N00210.AR.001291
NSTC GREAT LAKES, IL
5090.3a

IR PROGRAM OBSERVATIONS OF THE SITE VISIT 27 THROUGH 28 APRIL 1993 NS GREAT LAKES IL
5/12/1993
U S EPA REGION V

42

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

HSRL-6J

DATE: 12 MAY 1993

SUBJECT: Installation Restoration Program, Great Lakes Naval Training Center, Observations of the Site Visit on 27-28 April 1993

FROM: Laura J. Ripley, Federal Facilities Project Manager LJ Ripley

TO: Admiral Gaston

Thank you for arranging our visit to the Great Lakes Naval Training Center on 27-28 April 1993. Actually seeing the site gave me and my contractors a much better idea of what areas pose a potential threat to human health and the environment. In addition, I compliment your staff's thorough presentation of the areas of concern, the work in progress, and the technical documents that are available for the Naval Training Center. It appears that your staff is taking an active role in addressing the environmental concerns at Great Lakes Naval Training Center.

As the Federal Facilities Project Manager for this site, my role is to provide technical review of documents within the Installation Restoration Program to ensure that all areas of concern are addressed and federal regulations are met. At this time, I have found that documents have been submitted to the U.S. EPA for review. Unfortunately, these documents have been routed to the Site Assessment Section of the Waste Management Division and not the Remedial Response Section. I am currently coordinating my efforts with the Site Assessment Section in order to expedite the review of the technical documents generated by Great Lakes Naval Training Center. With respect to areas where no further action was recommended (the wastewater treatment plant, the golf course landfill, the supply side landfill,...), additional time is necessary to review documentation and additional documentation may be required before U.S. EPA can support this conclusion.

In the future, I would request that you include me on your mailing list for the reception of technical documents as well as Technical Review Meetings. I would like to take an active role in working with you in the Installation Restoration Program. If you have any questions, please contact me: (312) 886-0850.

cc: Lt. Ortgiesen, Great Lakes Staff Civil Engineer
Stephen Nussbaum, IEPA

Printed on Recycled Paper

To Joyce

MOTOR VEHICLE UTILIZATION RECORD

AUTOMOTIVE

REQUESTING ACTIVITY: NTC FACILITIES DONN STINER	PHONE: 4295	OPERATOR: ☐ YES ☒ NO
ACCOUNTING DATA CHARGEABLE: 1217216	DESTINATION: TRANSPORTATION OF VISITING TEAM FROM USEPA REGION 5	DATE OF REQUEST: 20 APR 93
TYPE EQUIPMENT REQUESTED: 12 PASSENGER VAN	NAME/SIGNATURE OF REQUESTER: R. D. CAMPBELL/NTC COMPTROLLER	NATIONAL CREDT CARD: ☐ YES ☒ NO
TYPE EQUIPMENT FURNISHED:	REGISTRATION (USN): 93-28463	ECC:
RECEIVED BY DISPATCHER/DATE:		DATE/TIME NEEDED: 27APR.0800-28APR93.1600

	VEHICLE OUT	VEHICLE IN	TOTAL HOURS/MILES
DATE	4-27-93	4-28-93	
TIME	0800	1100	27
METER READING	3240	3259	19

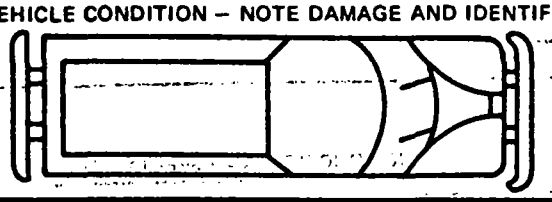
DISPATCHER'S SIGNATURE

SOURCE	OUTSIDE FUEL PURCHASE NO. OF GALLONS:	COST: $

II NOTE: When this vehicle is returned to the motor pool, it must be clean and serviced. You will also be responsible for accident damage other than that identified at the time of assignment.

ODOMETER READING OUT	ODOMETER READING IN	PHONE

VEHICLE CONDITION – NOTE DAMAGE AND IDENTIFY



VEHICLE CONDITION	OUT	IN	VEHICLE CONDITION	OUT	IN
FENDERS			GRILL		
BODY			TIRES		
HOOD			LIGHTS		
TRUNK & INTERIOR			MIRRORS		
BED & TAILGATE			TOOLS & SPARE TIRE		
BUMPERS			OIL & WATER		
GLASS			FIRE EXTINGUISHER		

INSPECTED BY:

III	DESTINATION	TIME ARRIVE	TIME DEPART	MILEAGE	REMARKS
FROM 1.					
TO 2.					
TO 3.					
TO 4.					
TO 5.					
TO 6.					

Post-It™ brand fax transmittal memo 7671 | # of pages ▸

To: Joyce	From: Donn Stiner
Co.: NTC Comptroller	Co.: NTC
Dept.:	Phone #: 4295
Fax #: 3449	Fax #: 5491

PWC-GL-11240/9 (Rev. 4-89)

CRANES

CRANE NO.	TYPE/CAP	LOCATION/ASSIGN	SHIFT 1 2 3	HOUR METER START STOP	HRS OPERATED	DATE

OPERATORS NAME	OILERS NAME	INSTRUCTION - Check all items indicated. Inspect and indicate as satisfactory = S, unsatisfactory = U, or not applicable = NA

1 WALK AROUND INSPECTION		S	U	2 MACHINERY HOUSE INSPECTION		S	U	3 OPERATOR CAB INSPECTION		S	U	4 OPERATION INSPECTION		S	U
a	Safety guards & plates			a	Housekeeping			a	Gauges			a	Area safety		
b	Carrier frame/rotate base *			b	Engine/compressor			b	Warning/indicator lights			b	Unusual noises		
c	General hardware			c	Leaks fuel/lube/oil/water			c	Controls/brakes			c	Control action		
d	Wire rope *			d	Lubrication			d	Visibility			d	Brakes/boom/load/rotate		
e	Reeving *			e	Battery			e	Load rating charts			e	Crane stability		
f	Block *			f	Lights			f	Safety devices			f	No load test		
g	Hook *			g	Glass			g	Emergency stops			g	Fleeting sheave		
h	Sheaves *			h	Clutch/brake linings			h	List/trim indicators			h	Limit switches		
i	Boom/jib *			i	Electric motors			i	Boom angle/radius indicator						
j	Gantry/pendants/boom stops *			j	Warning tags										
k	Walks/ladders/handrails			k	Fire extinguisher(s)										
l	Windlocks/chocks/stops														
m	Tires/wheels/tracks														
n	Leaks, fuel/lube/oil/water														
o	Radius indicator														
p	Outrigger/locking device *														

INSTRUCTIONS – Inspect all applicable items indicated, each shift. Suspend all operations immediately when observing an unsatisfactory condition of any item indicated above with an asterisk thus (*). In addition, suspend operation when any unsafe condition is observed and immediately notify supervisor. Other conditions not affecting safety shall be noted under "Remarks" and reported to supervisor.

OPERATORS SIGNATURE

DATE

REMARKS

SUPERVISOR SIGNATURE

DATE

CRANE OPERATORS DAILY CHECKLIST

CONSTRUCTION AND SPECIALIZED

OPERATOR'S DAILY PM REPORT

USN NO.

FUEL

OPR HRS

NO.	ITEM	OK ✓	SERVICES PERFORMED
1	RADIATOR SOLUTION		
2	GEN. & FAN BELT		
3	ENGINE OIL LEVEL		
4	AIR CLEANER		
5	PRECLEANER		
6	BATTERY		
7	HYD. OIL LEVEL		
8	LUBRICATION		
9	TIRE CONDITION		
10	SAFETY EQUIP.		
11	GENERAL COND.		
12	FUEL LEVEL		
13	INSTRUMENTS		
14	SHUTDOWN PRECAUTIONS		
15	OTHER		

DATE

OPERATOR'S SIGNATURE

OPERATOR'S INSPECTION GUIDE AND TROUBLE REPORT

REGISTRATION NO.

ODOMETER READING

Use this form as a guide when performing before and after operation inspections. Check (✓) items that require servicing by maintenance personnel.

	1. DAMAGE *(Exterior/Interior/Missing Components)*
	2. LEAKS *(Oil, Gas, Water)*
	3. TIRES *(Check inflation, abnormal wear)*
	4. FUEL, OIL, WATER SUPPLY *(Antifreeze in season)*
	5. BATTERY *(Check water level, cables, etc.)*
	6. HORN
	7. LIGHTS/REFLECTORS/MIRRORS/TURN SIGNALS
	8. INSTRUMENTS *(Oil, Air, Temperature, etc.)*
	9. WINDSHIELD WIPER
	10. CLEAN WINDSHIELD/VEHICLE INTERIOR
	11. CARGO MOUNTED EQUIPMENT
	12. STEERING
	13. SAFETY DEVICES *(Seat belts, flares, etc.)*
	14. DRIVE BELTS/PULLEYS
	15. BRAKES *(Drain air tank when equipped)*
	16. OTHER *(Specify in "Remarks")*

DATE

OPERATOR'S SIGNATURE

REMARKS

MEMORANDUM 29 April 1993

From: FAC3
To: FAC

Subj: USEPA REGION V AND ASSOCIATED CONTRACTORS SITE VISIT, 27-28 APRIL 1993

Encl: (1) Attendance at 27 April Meeting Between NTC Complex^2 and Representatives from USEPA Region V and W.W. Engineering and Science

1. On 27-28 April 1993, representatives from the United States Environmental Protection Agency and their contractors conducted a site visit at Naval Training Center, Great Lakes. The purpose of the visit was to familiarize the USEPA with the Installation Restoration Program being conducted at the Center; as such the visit was not a formal inspection.

2. 27 April 1993

a. Representatives from USEPA Region V and W.W. Engineering and Science, an A/E firm hired by the USEPA Region V, arrived at 1230 at Building 5 for a briefing and overview of the Installation Restoration environmental programs in place at NTC Great Lakes, Squared. The attendees at the meeting are attached as enclosure (1).

b. 1230-1255 - Mr. Ogrodowski presented the NTC Simplex Brief. Mr. Jennison left the group at 1255.

c. 1255-1320 - Representatives less Mr. Stiner met with Adm Gaston for an in-brief. Mr. Ogrodowski and Mr. Schultz introduced visitors and proceeded to inform Adm. Gaston on purpose of visit.

d. 1320-1530 - Windshield Tour of NTC Complex^2. Went to Harbor, Harbor Dredge Spoil Area, Lakefront, SERSCOLCOM, ESS, 144 Service Station, FFTD, Transformer Boneyard, FFTU, Golf Course Landfill, Supply-Side Landfill, NAVCRUITRACOM, Silk Screen Area, PWC Incinerator at NAVHOSP, NDSL and NDRI (None of the facilities were visited inside). Returned to Building 5.

e. 1500-1520 - Mr. Ogrodowski completed the NTC Simplex brief.

f. 1520-1530 - Mr. Mark Schultz presented the PWC brief.

g. 1530-1600 - Discussion of next day events. Mr. Tindall will not be returning. Ms. Ripley and W.W. Engineering and Science will return to look over files on all the Installation Restoration Program (IRP) Sites. LT Ortgiesen is scheduled to meet with the group and an outbrief is scheduled with Adm Gaston for 1400, 28

April 1993.

3. Events of 28 April 1993.

a. Representatives from the 27 April Meeting reassembled in the Building 5 conference room at 0800, with Mr. Stiner, Mr. Jennison and Mr. Tindall not attending.

b. Representatives from W.W. Engineering and Science and Ms. Ripley (USEPA) commenced review of existing IRP documentation. Ms. Laura Ripley discussed overall assessment of visit and observations. Adm. Gaston requested USEPA representative to provide a formal report of the Agency's findings to his office. Ms. Ripley agreed to this request.

c. Mr. Ogrodowski accompanied visitors back to Building 5. Visit ended at approximately 1430.

Respectfully,

Robert J Ogrodowski

Robert Ogrodowski

Copy:
PWCGLAKES (Code 320)

Date: 4-27-93

Client: Great Lakes

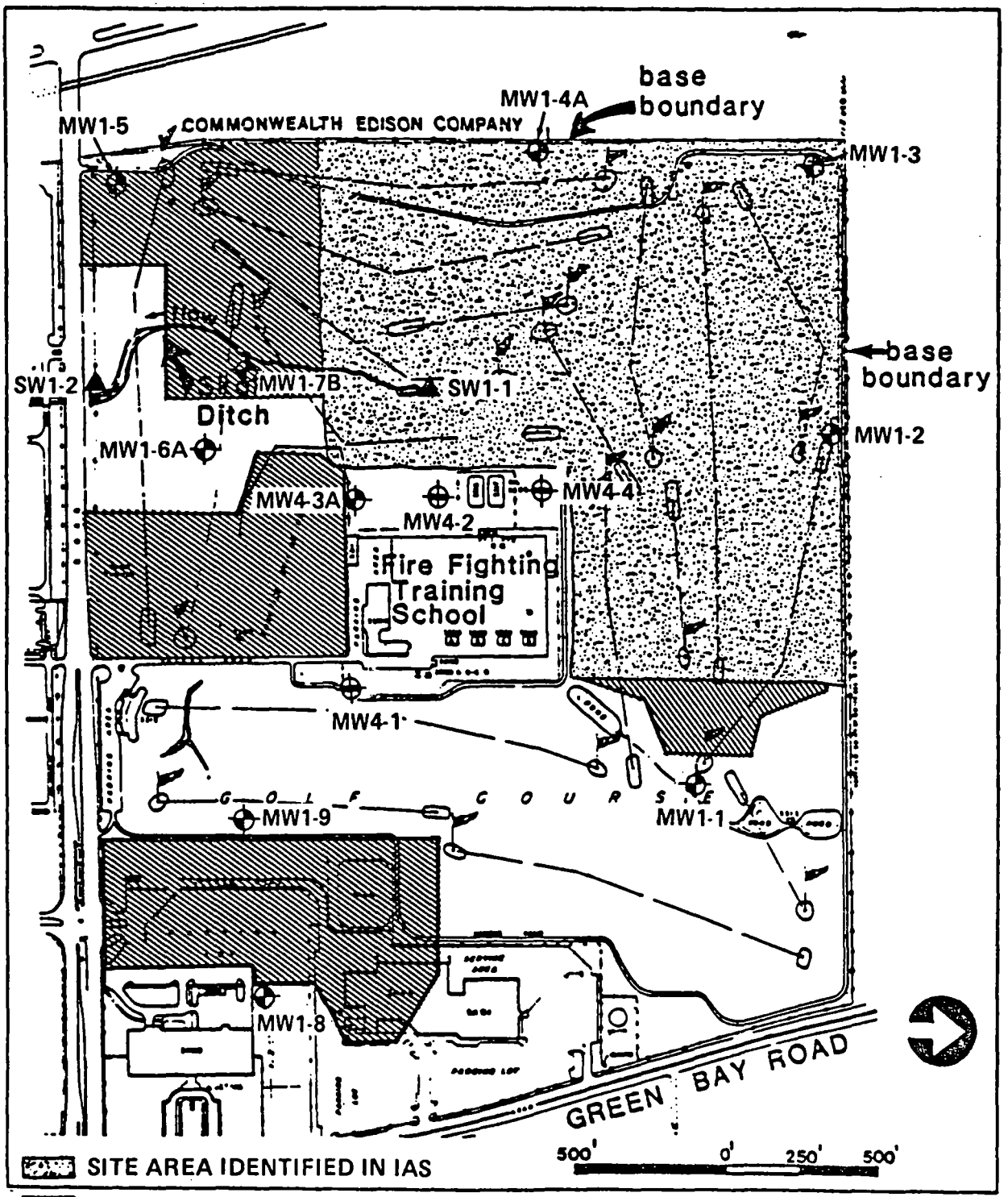
Project No.:

Name		phone
Liz Uhl	WW Engineering & Science	616-942-9600
Chris Jennison	ENG Field Activity, Midwest	708 688 2600
Laura Ripley	U.S. EPA - Region V	312-886-0850
MARK M. BARNES	ENG FIELD ACT MIDWEST	708-688-4197
MARK SCHULTZ	EFA/PWC GREAT LAKES	708-688-4693
JEFF GROEN	WW Engineering & Science	612-571-2869
Ken Tindall	U.S. EPA - Region V	312/886-9895
Ted LieTzke	WW Engineering & Science	616/942 9600
Donn O Stiner	NTC Environmental	708 688 4245
Robert T. Ogrodowski	NTC Environmental	708688 2796

ATTACHMENT B

Site Maps Showing Sampling Locations
RI Verification Step at NTC Great Lakes, Illinois

REPRODUCED AT GOVERNMENT EXPENSE



SITE AREA IDENTIFIED IN IAS

ADDITIONAL SITE AREA OBSERVED IN AERIAL PHOTOGRAPHS

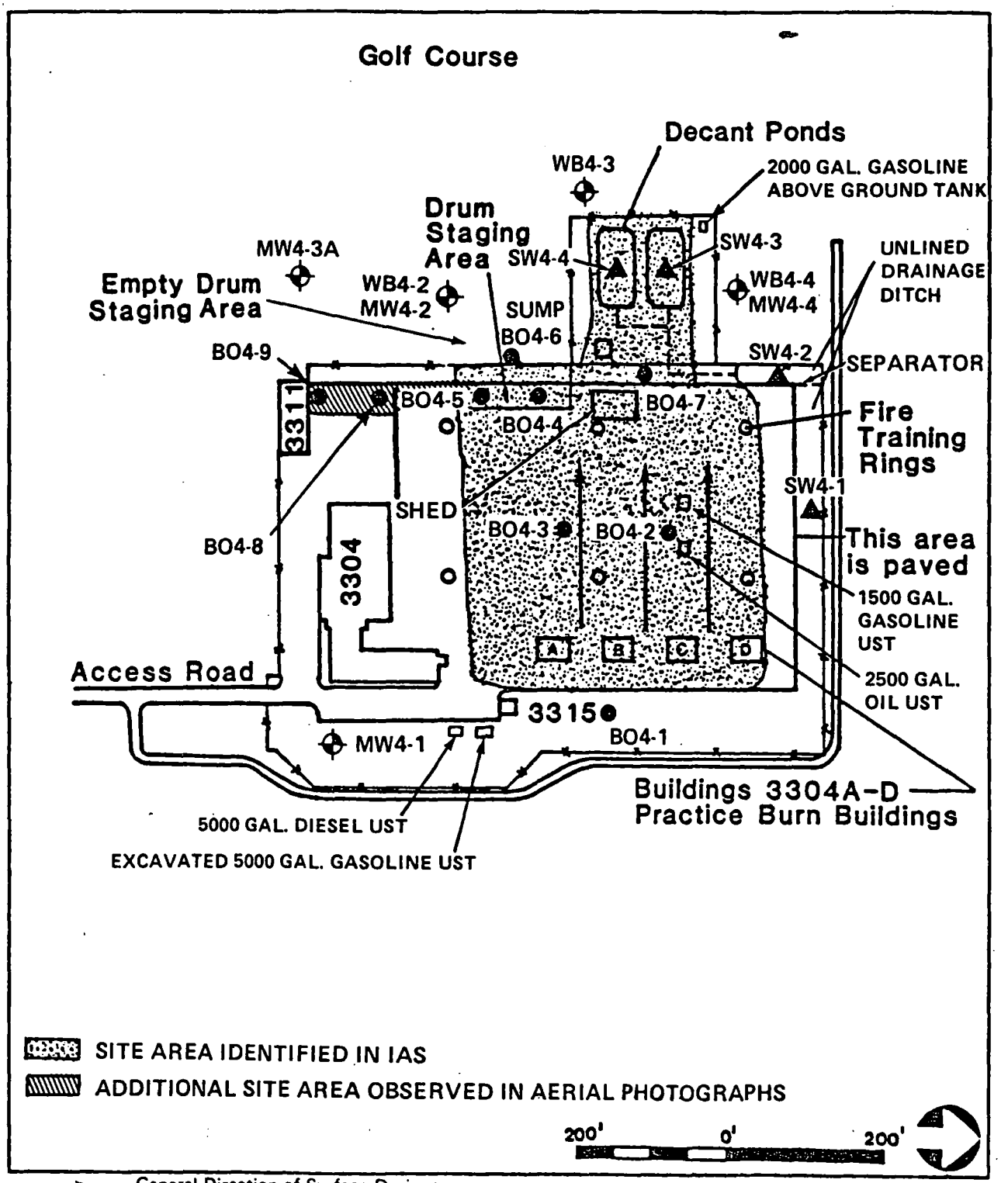
MW4-1 FFTA Wells (See Figure 2-2)

SW1-1 Surface Water Sampling Locations

MW1-1 Monitoring Well and Groundwater Sampling Locations

MONITORING WELL AND SAMPLING LOCATIONS
GOLF COURSE LANDFILL (SITE 1)

REMEDIAL INVESTIGATION
NAVAL TRAINING CENTER
Great Lakes, Illinois



General Direction of Surface Drainage

MW4-1 Monitoring Well and Groundwater Sampling Location

BO4-1 Soil Sampling Location (Samples were collected at depths 1.5-3 feet and 3.5-5 feet*)

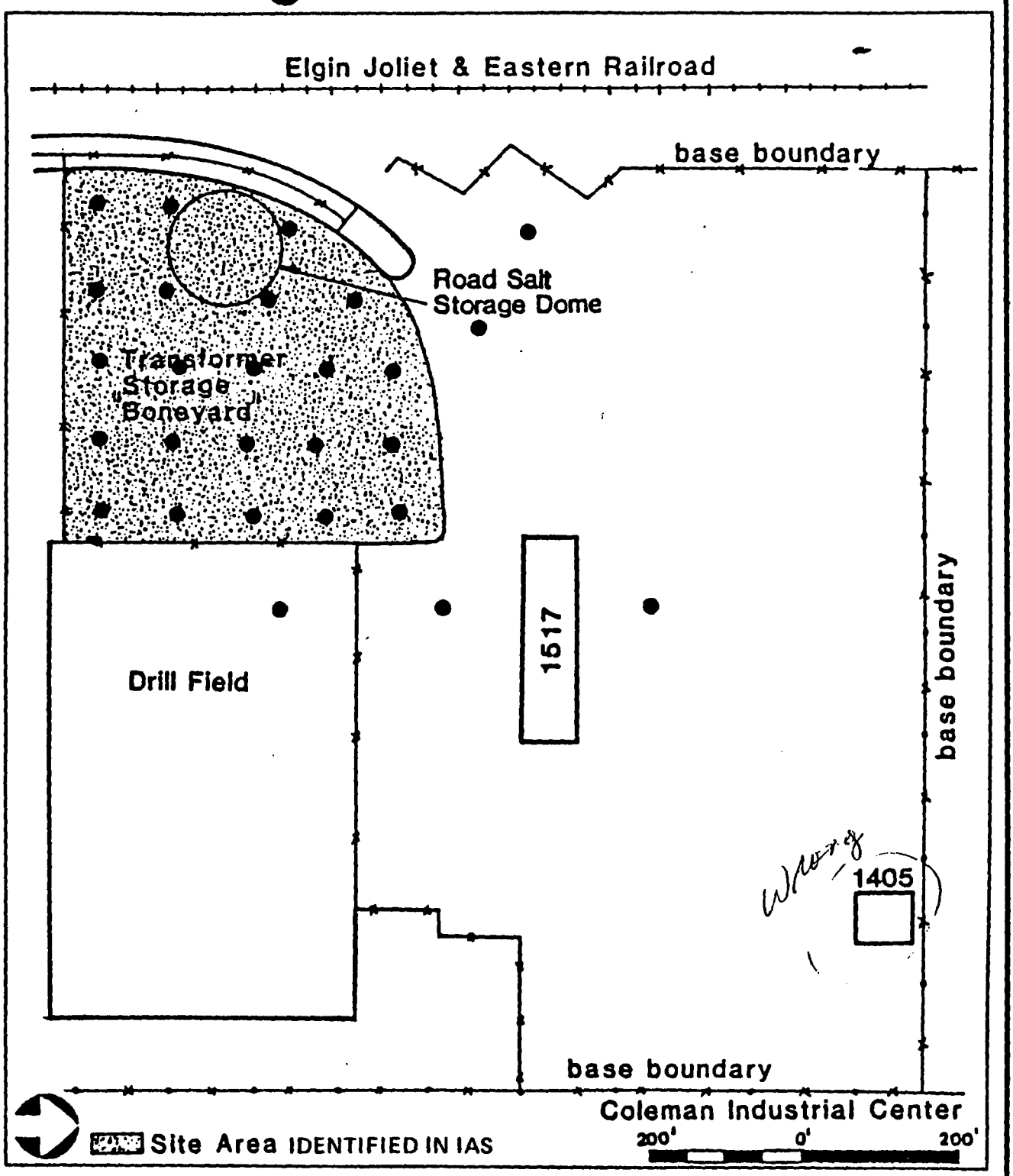
SW4-1 Surface Water Sampling Location

* NOTE: Soil samples for chemical analysis were collected at these depths in the initial borings for wells MW4-2, MW4-3, and MW4-4, and were designated by the codes WB4-2, WB4-3, and WB4-4.

MONITORING WELL AND SAMPLING LOCATIONS
FIRE FIGHTING TRAINING AREA
(SITE 4)

REMEDIAL INVESTIGATION
NAVAL TRAINING CENTER
Great Lakes, Illinois

REPRODUCED AT GOVERNMENT EXPENSE



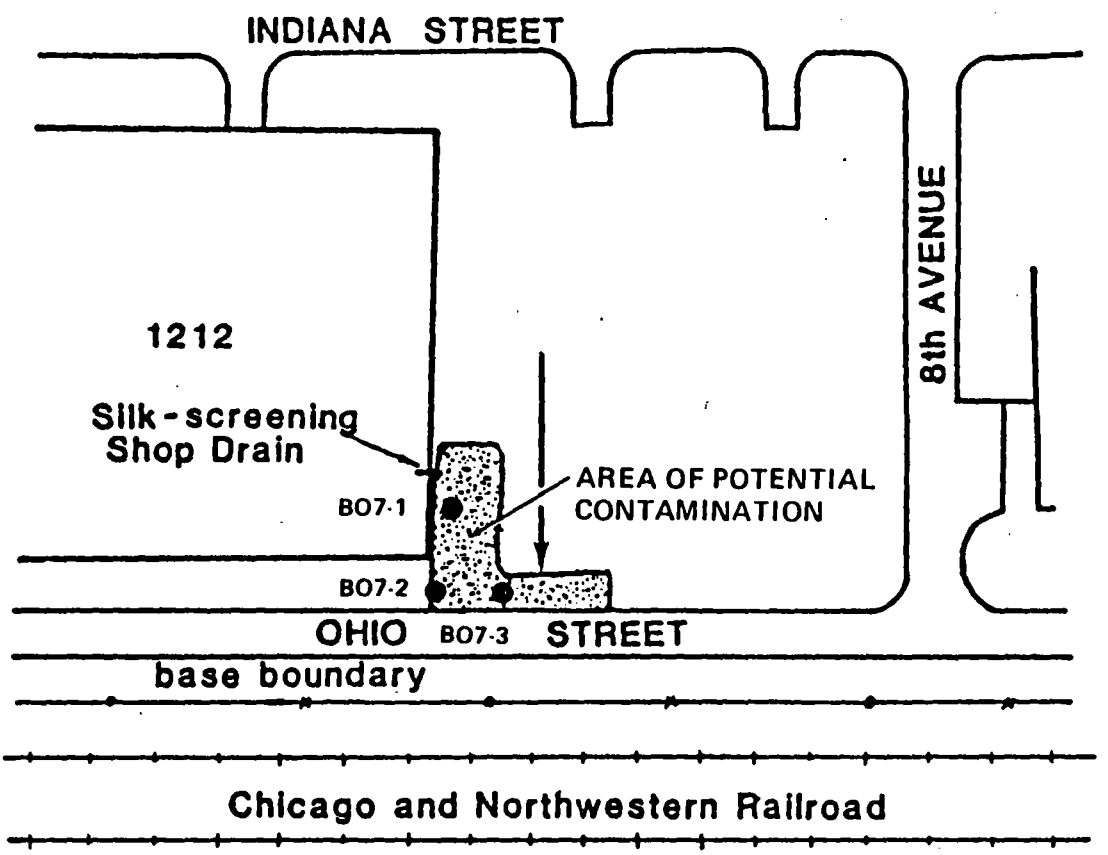
● Proposed Soil Sampling Location (samples collected at 0.5-1 ft. depth)
(Site designations are BO5-1 through BO5-27.)

NOTE: Among the 27 sampling locations, five willbe selected in the field for deeper sampling, at a depth of 1.5-2 ft.

