2.00E+00	2.00E+01	8.40E-02	8.40E-03
DIBENZO(A,H)ANTHRACENE	2.50E-01	4.60E-04	6.69E-01	1.67E-01	7.49E-03	5.90E-05	3.05E-02	3.81E-02	2.00E+00	2.00E+01	1.90E-02	1.90E-03
FLUORANTHENE	9.40E-01	1.19E-02	6.69E-01	6.29E-01	2.82E-02	1.53E-03	1.15E-01	1.45E-01	2.00E+00	2.00E+01	7.23E-02	7.23E-03
PHENANTHRENE	5.20E-01	4.73E-03	6.69E-01	3.48E-01	1.56E-02	6.07E-04	6.35E-02	7.97E-02	2.00E+00	2.00E+01	3.99E-02	3.99E-03
PYRENE	1.60E+00	8.61E-03	6.69E-01	1.07E+00	4.79E-02	1.10E-03	1.96E-01	2.45E-01	2.00E+00	2.00E+01	1.22E-01	1.22E-02
Pesticides												
4,4'-DDT	1.40E-02	0.00E+00	1.30E+01	1.82E-01	4.19E-04	0.00E+00	3.32E-02	3.37E-02	9.00E-03	5.20E-02	3.74E+00	6.47E-01
PCBs												
AROCLOR-1260	3.20E-02	0.00E+00	1.59E+01	5.09E-01	9.59E-04	0.00E+00	9.30E-02	9.39E-02	1.80E-01	1.80E+00	5.22E-01	5.22E-02
Herbicides												
PENTACHLOROPHENOL	2.80E-02	7.50E-05	1.00E+00	2.80E-02	8.39E-04	9.62E-06	5.11E-03	5.96E-03	NV	NV	NA	NA
Inorganics												
ARSENIC	2.07E+01	1.40E-03	5.23E-01	1.08E+01	6.20E-01	1.80E-04	1.98E+00	2.60E+00	2.46E+00	7.38E+00	1.06E+00	3.52E-01
CADMIUM	6.90E+00	3.60E-04	4.07E+01	2.81E+02	2.07E-01	4.62E-05	5.13E+01	5.15E+01	1.45E+00	2.00E+01	3.55E+01	2.57E+00
CHROMIUM	4.97E+01	3.60E-03	3.16E+00	1.57E+02	1.49E+00	4.62E-04	2.87E+01	3.02E+01	1.00E+00	5.00E+00	3.02E+01	6.04E+00
COPPER	2.01E+01	8.10E-03	1.53E+00	3.08E+01	6.02E-01	1.04E-03	5.62E+00	6.22E+00	4.70E+01	6.17E+01	1.33E-01	1.01E-01
LEAD	1.55E+02	2.90E-03	1.52E+00	2.36E+02	4.64E+00	3.72E-04	4.31E+01	4.77E+01	1.13E+00	1.13E+01	4.22E+01	4.22E+00
MERCURY	1.30E-01	0.00E+00	2.06E+01	2.68E+00	3.89E-03	0.00E+00	4.90E-01	4.94E-01	6.40E-03	6.40E-02	7.71E+01	7.71E+00
NICKEL	3.16E+01	8.00E-03	4.73E+00	1.49E+02	9.47E-01	1.03E-03	2.73E+01	2.82E+01	7.74E+01	1.07E+02	3.65E-01	2.64E-01
SELENIUM	1.10E+00	1.30E-03	1.34E+00	1.47E+00	3.30E-02	1.67E-04	2.69E-01	3.02E-01	4.00E-01	8.00E-01	7.56E-01	3.78E-01
ZINC	6.26E+02	1.02E-01	1.29E+01	8.07E+03	1.88E+01	1.31E-02	1.47E+03	1.49E+03	1.45E+01	1.31E+02	1.03E+02	1.14E+01

Cells are shaded if the EEQ is greater than 1.0.
Benzo(a)anthracene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, phenanthrene, and pyrene were COPCs in surface water only.
Cadmium was detected in the dissolved metals samples only.
NA = Not Applicable
NV = No Value Available

Body Weight = (BW)	1.660E-01	kg
Food Ingestion Rate = (If)	3.032E-02	kg/day
Water Ingestion Rate = (Iw)	2.130E-02	L/day
Soil Ingestion Rate = (Is)	4.972E-03	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

H=HR/CA (Assume = to 1 for maximum exposure)

Dose (surface soil) = (Cs * Is)(H)/BW
Dose (surface water) = (Cw * Iw)(H)/BW
Dose (invertebrates) = (Ci * If)(H)/BW
Total Dose = Dose (surface soil) + Dose (surface water) + Dose (invertebrates)

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Ci = Contaminant conc. in soil invertebrates (=soil conc. * Biotransfer Factor)
NV = No Value is available

AMERICAN WOODCOCK - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, INDIANA