FIGURE 2-4
PROPOSED SOIL SAMPLING LOCATIONS
TRANSFORMER STORAGE "BONEYARD"
(SITE 5)

REMEDIAL INVESTIGATION
NAVAL TRAINING CENTER
Great Lakes, Illinois

REPRODUCED AT GOVERNMENT EXPENSE



Site Area IDENTIFIED IN IAS

100' 0' 100'

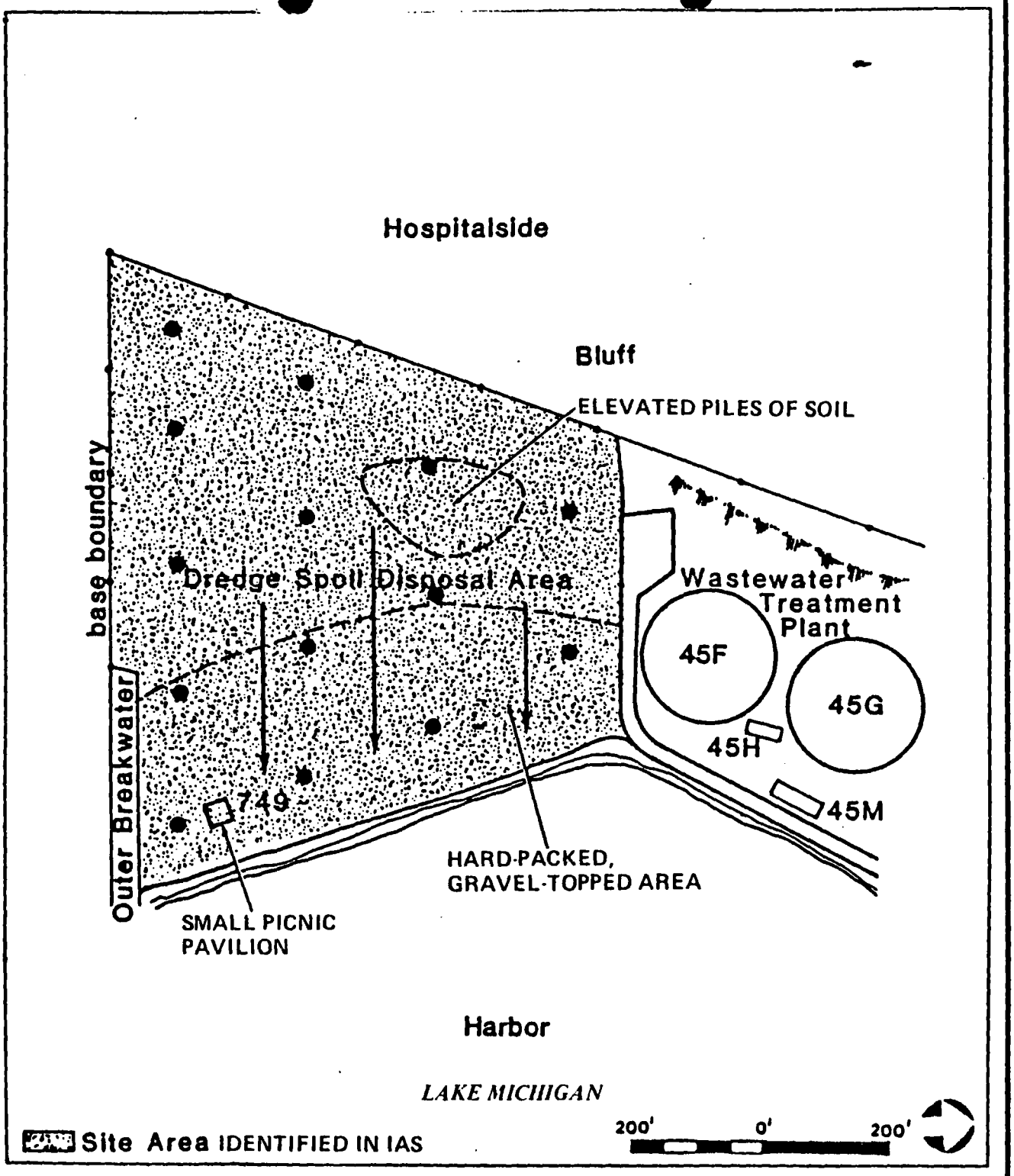
BO7-1 ● Proposed Soil Sampling Location (samples collected at depths of 0.5-1 ft. and 1.5 to 2 ft.)

→ General Direction of Surface Drainage

FIGURE 2-5
PROPOSED SOIL SAMPLING LOCATIONS
RTC SILK-SCREENING SHOP (SITE 7)

REMEDIAL INVESTIGATION
NAVAL TRAINING CENTER
Great Lakes, Illinois

PRODUCED AT GOVERNMENT EXPENSE



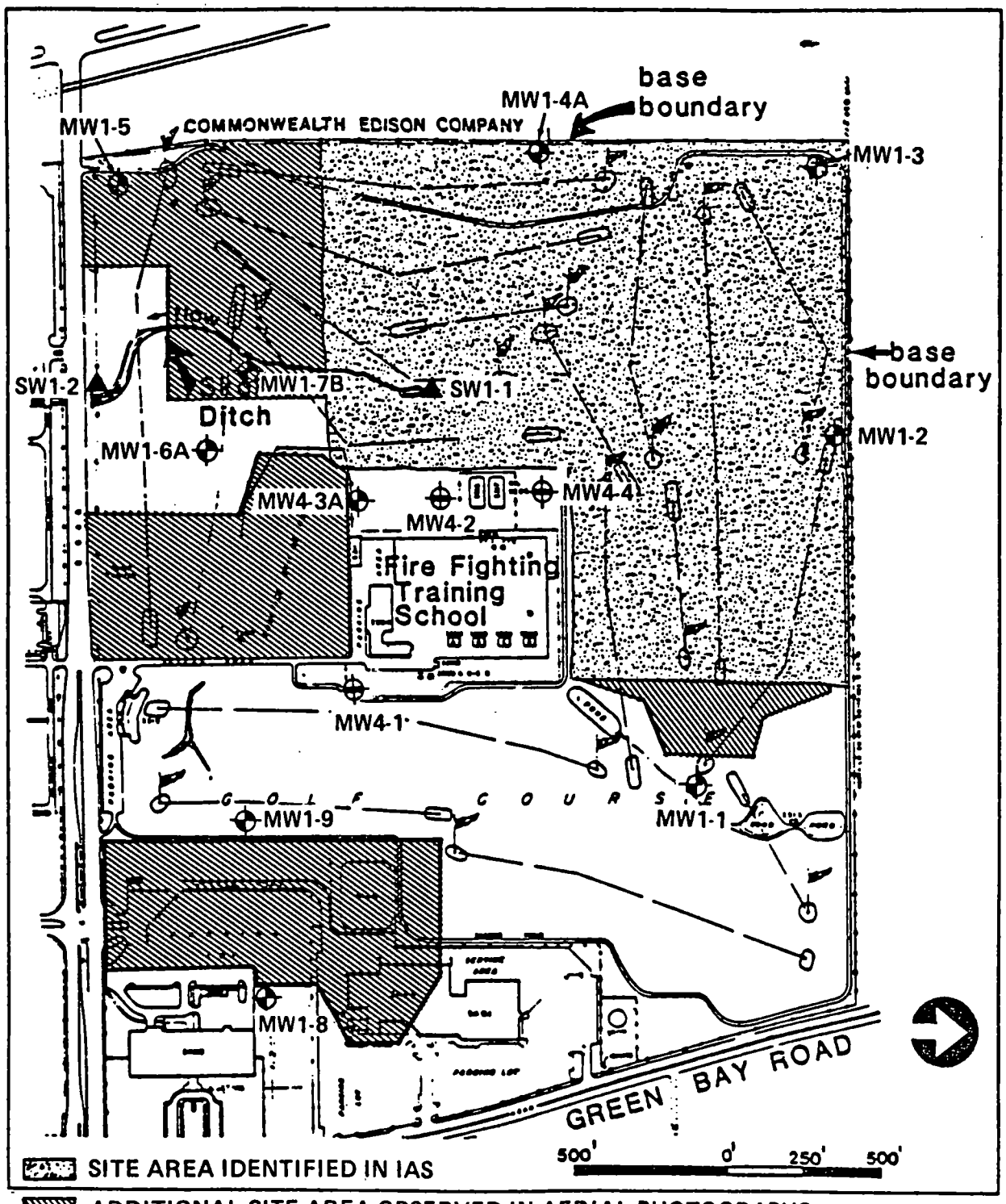
● Proposed Soil/Sludge Sampling Location (samples collected at depths of 0.5-2, 3.5-5, and 6.5-8 ft.) ,BO12-1 through BO12-14

→ Assumed General Direction of Surface Drainage

FIGURE 2-6
PROPOSED SOIL/SLUDGE SAMPLING LOCATIONS
HARBOR DREDGE SPOIL AREA
(SITE 12)

REMEDIAL INVESTIGATION
NAVAL TRAINING CENTER
Great Lakes, Illinois

REPRODUCED AT GOVERNMENT EXPENSE



ADDITIONAL SITE AREA OBSERVED IN AERIAL PHOTOGRAPHS

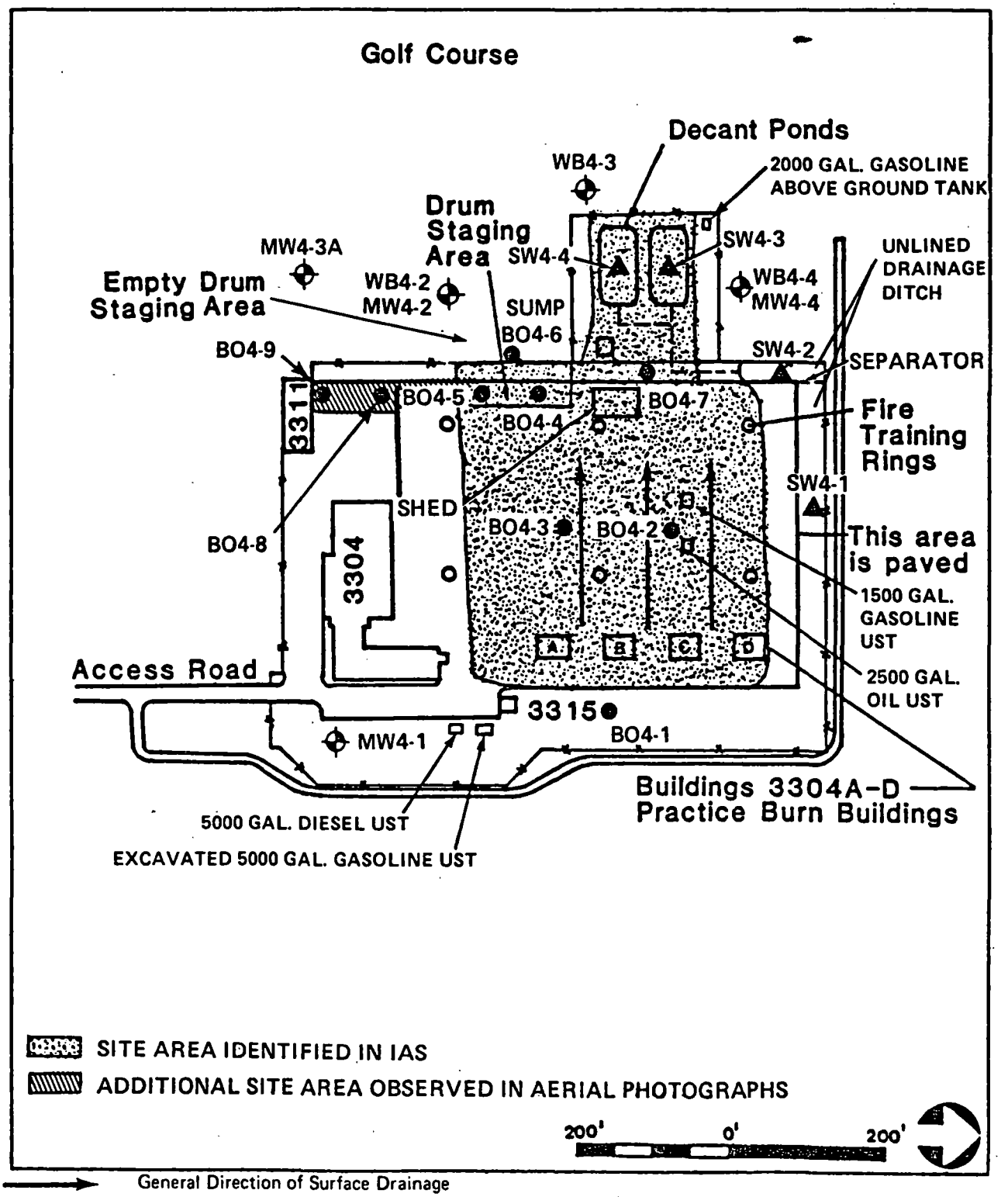
MW4-1 FFTA Wells (See Figure 2-2)

SW1-1 Surface Water Sampling Locations

MW1-1 Monitoring Well and Groundwater Sampling Locations

MONITORING WELL AND SAMPLING LOCATIONS GOLF COURSE LANDFILL (SITE 1)

REMEDIAL INVESTIGATION
NAVAL TRAINING CENTER
Great Lakes, Illinois



General Direction of Surface Drainage

MW4-1 Monitoring Well and Groundwater Sampling Location

BO4-1 Soil Sampling Location (Samples were collected at depths 1.5-3 feet and 3.5-5 feet*)

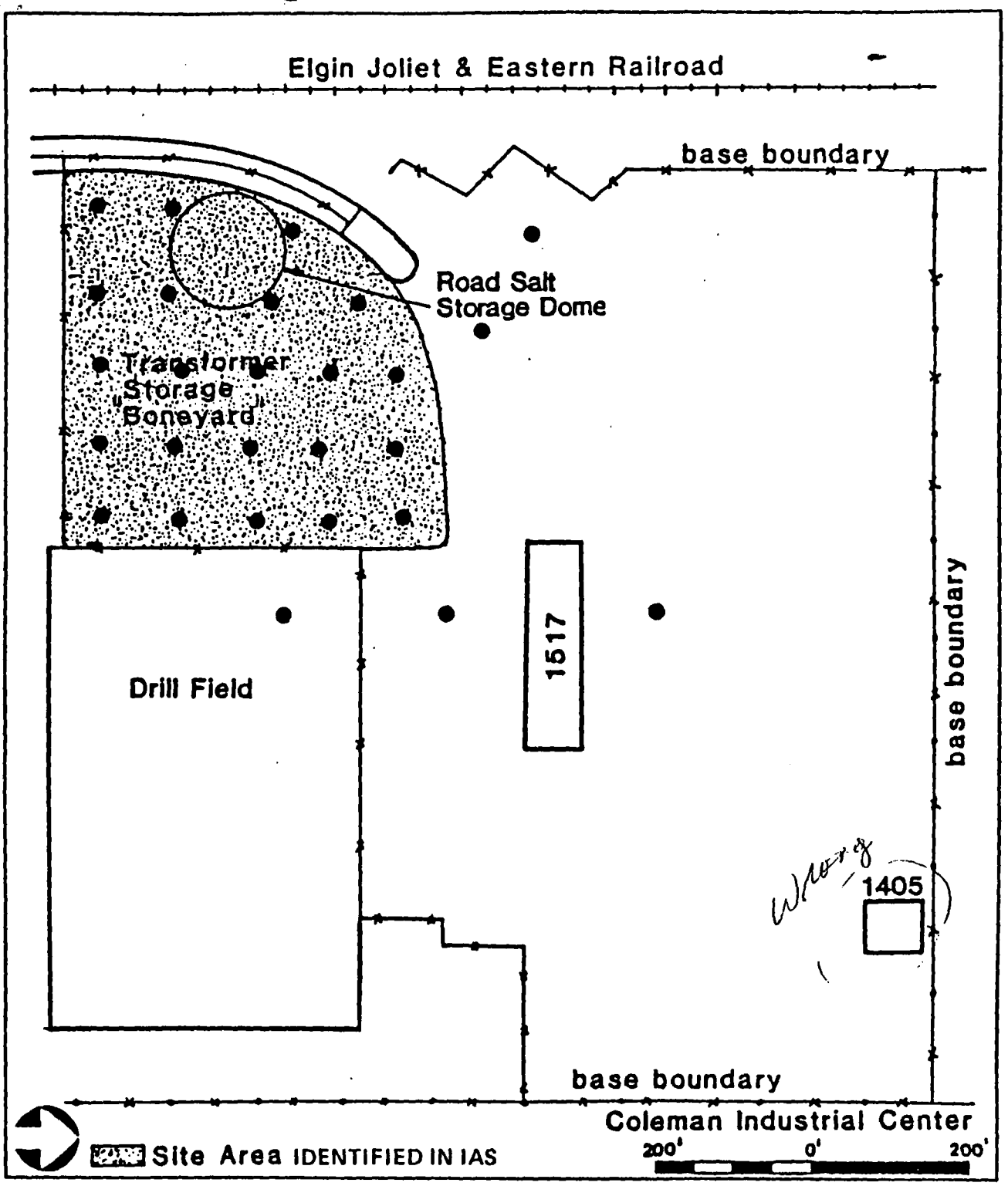
SW4-1 Surface Water Sampling Location

* NOTE: Soil samples for chemical analysis were collected at these depths in the initial borings for wells MW4-2, MW4-3, and MW4-4, and were designated by the codes WB4-2, WB4-3, and WB4-4.

MONITORING WELL AND SAMPLING LOCATIONS
FIRE FIGHTING TRAINING AREA
(SITE 4)

REMEDIAL INVESTIGATION
NAVAL TRAINING CENTER
Great Lakes, Illinois

PRODUCED AT GOVERNMENT EXPENSE



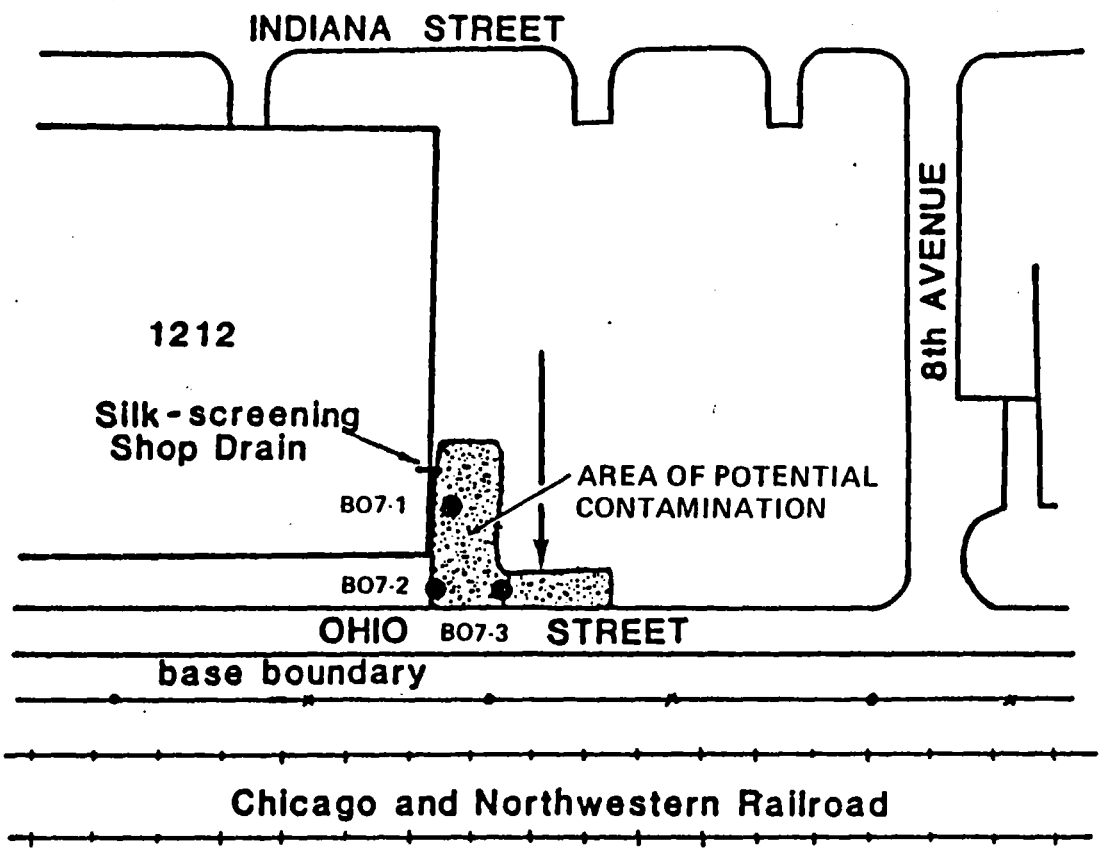
● Proposed Soil Sampling Location (samples collected at 0.5-1 ft. depth)
(Site designations are BO5-1 through BO5-27.)

NOTE: Among the 27 sampling locations, five willbe selected in the field for deeper sampling, at a depth of 1.5-2 ft.

FIGURE 2-4
PROPOSED SOIL SAMPLING LOCATIONS
TRANSFORMER STORAGE "BONEYARD"
(SITE 5)

REMEDIAL INVESTIGATION
NAVAL TRAINING CENTER
Great Lakes, Illinois

REPRODUCED AT GOVERNMENT EXPENSE



Site Area IDENTIFIED IN IAS

100' 0' 100'

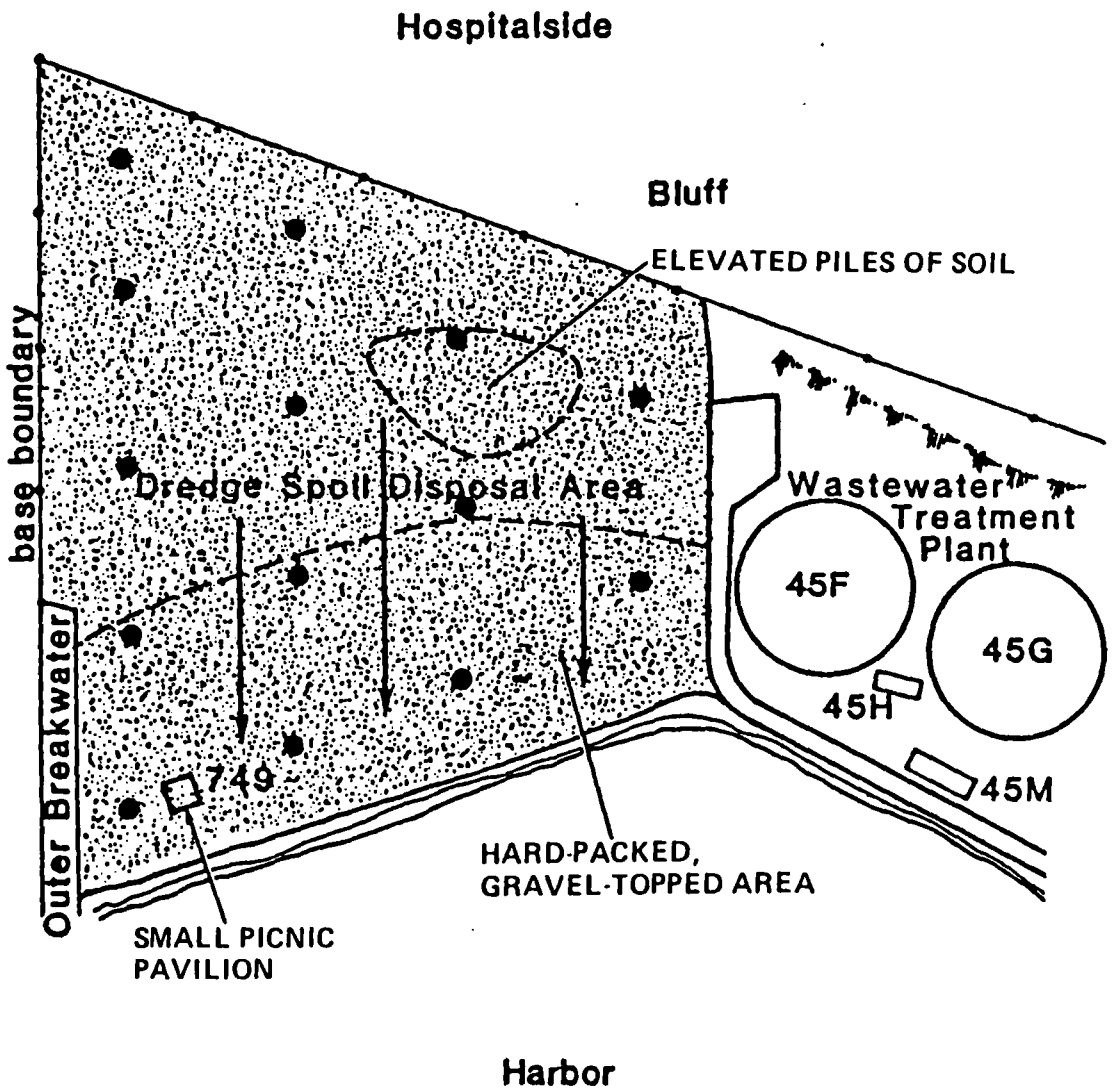
BO7-1 ● Proposed Soil Sampling Location (samples collected at depths of 0.5-1 ft. and 1.5 to 2 ft.)

→ General Direction of Surface Drainage

FIGURE 2-5
PROPOSED SOIL SAMPLING LOCATIONS
RTC SILK-SCREENING SHOP (SITE 7)

REMEDIAL INVESTIGATION
NAVAL TRAINING CENTER
Great Lakes, Illinois

PRODUCED AT GOVERNMENT EXPENSE



Site Area IDENTIFIED IN IAS

● Proposed Soil/Sludge Sampling Location (samples collected at depths of 0.5-2, 3.5-5, and 6.5-8 ft.) ,BO12-1 through BO12-14

→ Assumed General Direction of Surface Drainage

FIGURE 2-6
PROPOSED SOIL/SLUDGE SAMPLING LOCATIONS
HARBOR DREDGE SPOIL AREA
(SITE 12)

REMEDIAL INVESTIGATION
NAVAL TRAINING CENTER
Great Lakes, Illinois

DRAFT

SITE INSPECTION REPORT
PETTIBONE CREEK, BOAT BASIN, AND HARBOR AREAS
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) PROGRAM

Submitted to:
Southern Division
Environmental Branch, Code 18
Naval Facilities Engineering Command
2155 Eagle Drive, Box 10068
Charleston, South Carolina 29411-0068

Submitted by:
Halliburton NUS Corporation
993 Old Eagle School Road, Suite 415
Wayne, Pennsylvania 19087-1710

Contract No. N62472-90-D-1298
Contract Task Order 0063

June 1993

PREPARED BY:

MANSOUR GHIASI, P.E.
PROJECT MANAGER
RUST ENVIRONMENT &
INFRASTRUCTURE INC.
CHICAGO, ILLINOIS
Under subcontract to HALLIBURTON NUS

APPROVED BY:

JOHN J. TREPANOWSKI, P.E.
PROGRAM MANAGER
HALLIBURTON NUS CORPORATION

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LIST OF ACRONYMS/ABBREVIATIONS

BB	Boat Basin
CLEAN	Comprehensive Long-Term Environmental Action Navy
CTO	Contract Task Order
DO	Dissolved Oxygen
EP	Extraction Procedure
FAC	Freshwater Acute Criteria
FCC	Freshwater Chronic Criteria
GFAA	Graphite Furnace Atomic Absorption
IN	Inner Harbor
LM	Lake Michigan
MSL	Mean Sea Level
NEESA	Naval Energy and Environmental Support Activity
NTC	Naval Training Center
OH	Outer Harbor
PAHs	Polynuclear Aromatic Hydrocarbons
PC	Pettibone Creek
PCBs	Polychlorinated Biphenyls
QA/QC	Quality Assurance/Quality Control
RPD	Relative Percent Difference
SD	Sediment sample
SI	Site Inspection
STS	STS Consultants, Ltd.
SVOCs	Semi-Volatile Organic Compounds
SW	Surface Water sample
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
ug/kg	microgram per kilogram or parts per billion
ug/L	micrograms per liter
USCS	Unified Soil Classification System
USDOI	United States Department of Interior
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds

R/63SID/AA0

EXECUTIVE SUMMARY

During August 17 through 26, 1992, the Halliburton NUS Team conducted a Site Inspection (SI) at Pettibone Creek, the Boat Basin, the Inner Harbor, and the Outer Harbor at the Naval Training Center in Great Lakes, Illinois (NTC Great Lakes). The SI was performed under Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract Number N62472-90-D-1298, Contract Task Order (CTO) Number 0063.

NTC Great Lakes is located in Lake County, Illinois, on the shore of Lake Michigan, about 50 miles north of downtown Chicago. Dedicated in 1911, it is the largest naval training center in the United States.

The objectives of the SI at Pettibone Creek, the Boat Basin, and the Harbor Areas were to:

- Evaluate the types and levels of contaminants present in Pettibone Creek, Boat Basin, Inner Harbor, and Outer Harbor sediments and surface water.
- Establish background levels for the contaminants of concern.
- Evaluate contaminant migration pathways and patterns. Determine, if possible, whether contaminants have migrated via Pettibone Creek or Lake Michigan to the Boat Basin, Inner Harbor, and Outer Harbor. Potential sources of contaminants which may have migrated into the Boat Basin and Harbor Areas include industries in the city of North Chicago, NTC Great Lakes itself, and industries located along the shore of Lake Michigan both to the south and to the north of NTC Great Lakes.
- Collect and analyze select samples to allow the Navy to evaluate dredging and disposal options for the sediments in the Boat Basin, the Inner Harbor, and the Outer Harbor.

To accomplish these objectives, the Halliburton NUS Team collected eight sediment samples and two surface water samples from the Boat Basin, eight sediment samples and two surface water samples from the Inner Harbor, 11 sediment samples and two surface water samples from the Outer Harbor, six sediment samples and five surface water samples from Lake Michigan, and 11 sediment samples and 11 surface water samples from Pettibone Creek.

The sediment samples and surface water samples analyzed for one or more of the following parameter groups: Target Compound List (TCL) volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, and polychlorinated biphenyls (PCBs); Target Analyte List (TAL) metals and cyanide; Toxicity Characteristic

Leaching Procedure (TCLP) VOCs, SVOCs, herbicides, pesticides, and metals; reactivity; supernatant parameters; elutriate parameters; and miscellaneous parameters (i.e., total organic carbon and particle size). This SI report discusses the findings associated with the TCL, TAL and miscellaneous parameter testing only. The results of the TCLP, supernatant, and elutriate testing are presented in a Technical Memorandum, dated January 1993, previously submitted to the Navy.

The major findings of the SI are:

- Boat Basin, Inner Harbor, and Outer Harbor sediments contain elevated concentrations of SVOCs, pesticides, Aroclor 1254 (a PCB), metals, and cyanide.

- Pettibone Creek sediments contain elevated concentrations of SVOCs, pesticides, and metals, and to a lesser extent VOCs and Aroclor 1254. The data indicate that Pettibone Creek has been the primary migration route for contaminants to enter the Boat Basin, and consequently the Inner and Outer Harbors.

- Boat Basin, Inner Harbor, and Outer Harbor surface water samples were found to be free of significant contamination based on a comparison with regulatory standards.

- Contaminants present in the Boat Basin, Inner Harbor, and Outer Harbor sediments appear to have originated from unidentified sources located upstream from NTC Great Lakes in the city of North Chicago and from unidentified sources located on NTC Great Lakes property. The relative proportion of the contaminants derived from these two general sources is unknown.

- The data do not indicate that contaminants have migrated from Lake Michigan into the Outer Harbor.

This SI report comprises six sections and four appendices. Section 1.0 provides a brief description of NTC Great Lakes history and operations and of the SI project. Section 2.0 describes NTC Great Lakes and the SI sites in detail. This section also presents a discussion of previous investigations conducted at the NTC Great Lakes Harbor. Section 3.0 describes SI sampling procedures, and also presents and discusses the analytical results. Section 4.0 provides the analytical methodologies used and presents a brief discussion of data validation performed. Section 5.0 presents the conclusions of the SI. Section 6.0 lists the references cited in this report. Appendix A includes the qualified analytical data. Appendix B includes sediment core logs which contain descriptions and photographs of the sediment cores collected during the SI. Surface water quality data for the SI areas are included in Appendix C. Appendix D contains documentation of past spill events which may have adversely affected the SI areas.

1.0 INTRODUCTION

1.1 NTC DESCRIPTION

NTC Great Lakes is located in Lake County, Illinois, on the shore of Lake Michigan about 50 miles north of downtown Chicago (Figure 1-1). Dedicated in 1911, NTC Great Lakes is the largest naval training center in the United States. It is bounded on the west by U.S. Route 41, on the north by the City of North Chicago, on the south by the Veterans Administration Hospital and and the Shoreacres Country Club, and on the east by Lake Michigan. Figure 1-2 is an NTC Great Lakes site map.

NTC Great lakes initially consisted of a 167-acre tract which was purchased by the Navy under the Naval Appropriations Act of 1904. The base was commissioned on July 1, 1911, and was officially dedicated by President W.H. Taft on October 28, 1911. Expansion to the present boundaries was accomplished by various land acquisitions between 1917 and 1942.

During World War I, the facility accommodated up to 47,700 personnel, and had expanded to 1,200 acres with 775 buildings, many of which were temporary structures. By the end of World War I, most of the temporary buildings had been demolished. By 1922, the Navy had stopped training recruits at NTC Great Lakes.

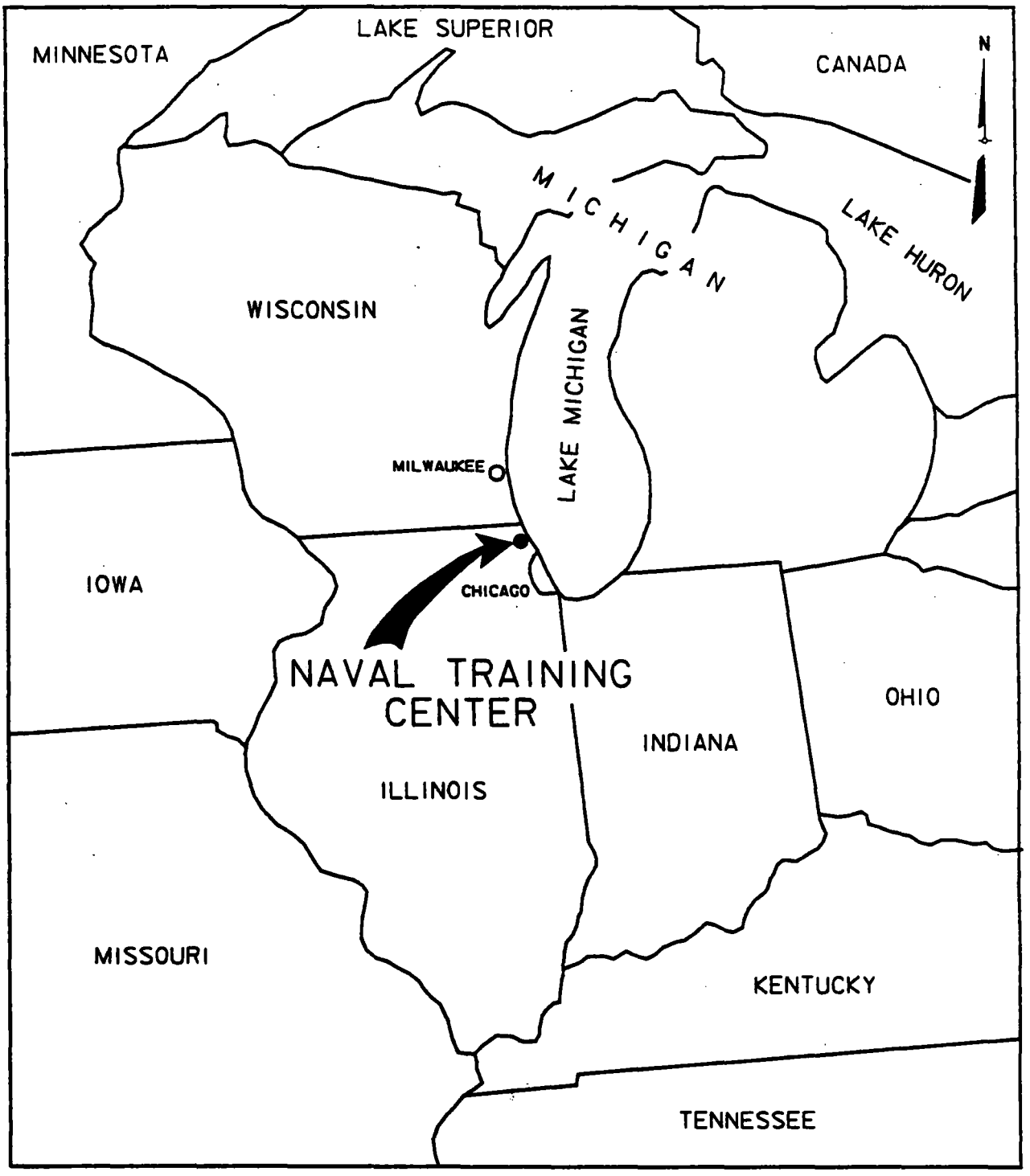
The land west of Sheridan Road and south of Buckley Road was transferred to the Veterans Administration Hospital by 1932. At that time, NTC Great Lakes consisted of 102 buildings on 507 acres.

Recruit training resumed at the facility in 1935. The second period of major growth for NTC Great Lakes began in 1939. By March 1944, the facility reached an all-time peak of 100,150 personnel.

Today, about 9,000 officers and personnel are stationed at NTC Great Lakes, maintaining facilities and conducting training of about 80,000 recruits annually. The base currently consists of 1,060 buildings on approximately 1,650 acres of land.

1.2 SITE INSPECTION OBJECTIVES

The Navy, and its contractor STS Consultants Ltd., conducted investigations at the NTC Great Lakes Harbor in 1988 and 1989 to evaluate dredging and disposal options for potentially contaminated sediments in the Boat Basin, the Inner Harbor, and the Outer Harbor. Descriptions of the 1988 and 1989 investigations are presented in Section 2.6.



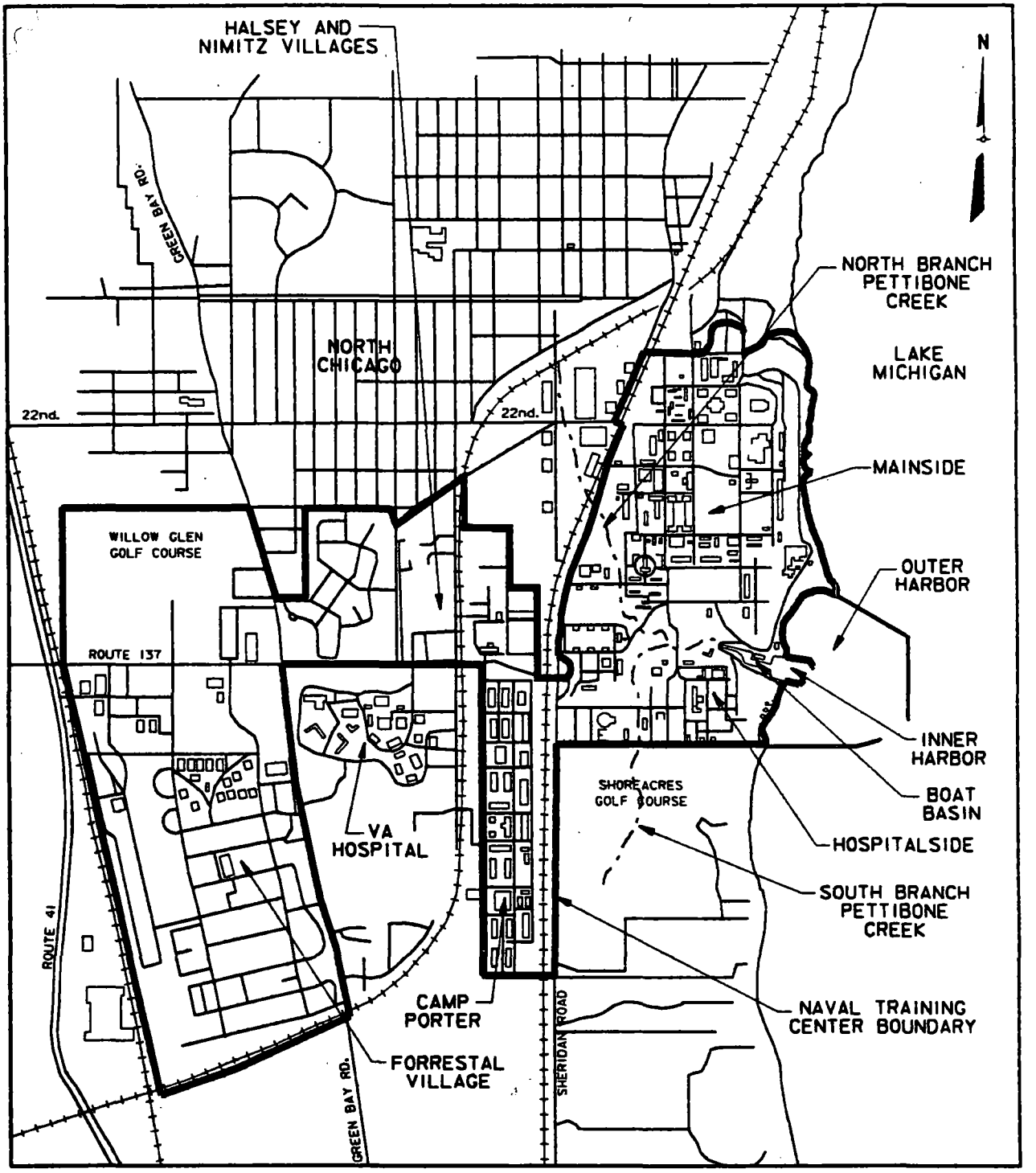
	NAMES	DATE
DR	JC	
TR	WES	
CK	MG	
AP	MG	

FIGURE 1-1
NAVAL TRAINING CENTER
GENERAL LOCATION MAP

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20812.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER F1G1-1.DGN



SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

2500' 1250' 0 2500'

SCALE: 1"=2500'

	NAMES	DATE
R.	JC	
SC.	WES	
K.	MG	
E	MG	
PP		
PP		
PP'D		

FIGURE 1-2
NAVAL TRAINING CENTER
SITE MAP

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93

CLIENT DWG. NUMBER

SECD DWG. NUMBER F1G1-2.DGN

In August 1991, the Navy issued a contract task order requesting that further investigation, in the form of an SI, be conducted at the Boat Basin, the Inner Harbor, and the Outer Harbor.

The SI field work was conducted by the Halliburton NUS Team in August 1992. The objectives of the SI were to:

- Evaluate the types and levels of contaminants present in Pettibone Creek, Boat Basin, Inner Harbor, and Outer Harbor sediments and surface water.
- Establish background levels for the contaminants of concern.
- Evaluate contaminant migration pathways and patterns. Determine, if possible, whether contaminants have migrated via Pettibone Creek or Lake Michigan to the Boat Basin, Inner Harbor, and Outer Harbor.
- Collect and analyze select samples to allow the Navy to evaluate dredging and disposal options for the sediments in the Boat Basin and the Harbor Areas.

The first three objectives were accomplished through a sampling and analysis program and the preparation of this report. The fourth objective was accomplished through the sampling and analysis program and the preparation of a technical memorandum titled "Sediment Coring Activities," dated January 1993, previously submitted to the Navy.

1.3 SCOPE OF SITE INSPECTION FIELD WORK

The SI consisted of the collection and analysis of the following environmental samples. Field quality control samples are not included in the numbers of samples provided.

- Boat Basin (samples collected here were assigned the location code "BB")
  - Eight sediment samples (identified as "SD" samples) from four locations (0- to 3-foot and 3- to 6-foot sample at each location).
  - Two surface water samples (identified as "SW" samples).
- Inner Harbor (location code "IN")
  - Eight sediment samples from four locations (0- to 3-foot and 3- to 6-foot sample at each location).
  - Two surface water samples.

- Outer Harbor (location code "OH")
  - Eleven sediment samples from six locations (0- to 3-foot and 3- to 6-foot sample at five locations, 0- to 3-foot sample only at one location).
  - Two surface water samples.
- Lake Michigan (location code "LM")
  - Six sediment samples from six locations (0- to 3-foot sample at each location).
  - Five surface water samples.
- Pettibone Creek (location code "PC")
  - Eleven sediment samples from 11 locations (0- to 1-foot sample at each location).
  - Eleven surface water samples.

The parameters for which each sediment sample was analyzed are presented in Table 1-1. The parameters for which each surface water sample was analyzed are presented in Table 1-2.

1.4 SITE INSPECTION REPORT ORGANIZATION

This SI report comprises six sections and four appendices. Section 1.0 provides a brief description of NTC Great Lakes history and operations and of the SI project. Section 2.0 describes the NTC Great Lakes and the SI sites in detail. This section also presents a discussion of previous investigations conducted at NTC Great Lakes Harbor. Section 3.0 describes SI sampling procedures, and also presents and discusses the analytical results. Section 4.0 provides the analytical methodologies used and presents a brief discussion of data validation. Section 5.0 presents the conclusions of the SI. Section 6.0 lists the references cited in this report. Appendix A includes the qualified analytical data. Appendix B includes sediment core logs which contain descriptions and photographs of the sediment cores collected during the SI. Surface water quality data for the SI areas are included in Appendix C. Appendix D contains documentation of past spill events which may have adversely affected the SI areas.

TABLE 1-1

SEDIMENT SAMPLE PARAMETERS
SITE INSPECTION FOR PETTIBONE CREEK, BOAT BASIN, AND HARBOR AREAS
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS
JUNE 1993

Sample Location	TCL/TAL	TCLP and/or Reactivity	Particle Size and/or TOC	Supernatant and Elutriate
BOAT BASIN				
SD-BB-01A	X	X	X	X
SD-BB-01B	X		X	X
SD-BB-02A	X		X	X
SD-BB-02B	X		X	X
SD-BB-03A	X	X	X	X
SD-BB-03B	X		X	X
SD-BB-04A	X		X	X
SD-BB-04B	X		X	X
INNER HARBOR				
SD-IN-05A	X	X	X	X
SD-IN-05B	X		X	X
SD-IN-06A	X			
SD-IN-06B	X			
SD-IN-07A	X			
SD-IN-07B	X			
SD-IN-08A	X			
SD-IN-08B	X			
OUTER HARBOR				
SD-OH-09A		X	X	X
SD-OH-10A	X		X	X
SD-OH-10B	X		X	X
SD-OH-11A	X	X	X	X
SD-OH-11B	X		X	X
SD-OH-11BFD			X	
SD-OH-12A			X	X
SD-OH-12B			X	X
SD-OH-13A	X			
SD-OH-13B	X			
SD-OH-14A	X			
SD-OH-14B	X			

TABLE 1-1 (Continued)

SEDIMENT SAMPLE PARAMETERS
SITE INSPECTION FOR PETTIBONE CREEK, BOAT BASIN, AND HARBOR AREAS
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS
JUNE 1993

Sample Location	TCL/TAL	TCLP and/or Reactivity	Particle Size and/or TOC	Supernatant and Elutriate
LAKE MICHIGAN				
SD-LM-15A	X			
SD-LM-16A	X			
SD-LM-17A	X			
SD-LM-18A	X			
SD-LM-19A	X			
SD-LM-20A	X			
PETTIBONE CREEK				
SD-PC-01	X			
SD-PC-02	X			
SD-PC-03	X			
SD-PC-04	X			
SD-PC-05	X			
SD-PC-06	X			
SD-PC-07	X			
SD-PC-08	X			
SD-PC-09	X			
SD-PC-10	X			
SD-PC-11	X			

ABBREVIATIONS:

BB - Boat Basin
IN - Inner Harbor
LM - Lake Michigan
OH - Outer Harbor
PC - Pettibone Creek
SD - Sediment
TCL/TAL - Target Compound List/Target Analyte List
TCLP - Toxicity Characteristic Leaching Procedure
TOC - Total Organic Carbon

R/63SID/AA2

TABLE 1-2

SURFACE WATER SAMPLE PARAMETERS
SITE INSPECTION FOR PETTIBONE CREEK, BOAT BASIN, AND HARBOR AREAS
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS
JUNE 1993

	TCL	TAL (total and dissolved)	Water Quality(1)	pH, cond., temp., turb.
BOAT BASIN				
SW-BB-01	X	X		X
SW-BB-03	X	X		X
INNER HARBOR				
SW-IN-05	X	X		X
SW-IN-07	X	X		X
OUTER HARBOR				
SW-OH-11	X	X		X
SW-OH-13	X	X		X
LAKE MICHIGAN				
SW-LM-16	X	X		X
SW-LM-17	X	X		X
SW-LM-18	X	X		X
SW-LM-19	X	X		X
SW-LM-20	X	X		X
PETTIBONE CREEK				
SW-PC-01	X	X	X	X
SW-PC-02	X	X	X	X
SW-PC-03	X	X	X	X
SW-PC-04	X	X	X	X
SW-PC-05	X	X	X	X
SW-PC-06	X	X	X	X
SW-PC-07	X	X	X	X
SW-PC-08	X	X	X	X
SW-PC-09	X	X	X	X
SW-PC-10	X	X	X	X
SW-PC-11	X	X	X	X

TABLE 1-2 (Continued)

SURFACE WATER SAMPLE PARAMETERS
SITE INSPECTION FOR PETTIBONE CREEK, BOAT BASIN, AND HARBOR AREAS
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS
JUNE 1993

ABBREVIATIONS:

BB - Boat Basin
IN - Inner Harbor
OH - Outer Harbor
LM - Lake Michigan
SW - Surface Water
TCL - Target Compound List
TAL - Target Analyte List
cond. - Conductivity
temp. - Temperature
turb. - Turbidity

(1) - Water Quality parameters include total organic carbon, alkalinity, chemical oxygen demand, chloride, nitrate/nitrite, total suspended solids, total dissolved solids, and sulfate.

R/63SID/AA2

2.0 EXISTING SITE CONDITIONS

2.1 PHYSIOGRAPHY

The topography of Lake County, Illinois, is gently sloping with poorly defined drainage patterns. Drainage patterns consist of swales which enter into depressions and marshes. The highest point in Lake County is Gander Mountain in the county's northwest corner. The lowest point is where the Des Plaines River flows out of the county at its southeast corner.

NTC Great Lakes is situated on land with an elevation of 640 to 660 feet above mean sea level (MSL) with the exception of the Pettibone Creek area, which is 600 feet above MSL, and the eastern portion of NTC Great Lakes along the Lake Michigan shoreline, which is approximately 590 feet above MSL (Rogers, Golden & Halpern, 1986).

NTC Great Lakes is located within two major drainage basins, the Lake Michigan north drainage basin and the Chicago River North Branch drainage basin. Areas east of Green Bay Road (shown on Figure 1-2) drain into Lake Michigan, in large part through Pettibone Creek. Areas to the west of Green Bay Road drain into the Skokie River, which is locally referred to as Skokie Ditch. The water quality of both Pettibone Creek and Skokie Ditch is reported to be poor due to urban runoff (Rogers, Golden & Halpern, 1986).

2.2 GEOLOGY

Lake County is blanketed by unconsolidated glacial tills deposited by Wisconsin stage glaciation during the Late Pleistocene Age, 10,000 to 12,000 years ago (Mickelson et al., 1977). Several glacial moraine systems are present in Lake County including the Valparaiso Morainic System, the Tinley Moraine, and the Lake Border Morainic System.

The Valparaiso Morainic System, the Tinley Moraine, and the Lake Border Morainic System are composed of the Wadsworth Till. The Wadsworth Till member ranges from approximately 170 to 210 feet in thickness, based on a review of well logs from areas surrounding NTC Great Lakes. The Wadsworth Till is an unsorted material consisting of elements ranging from clay to large boulders. This till member has been further subdivided into phases according to the size of the dominant particles (clayey phase and sandy phase). The clayey phase is predominant in the vicinity of NTC Great Lakes, but both the sandy phase and clayey phase may be interbedded as well. Because this till is unsorted, interstices between rocks in the till are filled with fine clay-sized particles, resulting in low permeabilities within the till unit (Dames & Moore, 1991).

The depositional patterns associated with the glacial till are highly variable; significant changes often occur over very short distances. In general, the till at NTC Great Lakes is clayey with thin, irregular lenses of sand or silty sand occurring over limited areas. These small lenses or pockets of sandy material may have been deposited during minor fluctuations in the movement of the ice sheet causing thawing and hence fluvial deposition. Whatever the source of the coarser deposits, they are generally, although not always, discontinuous and limited in areal extent.

The Wadsworth Till beneath NTC Great Lakes is underlain by Silurian age bedrock consisting of Niagran and Alexandrian dolomite. Bedding is nearly horizontal to gently eastward-dipping in the vicinity of NTC Great Lakes. The interface of the bedrock surface with the overlying till generally consists of from one to 15 feet of broken bedrock (dolomite), gravel, and sand and coarser material. This layer has been identified from local well logs and appears to be debris ground from the bedrock by the advancing ice sheet.

The Soil Survey of Lake County, Illinois, indicates that surface soils at NTC Great Lakes have been classified primarily into two groups: the Morley-Beecher-Hennepin association and Made Land (U.S. Department of Agriculture, 1970). The Morley-Beecher-Hennepin association consists primarily of loams and silt loams that are characterized as nearly level to very steep in deep ravines, well drained to somewhat poorly drained, and having moderately slow to moderate permeability. Made Land is defined as areas of manmade cuts and fills, and areas covered by roads and buildings. Fill materials include a variety of soils and nonsoil materials that have not been distinguished.

2.3 PRIVATE AND PUBLIC WATER SUPPLIES

Throughout Lake County, potable water is obtained from both Lake Michigan and from wells. Lake Michigan is used to supply drinking water to NTC Great Lakes, and to cities and villages including North Chicago, Lake Forest, and Lake Bluff. Most water-producing wells in the area of NTC Great Lakes are completed in the bedrock aquifer.

2.4 CLIMATE

Lake County weather is typical of a midcontinental climate. Changes in temperature, humidity, cloudiness, and wind direction are frequent. The summer season is warm with few prolonged hot spells. Major droughts are infrequent; however, long spells of dry weather during the growing season are common. Lake County experiences approximately 34 inches of rain per year (Rogers, Golden & Halpern, 1986). The average temperature during the year is 58°F (Dames & Moore, 1991). The winter months usually have temperatures below freezing. Lake County experiences about 37.2 inches of snowfall per year.

2.5 DESCRIPTION OF SITE INSPECTION AREAS

2.5.1 Pettibone Creek

The eastern boundary of NTC Great Lakes is a sand beach on the shore of Lake Michigan at an elevation of 580 feet above MSL. The beach is backed by a steep bluff which rises about 70 feet. The majority of activities at NTC Great Lakes take place on the plateau atop this bluff. The plateau is cut in places by a branching ravine which contains the north and south branches of Pettibone Creek. Pettibone Creek flows in a generally eastward direction, eventually discharging into the Boat Basin (refer to Figure 2-1).

The north branch of Pettibone Creek originates in the City of North Chicago near the intersection of Glen Drive and Broadway Avenue, and flows south, passing beneath Sheridan Road and entering NTC. The south branch of Pettibone Creek originates in the Shoreacres Country Club and flows north entering NTC Great Lakes near the intersection of G Street and 3rd Street. The two branches converge approximately 800 feet to the west of the Boat Basin.

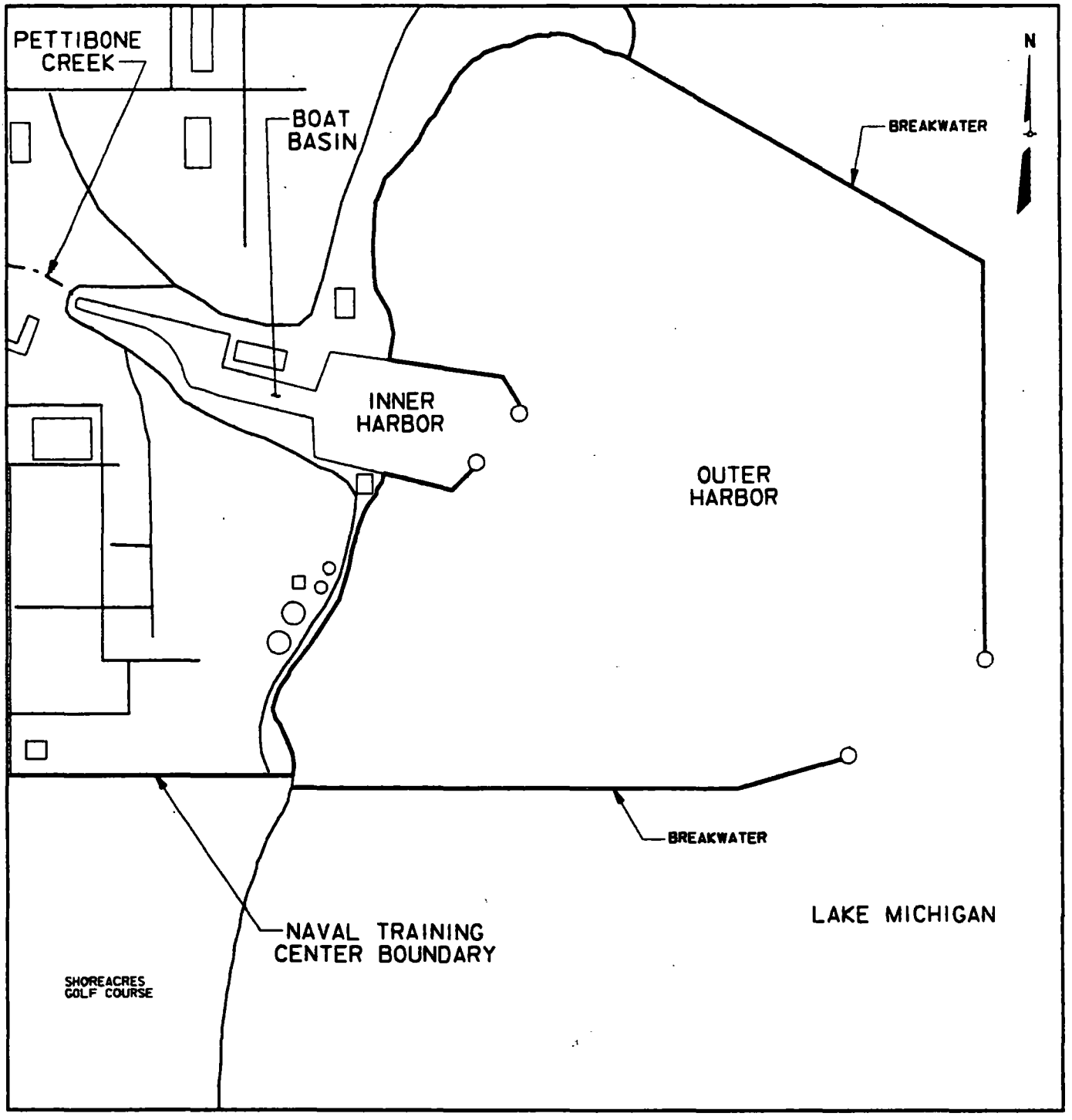
In NTC Great Lakes, Pettibone Creek ranges from between 15 and 30 feet in width, and from several inches to about 6 feet in depth. Over 30 stormwater sewer system outfalls are present along the creek banks inside NTC Great Lakes.

2.5.2 Boat Basin

In the past when its water was deeper, the primary purpose of the Boat Basin was to moor recreational craft. Currently, due to accumulated sediment, recreational craft can be moored only in the deeper, eastern portion of the Boat Basin. At the time of the SI the water depth in the Boat Basin ranged from less than one to about 5 feet. The Boat Basin is approximately 2.6 acres in area (refer to Figure 2-1).

2.5.3 Inner Harbor

The Inner Harbor is located between the Boat Basin and the Outer Harbor. During the boating season the Inner Harbor is occupied by floating slips upon which recreational craft are moored. A ship lift facility is located on its south side. At the time of the SI, water depths in the Inner Harbor ranged between about 9 and 15 feet. The Inner Harbor is approximately 5.9 acres in area (refer to Figure 2-1).



SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1000' 500' 0 1000'

SCALE: 1" = 500'

	NAMES	DATE
R.	JC	
SGN.	WES	
K.	MG	
E	MG	
PP		
PP		
PP'D		

FIGURE 2-1

SITE INSPECTION AREAS

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20812.060 DATE PLOTTED 3/2/83

CLIENT DWG. NUMBER

SECD DWG. NUMBER FIG2-2.DGN

2.5.4 Outer Harbor

The Outer Harbor, which is enclosed by breakwaters, is the largest area of the NTC Great Lakes Harbor. It contains numerous small craft moorings during the boating season. A boat ramp, located on the north side of the Outer Harbor, is used to launch recreational small craft (Headland, 1990). At the time of the SI, water depths in the Outer Harbor ranged from between 1 and 20 feet. The Outer Harbor is approximately 78 acres in area (refer to Figure 2-1).

2.5.5 Lake Michigan

As shown on Figure 1-1, NTC Great Lakes is located on the southwestern shore of Lake Michigan. Lake Michigan is 22,400 square miles in area, and contains about 3.9 billion acre-feet of water. The maximum depth of the lake, occurring in its northern portion, is 923 feet. The average depth is 276 feet. The lake has a shoreline of 1,660 miles (United States Department of Interior (USDOI), 1968).

Lake Michigan currents are motivated principally by the wind. Because winds are variable, lake currents exhibit frequent changes in both direction and speed. However, two recurring current patterns have been identified (USDOI, 1968). The most common pattern is created by south-southwest winds (the prevailing wind direction in northeastern Illinois). In this pattern, the main body of water in southern Lake Michigan rotates in a counterclockwise direction, while the nearshore currents on both sides of the lake flow northward. Under north-northeast winds this pattern is reversed, with the nearshore currents on both sides of the lake moving southward (Sato, 1975).

2.6 SUMMARY OF PREVIOUS INVESTIGATIONS

STS Consultants Ltd. (STS) conducted sediment sampling at the Boat Basin and Outer Harbor in April 1988, April 1989, and December 1989. These sampling events and associated chemical data are summarized below.

2.6.1 STS Sampling Event April 1988

On April 20, 1988, STS collected two grab samples, one from the Boat Basin and one from the Outer Harbor. The two samples were analyzed for priority pollutant metals, PCBs, and select Extraction Procedure (EP) metals. The concentrations of copper, cyanide, lead, nickel, and zinc in both samples exceeded the 1977 U.S. Environmental Protection Agency (USEPA) guidelines for classifying Great Lakes harbor sediments as "nonpolluted" (Table 2-1) (USEPA, 1977). The PCB concentration detected in Boat Basin Sample B-2 also exceeded the 1977 guidelines. Results of the EP toxicity testing indicated that the sediment samples were not considered hazardous relevant to chromium, lead, and mercury. Chemical data from the April 1988 sampling event are presented in Table 2-2 and Table 2-3 (STS, 1988).