Parameter	Avg Soil Concentration (mg/kg)	Avg SW Concentration (mg/L)	Biotransfer Factor (soil to inv.)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day) from: Surface Soil	Surface Water	Inverts.	Total Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Pesticides												
4,4'-DDT	1.45E-03	0.00E+00	1.30E+01	1.88E-02	1.24E-05	0.00E+00	2.51E-03	2.52E-03	9.00E-03	5.20E-02	2.80E-01	4.85E-02
Inorganics												
ARSENIC	8.62E+00	4.08E-04	2.24E-01	1.93E+00	7.36E-02	4.09E-05	2.57E-01	3.31E-01	2.46E+00	7.38E+00	1.35E-01	4.49E-02
CADMIUM	6.85E-01	7.45E-05	7.71E+00	5.28E+00	5.84E-03	7.47E-06	7.04E-01	7.09E-01	1.45E+00	2.00E+01	4.89E-01	3.55E-02
CHROMIUM	2.44E+01	1.47E-03	3.06E-01	7.48E+00	2.09E-01	1.47E-04	9.97E-01	1.21E+00	1.00E+00	5.00E+00	1.21E+00	2.41E-01
LEAD	2.34E+01	1.15E-03	2.66E-01	6.22E+00	1.99E-01	1.16E-04	8.29E-01	1.03E+00	1.13E+00	1.13E+01	9.10E-01	9.10E-02
MERCURY	3.66E-02	0.00E+00	1.69E+00	6.19E-02	3.12E-04	0.00E+00	8.25E-03	8.56E-03	6.40E-03	6.40E-02	1.34E+00	1.34E-01
ZINC	7.24E+01	2.75E-02	3.20E+00	2.32E+02	6.18E-01	2.75E-03	3.09E+01	3.15E+01	1.45E+01	1.31E+02	2.17E+00	2.41E-01

Cells are shaded if the EEQ is greater than 1.0.
Benzo(a)anthracene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, phenanthrene, and pyrene were COPCs in surface water only.
Cadmium was detected in the dissolved metals samples only.
NA = Not Applicable
NV = No Value Available

Body Weight = (BW)	1.895E-01	kg
Food Ingestion Rate = (If)	2.526E-02	kg/day
Water Ingestion Rate = (Iw)	1.900E-02	L/day
Soil Ingestion Rate = (Is)	1.617E-03	kg/day
Home Range = (HR)	6.133E+01	acres
Contaminated Area = (CA)	Assume equal to home range	

H=HR/CA (Assume = to 1 for maximum exposure)

Dose (surface soil) = (Cs * Is)(H)/BW
Dose (surface water) = (Cw * Iw)(H)/BW
Dose (invertebrates) = (Ci * If)(H)/BW
Total Dose = Dose (surface soil) + Dose (surface water) + Dose (invertebrates)

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Ci = Contaminant conc. in soil invertebrates (=soil conc. * Biotransfer Factor)
NV = No Value is available