TABLE 2-1

GUIDELINES FOR POLLUTIONAL CLASSIFICATION OF GREAT LAKES HARBOR SEDIMENTS
SITE INSPECTION FOR PETTIBONE CREEK, BOAT BASIN, AND HARBOR AREAS
GREAT LAKES, ILLINOIS
NAVAL TRAINING CENTER
JUNE 1993

Parameter	Nonpolluted (mg/kg)	Moderately Polluted (mg/kg)	Polluted (mg/kg)	Heavily Polluted (mg/kg)
Volatile solids, %	<5	5 - 8	--	>8
Chemical oxygen demand	<40,000	40,000 - 80,000	--	>80,000
Total Kjeldahl nitrogen	<1,000	1,000 - 2,000	--	>2,000
Ammonia	<75	75 - 200	--	>200
Phosphorus	<420	420 - 650	--	>650
Oil and grease	<1,000	1,000 - 2,000	--	>2,000
Total PCBs	--	--	>10	--
Arsenic	<3	3 - 8	--	>8
Barium	<20	20 - 60	--	>60
Cadmium	--	--	--	>6
Chromium	<25	25 - 75	--	>75
Copper	<25	25 - 50	--	>50
Cyanide	<0.10	0.10 - 0.25	--	>0.25
Iron	<17,000	17,000 - 25,000	--	>25,000
Lead	<40	40 - 60	--	>60
Manganese	<300	300 - 500	--	>500
Mercury	--	--	>1	--
Nickel	<20	20 - 50	--	>50
Zinc	<90	90 - 200	--	>200

NOTE: Units are on a dry-weight basis.

SOURCE: USEPA, April 1977, "Guidelines for Pollutional Classifications of Great Lakes Harbor Sediments," Region V, Chicago, Illinois.

R/63SID/AA2

TABLE 2-2

PRIORITY POLLUTANT METALS AND PCB DATA
STS SAMPLING EVENT - APRIL 1988

Parameter	Outer Harbor Sample B-1 (mg/kg)	Boat Basin Sample B-2 (mg/kg)
Arsenic	1.50	1.00
Cadmium	0.70	0.80
Chromium	13.0	11.5
Copper	37.0[M]	194[H]
Cyanide	0.13[M]	0.21[M]
Lead	55.5[M]	97.3[H]
Nickel	12.3[M]	54.2[H]
Zinc	121[M]	955[H]
Mercury	0.04	0.77
Total PCBs	<0.70	>12.1[P]

M - Moderately Polluted (refer to Table 2-1)

H - Heavily Polluted (refer to Table 2-1)

P - Polluted (refer to Table 2-1)

R/63SID/AA2

TABLE 2-3

EP TOXICITY DATA
STS SAMPLING EVENT - APRIL 1988

Parameter	Outer Harbor Sample B-1 (mg/L)	Boat Basin Sample B-2 (mg/L)
EP TOX - Chromium	0.021	0.013
EP TOX - Lead	0.17	0.09
EP TOX - Mercury	--	<0.001

-- Not Analyzed

R/63SID/AA2

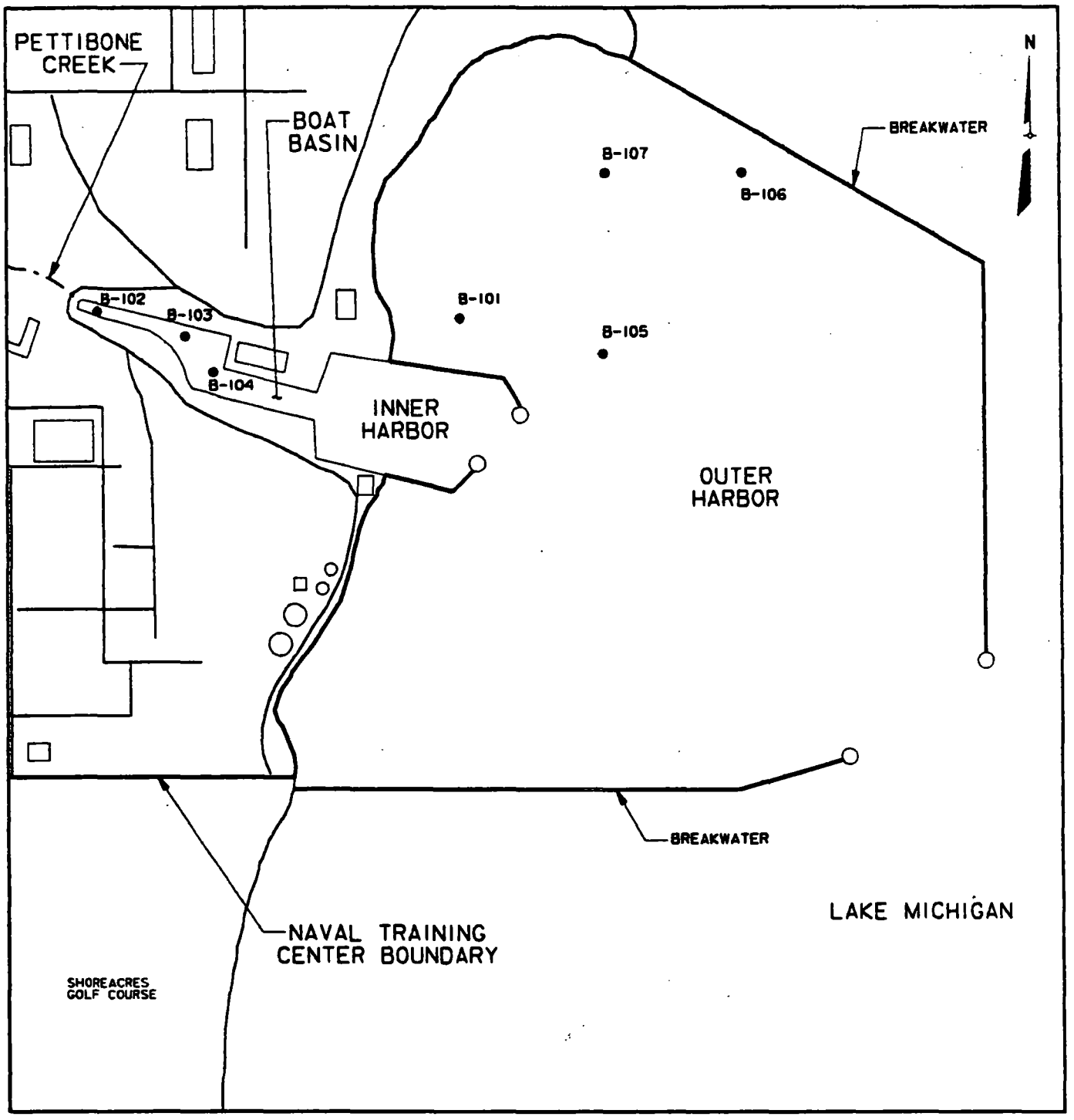
2.6.2 STS Sampling Event April 1989

Seven composite sediment samples (three from the Boat Basin and four from the Outer Harbor) and one background sediment sample (from south of the south Outer Harbor breakwater) were collected on April 19 and 20, 1989, and were analyzed for metals and SVOCs (the locations of the Boat Basin and Outer Harbor samples are shown on Figure 2-2). The background sediment sample was collected from a depth interval of 0- to 1-foot; all other sediment samples were composites of samples collected from 0- to 5-feet. The levels of detectable metals in the Boat Basin sediment samples were generally higher than those collected in the Outer Harbor. Within the Boat Basin, the highest levels were generally found at the B-104 location. Metal levels in sediment sample B-105 (next to the mouth of the Inner Harbor) were highest among all Outer Harbor sediment samples. Several SVOCs were detected at low milligram per kilogram (mg/kg) concentrations. Chemical data from the April 1989 sampling event are presented in Table 2-4 (STS, May 1989).

Supernatant testing and analyses of metals, total suspended solids, total volatile solids and ammonia-nitrogen were conducted for samples B-104, B-105 and B-106. These were samples with fine materials (finer than a No. 230 U.S. sieve) in excess of 20 percent. Table 2-5 presents these data.

2.6.3 STS Sampling Event December 1989

STS collected seven composite sediment samples (three from the Boat Basin and four from the Outer Harbor) on December 5 and 6, 1989 (sample locations are shown on Figure 2-3). These samples were analyzed for PCBs, polyaromatic hydrocarbons (PAHs), and supernatant metals. Each composite sample was a mixture of grab samples from the top 5 feet of sediment. Chemical data from the December 1989 sampling event are presented in Tables 2-6 and 2-7 (STS, December 1989).



LEGEND

● SAMPLE LOCATION

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1000' 500' 0 1000'

SCALE: 1" = 500'

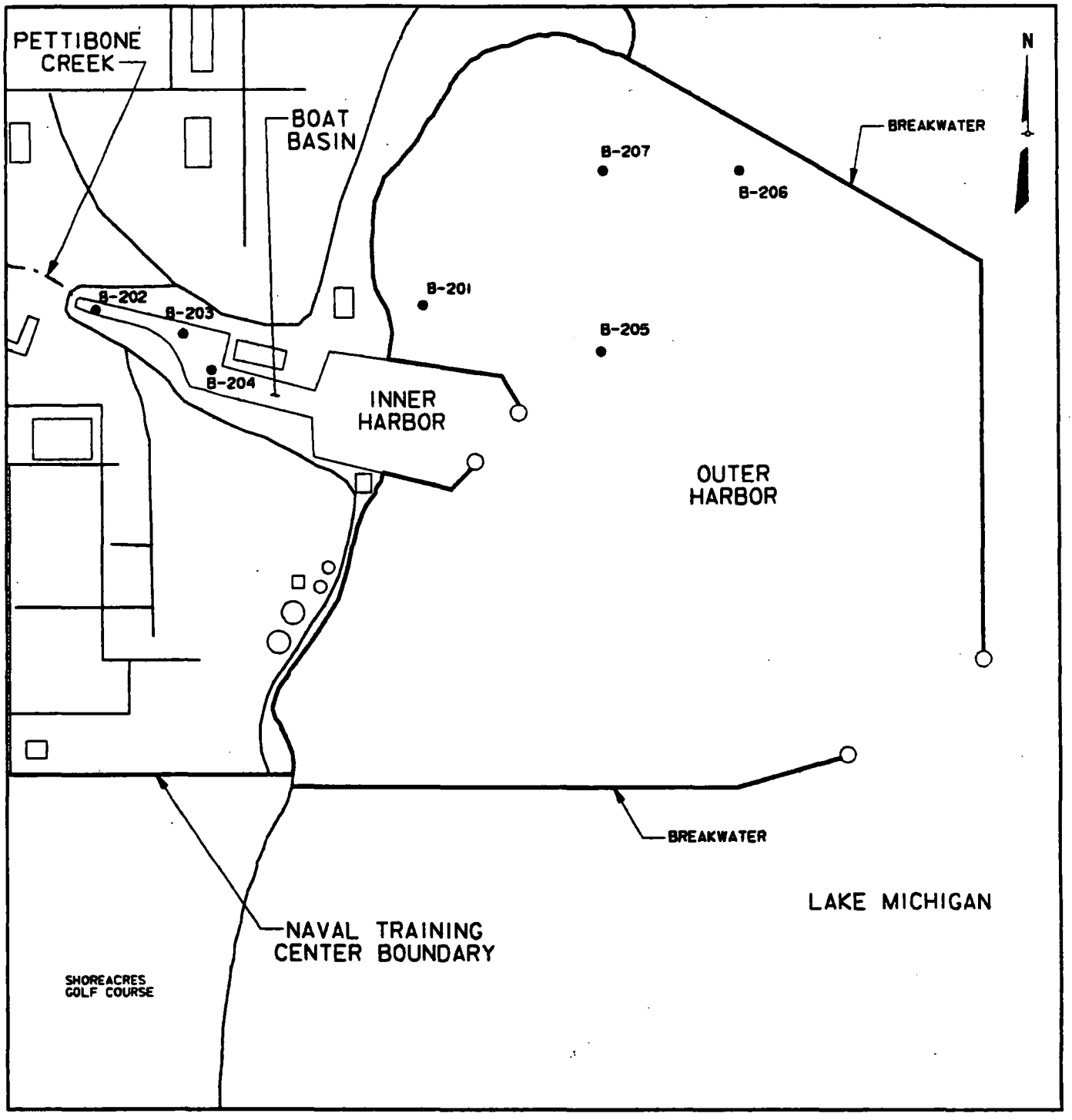
	NAMES	DATE
DR.	JC	
DSGN.	WES	
CK	MG	
P	MG	
AI		
APP'D		

FIGURE 2-2
STS SAMPLE LOCATIONS IN BOAT BASIN AND OUTER HARBOR-APRIL 1989 SAMPLING EVENT

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER FIG2-1.DGN



LEGEND

● SAMPLE LOCATION

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1000' 500' 0 1000'

SCALE: 1" = 500'

	NAMES	DATE
R.	JC	
SK.	WES	
Z.	MG	
E	MG	
PP		
PP		
PP'D		

FIGURE 2-3

STS SAMPLE LOCATIONS IN BOAT BASIN AND OUTER HARBOR-DECEMBER 1989 SAMPLING EVENT

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93

CLIENT DWG. NUMBER

SECD DWG. NUMBER FIG2-2.DGN

TABLE 2-4

METALS AND SEMIVOLATILE ORGANIC COMPOUND DATA
STS SAMPLING EVENT - APRIL 1989

Parameter	Outer Harbor B-101	Boat Basin B-102	Boat Basin B-103	Boat Basin B-104	Outer Harbor B-105	Outer Harbor B-106	Outer Harbor B-107	Background*
Thallium	<25	<25	<25	<25	<25	<25	<25	<25
Antimony	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5
Arsenic	2.2	4.0[M]	2.6	11[H]	20[H]	9.0[H]	0.98	2.1
Beryllium	<0.12	1.1	0.52	0.39	0.20	0.13	<0.12	<0.12
Cadmium	0.52	1.4	0.90	2.5	2.3	1.3	0.34	<0.25
Chromium	4.2	7.6	5.0	17	33[M]	15	2.4	2.2
Hexavalent Chromium	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1
Copper	8.3	68[H]	49[M]	110[H]	51[H]	38[M]	6.4	3.1
Lead	25	53[M]	56[M]	150[H]	110[H]	72[H]	12	21
Nickel	4.8	22[M]	8.5	24[M]	15	7.2	2.8	2.3
Zinc	39	510[H]	280[H]	390[H]	200[M]	110[M]	27	27
Silver	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Selenium	1.1	0.88	0.85	0.81	0.80	1.2	0.94	<0.50
Mercury	0.026	0.043	0.024	1.1[P]	0.47	0.22	0.029	0.023
Total Cyanide	<10	<10	<10	<10	<10	<10	<10	<10
Total Organic Carbon	2,600	3,800	4,000	15,000	13,000	5,600	1,700	1,000
Acenaphthene	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Acenaphtylene	<0.010	0.16	0.28	<0.010	<0.010	<0.010	<0.010	<0.010
Anthracene	<0.010	5.5	2.6	<0.010	<0.010	<0.010	<0.010	<0.010
Benzidine	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(a)anthracene	<0.010	2.1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(a)pyrene	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(b)fluoranthene	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(g,h,i)perylene	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(k)fluoranthene	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Bis(2-ethylhexyl)phthalate	2.6	0.97	5.8	<0.010	<0.010	<0.010	<0.010	0.15
4-Bromophenyl phenyl ether	0.70	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Butyl benzyl phthalate	0.78	0.56	1.4	<0.010	<0.010	<0.010	<0.010	0.22

UNITS: mg/kg

M - Moderately Polluted
H - Highly Polluted
P - Polluted

* Collected in Lake Michigan south of the south Outer Harbor breakwater.

R/63SID/AA3

TABLE 2-5

SUPERNATANT TESTING
STS SAMPLING EVENT - APRIL 1989

Parameter	Units	Sample B-104		Sample B-105		Sample B-106	
		0 Min	15 Min	0 Min	15 Min	0 Min	15 Min
Ammonia as N	(mg/L)	3.7	2.6	3.9	2.7	2.9	1.5
Arsenic (Total)	(ug/L)	1,270	140	6,300	1450	1,350	290
Copper (Total)	(mg/L)	50	1.7	30	7	8	1.7
Mercury (Total)	(ug/L)	208	20.1	99.7	20.2	36.5	0.49
Lead (Total)	(mg/L)	53	2.1	44	10.9	11.5	2.3
Total Suspended Solids	(mg/L)	112,000	4,200	182,000	42,000	178,000	1,080
Total Volatile Solids	(mg/L)	1080	470	7,840	1,940	5,490	132
Zinc (Total)	(mg/L)	130	4.9	69	17	20	3.4

R/63SID/AA3

TABLE 2-6

PCB AND PAH TESTING
STS SAMPLING EVENT - DECEMBER 1989

Parameter	Units	Outer Harbor B-201	Boat Basin B-202	Boat Basin B-203	Boat Basin B-204	Outer Harbor B-205	Outer Harbor B-206	Outer Harbor B-207
Total Organic Carbon	mg/kg	11,900	1,190	2,530	12,300	1,570	13,300	10,700
Total Solids	%	81.4	80.9	79.6	63.0	59.5	73.9	82.0
PCB:								
PCB-1016	ug/kg	ND	ND	ND	ND	ND	ND	ND
PCB-1221	ug/kg	ND	ND	ND	ND	ND	ND	ND
PCB-1232	ug/kg	ND	ND	ND	ND	ND	ND	ND
PCB-1242	ug/kg	ND	ND	ND	ND	ND	ND	ND
PCB-1248	ug/kg	ND	ND	ND	ND	ND	ND	ND
PCB-1254	ug/kg	ND	ND	ND	2,400	ND	ND	ND
PCB-1260	ug/kg	ND	ND	ND	ND	ND	ND	ND
PAH:								
Acenaphthene	ug/kg	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ug/kg	ND	ND	ND	ND	ND	ND	ND
Anthracene	ug/kg	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	ug/kg	560	270	500	1,100	180	740	550
Benzo(b)fluoranthene	ug/kg	570	260	540	740	200	260	620
Benzo(g,h,i)perylene	ug/kg	250	160	310	680	150	370	320
Benzo(a)pyrene	ug/kg	310	92	360	810	190	1,300	360
Chrysene	ug/kg	620	360	670	1,800	310	770	580
Dibenz(a,h,)anthracene	ug/kg	98	55	110	260	47	170	110
Fluoranthrene	ug/kg	170	ND	170	450	ND	ND	130
Fluorene	ug/kg	120	ND	ND	266	ND	ND	ND
Indeno(1,2,3,cd)pyrene	ug/kg	780	630	190	704	720	250	800
Phenanthrene	ug/kg	850	410	770	2,100	ND	650	600
Pyrene	ug/kg	830	450	970	2,100	340	910	630

ND - Denotes concentrations below detection limits

R/63SID/AA3

TABLE 2-7

SUPERNATANT METALS TESTING
STS SAMPLING EVENT - DECEMBER 1989

Parameter	Units	Outer Harbor B-201		Boat Basin B-202		Boat Basin B-203		Boat Basin B-204	
		0 Min	15 Min	0 Min	15 Min	0 Min	15 Min	0 Min	15 Min
Silver	mg/L	0.304	0.248	0.043	0.034	0.069	0.067	0.390	0.429
Arsenic	ug/L	1098	1074	212	216	478	448	1560	2170
Beryllium	mg/L	0.05	0.04	ND	ND	0.04	0.04	0.10	0.10
Cadmium	mg/L	0.123	0.098	0.054	0.064	0.104	0.104	0.951	1.22
Total Cyanide	ug/L	ND	ND	104	93	81	74	1450	580
Chromium	mg/L	1.35	1.48	0.449	0.501	0.735	0.695	5.19	6.10
Hex. Chromium	mg/L	ND	ND	ND	ND	ND	ND	ND	ND
Copper	mg/L	3.91	3.85	4.73	5.12	9.12	9.24	59.9	85.1
Mercury	ug/L	ND	1.4	6.9	8.4	14.6	38.4	235.0	99.0
Nickel	mg/L	2.49	2.33	1.39	1.47	2.00	2.07	14.5	23.2
Lead	mg/L	5.7	5.4	3.3	3.7	11	11	68	50
Antimony	ug/L	ND	ND	3.0	2.3	8.0	6.5	43.5	70.2
Selenium	ug/L	18.0	14.8	8.2	9.3	17.9	25.2	138	147
Thallium	mg/L	1.8	1.23	ND	ND	0.2	0.19	1.12	1.24
Zinc	mg/L	9.92	11	16.4	18.3	35.0	35.2	137	195

TABLE 2-7 (Continued)

SUPERNATANT METALS TESTING
STS SAMPLING EVENT - DECEMBER 1989

Parameter	Units	Outer Harbor B-205 0 Min	Outer Harbor B-205 15 Min	Outer Harbor B-206 0 Min	Outer Harbor B-206 15 Min	Outer Harbor B-207 0 Min	Outer Harbor B-207 15 Min	Lake Michigan Water
Silver	mg/L	0.441	0.062	0.362	0.098	0.108	0.017	ND
Arsenic	ug/L	2860	288	2990	786	538	118	ND
Beryllium	mg/L	0.06	0.03	0.07	0.03	0.04	ND	ND
Cadmium	mg/L	0.367	0.024	0.411	0.094	0.116	0.011	ND
Total Cyanide	ug/L	115	92	68	128	42	52	ND
Chromium	mg/L	6.72	1.57	4.72	1.49	0.910	0.218	ND
Hex. Chromium	mg/L	ND	ND	ND	ND	ND	ND	ND
Copper	mg/L	20.4	2.10	27.6	6.58	20.5	5.00	ND
Mercury	ug/L	30.2	5.2	17.8	7.4	2.1	1.8	ND
Nickel	mg/L	5.58	0.64	4.00	0.85	1.03	0.19	ND
Lead	mg/L	40	4.2	30	6.8	13	3.0	ND
Antimony	ug/L	5.2	ND	16.8	10.0	24.7	11.0	ND
Selenium	ug/L	93.0	8.4	48.0	8.2	9.9	ND	ND
Thallium	mg/L	1.46	ND	1.63	0.27	0.47	ND	ND
Zinc	mg/L	56.5	5.62	12.4	49.6	35.4	8.02	0.05

ND - Denotes concentrations below detection limits.

R/63SID/AA3

3.0 SITE INSPECTION PROCEDURES AND RESULTS

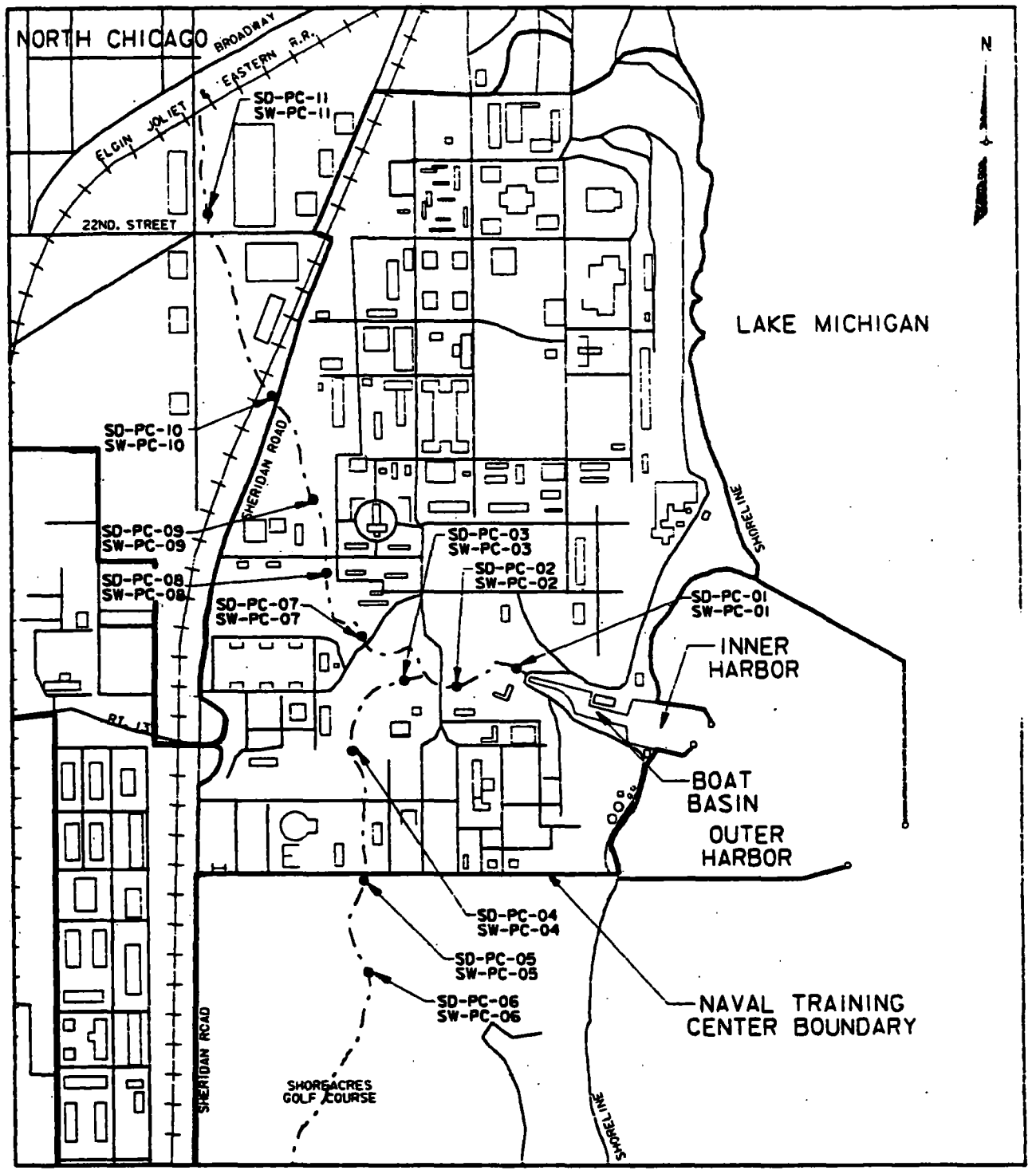
3.1 INTRODUCTION

To accomplish the SI objectives, the Halliburton NUS Team collected sediment and surface water samples from Pettibone Creek, the Boat Basin, the Inner Harbor, the Outer Harbor, and Lake Michigan between August 17 and 26, 1992. This section first describes the procedures followed to collect the samples, then presents and evaluates the resulting analytical data.

3.2 PETTIBONE CREEK SAMPLING PROCEDURES

A total of 11 surface water and 11 sediment samples were collected from Pettibone Creek (refer to Figure 3-1). Samples PC-01 through PC-04 and PC-07 through PC-09 were collected on NTC Great Lakes property. Samples PC-05 and PC-06 were collected south of NTC Great Lakes on Shoreacres Country Club property. Samples PC-10 and PC-11 were collected north of NTC Great Lakes in the City of North Chicago. At each location, the surface water sample was collected prior to the sediment sample. To collect the surface water sample, the sampler donned waders and entered the creek, approaching the desired sample location from downstream. When the sampler arrived at the desired location, surface water was collected in the required sample bottles by lowering the bottles into the creek and allowing them to fill with water. Powderless surgical gloves were worn by the sampler during this process. Also, those bottles which did not contain a preservative were rinsed several times with the surface water to minimize the introduction of contamination to the sample from the containers. An extra sample bottle was filled at each location; from this sample pH, temperature, conductivity, and turbidity readings were obtained. The readings obtained are presented in tabular format in Appendix C. Samples for dissolved metals analysis were filtered within 30 minutes of sample collection in all cases.

After the surface water sample had been collected, creek sediments were collected from the top foot of sediment using a decontaminated hand auger. Soil bottles for VOC analysis were filled first by transferring collected sediment from the hand auger directly to the bottles using a decontaminated stainless steel spoon. The remaining sediment material was then emptied into a decontaminated stainless steel compositing bowl and classified using the Unified Soil Classification System (USCS). Water was decanted, debris such as sticks and rocks were removed, and the sediment was mixed in the bowl using a spoon until a homogenous mixture was obtained. The resultant sediment was then divided into quadrants. A small sample was taken from each quadrant using a spoon and loaded into sample bottles. Excess sediment remaining in the bowl was returned to the creek at the sampling location. At each sampling location, a wooden lath was labeled with the sample identification number and pounded into the creek bottom.



LEGEND

● SEDIMENT AND SURFACE WATER SAMPLE LOCATION

— · — · — PETTIBONE CREEK

ABBREVIATIONS

PC - PETTIBONE CREEK
SD - SEDIMENT
SW - SURFACE WATER

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 525' 0 1250'

SCALE: 1" = 1250'

	NAMES	DATE
	JC	
	WES	
	MG	
	MG	

FIGURE 3-1

SAMPLE LOCATIONS IN PETTIBONE CREEK

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.080 DATE PLOTTED 3/2/93

CLIENT DWG. NUMBER

SECO DWG. NUMBER FIG3-1.DGN

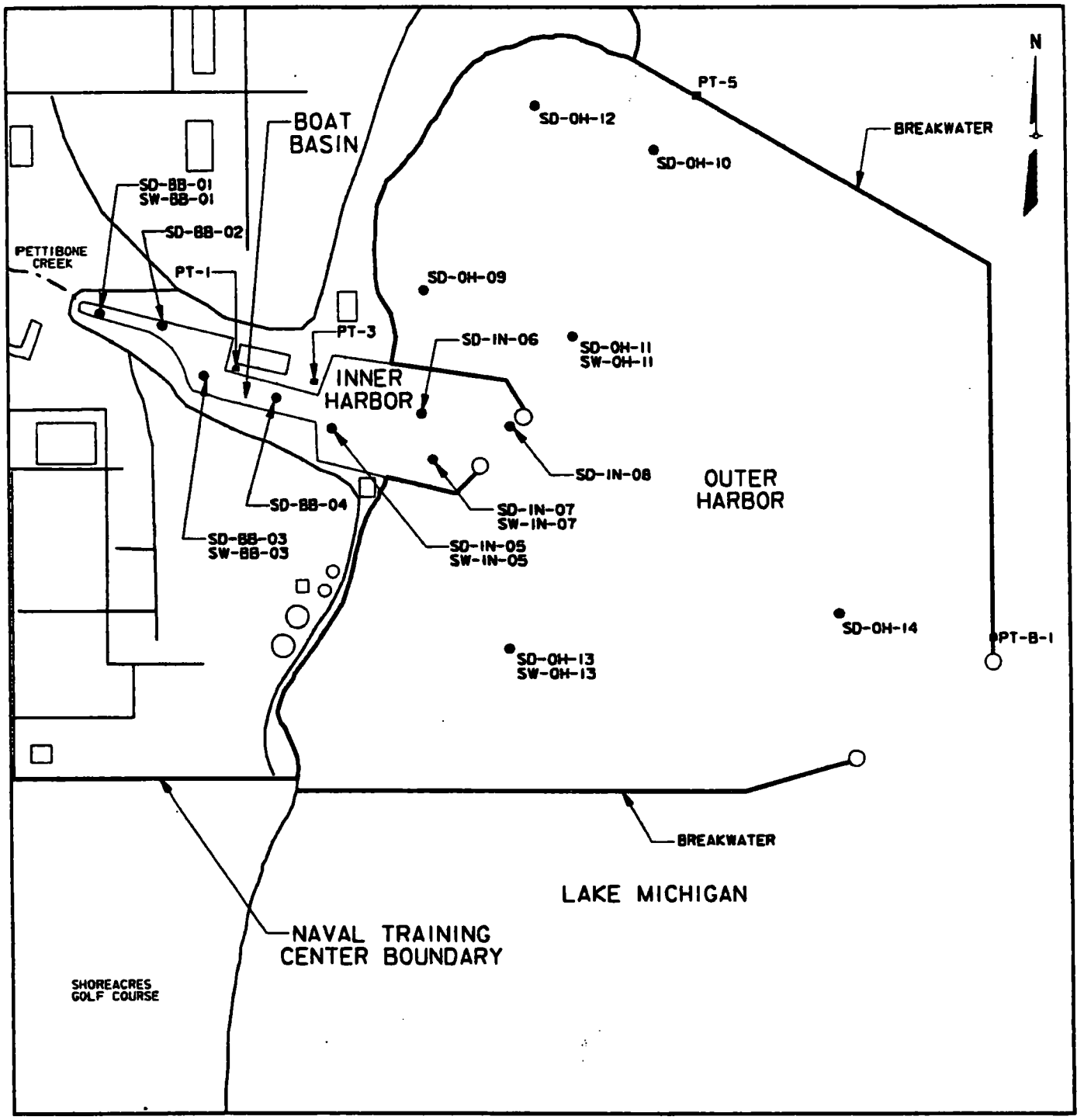
3.3 BOAT BASIN, INNER HARBOR, OUTER HARBOR, AND LAKE MICHIGAN SAMPLING PROCEDURES

In August 1992, the Halliburton NUS Team and its subcontractor, Ocean Surveys, Inc. of Old Saybrook, Connecticut, collected sediment and surface water samples in the Boat Basin, Inner Harbor, Outer Harbor, and Lake Michigan at the locations shown in Figures 3-2 and 3-3. Sediment cores were collected using the vibratory coring technique. Vibratory coring was accomplished using a shallow draft coring vessel and a portable vibratory corer designed for obtaining shallow water cores of unconsolidated materials.

The Illinois State Plane coordinate of each sample location was determined in the office using existing NTC Great Lakes topographic maps prior to the start of SI field work. In the field, each sample location was determined using a HYDRO I range azimuth optical navigation system. The HYDRO I is a laser-based, short-range dynamic navigation system with a stated position accuracy of plus or minus 2 feet at ranges of up to 5,000 feet. Operationally, the HYDRO I was positioned over a shore-based control point with known state plane coordinates (shore-based control points used during the SI are shown on Figure 3-2). The coordinates of the shore-based control point and the desired coordinates of the sample location were entered into the HYDRO I computer. The HYDRO I operator then sighted a prism mounted on the coring vessel and continuously tracked the vessel as it maneuvered into location. The ship's position was relayed from the shore to the shipboard computer via a digital radio link. Based on these data, the desired vibratory coring location was reached. The Illinois State Plane coordinates of the shore-based control points and the sampling locations are provided in Table 3-1. A survey nail was placed into the concrete at each shore-based control point.

Once the location was reached, the vessel was securely anchored. Prior to vibratory coring, surface water samples were collected at select locations using a Kemmerer sampler. The Kemmerer sampler was lowered half way to the harbor- or lake-bottom at each location, and then opened and allowed to fill with water. The filled Kemmerer sampler was then pulled up, and the water collected in the sampler was poured directly into sample bottles. At the surface water sample locations, a Seabird SBE 19 Seacat Profiler instrument was used to obtain water temperature, pH, dissolved oxygen (DO) concentration, and conductivity readings at 2-foot depth intervals. In addition, turbidity readings were taken at the water surface at each location. The readings obtained are presented on Water Quality Profile Forms in Appendix C.

Sediment cores were then collected using the vibratory corer. The vibratory coring apparatus consisted of an engine connected to aluminum core tubes. The engine generated vibrations which pushed the core tube into the sediments. When the core had penetrated the sediments to the desired depth, the motor was shut off, and the core was retrieved using a winch system mounted on the vessel. Once a core had been



LEGEND

- ● SAMPLE LOCATION
- ■ SHORE-BASED HORIZONTAL CONTROL POINT

ABBREVIATIONS

BB - BOAT BASIN
IN - INNER HARBOR
OH - OUTER HARBOR
LM - LAKE MICHIGAN
PT - HORIZONTAL CONTROL POINT
SD - SEDIMENT
SW - SURFACE WATER

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1"=500'

NAMES	DATE
JC	
WES	
MG	
MG	

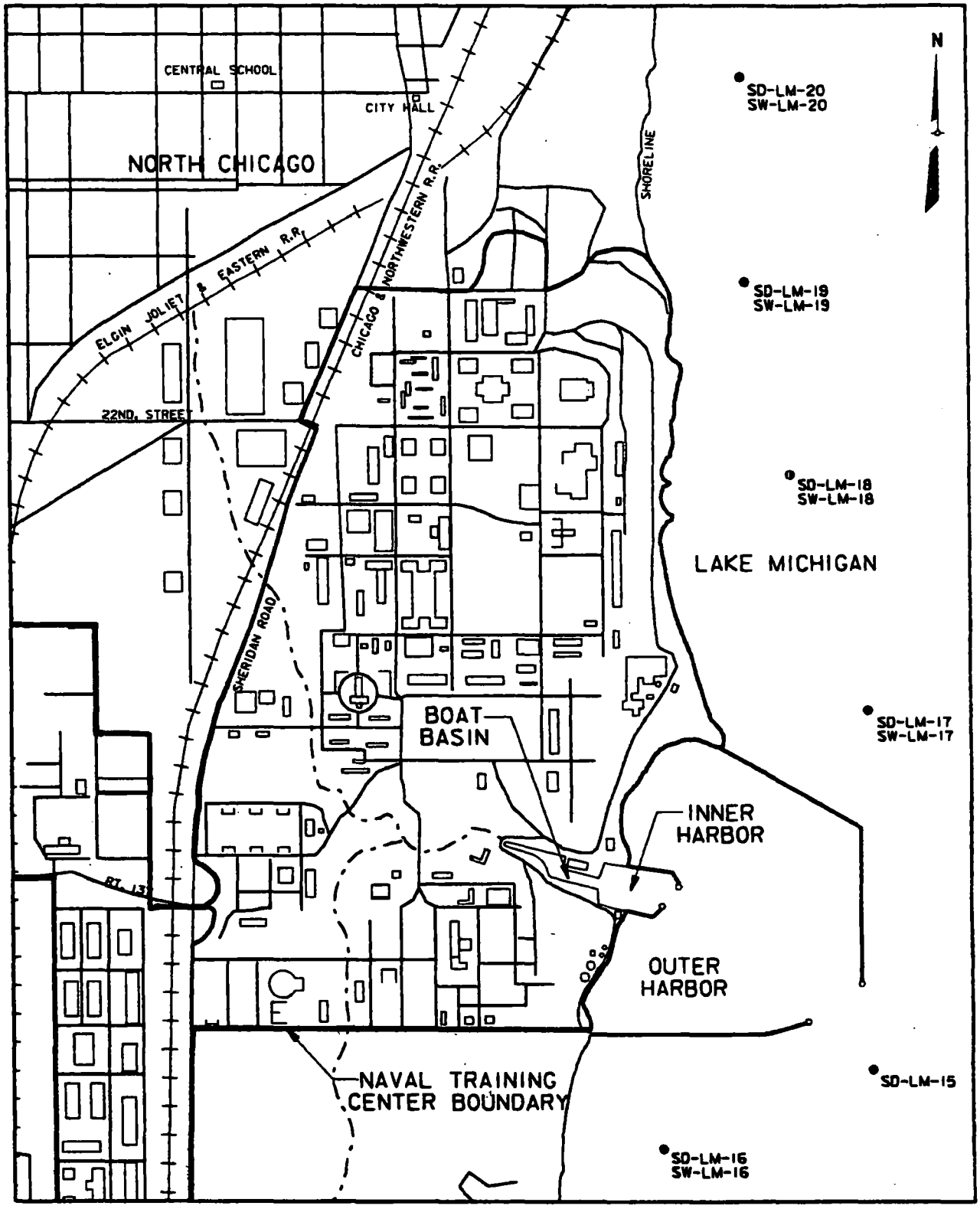
FIGURE 3-2

SAMPLE LOCATIONS IN BOAT BASIN, INNER HARBOR AND OUTER HARBOR

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECD DWG. NUMBER FIG3-2.DGN



LEGEND

● SAMPLE LOCATION

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1" = 1250'

NAMES	DATE
JC	
BES	
MG	
MG	

FIGURE 3-3

SAMPLE LOCATIONS IN LAKE MICHIGAN

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93

CLIENT DWG. NUMBER

SECO DWG. NUMBER FIG3-3.DGN

TABLE 3-1

SHORE-BASED CONTROL POINTS AND SAMPLE LOCATION COORDINATES
SITE INSPECTION FOR PETTIBONE CREEK, BOAT BASIN, AND HARBOR AREAS
GREAT LAKES, ILLINOIS
NAVAL TRAINING CENTER
JUNE 1993

SHORE-BASED CONTROL POINTS	NORTHING	EASTING
PT-1	2,055,375	635,041
PT-3	2,055,334	635,315
PT-5	2,056.343	636,592
PT-B-1	2,054,392	637,591

SAMPLE LOCATION	NORTHING	EASTING
BB-01	2,055,548	634,614
BB-02	2,055,591	634,781
BB-03	2,055,378	634,964
BB-04	2,055,304	635,189
IN-05	2,055,226	635,338
IN-06	2,055,158	635,715
IN-07	2,055,113	635,706
IN-08	2,055,220	635,934
OH-09	2,055,649	635,623
OH-10	2,056,097	636,371
OH-11	2,055,452	636,138
OH-12	2,056,104	635,997
OH-13	2,054,325	635,885
OH-14	2,054,591	636,692
LM-15	2,053,659	637,581
LM-16	2,053,025	635,807
LM-17	2,056,723	637,446
LM-18	2,058,467	636,917
LM-19	2,059,883	636,574
LM-20	2,061,399	636,580

retrieved, a plastic cap was placed on its bottom to ensure the collected sediment was not lost. A power drill was then used to place holes through the core to determine the length of sediment retrieved. Once the length of retrieved sediment was determined, a tape measure was used to separate the top 3 feet from the bottom 3 feet of sediment collected. The core was next divided into 0- to 3-foot and 3- to 6-foot sections using a hack saw. The core sections were then capped and brought to the shore to be opened. At shore, the cores were opened and their contents emptied on a plastic liner. Photographs of the cores were taken, and descriptions of the cores were recorded on Sediment Core Logs (included in Appendix B) using a Munsell Soil Color Chart and the USCS. Sediment samples for VOC analysis were collected directly from the top 3 inches of each sediment core without mixing. The remaining core sediment was then mixed in a stainless steel compositing bowl with a decontaminated stainless steel spoon until a visually homogenous sample was obtained. The resultant mixed sediment composite was spread evenly at the bottom of the bowl and divided into quadrants. Portions were taken from each quadrant using the stainless steel spoon and loaded directly into sample bottles. Sediment samples were stored in a cooler on ice and then shipped to the laboratory for analysis. In all cases, samples were shipped priority overnight to the laboratory on the day collected.

3.4 PETTIBONE CREEK SEDIMENT SAMPLE DATA EVALUATION

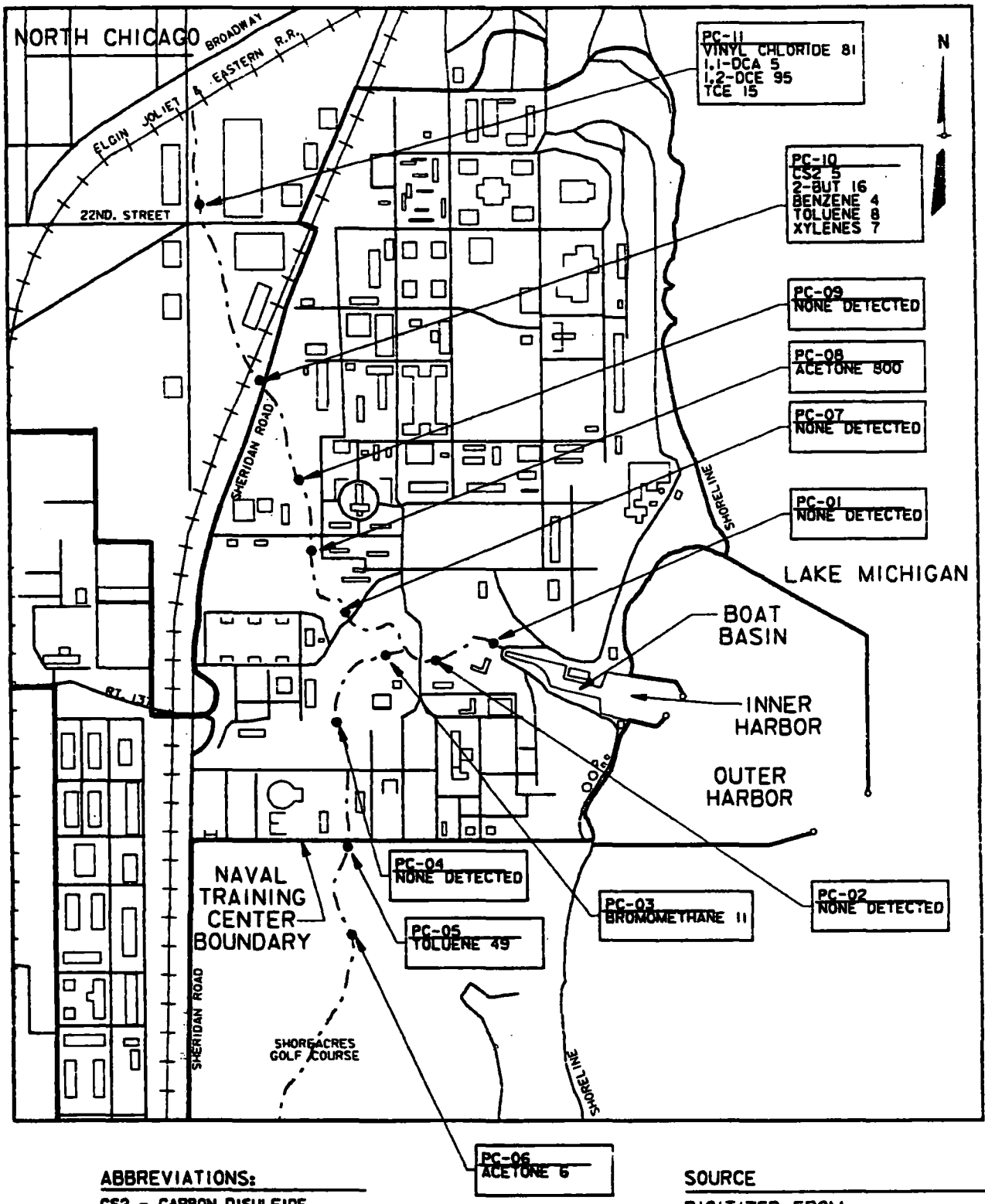
Eleven sediment samples were collected in Pettibone Creek and analyzed for TCL VOCs, SVOCs, pesticides, PCBs, and TAL metals/cyanide. Samples were collected from the top foot of sediment at each location. The following discussion presents the Pettibone Creek sediment sample analytical results for each parameter group.

3.4.1 Volatile Organic Compounds

VOCs detected in Pettibone Creek sediment samples are depicted on Figure 3-4. The two sediment samples found to contain the most VOCs were samples SD-PC-10 and SD-PC-11, both collected upstream from NTC Great Lakes in the City of North Chicago.

Sample SD-PC-11 contained four chlorinated VOCs. The presence of these chlorinated VOCs may be attributable to past chemical spills into Pettibone Creek near this location. As documented in Appendix D, a spill of mineral spirits occurred near this location in 1987. Mineral spirits typically contain approximately 1 percent chlorinated VOCs (Kiani, 1993). Chlorinated VOCs were also detected in the surface water sample collected at this location (SW-PC-11).

SEDIMENT 0 TO 1-FOOT SAMPLES



ABBREVIATIONS:

CS2 - CARBON DISULFIDE
2-BUT - 2-BUTANONE
1,1-DCA - 1,1-DICHLOROETHANE
1,2-DCE - 1,2-DICHLOROETHENE (TOTAL)
TCE - TRICHLOROETHENE

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1" = 1250'

NAMES	DATE
JC	
WES	
MG	
MG	

FIGURE 3-4

VOLATILE ORGANIC COMPOUNDS (ug/kg) DETECTED IN PETTIBONE CREEK SEDIMENTS

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93

CLIENT DWG. NUMBER

SECO DWG. NUMBER FIG3-4.DGN

The gasoline indicator compounds benzene, toluene, and total xylenes were detected in sediment sample SD-PC-10. Toluene was also detected in sediment sample SD-PC-05.

On NTC Great Lakes, two Pettibone Creek sediment samples contained VOCs. Bromomethane (11 ug/kg) was detected in SD-PC-03, and acetone (800 ug/kg) was detected in SD-PC-08.

Based on these data, the following conclusions can be made:

- Despite the VOCs detected in upgradient Pettibone Creek sediment samples (SD-PC-05, SD-PC-10, and SD-PC-11), significant levels of VOCs were not detected in Pettibone Creek sediments on NTC Great Lakes property, nor in Boat Basin, Inner Harbor, and Outer Harbor sediments.

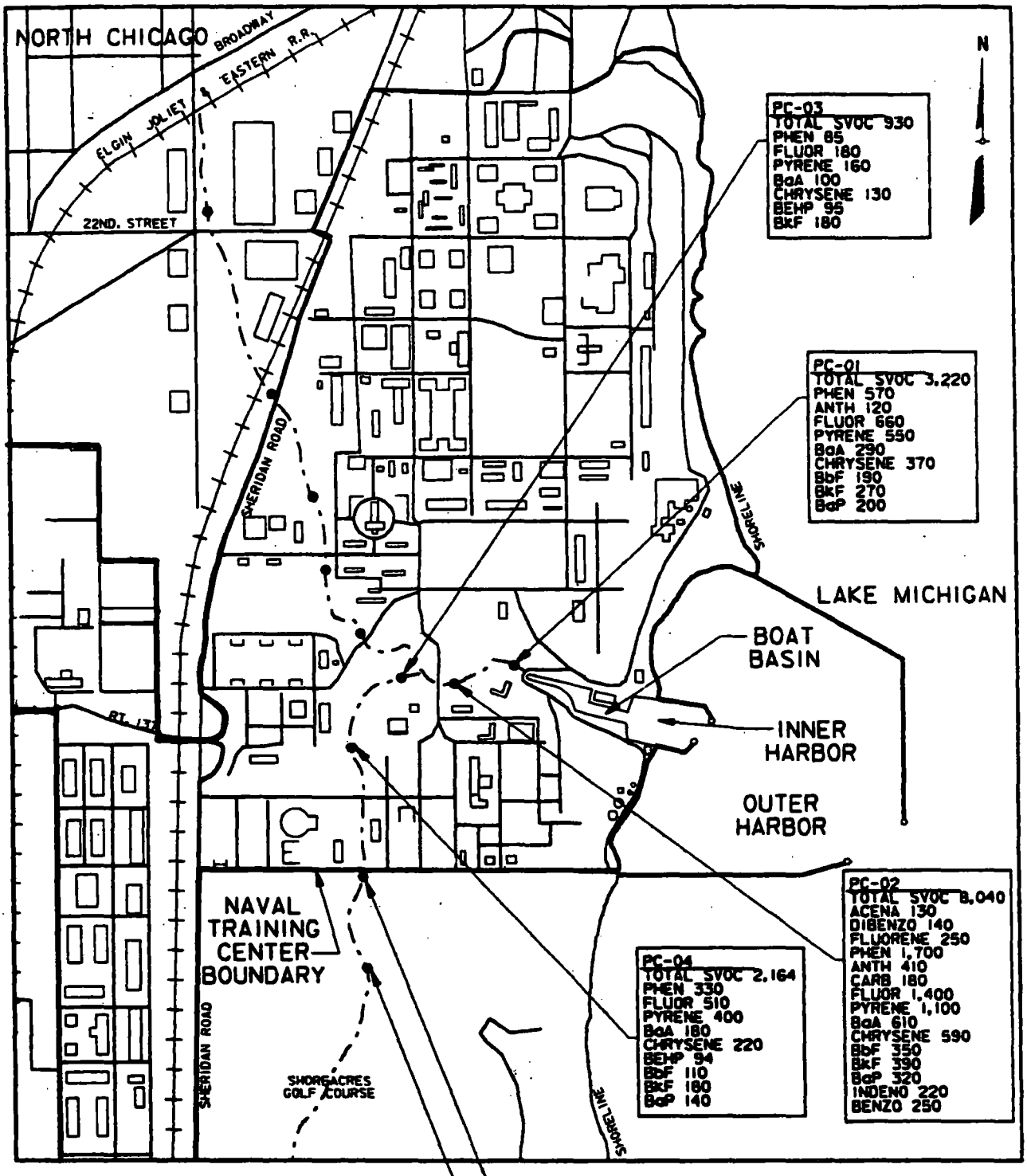
- As further demonstrated in the following sections, the portion of Pettibone Creek located north of 22nd Street in the City of North Chicago has suffered extensive environmental damage. Not only are numerous organic and inorganic contaminants present in the creek water and sediment in this area, but large amounts of debris, such as tires, paper, glass, and metal pieces, are scattered both in the creek and on its banks. The creek's water and sediment quality generally appears to improve with increasing distance from the PC-11 sample location.

3.4.2 Semi-Volatile Organic Compounds

SVOCs detected in Pettibone Creek sediment samples SD-PC-01 through SD-PC-06 are depicted on Figure 3-5. SVOCs detected in Pettibone Creek sediment samples SD-PC-07 through SD-PC-11 are depicted on Figure 3-6.

As can be seen from these two figures, SVOCs were detected in all Pettibone Creek sediment samples with the exception of the two south branch upgradient samples (SD-PC-05 and SD-PC-06). The highest total SVOC concentrations were found in samples SD-PC-09 and SD-PC-10, with total SVOC concentrations generally decreasing progressively downstream from these two samples. The total SVOC concentrations detected in samples SD-PC-09 and SD-PC-10 were also greater than the total SVOC concentration detected in any Boat Basin, Inner Harbor, or Outer Harbor sample.

SEDIMENT 0 TO 1-FOOT SAMPLES



ABBREVIATIONS:

ACENA - ACENAPHTHENE
DIBENZO - DIBENZOFURAN
PHEN - PHENANTHRENE
ANTH - ANTHRACENE
CARB - CARBAZOLE
FLUOR - FLUORANTHENE
BaA - BENZO(a)ANTHRACENE
BEHP - BIS(2-ETHYLHEXYL)PHTHALATE
BbF - BENZO(b)FLUORANTHENE
BkF - BENZO(k)FLUORANTHENE
BaP - BENZO(a)PYRENE
INDENO - INDENO (1,2,3-cd) PYRENE
BENZO - BENZO (g,h,i) PERYLENE

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

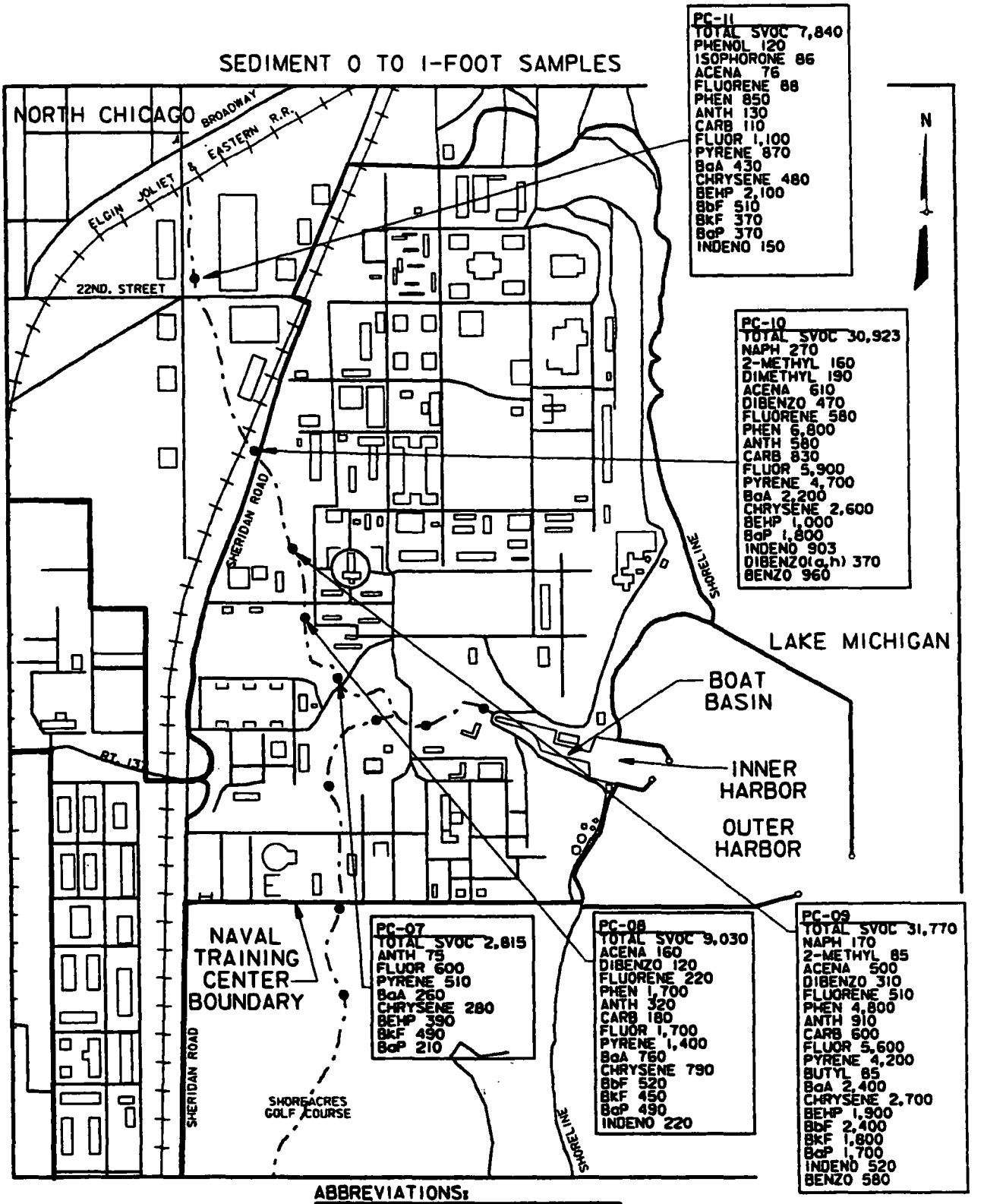
1250' 625' 0 1250'
SCALE: 1" = 1250'

	NAMES	DATE
	JC	
	WES	
	MG	
	MG	

FIGURE 3-5
SEMI-VOLATILE ORGANIC COMPOUNDS (ug/kg) DETECTED IN PETTIBONE CREEK SEDIMENTS SAMPLES SD-PC-01 THROUGH SD-PC-06
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.080 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER FIG3-5.DGN



ABBREVIATIONS:

ACENA - ACENAPHTHENE
DIBENZO - DIBENZOFURAN
2-METHYL - 2-METHYLNAPHTHALENE
PHEN - PHENANTHRENE
DIMETHYL - DIMETHYLPHTHALATE
ANTH - ANTHRACENE
CARB - CARBAZOLE
FLUOR - FLUROANTHENE
BaA - BENZO(a)ANTHRACENE
BEHP - BIS(2-ETHYLHEXYL)PHTHALATE
BbF - BENZO(b)FLUORANTHENE
BkF - BENZO(k)FLUORANTHENE
BaP - BENZO(a)PYRENE
INDENO - INDENO (1,2,3-cd) PYRENE
BENZO - BENZO (g,h,i) PERYLENE
BUTYL - BUTYLBENZYL PHTHALATE
DIBENZO - DIBENZO (a,h) ANTHRACENE

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1"=1250'

	NAMES	DATE
R.	JC	
SGN.	WES	
K.	MG	
E	MG	
F		
PP'D		

FIGURE 3-6

SEMI-VOLATILE ORGANIC COMPOUNDS (ug/kg) DETECTED IN PETTIBONE CREEK SEDIMENTS SAMPLES SD-PC-07 THROUGH SD-PC-11

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECD DWG. NUMBER FIG3-6.DGN

Two conclusions can be drawn from these data:

- Because SVOCs were detected in sediment samples SD-PC-10 and SD-PC-11 collected upstream from NTC Great Lakes, it is likely that unidentified off-site sources of SVOCs have contributed to the SVOC contamination detected in Pettibone Creek sediments on NTC Great Lakes property. These unidentified sources may have also contributed to the SVOCs present in Boat Basin, Inner Harbor and Outer Harbor sediments.

- SVOCs were not detected in upgradient samples SD-PC-05 and SD-PC-06, collected on Shoreacres Country Club property. However, SVOCs were detected in sample SD-PC-04, collected about 1,000 feet downstream from sample SD-PC-05, on NTC Great Lakes property. This appears to indicate that unidentified sources present on NTC Great Lakes property have also contributed to the SVOC contamination detected in Pettibone Creek sediments. Consequently, these unidentified sources may also have contributed to the SVOCs present in Boat Basin, Inner Harbor and Outer Harbor sediments.