MINK - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, INDIANA

Parameter	Max Sediment Concentration (mg/kg)	Max SW Concentration (mg/L)	Biotransfer Factor (sed to fish)(1)	Fish Concentration (mg/kg)	Dose (mg/kg/day) from: Sediment	Surface Water	Fish	Total Dose (mg/kg/day)	Site Use Factor of 10%	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ 100% SUF	LOAEL EEQ 100% SUF	NOAEL EEQ 10% SUF	LOAEL EEQ 10% SUF
Semivolatile Organics															
ACENAPHTHENE	8.50E-01	3.30E-04	2.90E-01	2.73E+00	3.73E-03	1.14E-04	2.78E-01	2.82E-01	2.82E-02	3.03E-01	6.06E-01	9.32E-01	4.66E-01	9.32E-02	4.66E-02
ACENAPHTHYLENE	4.80E-02	4.30E-04	2.90E-01	1.54E-01	2.10E-04	1.49E-04	1.57E-02	1.61E-02	1.61E-03	1.21E+00	1.21E+01	1.33E-02	1.33E-03	1.33E-03	1.33E-04
ANTHRACENE	1.80E+00	3.60E-04	2.90E-01	5.78E+00	7.89E-03	1.25E-04	5.90E-01	5.98E-01	5.98E-02	1.73E+00	1.73E+01	3.45E-01	3.45E-02	3.45E-02	3.45E-03
BENZO(A)ANTHRACENE	3.70E+00	1.84E-03	2.90E-01	1.19E+01	1.62E-02	6.38E-04	1.21E+00	1.23E+00	1.23E-01	2.94E-03	2.94E-02	4.18E+02	4.18E+01	4.18E+01	4.18E+00
BENZO(A)PYRENE	4.50E+00	2.38E-03	2.90E-01	1.45E+01	1.97E-02	8.25E-04	1.47E+00	1.49E+00	1.49E-01	1.73E-02	1.73E-01	8.64E+01	8.64E+00	8.64E+00	8.64E-01
BENZO(G,H,I)PERYLENE	3.80E+00	2.46E-03	2.90E-01	1.22E+01	1.67E-02	8.53E-04	1.24E+00	1.26E+00	1.26E-01	1.25E-01	1.25E+00	1.01E+01	1.01E+00	1.01E+00	1.01E-01
BENZO(K)FLUORANTHENE	2.00E+00	1.72E-03	2.90E-01	6.42E+00	8.77E-03	5.96E-04	6.55E-01	6.64E-01	6.64E-02	1.25E-01	1.25E+00	5.33E+00	5.33E-01	5.33E-01	5.33E-02
CHRYSENE	4.50E+00	4.46E-03	2.90E-01	1.45E+01	1.97E-02	1.55E-03	1.47E+00	1.50E+00	1.50E-01	2.94E-03	2.94E-02	5.08E+02	5.08E+01	5.08E+01	5.08E+00
DIBENZO(A,H)ANTHRACENE	7.00E-01	4.60E-04	2.90E-01	2.25E+00	3.07E-03	1.59E-04	2.29E-01	2.32E-01	2.32E-02	2.30E-02	2.30E-01	1.01E+01	1.01E+00	1.01E+00	1.01E-01
FLUORANTHENE	1.20E+01	1.19E-02	2.90E-01	3.85E+01	5.26E-02	4.13E-03	3.93E+00	3.99E+00	3.99E-01	2.16E-01	4.33E-01	1.84E+01	9.22E+00	1.84E+00	9.22E-01
FLUORENE	8.20E-01	3.40E-04	2.90E-01	2.63E+00	3.59E-03	1.18E-04	2.69E-01	2.72E-01	2.72E-02	2.16E-01	4.33E-01	1.26E+00	6.29E-01	1.26E-01	6.29E-02
INDENO(1,2,3-CD)PYRENE	3.10E+00	2.09E-03	2.90E-01	9.96E+00	1.36E-02	7.25E-04	1.02E+00	1.03E+00	1.03E-01	1.25E-01	1.25E+00	8.27E+00	8.27E-01	8.27E-01	8.27E-02