3.4.3 Pesticides/PCBs

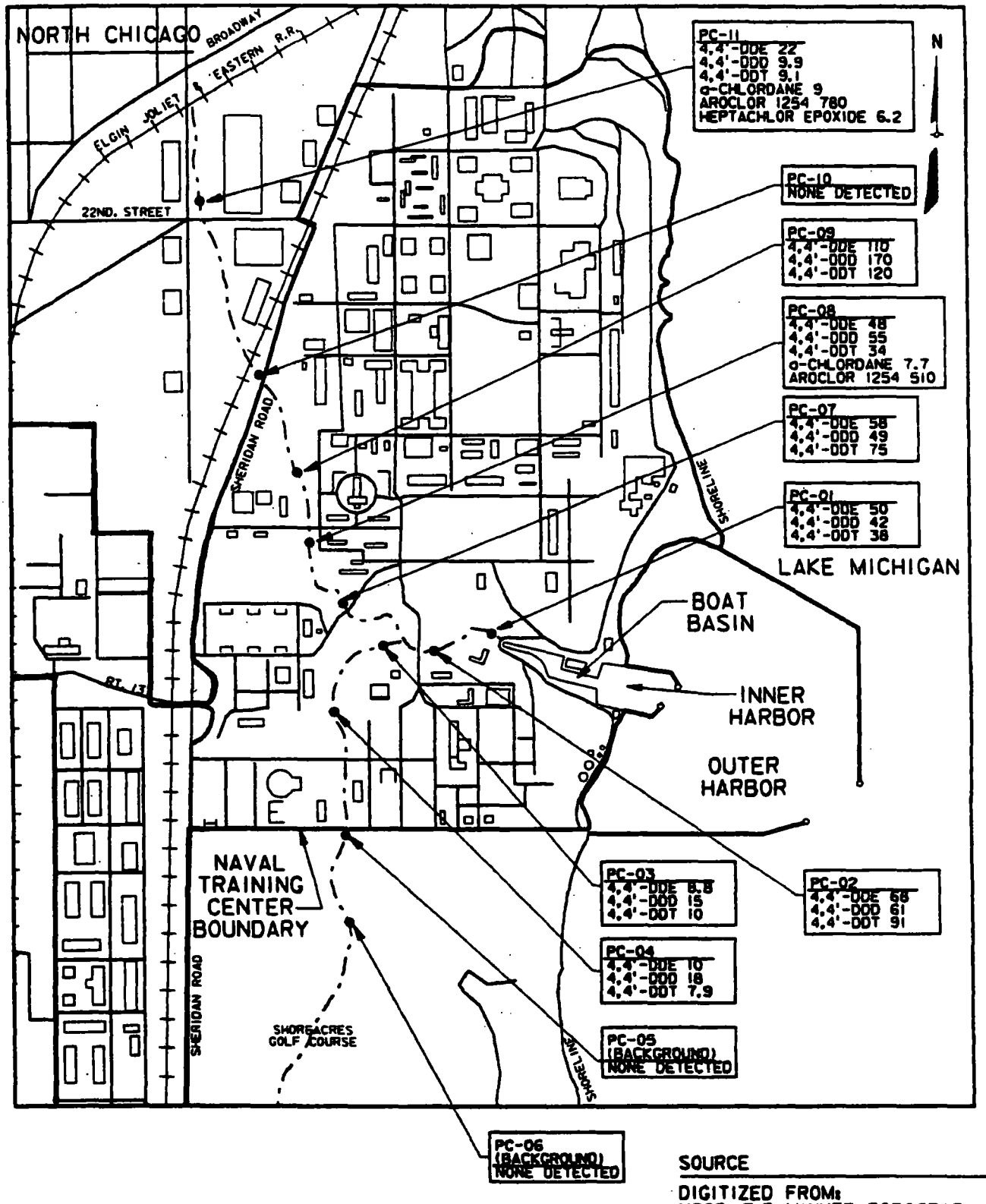
Pesticides and PCBs detected in Pettibone Creek sediment samples are depicted on Figure 3-7. As can be seen on this figure, the pesticide 4,4'-DDT and its breakdown compounds 4,4'-DDD and 4,4'-DDE (hereafter referred to as DDT, DDD, and DDE) were detected in all seven Pettibone Creek sediment samples collected on NTC Great Lakes property, and in one of the four samples collected off NTC Great Lakes property (SD-PC-11). Aroclor 1254 was detected in one background sediment sample (SD-PC-11), and in one sediment sample collected on NTC Great Lakes property (SD-PC-08).

The following conclusions can be drawn from these data:

- It appears that unidentified sources located both upstream from NTC Great Lakes in the City of North Chicago, and on NTC Great Lakes property, have contributed to the widespread occurrence of DDT, DDD, and DDE in Pettibone Creek, Inner Harbor, and Outer Harbor sediments. This conclusion is supported as follows.

  - DDT, DDD, and DDE were detected in upstream sample SD-PC-11, which indicates that unidentified sources located upstream from NTC Great Lakes in North Chicago may have contributed to the presence of DDT, DDD, and DDE in Pettibone Creek, Boat Basin, Inner Harbor, and Outer Harbor sediments.

SEDIMENT 0 TO 1-FOOT SAMPLES



SOURCE

DIGITIZED FROM:
USGS. 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1" = 1250'

NAMES	DATE
JC	
WES	
MG	
MG	

FIGURE 3-7

PESTICIDES/PCBs (ug/kg) DETECTED IN PETTIBONE CREEK SEDIMENTS

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93

CLIENT DWG. NUMBER

SECO DWG. NUMBER FIG3-27.DGN

- The concentrations of DDT, DDD, and DDE were found to be generally higher on NTC Great Lakes property than in sample SD-PC-11, indicating that sources on NTC Great Lakes may have also contributed to the widespread occurrence of these three pesticides in Pettibone Creek, Boat Basin, Inner Harbor, and Outer Harbor sediments. Another piece of evidence supporting this statement is that DDT, DDD, and DDE were not detected in upstream sample SD-PC-05 collected on Shoreacres Country Club property, but were detected in sample SD-PC-04, collected on NTC Great Lakes property about 1,000 feet downstream from SD-PC-05.

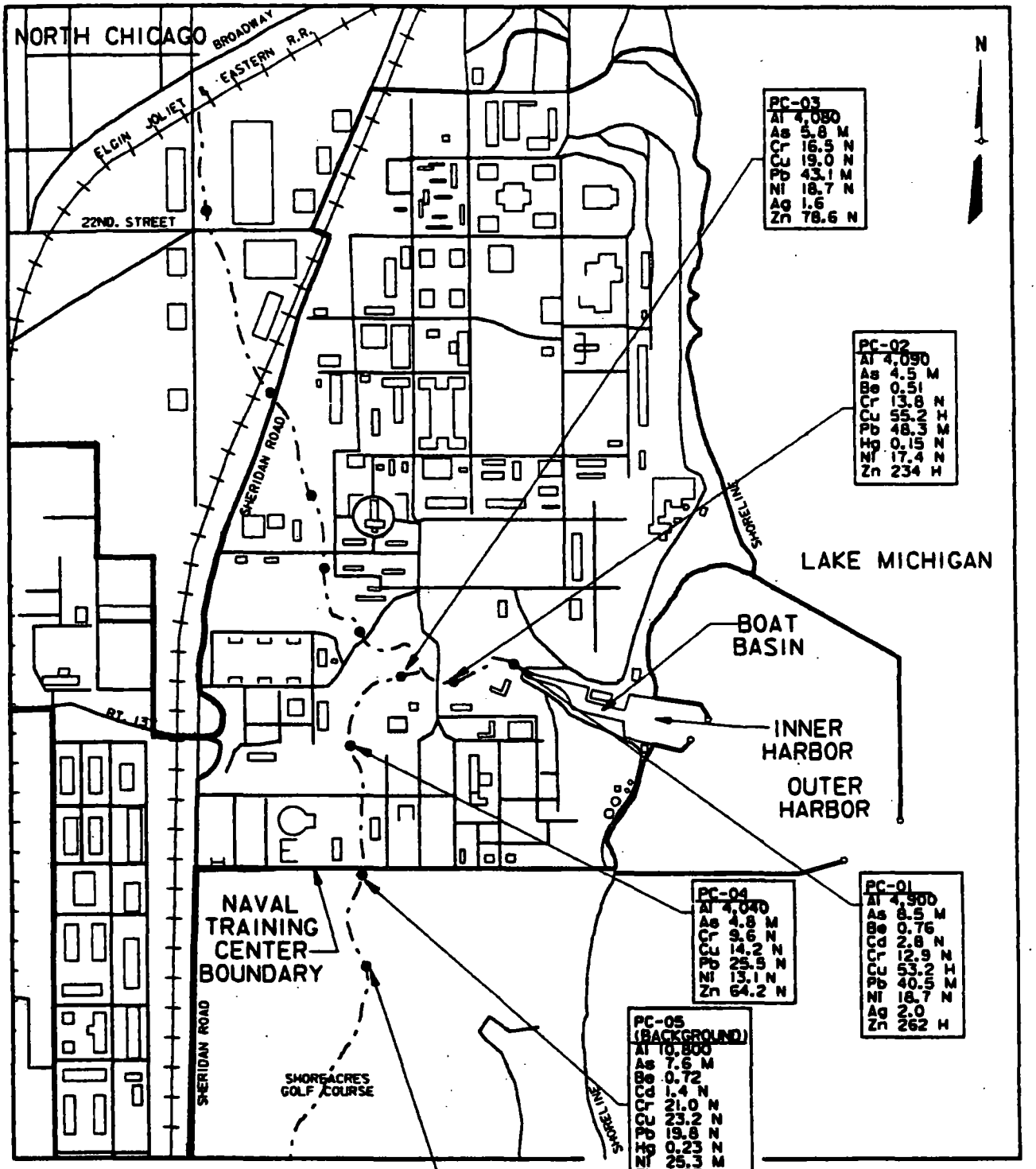
- Aroclor 1254 was detected only in samples SD-PC-08 and SD-PC-11. Based on these data, no conclusions can be made regarding the location of potential sources of the Aroclor 1254 detected in Boat Basin, Inner Harbor, and Outer Harbor sediments.

3.4.4 Metals

Priority pollutant metals detected in Pettibone Creek sediment samples are depicted on Figures 3-8 and 3-9. Statistical calculations were performed, using data from background locations SD-PC-05 and SD-PC-06, to determine the upper limit background metal concentrations in Pettibone Creek. The upper limit background concentration is the highest value that can be considered to be part of the normal distribution of Pettibone Creek sediment metal concentrations. The upper limit concentration was calculated by adding three sample standard deviations to the background sample mean for each metal. If a metal was not detected in a particular sample, an arbitrary concentration of one-half the detection limit was used to calculate the sample mean and sample standard deviation. The results of the statistical calculations are provided on Table 3-2. Pettibone Creek sediment sample metals data are compared to the upper limit background concentrations on Table 3-3. "Background" samples PC-SD-10 and PC-SD-11 were not used in the statistical calculations due to the high metal concentrations detected in these samples.

The pollutional classifications from Table 2-1 are included on Figures 3-8 and 3-9 for comparison purposes. It must be noted that the pollutional classifications were established by USEPA for Great Lakes harbor sediments only, not for Pettibone Creek sediments. However, this comparison may allow the reader a better understanding of the metal concentrations present in Pettibone Creek sediments.

SEDIMENT 0 TO 1-FOOT SAMPLES



POLLUTIONAL CLASSIFICATIONS

N - NOT POLLUTED
M - MODERATELY POLLUTED
H - HIGHLY POLLUTED
P - POLLUTED

NOTE

1. POLLUTIONAL CLASSIFICATIONS HAVE NOT BEEN ESTABLISHED FOR Al, Be, Se, AND Ag.
2. THE POLLUTIONAL CLASSIFICATIONS HAVE BEEN PROVIDED ON THIS FIGURE FOR COMPARISON PURPOSES ONLY. THESE CLASSIFICATIONS WERE ESTABLISHED FOR HARBOR SEDIMENTS, NOT PETTIBONE CREEK SEDIMENTS.

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1" = 1250'

NAMES	DATE
JC	
WES	
MG	
MG	

FIGURE 3-8

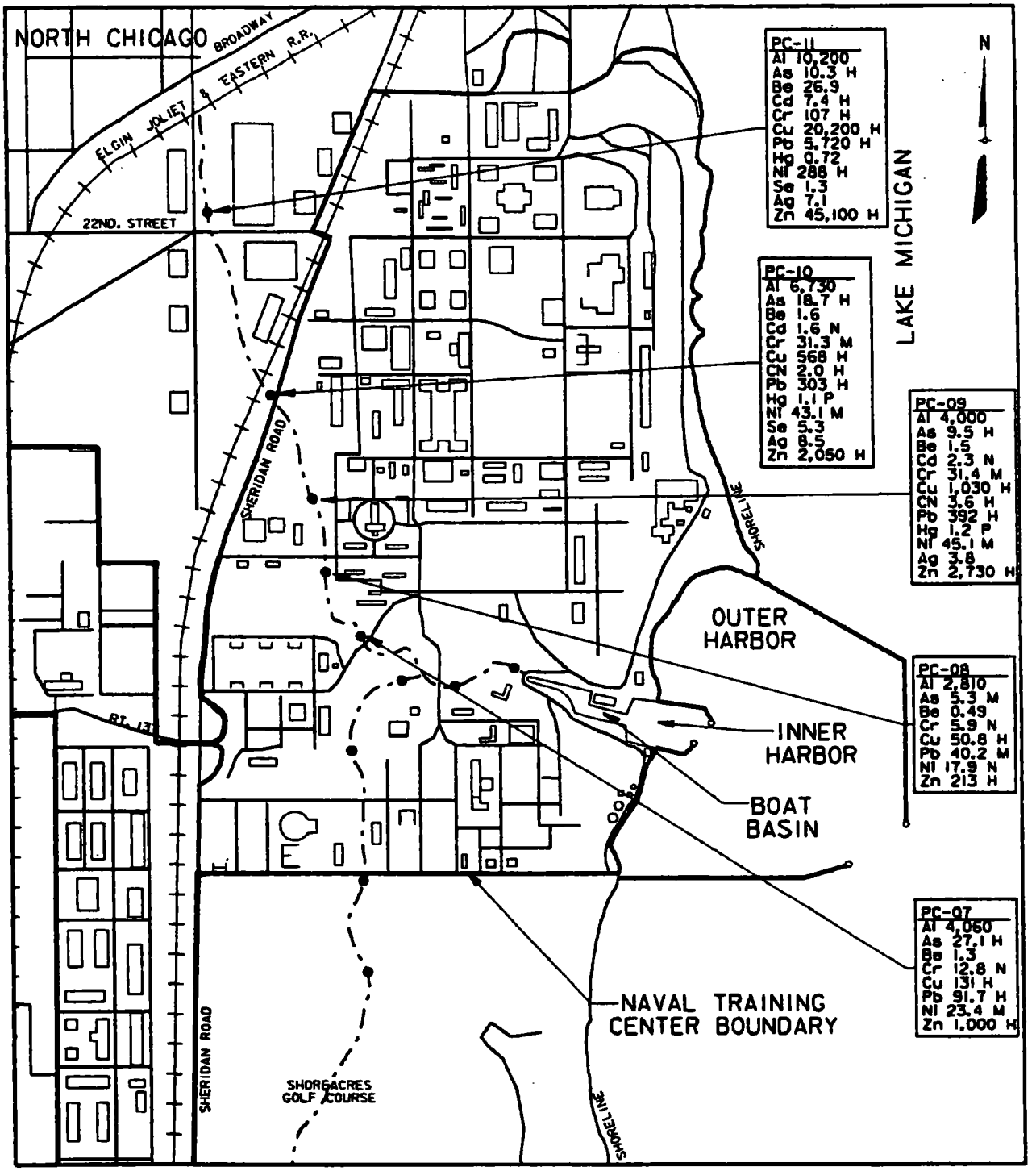
PRIORITY POLLUTANT METALS (mg/kg)
DETECTED IN PETTIBONE CREEK SEDIMENTS
SAMPLES SD-PC-01 THROUGH SD-PC-06

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECD DWG. NUMBER F153-8.DGN

SEDIMENT 0 TO 1-FOOT SAMPLES



POLLUTIONAL CLASSIFICATIONS

N - NOT POLLUTED
M - MODERATELY POLLUTED
H - HIGHLY POLLUTED
P - POLLUTED

NOTE

1. POLLUTIONAL CLASSIFICATIONS HAVE NOT BEEN ESTABLISHED FOR Al, Be, Se, AND Ag.
2. THE POLLUTIONAL CLASSIFICATIONS HAVE BEEN PROVIDED ON THIS FIGURE FOR COMPARISON PURPOSES ONLY. THESE CLASSIFICATIONS WERE ESTABLISHED FOR HARBOR SEDIMENTS, NOT PETTIBONE CREEK SEDIMENTS.

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1" = 1250'

NAMES	DATE
JC	
WES	
MG	
MG	

FIGURE 3-9

PRIORITY POLLUTANT METALS (mg/kg) DETECTED IN PETTIBONE CREEK SEDIMENTS SAMPLES SD-PC-07 THROUGH SD-PC-11

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER FIG3-9.DGN

TABLE 3-2

CALCULATION OF BACKGROUND METAL CONCENTRATIONS IN PETIBONE CREEK SEDIMENTS
SITE INSPECTION AT PETTIBONE CREEK, BOAT BASIN AND HARBOR AREAS
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS
JUNE 1993

METAL	BACKGROUND SAMPLES (mg/kg) SD-PC-05	SD-PC-06	SAMPLE MEAN (mg/kg)	SAMPLE STANDARD DEVIATION	UPPER LIMIT BACKGROUND VALUE (mg/kg)
Aluminum	10,800	9,200	10,000	1,131	13,393
Arsenic	7.6	23.9	15.8	11.53	50.4
Beryllium	0.72	0.70	0.71	0.0141	0.75
Cadmium	1.4	1.2	1.3	0.1414	1.7
Chromium	21.0	15.9	18.5	3.606	29.3
Copper	23.2	21.1	22.2	1.485	26.7
Cyanide	0.59 (U)	0.60 (U)	0.30	0.0035	0.31
Lead	19.8	20.6	20.2	0.5657	21.9
Mercury	0.23	0.11 (U)	0.14	0.1237	0.51
Nickel	25.3	25.1	25.2	0.1414	25.6
Selenium	0.24 (U)	0.23 (U)	0.12	0.0035	0.13
Silver	1.2 (U)	1.2 (U)	0.60	0	0.60
Thallium	0.53	0.47 (U)	0.38	0.2086	1.0
Zinc	63.2	55.6	59.4	5.374	75.5

QUALIFIERS:

U - This flag indicates that the analyte was analyzed for but not detected above the provided detection limit. In this case, a value of one-half the detection limit was used to calculate the sample means and sample standard deviations presented on the next page.

NOTE: The upper limit background concentration was calculated by adding three sample standard deviations to the background sample mean for each metal.

ABBREVIATIONS:

PC - Pettibone Creek
SD - Sediment Sample

R/63SID/AA4

TABLE 3-3

METALS DETECTED ABOVE UPPER LIMIT BACKGROUND CONCENTRATIONS IN PETTIBONE CREEK SEDIMENT SAMPLES NAVAL TRAINING CENTER GREAT LAKES, ILLINOIS JUNE 1993

Metal	Upper Limit Background Concentration	SD-PC-01	SD-PC-02	SD-PC-03	SD-PC-04	SD-PC-07	SD-PC-08	SD-PC-09	SD-PC-10	SD-PC-11
Aluminum	13,393	-	-	-	-	-	-	-	-	-
Arsenic	50.4	-	-	-	-	-	-	-	-	-
Beryllium	0.75	0.76	-	-	-	1.3	-	1.5	1.6	26.9
Cadmium	1.7	2.8	-	-	-	-	-	2.3	-	7.4
Chromium	29.3	-	-	-	-	-	-	31.4	31.3	107
Copper	26.7	53.2	55.2	-	-	131	50.8	1,030	568	20,200
Cyanide	0.31	-	-	-	-	-	-	3.6	2.0	-
Lead	21.9	40.5	48.3	43.1	25.5	91.7	40.2	392	303	5,720
Mercury	0.51	-	-	-	-	-	-	1.2	1.1	0.72
Nickel	25.6	-	-	-	-	-	-	45.1	43.1	288
Selenium	0.13	-	-	-	-	-	-	-	5.3	1.3
Silver	0.60	2.0	-	1.6	-	-	-	3.8	8.5	7.1
Thallium	1.0	-	-	-	-	-	-	-	-	-
Zinc	75.5	262	234	78.6	-	1,000	213	2,730	2,050	45,100

- Designates below upper limit background concentration or not detected.

UNITS: mg/kg

R/63SID/AA5

The following conclusions can be made based on the Pettibone Creek sediment sample metal data:

- Upstream sample SD-PC-11 contained concentrations of copper (20,200 mg/kg), lead (5,720 mg/kg), nickel (288 mg/kg), and zinc (45,100 mg/kg) higher than any other sediment sample collected in this SI. Based on these data, it is likely that unidentified off-site sources located upstream from NTC Great Lakes in the City of North Chicago have contributed to the metals present in Pettibone Creek sediments on NTC Great Lakes property, and in Boat Basin, Inner Harbor and Outer Harbor sediments.

- Sediment samples collected from the south branch of Pettibone Creek were found to contain metal concentrations generally less than the concentrations detected in the north branch.

3.5 BOAT BASIN, INNER HARBOR, OUTER HARBOR, AND LAKE MICHIGAN SEDIMENT SAMPLE DATA EVALUATION

The following sediment samples were collected and analyzed for TCL VOCs, SVOCs, Pesticides/PCBs, and TAL metals/cyanide:

Boat Basin	Eight samples from four locations (0- to 3-foot sample and 3- to 6-foot sample at each location).
Inner Harbor	Eight samples from four locations (0- to 3-foot sample and 3- to 6-foot sample at each location).
Outer Harbor	Eight samples from four locations (0- to 3-foot sample and 3- to 6-foot sample at each location).
Lake Michigan	Six sediment samples from six locations (0- to 3-foot sample at each location).

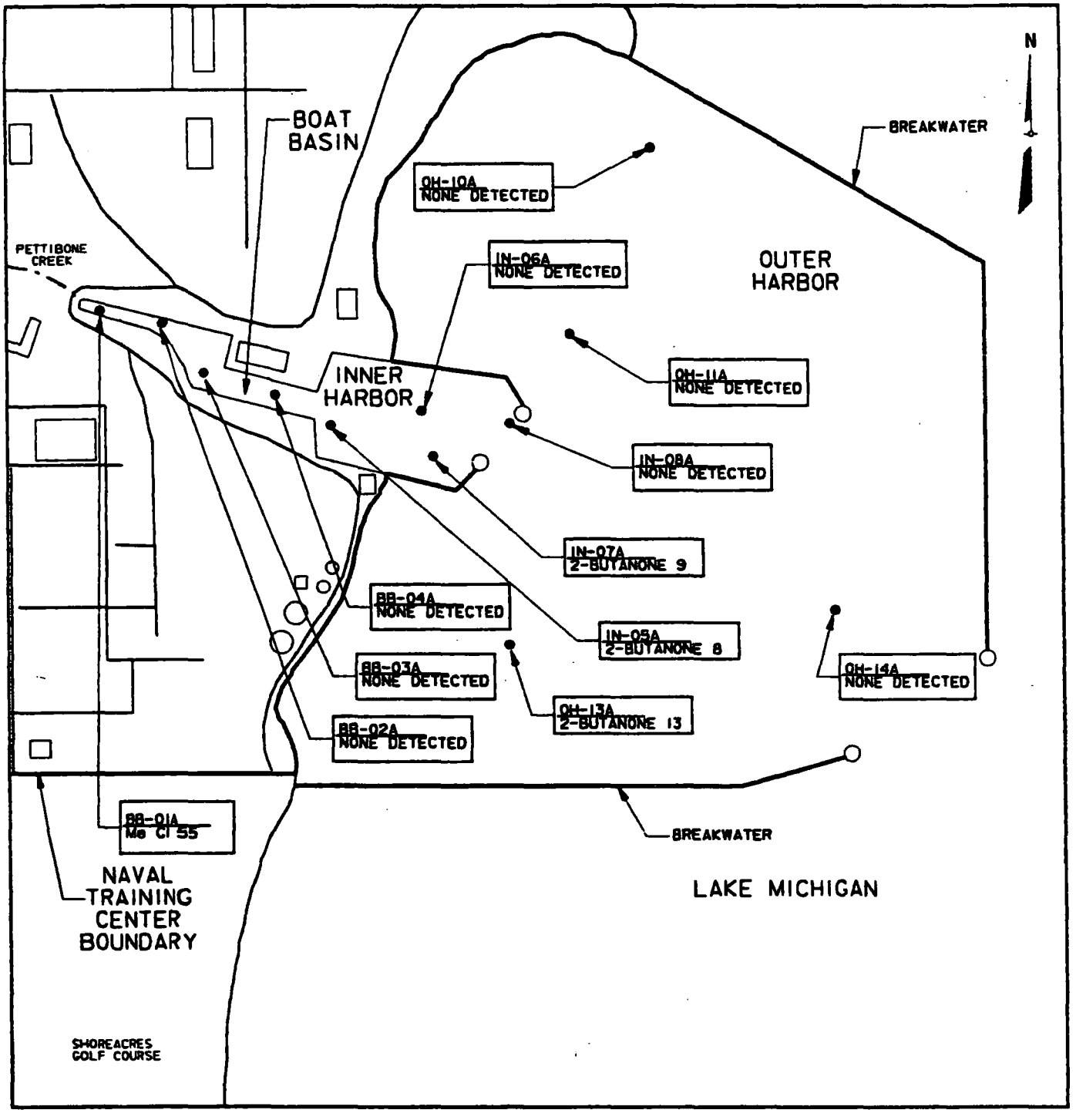
The following discussion presents the sediment sample analytical results.

3.5.1 Volatile Organic Compounds

3.5.1.1 Boat Basin, Inner Harbor and Outer Harbor Samples

VOCs detected in 0- to 3-foot and 3- to 6-foot sediment samples collected from the Boat Basin, Inner Harbor, and Outer Harbor are depicted on Figures 3-10 and 3-11, respectively.

SEDIMENT 0 TO 3-FOOT SAMPLES



SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1" =500'

	NAMES	DATE
	JC	
	WES	
	MS	
	MS	

FIGURE 3-10
VOLATILE ORGANIC COMPOUNDS (ug/kg) DETECTED IN BOAT BASIN, INNER HARBOR AND OUTER HARBOR SEDIMENTS-0 TO 3-FOOT SAMPLES

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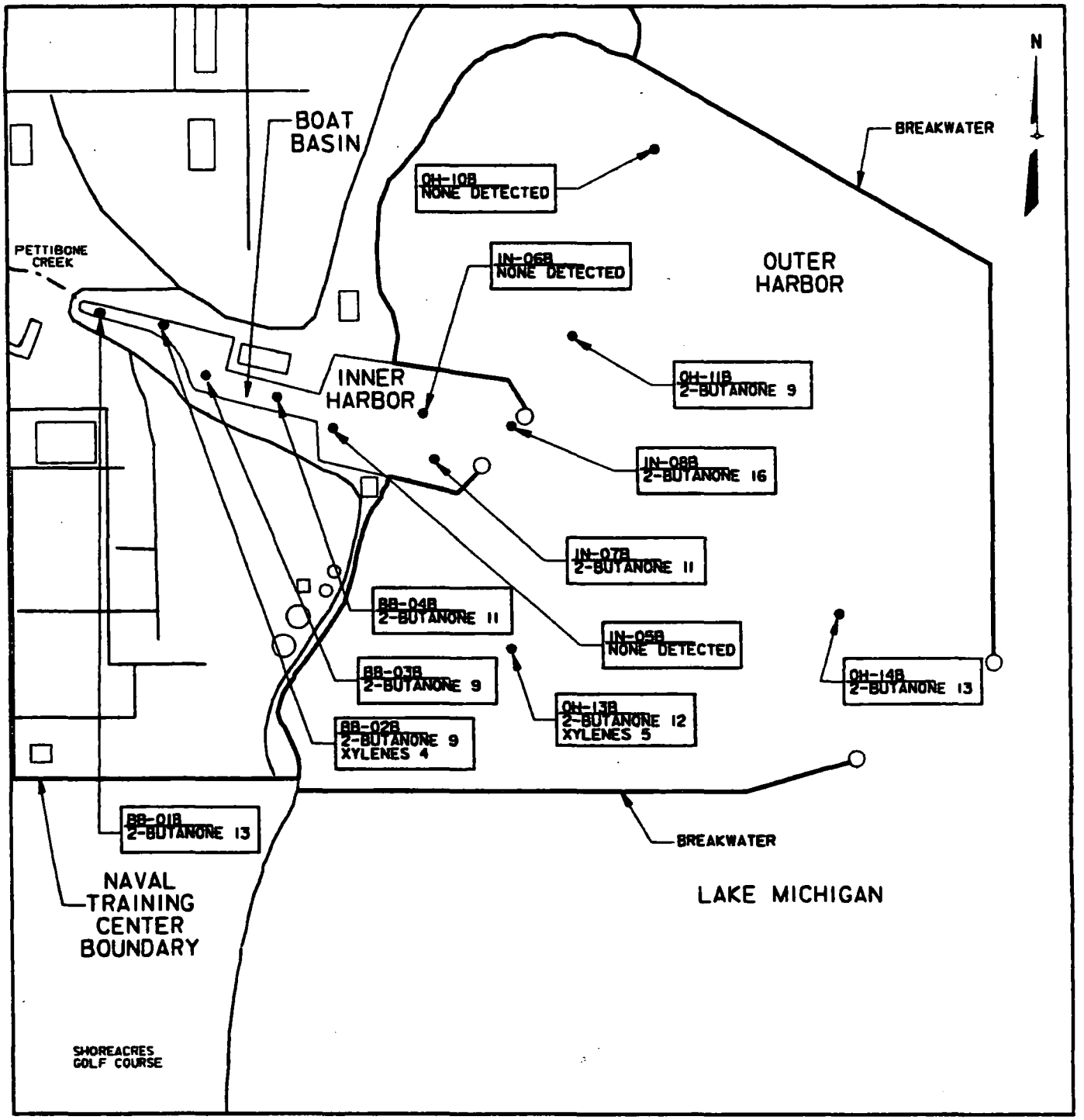
RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER FIG3-10.DGN

SEDIMENT 3 TO 6-FOOT SAMPLES



SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1" = 500'

NAMES	DATE
JC	
WES	
MG	
MG	

FIGURE 3-11

VOLATILE ORGANIC COMPOUNDS (ug/kg) DETECTED IN BOAT BASIN, INNER HARBOR AND OUTER HARBOR SEDIMENTS-3 TO 6-FOOT SAMPLES

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RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93

CLIENT DWG. NUMBER

SECO DWG. NUMBER FIG3-11.DGN

Three VOCs were detected in these areas, with 2-butanone being the most prevalent. All VOCs detected were in the low microgram per kilogram (ug/kg) range. Based on these data, VOC contamination of the Boat Basin, Inner Harbor, and Outer Harbor sediments sampled was found to be insignificant.

3.5.1.2 Lake Michigan Samples

VOCs detected in 0- to 3-foot sediment samples collected in Lake Michigan are depicted on Figure 3-12. Only 2-butanone was detected (13 ug/kg in SD-LM-20A).

Based on these data, VOC contamination of the Lake Michigan sediments sampled was found to be insignificant.

3.5.2 Semi-Volatile Organic Compounds

3.5.2.1 Boat Basin Samples

SVOCs detected in 0- to 3-foot and 3- to 6-foot sediment samples collected from the Boat Basin are depicted on Figures 3-13 and 3-14, respectively. Based on these data, the following conclusions can be made:

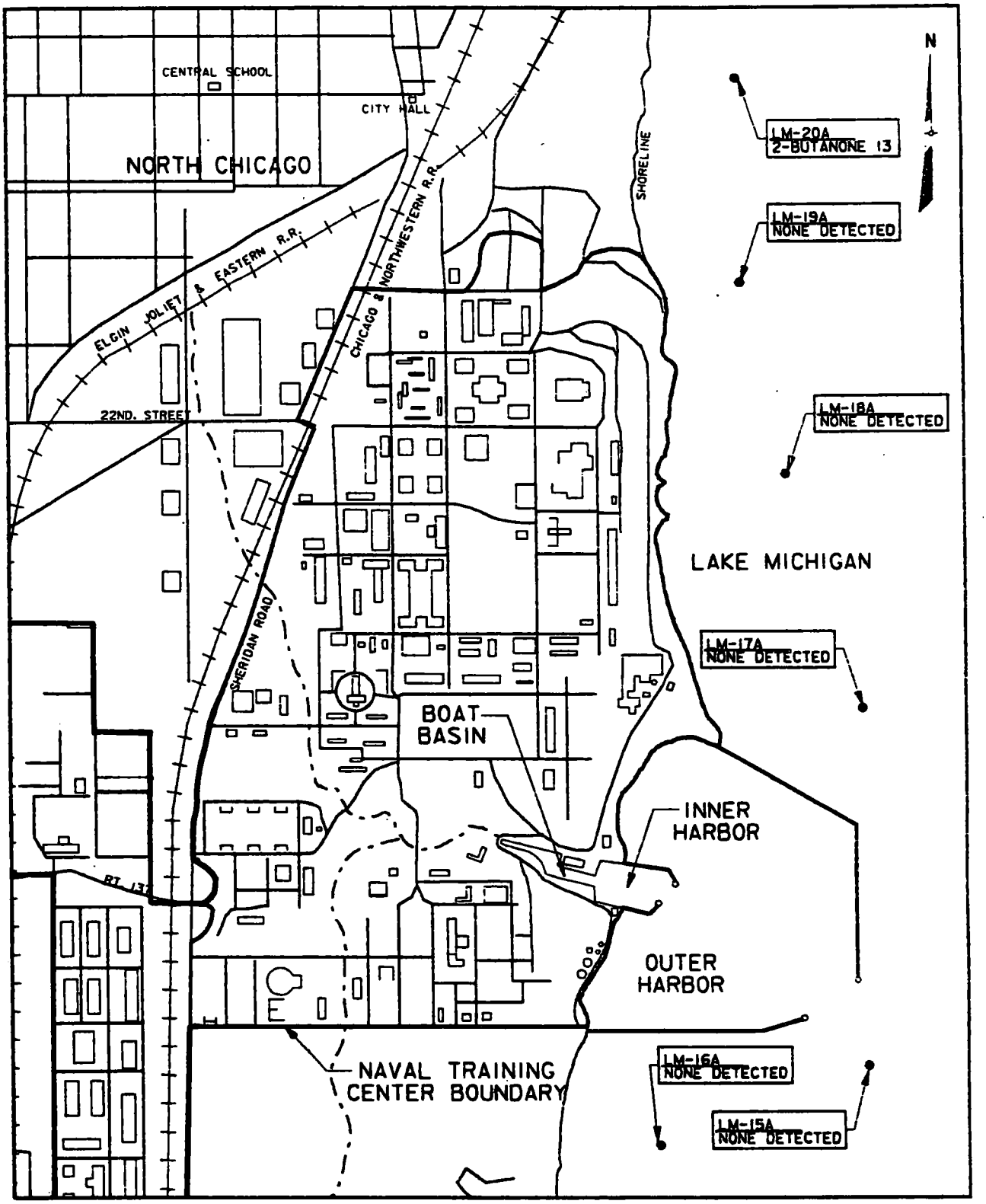
- SVOC contamination of Boat Basin sediments was found to be present at both the 0- to 3-foot and the 3- to 6-foot depth intervals.
- Total SVOCs were detected at concentrations of equal magnitude in both depth intervals sampled.
- SVOC contamination was found to be present in the Boat Basin to a depth of at least 6 feet.

3.5.2.2 Inner Harbor Samples

SVOCs detected in 0- to 3-foot and 3- to 6-foot sediment samples collected from the Inner Harbor are depicted on Figures 3-15 and 3-16, respectively. Based on these data, the following conclusions can be made:

- SVOC contamination of Inner Harbor sediments was found to be present at both the 0- to 3-foot and the 3- to 6-foot depth intervals.
- Total SVOC concentrations appear to decrease in magnitude with increasing depth in the southern half of the Inner Harbor (locations IN-05 and IN-07), but appear to remain similar in concentration with increasing depth in the center and northern half of the Inner Harbor (locations IN-06 and IN-08).

SEDIMENT 0 TO 3-FOOT SAMPLES



SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1" = 1250'

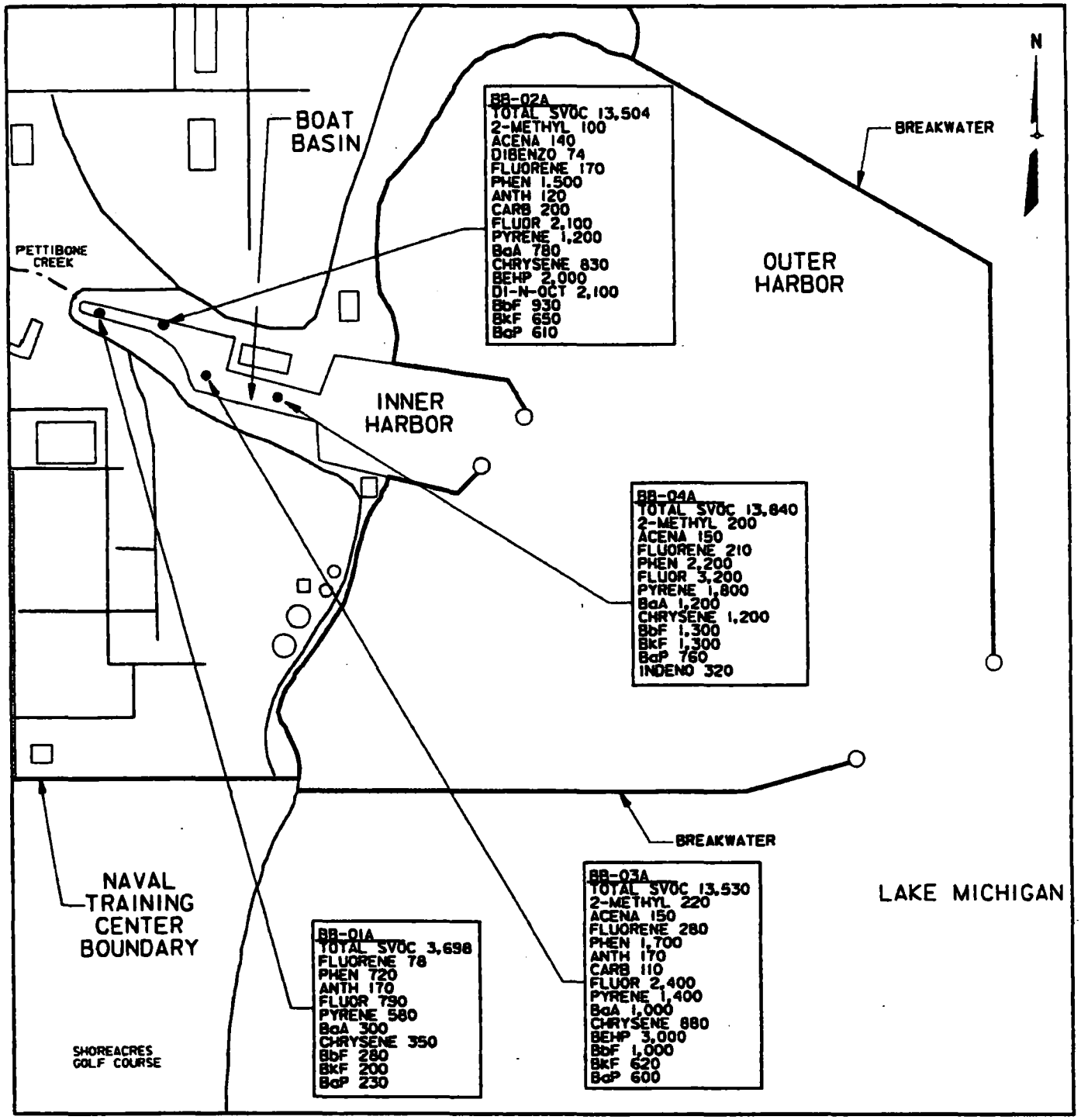
NAMES	DATE
JC	
WES	
MG	
MG	

FIGURE 3-12
VOLATILE ORGANIC COMPOUNDS (ug/kg) DETECTED IN LAKE MICHIGAN SEDIMENTS-0 TO 3-FOOT SAMPLES
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER FIG3-12.DGN

SEDIMENT 0 TO 3-FOOT SAMPLES



ABBREVIATIONS:

2-METHYL - 2-METHYLNAPHTHALENE
ACENA - ACENAPHTHYLENE
DIBENZO - DIBENZOFURAN
PHEN - PHENANTHRENE
ANTH - ANTHRACENE
CARB - CARBAZOLE
FLUOR - FLUORANTHENE
BaA - BENZO(a)ANTHRACENE
BEHP - BIS(2-ETHYLHEXYL)PHTHALATE
DI-N-OCT - DI-N-OCTYLPHTHALATE
BbF - BENZO(b)FLUORANTHENE
BkF - BENZO(k)FLUORANTHENE
BaP - BENZO(a)PYRENE
INDENO - INDENO (1,2,3-cd) PYRENE

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1"=500'

NAMES	DATE
JC	
WES	
MG	
MG	

FIGURE 3-13

SEMI-VOLATILE ORGANIC COMPOUNDS (ug/kg) DETECTED IN BOAT BASIN SEDIMENTS-0 TO 3-FOOT SAMPLES

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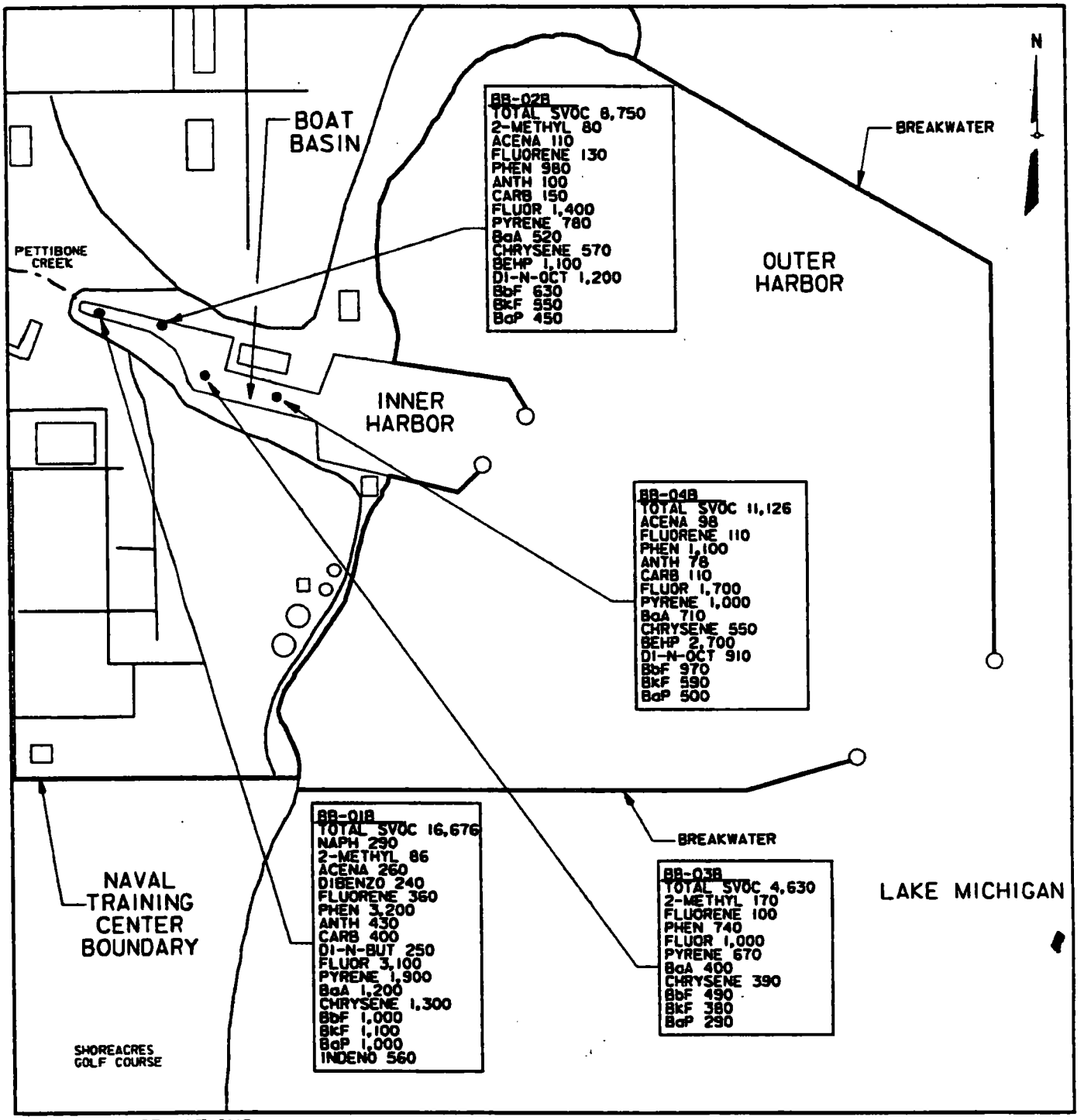
RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER 3-13.DGN

SEDIMENT 3 TO 6-FOOT SAMPLES



ABBREVIATIONS:

2-METHYL - 2-METHYLNAPHTHALENE
ACENA - ACENAPHTHYLENE
DIBENZO - DIBENZOFURAN
PHEN - PHENANTHRENE
ANTH - ANTHRACENE
CARB - CARBAZOLE
DI-N-BUT - DI-N-BUTYLPHTHALATE
FLUOR - FLUORANTHENE
BaA - BENZO(a)ANTHRACENE
BEHP - BIS(2-ETHYLHEXYL)PHTHALATE
DI-N-OCT - DI-N-OCTYLPHTHALATE
BbF - BENZO(b)FLUORANTHENE
BkF - BENZO(k)FLUORANTHENE
BaP - BENZO(a)PYRENE
INDENO - INDENO (1,2,3-cd) PYRENE
NAPH - NAPHTHALENE

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1" = 500'

NAMES	DATE
JC	
WES	
MG	
MG	

FIGURE 3-14

SEMI-VOLATILE ORGANIC COMPOUNDS (ug/kg) DETECTED IN BOAT BASIN SEDIMENTS-3 TO 6-FOOT SAMPLES

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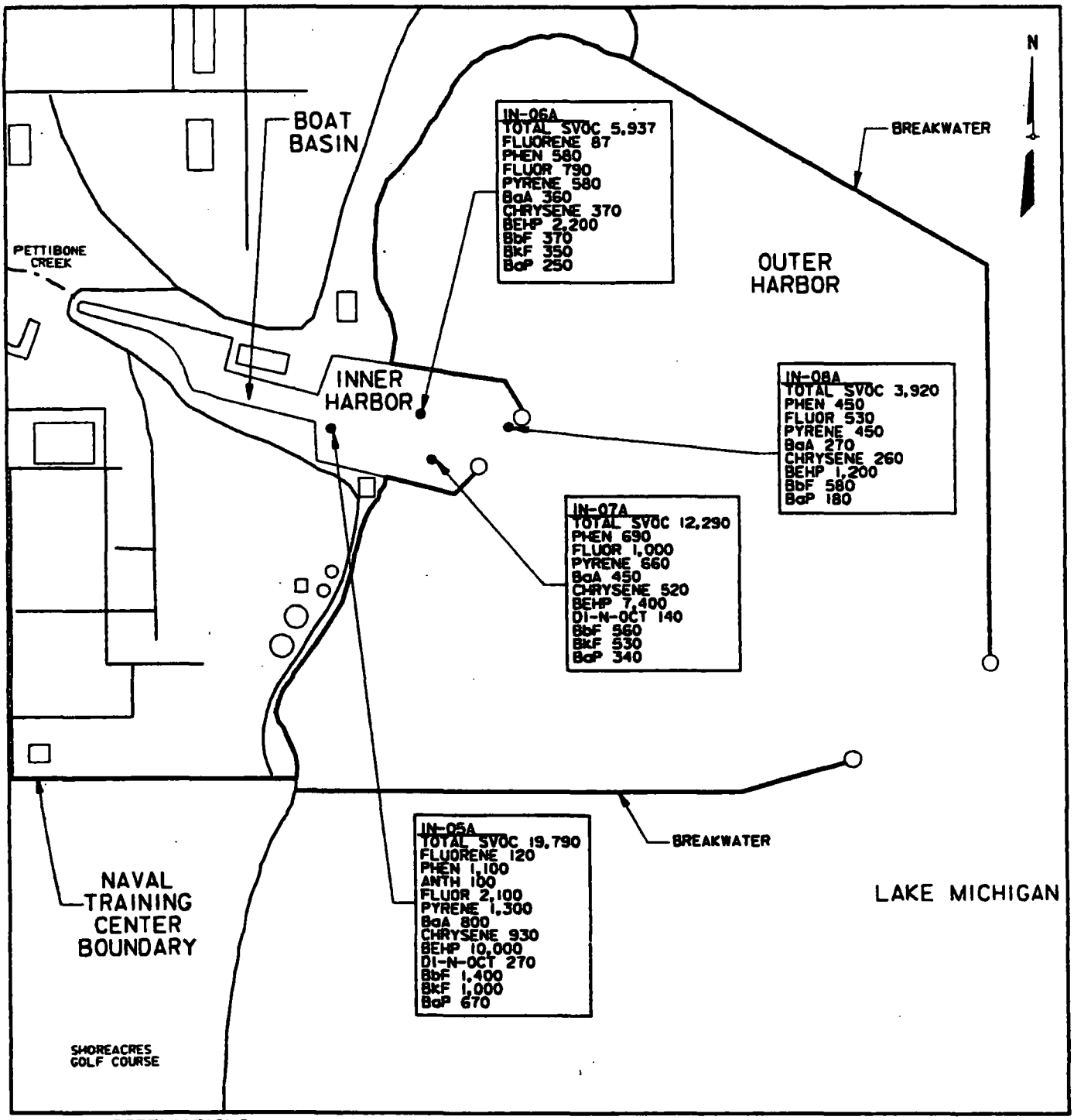
RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER FIG3-14.DGN

SEDIMENT 0 TO 3-FOOT SAMPLES



ABBREVIATIONS:

PHEN - PHENANTHRENE
ANTH - ANTHRACENE
FLUOR - FLUORANTHENE
BaA - BENZO(a)ANTHRACENE
BEHP - BIS(2-ETHYLHEXYL)PHTHALATE
DI-N-OCT - DI-N-OCTYLPHTHALATE
BbF - BENZO(b)FLUORANTHENE
BkF - BENZO(k)FLUORANTHENE
BaP - BENZO(a)PYRENE

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1" = 500'

NAMES	DATE
JC	
WES	
MG	
MG	

FIGURE 3-15

SEMI-VOLATILE ORGANIC COMPOUNDS (ug/kg) DETECTED IN INNER HARBOR SEDIMENTS-0 TO 3-FOOT SAMPLES

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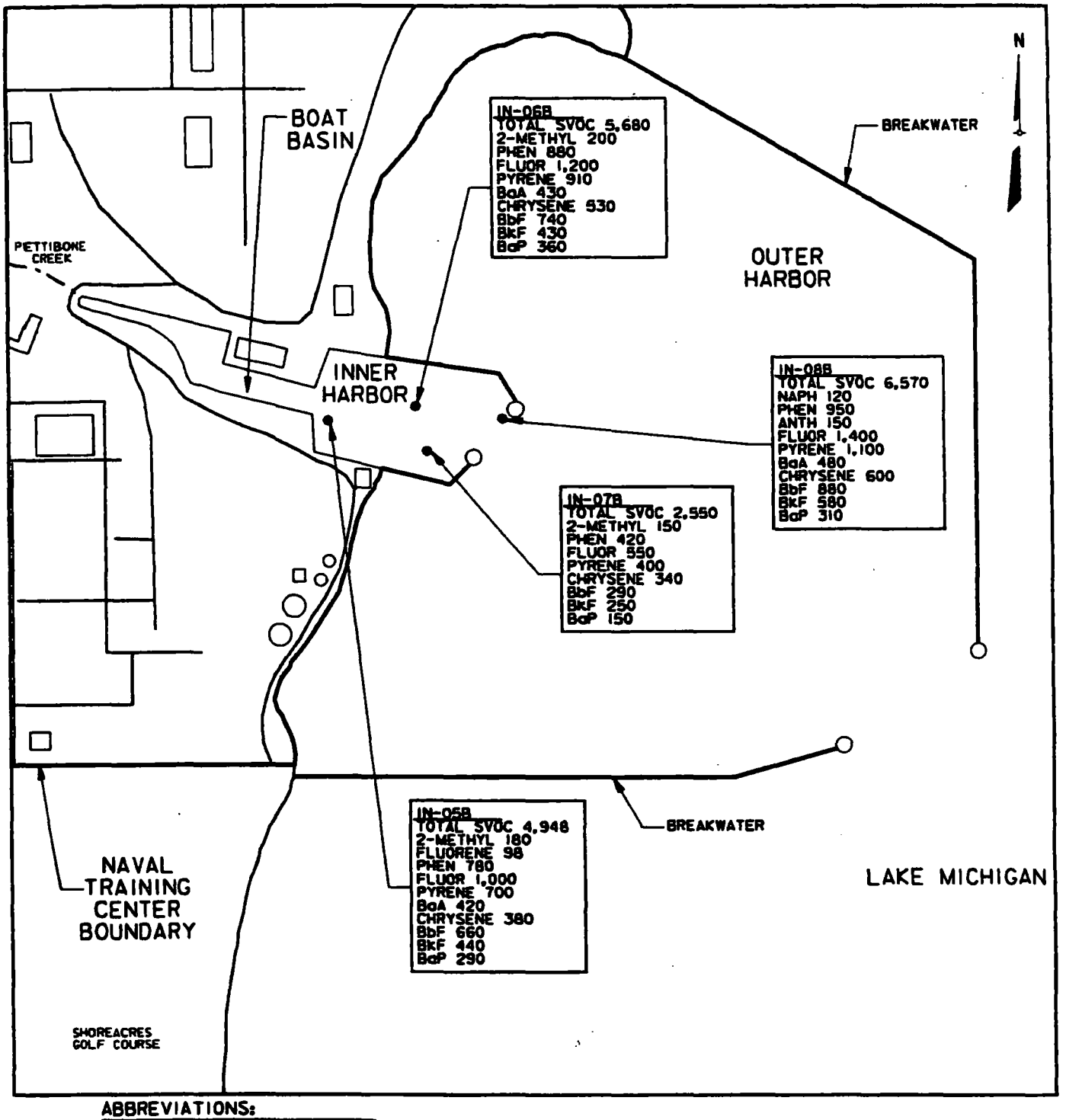
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECD DWG. NUMBER FIG3-15.DGN

SEDIMENT 3 TO 6-FOOT SAMPLES



ABBREVIATIONS:

2-METHYL - 2-METHYLNAPHTHALENE
PHEN - PHENANTHRENE
ANTH - ANTHRACENE
FLUOR - FLUORANTHENE
BaA - BENZO(a)ANTHRACENE
BbF - BENZO(b)FLUORANTHENE
BkF - BENZO(k)FLUORANTHENE
BaP - BENZO(a)PYRENE
NAPH - NAPHTHALENE

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1"=500'

NAMES	DATE
JC	
WES	
MG	
MG	

FIGURE 3-16

SEMI-VOLATILE ORGANIC COMPOUNDS (ug/kg) DETECTED IN INNER HARBOR SEDIMENTS-3 TO 6-FOOT SAMPLES

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GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER FIG3-16.DGN

- SVOC concentrations detected in Inner Harbor 0- to 3-foot samples were similar in magnitude to SVOC concentrations detected in that same depth interval in the Boat Basin. However, SVOC concentrations detected in Inner Harbor 3- to 6-foot samples were slightly less in magnitude when compared to the SVOC concentrations detected in that same depth interval in the Boat Basin.

- SVOC contamination was found to be present in the Inner Harbor to a depth of at least 6 feet.

3.5.2.3 Outer Harbor Samples

SVOCs detected in 0- to 3-foot and 3- to 6-foot sediment samples collected from the Outer Harbor are depicted on Figures 3-17 and 3-18, respectively. Based on these data, the following conclusions can be made:

- SVOC contamination of Outer Harbor sediments at both the 0- to 3-foot and the 3- to 6-foot depth intervals is present at concentrations greater than background but less than the concentrations detected in the Boat Basin and Inner Harbor.

- Total SVOCs were detected in the Outer Harbor at similar concentrations in both depth intervals sampled.

3.5.2.4 Lake Michigan Samples

SVOCs detected in 0- to 3-foot background sediment samples collected in Lake Michigan are depicted on Figure 3-19. Total SVOCs in the background samples ranged from None Detected to 1,436 ug/kg. One possible explanation for the presence of SVOCs in the background samples is that the compounds are present as a result of commercial and industrial activities which have taken place along the southern Lake Michigan shoreline for over 100 years.

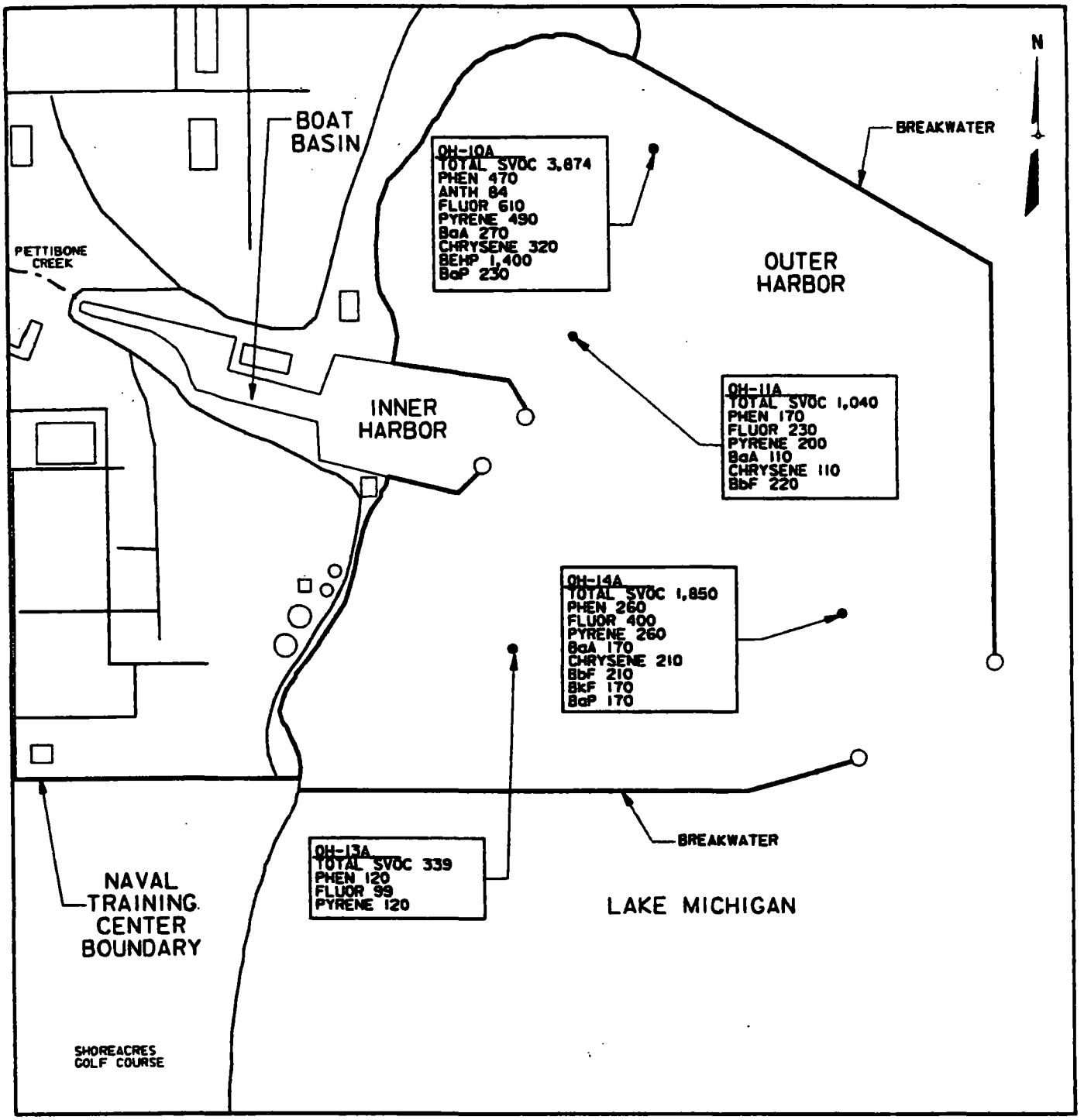
3.5.3 Pesticides/PCBs

3.5.3.1 Boat Basin and Inner Harbor Samples

Pesticides and PCBs (Aroclor 1254) detected in 0- to 3-foot and 3- to 6-foot sediment samples collected from the Boat Basin and the Inner Harbor are depicted on Figures 3-20 and 3-21, respectively. Based on these data, the following conclusions can be made:

- Pesticides and Aroclor 1254 were found to be widespread in Boat Basin and Inner Harbor sediments at both the 0- to 3-foot and the 3- to 6-foot depth intervals.