PHENANTHRENE	9.10E+00	4.73E-03	2.90E-01	2.92E+01	3.99E-02	1.64E-03	2.98E+00	3.02E+00	3.02E-01	1.73E-02	1.73E-01	1.75E+02	1.75E+01	1.75E+01	1.75E+00
PYRENE	1.80E+01	8.61E-03	2.90E-01	5.78E+01	7.89E-02	2.99E-03	5.90E+00	5.98E+00	5.98E-01	1.30E-01	2.16E-01	4.61E+01	2.76E+01	4.61E+00	2.76E+00
Pesticides															
4,4'-DDD	3.50E-02	0.00E+00	2.80E-01	1.09E-01	1.53E-04	0.00E+00	1.11E-02	1.12E-02	1.12E-03	1.61E-01	8.07E-01	6.95E-02	1.39E-02	6.95E-03	1.39E-03
4,4'-DDE	7.60E-02	0.00E+00	7.70E+00	6.48E+00	3.33E-04	0.00E+00	6.61E-01	6.61E-01	6.61E-02	1.61E-01	8.07E-01	4.09E+00	8.19E-01	4.09E-01	8.19E-02
4,4'-DDT	1.00E-01	0.00E+00	1.67E+00	1.85E+00	4.38E-04	0.00E+00	1.89E-01	1.89E-01	1.89E-02	1.61E-01	8.07E-01	1.17E+00	2.34E-01	1.17E-01	2.34E-02
ALPHA-CHLORDANE	3.10E-02	0.00E+00	4.77E+00	1.64E+00	1.36E-04	0.00E+00	1.67E-01	1.67E-01	1.67E-02	7.92E-02	1.58E-01	2.11E+00	1.05E+00	2.11E-01	1.05E-01
GAMMA-CHLORDANE	2.80E-02	0.00E+00	2.22E+00	6.89E-01	1.23E-04	0.00E+00	7.02E-02	7.03E-02	7.03E-03	7.92E-02	1.58E-01	8.87E-01	4.44E-01	8.87E-02	4.44E-02
PCBs															
AROCLOR-1254	2.30E-01	0.00E+00	1.85E+00	4.71E+00	1.01E-03	0.00E+00	4.81E-01	4.82E-01	4.82E-02	5.49E-04	5.49E-03	8.77E+02	8.77E+01	8.77E+01	8.77E+00
AROCLOR-1260	3.30E-01	0.00E+00	1.85E+00	6.76E+00	1.45E-03	0.00E+00	6.89E-01	6.91E-01	6.91E-02	5.49E-04	5.49E-03	1.26E+03	1.26E+02	1.26E+02	1.26E+01
Inorganics															
ARSENIC	3.38E+01	1.40E-03	6.90E-01	2.33E+01	1.48E-01	4.85E-04	2.38E+00	2.53E+00	2.53E-01	2.18E-03	2.18E-02	1.16E+03	1.16E+02	1.16E+02	1.16E+01
CHROMIUM	7.01E+01	3.60E-03	4.68E-01	3.28E+01	3.07E-01	1.25E-03	3.34E+00	3.65E+00	3.65E-01	6.62E-01	2.65E+00	5.52E+00	1.38E+00	5.52E-01	1.38E-01
LEAD	1.33E+02	2.90E-03	6.07E-01	8.07E+01	5.83E-01	1.01E-03	8.23E+00	8.81E+00	8.81E-01	1.61E+00	1.61E+01	5.46E+00	5.46E-01	5.46E-01	5.46E-02
NICKEL	3.54E+01	8.00E-03	2.32E+00	8.21E+01	1.55E-01	2.77E-03	8.37E+00	8.53E+00	8.53E-01	8.07E+00	1.61E+01	1.06E+00	5.28E-01	1.06E-01	5.28E-02
SELENIUM	8.00E-01	1.30E-03	1.00E+00	8.00E-01	3.51E-03	4.51E-04	8.16E-02	8.55E-02	8.55E-03	4.04E-02	6.66E-02	2.12E+00	1.28E+00	2.12E-01	1.28E-01
ZINC	1.63E+02	1.02E-01	7.53E+00	1.23E+03	7.15E-01	3.54E-02	1.25E+02	1.26E+02	1.26E+01	3.23E+01	6.46E+01	3.90E+00	1.95E+00	3.90E-01	1.95E-01

Cells are shaded if the EEQ is greater than 1.0.
(1) - The sediment to invertebrate BAF was used for metals because no sediment to fish BAFs were available for metals.

Body Weight = (BW)	5.500E-01	kg
Food Ingestion Rate = (If)	5.608E-02	kg/day
Water Ingestion Rate = (Iw)	1.907E-01	L/day
Sediment Ingestion Rate = (Is)	2.411E-03	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

H=HR/CA (Assume = to 1 for maximum exposure)

Dose (sediment) = (Cs * Is)(H)/BW
Dose (surface water) = (Cw * Iw)(H)/BW
Dose (fish) = (Cf * If)(H)/BW
Total Dose = Dose (sediment) + Dose (surface water) + Dose (fish)

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
Cs = Contaminant concentration in sediment
Cw = Contaminant concentration in water
Cf = Contaminant concentration in fish
Metals = sediment concentration * BAF
Organics = (sediment concentration * BSAF * %lipids)/(% total organic carbon)
Where:
% Lipids = 14.4 % (see Appendix J.4)
% TOC = 1.3 %

MINK - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, INDIANA

Parameter	Avg Sediment Concentration (mg/kg)	Avg SW Concentration (mg/L)	Biotransfer Factor (sed to fish)[1]	Fish Concentration (mg/kg)	Dose (mg/kg/day) from: Sediment	Surface Water	Fish	Total Dose (mg/kg/day)	Site Use Factor of 10%	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ 100% SUF	LOAEL EEQ 100% SUF	NOAEL EEQ 10% SUF	LOAEL EEQ 10% SUF
Semivolatile Organics															
BENZO(A)ANTHRACENE	1.08E+00	2.71E-04	2.90E-01	3.46E+00	5.52E-04	2.14E-05	1.36E-01	1.37E-01	1.37E-02	5.00E-03	5.00E-02	2.74E+01	2.74E+00	2.74E+00	2.74E-01
BENZO(A)PYRENE	1.18E+00	3.53E-04	2.90E-01	3.79E+00	6.04E-04	2.79E-05	1.49E-01	1.50E-01	1.50E-02	2.94E-02	2.94E-01	5.09E+00	5.09E-01	5.09E-01	5.09E-02
BENZO(G,H,I)PERYLENE	1.12E+00	3.66E-04	2.90E-01	3.61E+00	5.75E-04	2.89E-05	1.42E-01	1.43E-01	1.43E-02	2.12E-01	2.12E+00	6.73E-01	6.73E-02	6.73E-02	6.73E-03
BENZO(K)FLUORANTHENE	6.34E-01	2.50E-04	2.90E-01	2.04E+00	3.24E-04	1.98E-05	8.02E-02	8.05E-02	8.05E-03	2.12E-01	2.12E+00	3.80E-01	3.80E-02	3.80E-02	3.80E-03
CHRYSENE	1.31E+00	6.32E-04	2.90E-01	4.21E+00	6.71E-04	4.99E-05	1.66E-01	1.66E-01	1.66E-02	5.00E-03	5.00E-02	3.33E+01	3.33E+00	3.33E+00	3.33E-01
DIBENZO(A,H)ANTHRACENE	2.18E-01	7.56E-05	2.90E-01	7.01E-01	1.12E-04	5.97E-06	2.76E-02	2.77E-02	2.77E-03	3.91E-02	3.91E-01	7.08E-01	7.08E-02	7.08E-02	7.08E-03
FLUORANTHENE	2.85E+00	1.53E-03	2.90E-01	9.14E+00	1.46E-03	1.21E-04	3.60E-01	3.61E-01	3.61E-02	3.68E-01	7.36E-01	9.82E-01	4.91E-01	9.82E-02	4.91E-02
FLUORENE	1.96E-01	5.14E-05	2.90E-01	6.31E-01	1.01E-04	4.05E-06	2.48E-02	2.49E-02	2.49E-03	3.68E-01	7.36E-01	6.78E-02	3.39E-02	6.78E-03	3.39E-03
INDENO(1,2,3-CD)PYRENE	9.34E-01	3.11E-04	2.90E-01	3.00E+00	4.78E-04	2.45E-05	1.18E-01	1.19E-01	1.19E-02	2.12E-01	2.12E+00	5.60E-01	5.60E-02	5.60E-02	5.60E-03
PHENANTHRENE	2.56E+00	6.59E-04	2.90E-01	8.21E+00	1.31E-03	5.20E-05	3.23E-01	3.25E-01	3.25E-02	2.94E-02	2.94E-01	1.10E+01	1.10E+00	1.10E+00	1.10E-01
PYRENE	4.28E+00	1.27E-03	2.90E-01	1.37E+01	2.19E-03	1.00E-04	5.41E-01	5.43E-01	5.43E-02	2.21E-01	3.68E-01	2.46E+00	1.48E+00	2.46E-01	1.48E-01
Pesticides															
4,4'-DDE	1.33E-02	0.00E+00	7.70E+00	1.13E+00	6.80E-06	0.00E+00	4.46E-02	4.46E-02	4.46E-03	2.75E-01	1.37E+00	1.62E-01	3.25E-02	1.62E-02	3.25E-03
4,4'-DDT	1.73E-02	0.00E+00	1.67E+00	3.21E-01	8.87E-06	0.00E+00	1.26E-02	1.26E-02	1.26E-03	2.75E-01	1.37E+00	4.60E-02	9.19E-03	4.60E-03	9.19E-04
ALPHA-CHLORDANE	4.27E-03	0.00E+00	4.77E+00	2.26E-01	2.19E-06	0.00E+00	8.89E-03	8.89E-03	8.89E-04	1.35E-01	2.70E-01	6.60E-02	3.30E-02	6.60E-03	3.30E-03
PCBs															
AROCLOR-1254	3.05E-02	0.00E+00	1.85E+00	6.26E-01	1.56E-05	0.00E+00	2.46E-02	2.47E-02	2.47E-03	9.34E-04	9.34E-03	2.64E+01	2.64E+00	2.64E+00	2.64E-01
AROCLOR-1260	3.52E-02	0.00E+00	1.85E+00	7.21E-01	1.80E-05	0.00E+00	2.84E-02	2.84E-02	2.84E-03	9.34E-04	9.34E-03	3.04E+01	3.04E+00	3.04E+00	3.04E-01
Inorganics															
ARSENIC	8.82E+00	4.08E-04	1.43E-01	1.26E+00	4.51E-03	3.22E-05	4.96E-02	5.42E-02	5.42E-03	3.71E-03	3.71E-02	1.46E+01	1.46E+00	1.46E+00	1.46E-01
CHROMIUM	2.41E+01	1.47E-03	1.00E-01	2.41E+00	1.24E-02	1.16E-04	9.50E-02	1.08E-01	1.08E-02	1.13E+00	4.51E+00	9.55E-02	2.38E-02	9.55E-03	2.38E-03
LEAD	2.79E+01	1.15E-03	7.10E-02	1.98E+00	1.43E-02	9.10E-05	7.80E-02	9.23E-02	9.23E-03	2.75E+00	2.75E+01	3.36E-02	3.36E-03	3.36E-03	3.36E-04
NICKEL	1.86E+01	3.09E-03	4.86E-01	9.02E+00	9.50E-03	2.44E-04	3.55E-01	3.65E-01	3.65E-02	1.37E+01	2.75E+01	2.66E-02	1.33E-02	2.66E-03	1.33E-03
SELENIUM	3.44E-01	2.89E-04	1.00E+00	3.44E-01	1.76E-04	2.28E-05	1.35E-02	1.37E-02	1.37E-03	6.87E-02	1.13E-01	2.00E-01	1.21E-01	2.00E-02	1.21E-02
ZINC	6.22E+01	2.75E-02	1.94E+00	1.20E+02	3.18E-02	2.17E-03	4.74E+00	4.77E+00	4.77E-01	5.49E+01	1.10E+02	8.69E-02	4.34E-02	8.69E-03	4.34E-03

Cells are shaded if the EEQ is greater than 1.0.
(1) - The sediment to invertebrate BAF was used for metals because no sediment to fish BAFs were available for metals.

Body Weight = (BW)	1.020E+00	kg
Food Ingestion Rate = (If)	4.015E-02	kg/day
Water Ingestion Rate = (Iw)	8.050E-02	L/day
Sediment Ingestion Rate = (Is)	5.220E-04	kg/day
Home Range = (HR)	3.484E+01	acres
Contaminated Area = (CA)	Assume equal to home range	

H=HR/CA (Assume = to 1 for maximum exposure)

Dose (sediment) = (Cs * Is)(H)/BW
Dose (surface water) = (Cw * Iw)(H)/BW
Dose (fish) = (Cf * If)(H)/BW
Total Dose = Dose (sediment) + Dose (surface water) + Dose (fish)

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
Cs = Contaminant concentration in sediment
Cw = Contaminant concentration in water
Cf = Contaminant concentration in fish
Metals = sediment concentration * BAF
Organics = (sediment concentration * BSAF * %lipids)/(% total organic carbon)
Where:
% Lipids = 14.4 % (see Appendix J.4)
% TOC = 1.3 %

BELTED KINGFISHER - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, INDIANA

Parameter	Max Sediment Concentration (mg/kg)	Max SW Concentration (mg/L)	Biotransfer Factor (sed to fish)(1)	Fish Concentration (mg/kg)	Dose (mg/kg/day) from: Sediment	Surface Water	Fish	Total Dose (mg/kg/day)	Site Use Factor of 10%	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ 100% SUF	LOAEL EEQ 100% SUF	NOAEL EEQ 10% SUF	LOAEL EEQ 10% SUF
Semivolatile Organics															
ACENAPHTHENE	8.50E-01	3.30E-04	2.90E-01	2.73E+00	3.91E-03	4.54E-05	3.80E-01	3.84E-01	3.84E-02	2.00E+00	2.00E+01	1.92E-01	1.92E-02	1.92E-02	1.92E-03
ACENAPHTHYLENE	4.80E-02	4.30E-04	2.90E-01	1.54E-01	2.21E-04	5.91E-05	2.15E-02	2.18E-02	2.18E-03	2.00E+00	2.00E+01	1.09E-02	1.09E-03	1.09E-03	1.09E-04
ANTHRACENE	1.80E+00	3.60E-04	2.90E-01	5.78E+00	8.28E-03	4.95E-05	8.06E-01	8.14E-01	8.14E-02	2.00E+00	2.00E+01	4.07E-01	4.07E-02	4.07E-02	4.07E-03
BENZO(A)ANTHRACENE	3.70E+00	1.84E-03	2.90E-01	1.19E+01	1.70E-02	2.53E-04	1.66E+00	1.67E+01	1.67E-01	2.00E+00	2.00E+01	8.37E-01	8.37E-02	8.37E-02	8.37E-03
BENZO(A)PYRENE	4.50E+00	2.38E-03	2.90E-01	1.45E+01	2.07E-02	3.27E-04	2.01E+00	2.04E+00	2.04E-01	2.00E+00	2.00E+01	1.02E+00	1.02E-01	1.02E-01	1.02E-02
BENZO(G,H,I)PERYLENE	3.80E+00	2.46E-03	2.90E-01	1.22E+01	1.75E-02	3.38E-04	1.70E+00	1.72E+00	1.72E-01	2.00E+00	2.00E+01	8.59E-01	8.59E-02	8.59E-02	8.59E-03
BENZO(K)FLUORANTHENE	2.00E+00	1.72E-03	2.90E-01	6.42E+00	9.20E-03	2.37E-04	8.95E-01	9.05E-01	9.05E-02	2.00E+00	2.00E+01	4.52E-01	4.52E-02	4.52E-02	4.52E-03
CHRYSENE	4.50E+00	4.46E-03	2.90E-01	1.45E+01	2.07E-02	6.13E-04	2.01E+00	2.04E+00	2.04E-01	2.00E+00	2.00E+01	1.02E+00	1.02E-01	1.02E-01	1.02E-02
DIBENZO(A,H)ANTHRACENE	7.00E-01	4.60E-04	2.90E-01	2.25E+00	3.22E-03	6.33E-05	3.13E-01	3.17E-01	3.17E-02	2.00E+00	2.00E+01	1.58E-01	1.58E-02	1.58E-02	1.58E-03
FLUORANTHENE	1.20E+01	1.19E-02	2.90E-01	3.85E+01	5.52E-02	1.64E-03	5.37E+00	5.43E+00	5.43E-01	2.00E+00	2.00E+01	2.71E+00	2.71E-01	2.71E-01	2.71E-02
FLUORENE	8.20E-01	3.40E-04	2.90E-01	2.63E+00	3.77E-03	4.68E-05	3.67E-01	3.71E-01	3.71E-02	2.00E+00	2.00E+01	1.85E-01	1.85E-02	1.85E-02	1.85E-03
INDENO(1,2,3-CD)PYRENE	3.10E+00	2.09E-03	2.90E-01	9.96E+00	1.43E-02	2.87E-04	1.39E+00	1.40E+00	1.40E-01	2.00E+00	2.00E+01	7.01E-01	7.01E-02	7.01E-02	7.01E-03
PHENANTHRENE	9.10E+00	4.73E-03	2.90E-01	2.92E+01	4.18E-02	6.50E-04	4.07E+00	4.12E+00	4.12E-01	2.00E+00	2.00E+01	2.06E+00	2.06E-01	2.06E-01	2.06E-02
PYRENE	1.80E+01	8.61E-03	2.90E-01	5.78E+01	8.28E-02	1.18E-03	8.06E+00	8.14E+00	8.14E-01	2.00E+00	2.00E+01	4.07E+00	4.07E-01	4.07E-01	4.07E-02
Pesticides															
4,4'-DDD	3.50E-02	0.00E+00	2.80E-01	1.09E-01	1.61E-04	0.00E+00	1.51E-02	1.53E-02	1.53E-03	9.00E-03	5.20E-02	1.70E+00	2.94E-01	1.70E-01	2.94E-02
4,4'-DDE	7.60E-02	0.00E+00	7.70E+00	6.48E+00	3.49E-04	0.00E+00	9.03E-01	9.04E-01	9.04E-02	9.00E-03	5.20E-02	1.00E+02	1.74E+01	1.00E+01	1.74E+00
4,4'-DDT	1.00E-01	0.00E+00	1.67E+00	1.85E+00	4.60E-04	0.00E+00	2.58E-01	2.58E-01	2.58E-02	9.00E-03	5.20E-02	2.87E+01	4.97E+00	2.87E+00	4.97E-01
ALPHA-CHLORDANE	3.10E-02	0.00E+00	4.77E+00	1.64E+00	1.43E-04	0.00E+00	2.28E-01	2.28E-01	2.28E-02	2.14E+00	1.07E+01	1.07E-01	2.13E-02	1.07E-02	2.13E-03
GAMMA-CHLORDANE	2.80E-02	0.00E+00	2.22E+00	6.89E-01	1.29E-04	0.00E+00	9.59E-02	9.61E-02	9.61E-03	2.14E+00	1.07E+01	4.49E-02	8.98E-03	4.49E-03	8.98E-04
PCBs															
AROCLOR-1254	2.30E-01	0.00E+00	1.85E+00	4.71E+00	1.06E-03	0.00E+00	6.57E-01	6.58E-01	6.58E-02	1.80E-01	1.80E+00	3.65E+00	3.65E-01	3.65E-01	3.65E-02
AROCLOR-1260	3.30E-01	0.00E+00	1.85E+00	6.76E+00	1.52E-03	0.00E+00	9.42E-01	9.44E-01	9.44E-02	1.80E-01	1.80E+00	5.24E+00	5.24E-01	5.24E-01	5.24E-02
Inorganics															
ARSENIC	3.38E+01	1.40E-03	6.90E-01	2.33E+01	1.55E-01	1.93E-04	3.25E+00	3.41E+00	3.41E-01	2.46E+00	7.38E+00	1.38E+00	4.61E-01	1.38E-01	4.61E-02
CHROMIUM	7.01E+01	3.60E-03	4.68E-01	3.28E+01	3.22E-01	4.95E-04	4.57E+00	4.89E+00	4.89E-01	1.00E+00	5.00E+00	4.89E+00	9.79E-01	4.89E-01	9.79E-02
LEAD	1.33E+02	2.90E-03	6.07E-01	8.07E+01	6.12E-01	3.99E-04	1.12E+01	1.19E+01	1.19E+00	1.13E+00	1.13E+01	1.05E+01	1.05E+00	1.05E+00	1.05E-01
NICKEL	3.54E+01	8.00E-03	2.32E+00	8.21E+01	1.63E-01	1.10E-03	1.14E+01	1.16E+01	1.16E+00	7.74E+01	1.07E+02	1.50E-01	1.08E-01	1.50E-02	1.08E-02
SELENIUM	8.00E-01	1.30E-03	1.00E+00	8.00E-01	3.68E-03	1.79E-04	1.11E-01	1.15E-01	1.15E-02	4.00E-01	8.00E-01	2.88E-01	1.44E-01	2.88E-02	1.44E-02
ZINC	1.63E+02	1.02E-01	7.53E+00	1.23E+03	7.50E-01	1.40E-02	1.71E+02	1.72E+02	1.72E+01	1.45E+01	1.31E+02	1.19E+01	1.31E+00	1.19E+00	1.31E-01

Cells are shaded if the EEQ is greater than 1.0.
(1) - The sediment to invertebrate BAF was used for metals because no sediment to fish BAFs were available for metals.
NA = Not Applicable
NV = No Value Available

Body Weight = (BW)	1.360E-01	kg
Food Ingestion Rate = (If)	1.895E-02	kg/day
Water Ingestion Rate = (Iw)	1.870E-02	L/day
Sediment Ingestion Rate = (Is)	6.254E-04	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

H=HR/CA (Assume = to 1 for maximum exposure)

Dose (sediment) = (Cs * Is)(H)/BW
Dose (surface water) = (Cw * Iw)(H)/BW
Dose (fish) = (Cf * If)(H)/BW
Total Dose = Dose (sediment) + Dose (surface water) + Dose (fish)

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
Cs = Contaminant concentration in sediment
Cw = Contaminant concentration in water
Cf = Contaminant concentration in fish
Metals = sediment concentration * BAF
Organics = (sediment concentration * BSAF * %lipids)/(% total organic carbon)
Where:
% Lipids = 14.4 % (see Appendix J.4)
% TOC = 1.3 %

BELTED KINGFISHER - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SWMU 15 (ROADS AND GROUNDS AREA)
NSWC CRANE, INDIANA

Parameter	Avg Sediment Concentration (mg/kg)	Avg SW Concentration (mg/L)	Biotransfer Factor (sed to fish)(1)	Fish Concentration (mg/kg)	Dose (mg/kg/day) from: Sediment	Surface Water	Fish	Total Dose (mg/kg/day)	Site Use Factor of 10%	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ 100% SUF	LOAEL EEQ 100% SUF	NOAEL EEQ 10% SUF	LOAEL EEQ 10% SUF
Semivolatile Organics															
BENZO(A)PYRENE	1.18E+00	3.53E-04	2.90E-01	3.79E+00	4.41E-03	3.88E-05	4.30E-01	4.34E-01	4.34E-02	2.00E+00	2.00E+01	2.17E-01	2.17E-02	2.17E-02	2.17E-03
CHRYSENE	1.31E+00	6.32E-04	2.90E-01	4.21E+00	4.90E-03	6.94E-05	4.77E-01	4.82E-01	4.82E-02	2.00E+00	2.00E+01	2.41E-01	2.41E-02	2.41E-02	2.41E-03
FLUORANTHENE	2.85E+00	1.53E-03	2.90E-01	9.14E+00	1.06E-02	1.68E-04	1.04E+00	1.05E+00	1.05E-01	2.00E+00	2.00E+01	5.23E-01	5.23E-02	5.23E-02	5.23E-03
PHENANTHRENE	2.56E+00	6.59E-04	2.90E-01	8.21E+00	9.56E-03	7.24E-05	9.30E-01	9.40E-01	9.40E-02	2.00E+00	2.00E+01	4.70E-01	4.70E-02	4.70E-02	4.70E-03
PYRENE	4.28E+00	1.27E-03	2.90E-01	1.37E+01	1.60E-02	1.39E-04	1.56E+00	1.57E+00	1.57E-01	2.00E+00	2.00E+01	7.86E-01	7.86E-02	7.86E-02	7.86E-03
Pesticides															
4,4'-DDD	8.05E-03	0.00E+00	2.80E-01	2.50E-02	3.01E-05	0.00E+00	2.83E-03	2.86E-03	2.86E-04	9.00E-03	5.20E-02	3.18E-01	5.50E-02	3.18E-02	5.50E-03
4,4'-DDE	1.33E-02	0.00E+00	7.70E+00	1.13E+00	4.97E-05	0.00E+00	1.28E-01	1.28E-01	1.28E-02	9.00E-03	5.20E-02	1.43E+01	2.47E+00	1.43E+00	2.47E-01
4,4'-DDT	1.73E-02	0.00E+00	1.67E+00	3.21E-01	6.48E-05	0.00E+00	3.63E-02	3.64E-02	3.64E-03	9.00E-03	5.20E-02	4.04E+00	7.00E-01	4.04E-01	7.00E-02
PCBs															
AROCLOR-1254	3.05E-02	0.00E+00	1.85E+00	6.26E-01	1.14E-04	0.00E+00	7.09E-02	7.10E-02	7.10E-03	1.80E-01	1.80E+00	3.95E-01	3.95E-02	3.95E-02	3.95E-03
AROCLOR-1260	3.52E-02	0.00E+00	1.85E+00	7.21E-01	1.32E-04	0.00E+00	8.18E-02	8.19E-02	8.19E-03	1.80E-01	1.80E+00	4.55E-01	4.55E-02	4.55E-02	4.55E-03
Inorganics															
ARSENIC	8.82E+00	4.08E-04	1.43E-01	1.26E+00	3.30E-02	4.48E-05	1.43E-01	1.76E-01	1.76E-02	2.46E+00	7.38E+00	7.15E-02	2.38E-02	7.15E-03	2.38E-03
CHROMIUM	2.41E+01	1.47E-03	1.00E-01	2.41E+00	9.03E-02	1.61E-04	2.74E-01	3.64E-01	3.64E-02	1.00E+00	5.00E+00	3.64E-01	7.28E-02	3.64E-02	7.28E-03
LEAD	2.79E+01	1.15E-03	7.10E-02	1.98E+00	1.04E-01	1.27E-04	2.24E-01	3.29E-01	3.29E-02	1.13E+00	1.13E+01	2.91E-01	2.91E-02	2.91E-02	2.91E-03
ZINC	6.22E+01	2.75E-02	1.94E+00	1.20E+02	2.33E-01	3.02E-03	1.36E+01	1.39E+01	1.39E+00	1.45E+01	1.31E+02	9.58E-01	1.06E-01	9.58E-02	1.06E-02

Cells are shaded if the EEQ is greater than 1.0.
(1) - The sediment to invertebrate BAF was used for metals because no sediment to fish BAFs were available for metals.
NA = Not Applicable
NV = No Value Available

Body Weight = (BW)	1.520E-01	kg
Food Ingestion Rate = (If)	1.723E-02	kg/day
Water Ingestion Rate = (Iw)	1.670E-02	L/day
Sediment Ingestion Rate = (Is)	5.684E-04	kg/day
Home Range = (HR)	1.160E+00	km
Contaminated Area = (CA)	Assume equal to home range	

H=HR/CA (Assume = to 1 for maximum exposure)

Dose (sediment) = (Cs * Is)(H)/BW
Dose (surface water) = (Cw * Iw)(H)/BW
Dose (fish) = (Cf * If)(H)/BW
Total Dose = Dose (sediment) + Dose (surface water) + Dose (fish)

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
Cs = Contaminant concentration in sediment
Cw = Contaminant concentration in water
Cf = Contaminant concentration in fish
Metals = sediment concentration * BAF
Organics = (sediment concentration * BSAF * %lipids)/(% total organic carbon)
Where:
% Lipids = 14.4 % (see Appendix J.4)
% TOC = 1.3 %