SEDIMENT 0 TO 3-FOOT SAMPLES



ABBREVIATIONS:

PHEN - PHENANTHRENE
ANTH - ANTHRACENE
FLUOR - FLUORANTHENE
BaA - BENZO(a)ANTHRACENE
BEHP - BIS(2-ETHYLHEXYL)PHTHALATE
BaP - BENZO(a)PYRENE
BbF - BENZO(b)FLUORANTHENE
BkF - BENZO(k)FLUORANTHENE

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1" = 500'

NAMES	DATE
JC	
WES	
MG	
MG	

FIGURE 3-17
SEMI-VOLATILE ORGANIC COMPOUNDS (ug/kg) DETECTED IN OUTER HARBOR SEDIMENTS-0 TO 3-FOOT SAMPLES

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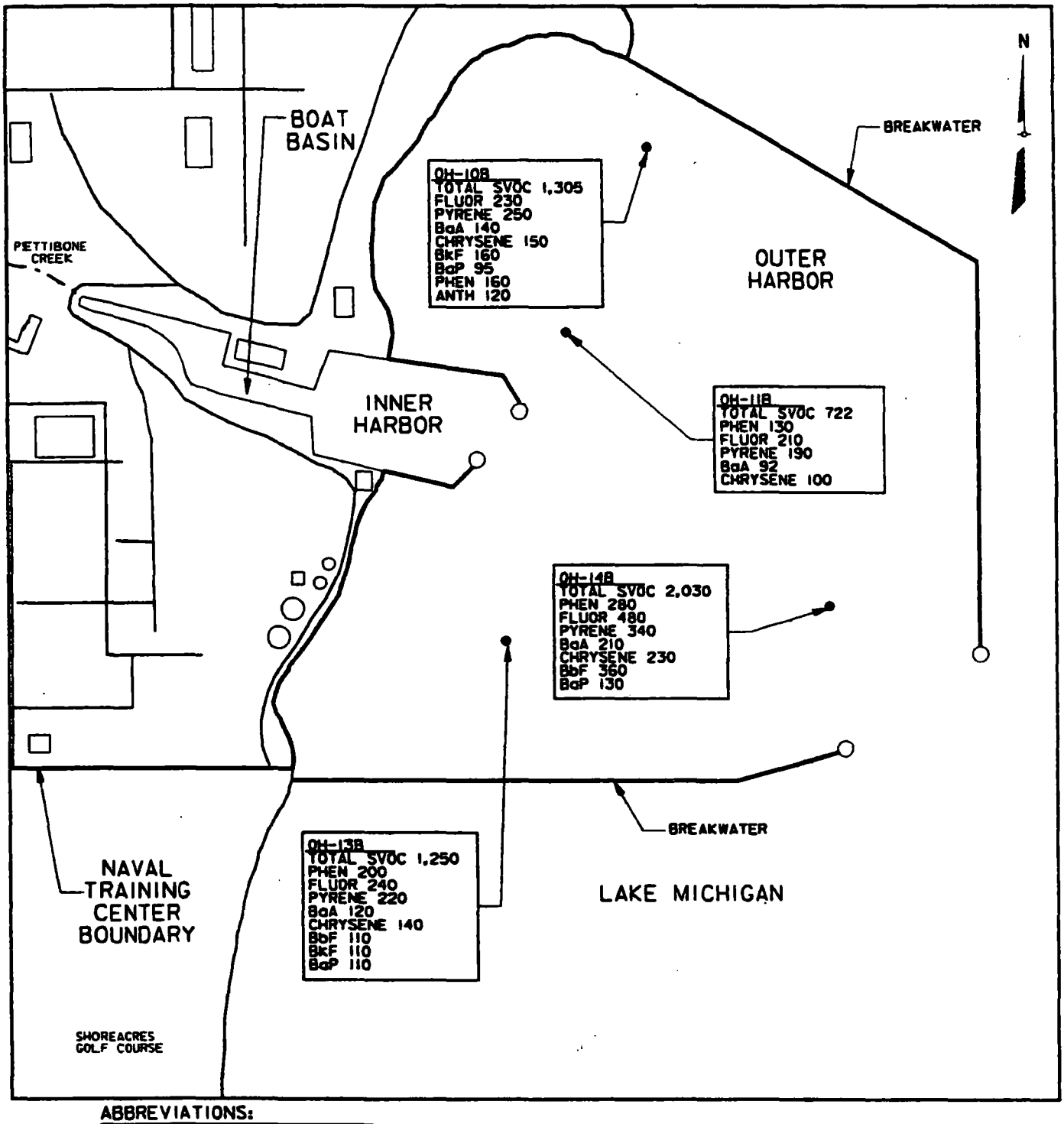
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER FIG3-17.DGN

SEDIMENT 3 TO 6-FOOT SAMPLES



ABBREVIATIONS:

PHEN - PHENANTHRENE
FLUOR - FLUORANTHENE
BaA - BENZO(a)ANTHRACENE
BaP - BENZO(a)PYRENE
BbF - BENZO(b)FLUORANTHENE
BkF - BENZO(k)FLUORANTHENE
ANTH - ANTHRACENE

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1" =500'

NAMES	DATE
JC	
WES	
MG	
MG	

FIGURE 3-18

SEMI-VOLATILE ORGANIC COMPOUNDS (ug/kg) DETECTED IN OUTER HARBOR SEDIMENTS-3 TO 6-FOOT SAMPLES

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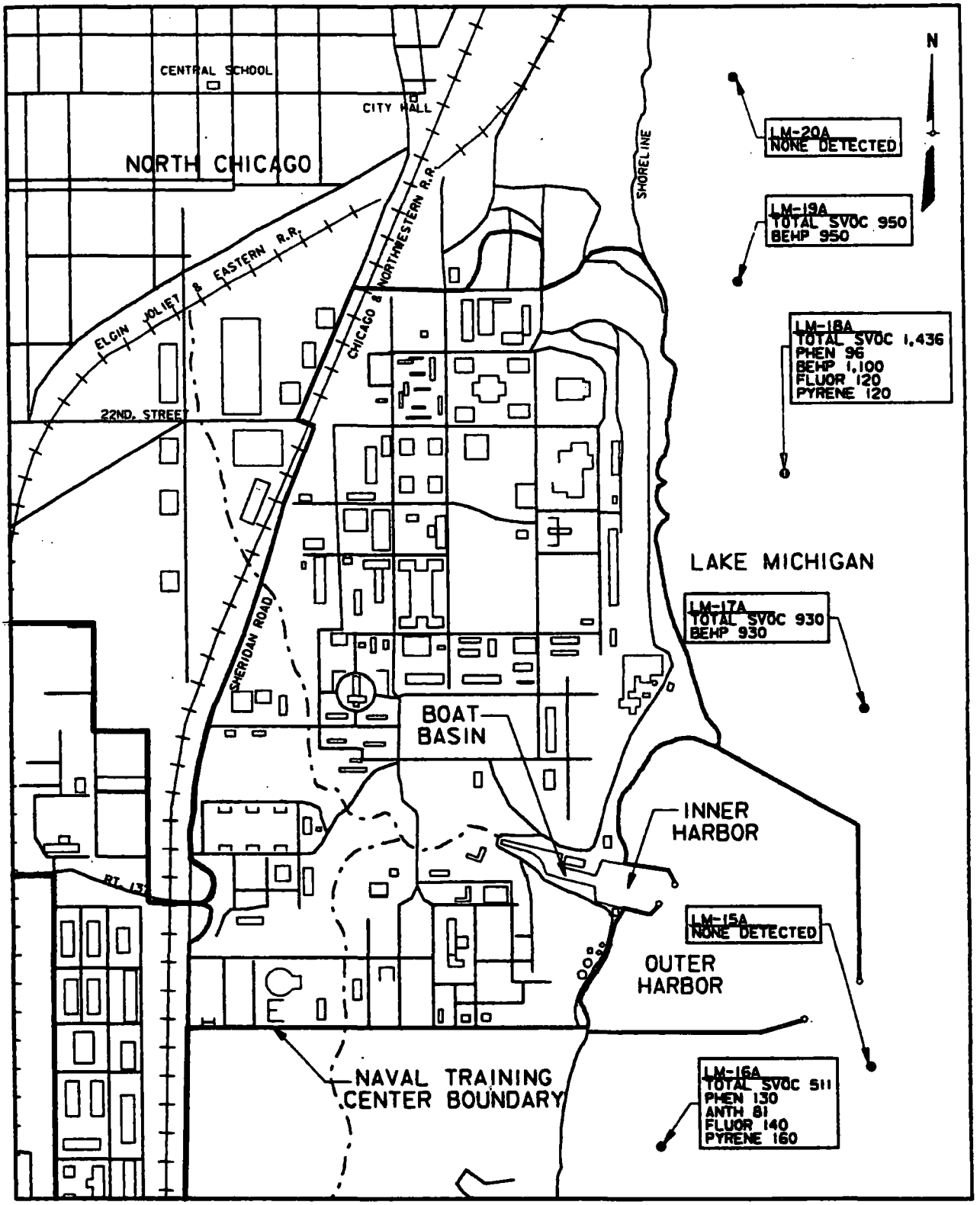
RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER F:G3-18.DGN

SEDIMENT 0 TO 3-FOOT SAMPLES



ABBREVIATIONS:

BEHP - BIS(2-ETHYLHEXYL)PHTHALATE
PHEN - PHENANTHRENE
FLUOR - FLUORANTHENE

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1"=1250'

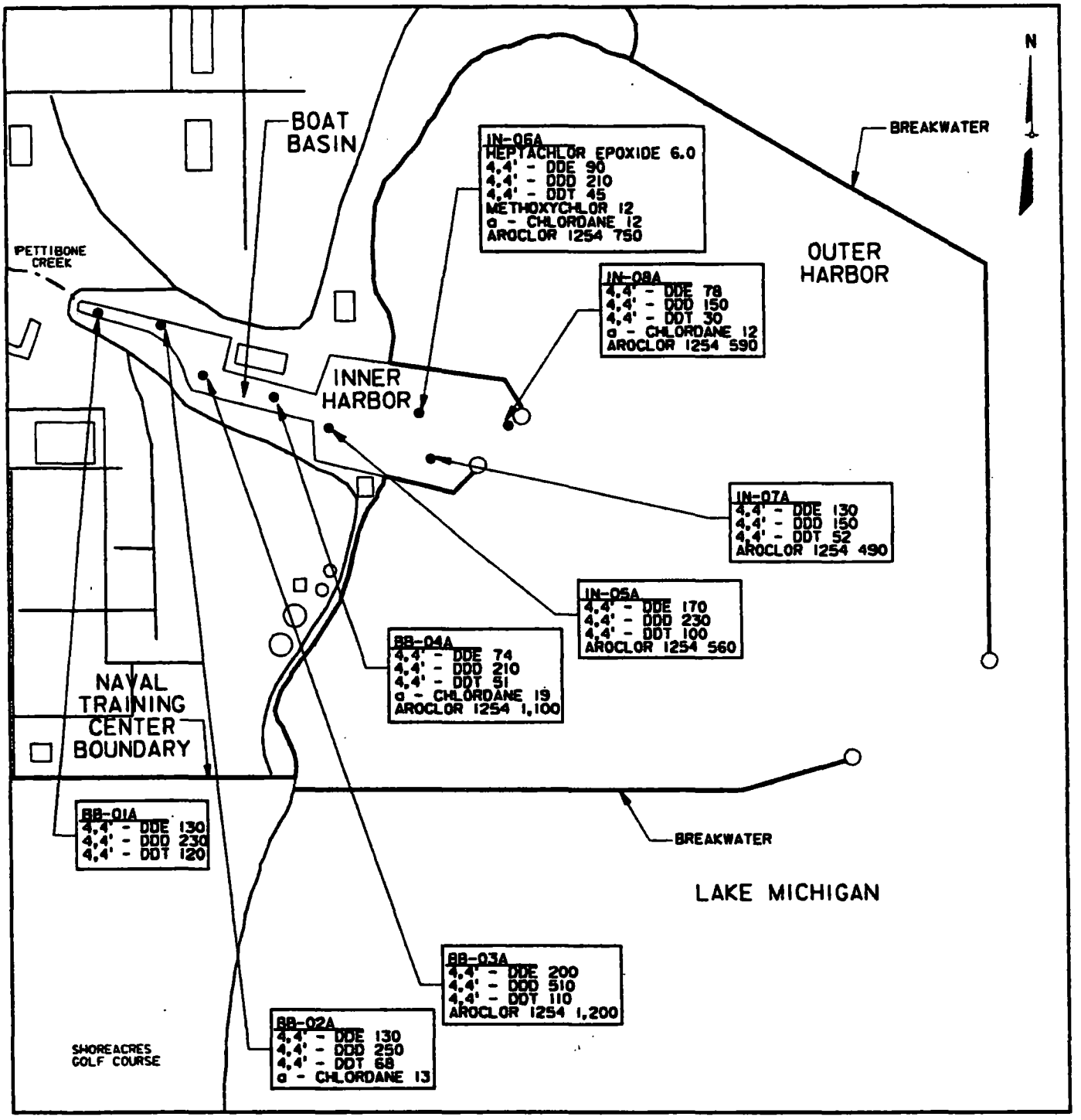
	NAMES	DATE
	JC	
	WES	
	MG	
	MG	

FIGURE 3-19
SEMI-VOLATILE ORGANIC COMPOUNDS(ug/kg)
DETECTED IN LAKE MICHIGAN
SEDIMENTS-0 TO 3-FOOT SAMPLES
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECD DWG. NUMBER F1G3-19.DGN

SEDIMENT 0 TO 3-FOOT SAMPLES



SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1"=500'

	NAMES	DATE
	JC	

FIGURE 3-20

PESTICIDES/PCBs (ug/kg) DETECTED IN BOAT BASIN AND INNER HARBOR SEDIMENTS-0 TO 3-FOOT SAMPLES

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

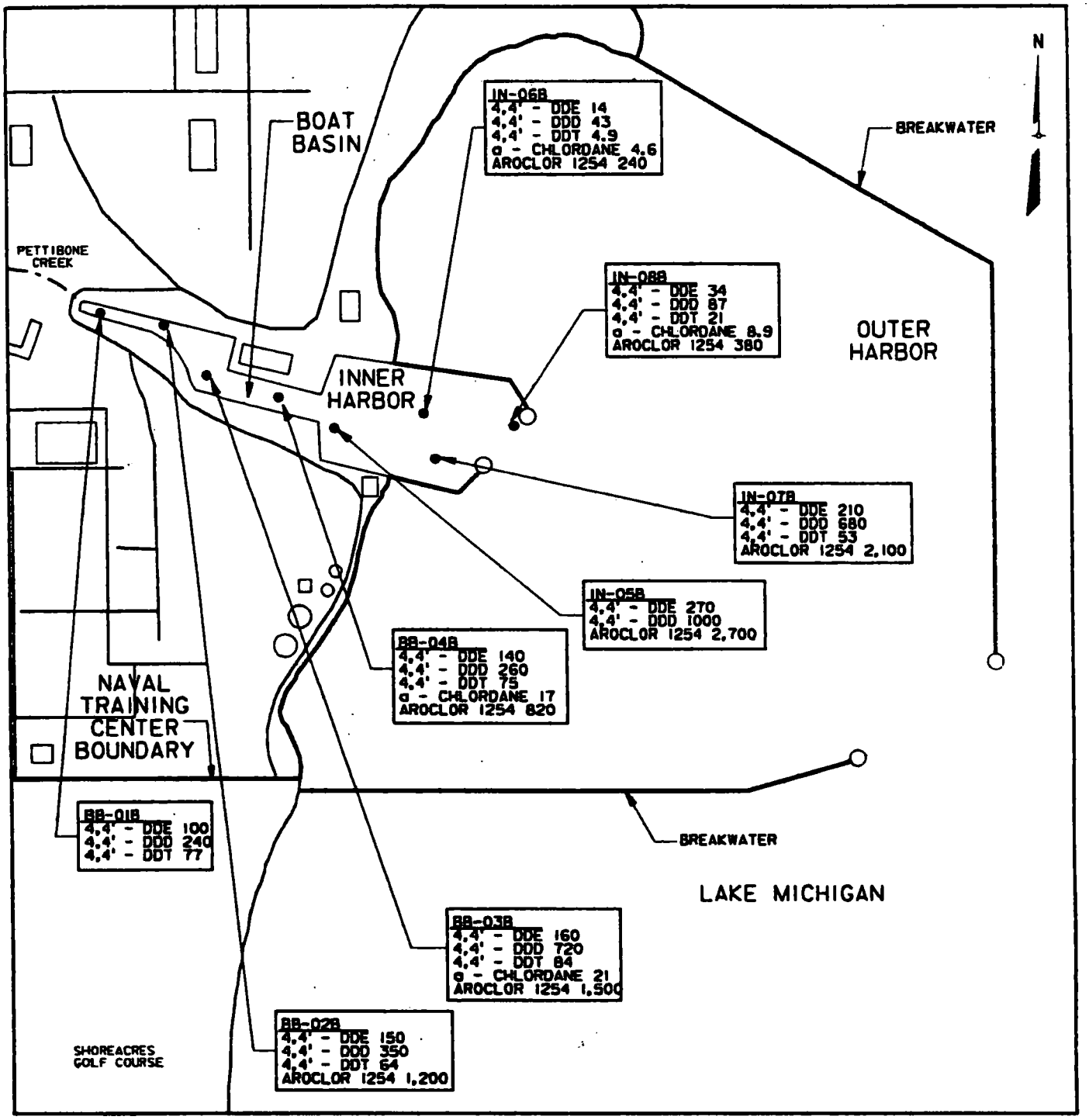
RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.080 DATE PLOTTED 3/2/93

CLIENT DWG. NUMBER

SECO DWG. NUMBER FIG3-20.DGN

SEDIMENT 3 TO 6-FOOT SAMPLES



SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1"=500'

NAMES	DATE
JC	
SCALE WES	
MG	
MG	

FIGURE 3-21

PESTICIDES/PCBs (ug/kg) DETECTED IN BOAT BASIN AND INNER HARBOR SEDIMENTS-3 TO 6-FOOT SAMPLES

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93

CLIENT DWG. NUMBER

SECO DWG. NUMBER FIG3-21.DGN

- The most common pesticides detected were DDT and its breakdown compounds, DDD, and DDE. At least one of these pesticides was detected in all 16 sediment samples collected in the Boat Basin and the Inner Harbor. These compounds were generally detected at greater concentrations in the 3- to 6-foot samples than the 0- to 3-foot samples. DDT was a widely-used insecticide in the past, which may account for its presence in the deeper Boat Basin and Inner Harbor sediments.

- Aroclor 1254 was detected in six of the eight 0- to 3-foot samples and in seven of the eight 3- to 6-foot samples. Aroclor 1254 concentrations were found to be slightly greater in the 3- to 6-foot depth interval.

3.5.3.2 Outer Harbor Samples

Pesticides and Aroclor 1254 detected in 0- to 3-foot and 3- to 6-foot sediment samples collected from the Outer Harbor are depicted on Figures 3-22 and 3-23, respectively. Based on these data, the following conclusions can be made:

- As was the case for the Boat Basin and the Inner Harbor, the most common pesticides detected were DDT, DDD, and DDE. Two of four Outer Harbor 0- to 3-foot samples contained at least one of these compounds. However, all four Outer Harbor 3- to 6-foot samples contained at least one of these compounds.

- In the Outer Harbor, Aroclor 1254 was detected in two of the four 0- to 3-foot samples and in all four 3- to 6-foot samples.

- The concentrations of pesticides and Aroclor 1254 detected were generally less in magnitude than the concentrations detected in the Boat Basin and the Inner Harbor. As stated previously, we believe that this fact indicates that Pettibone Creek is a likely migration route for contaminants to enter the NTC Great Lakes Harbor.

3.5.3.3 Lake Michigan Samples

As shown on Figure 3-24, pesticides and Aroclor 1254 were detected in only one Lake Michigan background sample (Sample SD-LM-16A contained DDD and Aroclor 1254). One possible explanation for the presence of these contaminants in this background sample is that the contaminants are present as a result of commercial and industrial activities which have taken place along the southern Lake Michigan shoreline for over 100 years.

Pollutional classifications have been provided on Figure 3-29 for comparison purposes. It must be stated that these classifications were established for Great Lakes harbor sediments, not for Lake Michigan sediments.

Metal concentrations considered moderately or highly polluted were not detected in samples SD-LM-18A, SD-LM-19 and SD-LM-20A. In sample SD-LM-15A, arsenic and lead were detected at highly polluted concentrations, and zinc was detected at a moderately polluted concentration. In sample SD-LM-16A, lead was detected at a moderately polluted concentration. In sample SD-LM-17A, arsenic and lead were detected at moderately polluted concentrations.

There are two possible explanations for the presence of apparently elevated metal concentrations in these three background samples:

- The elevated metal concentrations are present as a result of commercial and industrial activities which have taken place along the southern Lake Michigan shoreline for over 100 years.

- The elevated concentrations are present as a result of metals migration from the Outer Harbor into Lake Michigan.

The second explanation appears plausible based on the SD-LM-15A metals data. This sample contained the highest concentrations of metals, and is also the background sample collected closest to the Outer Harbor mouth. However, the second explanation is not supported by the SVOC and pesticide/PCB data for this sample, as previously discussed.

3.6 PETTIBONE CREEK SURFACE WATER SAMPLE DATA EVALUATION

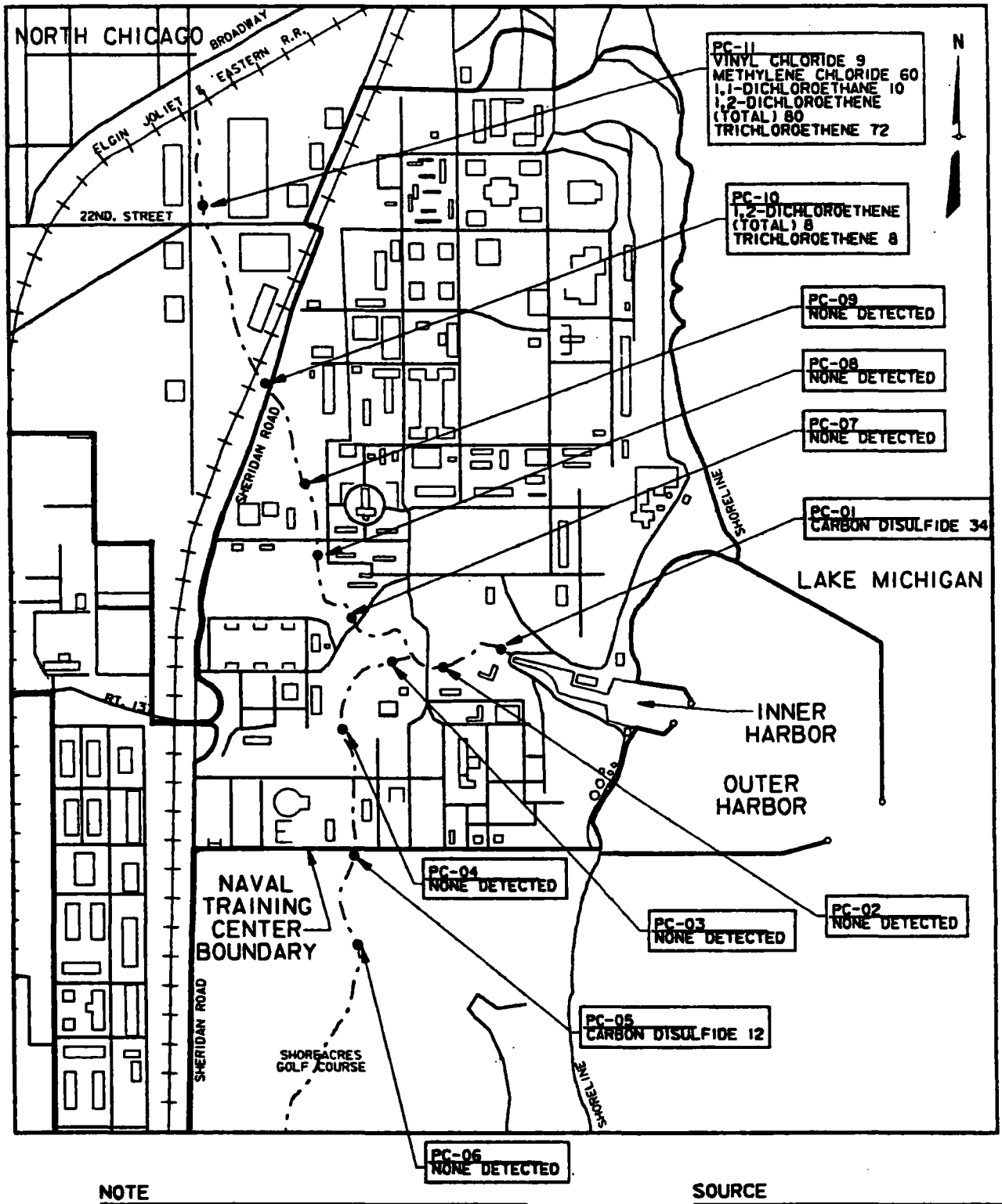
Eleven surface water samples were collected in Pettibone Creek and analyzed for TCL VOCs, SVOCs, Pesticides/PCBs, and TAL metals/cyanide.

The following discussion presents the Pettibone Creek surface water sample analytical results.

3.6.1 Volatile Organic Compounds

VOCs detected in Pettibone Creek surface water samples are depicted on Figure 3-30. Surface water samples SW-PC-10 and SW-PC-11, both collected upstream from NTC Great Lakes in North Chicago, were found to contain the most VOCs.

SURFACE WATER SAMPLES



NOTE

IN NO CASE DID THE SURFACE WATER SAMPLES COLLECTED AT THESE LOCATIONS EXCEED FEDERAL OR STATE WATER QUALITY STANDARDS FOR VOCs.

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1" = 1250'

NAMES	DATE
JC	
BES	
MG	
MG	

FIGURE 3-30
VOLATILE ORGANIC COMPOUNDS (ug/L) DETECTED IN PETTIBONE CREEK SURFACE WATER SAMPLES
NAVAL TRAINING CENTER GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER FIG3-30.DGN

The chlorinated VOCs vinyl chloride, 1,1-DCA, 1,2-DCE, and TCE were detected in surface water sample SW-PC-11. These same VOCs were also detected in the sediment sample collected at this location (SD-PC-11). There has been one documented mineral spirits spill into Pettibone Creek in this area which may partially explain the presence of the chlorinated VOCs (refer to Appendix D). Mineral spirits typically contain approximately one percent chlorinated VOCs (Kiani, 1993). 1,2-DCE and TCE were also detected in upgradient surface water sample SW-PC-10. In no case, however, did the concentrations of the chlorinated VOCs detected exceed state or federal water quality standards. These standards are provided on Table 3-6.

The chlorinated VOCs detected at locations SW-PC-10 and SW-PC-11 were not detected in any Pettibone Creek surface water sample collected on NTC Great Lakes property. Two surface water samples did contain the VOC carbon disulfide at low concentrations.

3.6.2 Semi-Volatile Organic Compounds

SVOCs detected in Pettibone Creek surface water samples are depicted on Figure 3-31. Only surface water sample SW-PC-11 contained any SVOCs, specifically isophorone (41 micrograms per liter [ug/L]) and bis(2-ethylhexyl)phthalate (3 ug/L). Isophorone was also detected in sediment sample SD-PC-11. There is a Federal Freshwater Acute Criterion (FAC) for isophorone of 117,000 ug/L, which is well above the concentration detected in SW-PC-11. There are no state or federal water quality standards for bis(2-ethylhexyl)phthalate.

3.6.3 Pesticides/PCBs

As can be seen on Figure 3-32, pesticides and PCBs were not detected in any Pettibone Creek surface water sample collected during the SI. This is not unusual considering the hydrophobic nature of these groups of compounds.

3.6.4 Metals

Total priority pollutant metals detected in Pettibone Creek surface water samples are depicted on Figure 3-33. Dissolved priority pollutant metals detected in Pettibone Creek surface water samples are depicted on Figure 3-34.

As can be seen on Figure 3-33, eight of the 11 surface water samples collected in Pettibone Creek and analyzed for total metals had at least one exceedance of a state or federal water quality standard. However, when the dissolved metals data are evaluated, it can be seen that only two surface water samples contained a metal (copper) at a concentration exceeding a state or federal water quality standard, indicating that the water quality exceedances noted in the total metals samples were primarily due to suspended material in the surface water samples.

TABLE 3-6

FEDERAL AND STATE SURFACE WATER QUALITY STANDARDS
SITE INSPECTION AT PETTIBONE CREEK, BOAT BASIN, AND HARBOR AREA
NAVAL TRAINING CENTER
GREAET LAKES, ILLINOIS
JUNE 1993

Parameter	Federal AWQC		Illinois Standards	
	FAC (ug/L)	FCC (ug/L)	General Use AS/CS (ug/L)	Public and Food Processing (ug/L)
PRIORITY POLLUTANT METALS				
Aluminum	-	-	-	-
Arsenic (Tri)	360	190	360/190	50
Beryllium	130	5.3	-	-
Cadmium	3.9+	1.1+	9.7+/1.1+	10
Chromium (Tri)	1,700+	210+	1,737+/207+	50
Chromium (Hex)	16	11	16/11	-
Copper	18+	12+	17.7+/11.8+	-
Lead	82+	3.2+	81.6+/-	50
Mercury	2.4	0.012	0.5/-	-
Nickel	1,400+	160+	1,000	-
Selenium	260	35	1,000	10
Silver	4.1+	0.12+	5.0	-
Thallium	1,400	40	-	-
Zinc	120+	110+	1,000	-
Cyanide	22	5.2	22/5.2	-
VOCs DETECTED IN SURFACE WATER SAMPLES				
Toluene	17,500	-	-	-
Xylenes	-	-	-	-
Carbon Disulfide	-	-	-	-
Vinyl Chloride	-	-	-	-
Methylene Chloride	-	-	-	-
1,1-Dichloroethane	118,000	20,000	-	-
1,2-Dichloroethene (total)	11,600	-	-	-
Trichloroethene	45,000	21,900	-	-
SVOCs DETECTED IN SURFACE WATER SAMPLES				
Isophorone	117,000	-	-	-
Bis(2-ethylhexyl)phthalate	-	-	-	-

TABLE 3-6 (Continued)

FEDERAL AND STATE SURFACE WATER QUALITY STANDARDS
SITE INSPECTION AT PETTIBONE CREEK, BOAT BASIN, AND HARBOR AREA
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS
JUNE 1993

Parameter	Federal AWQC		Illinois Standards	
	FAC (ug/L)	FCC (ug/L)	General Use AS/CS (ug/L)	Public and Food Processing (ug/L)
WATER QUALITY PARAMETERS				
Alkalinity	-	20,000	-	-
Total Organic Carbon	-	-	-	-
Chemical Oxygen Demand	-	-	-	-
Chloride	-	-	500,000	250,000
Nitrate/Nitrite	-	-	-	-
Total Suspended Solids	-	-	-	-
Total Dissolved Solids	-	-	1,000,000	500,000
Sulfate	-	-	500,000	250,000

ABBREVIATIONS

AS - Acute Standard
AWQC - Ambient Water Quality Criteria
CS - Chronic Standard
FAC - Freshwater Acute Criteria
FCC - Freshwater Chronic Criteria

NOTES

- Standard not established
+ Hardness-dependent standard (100 mg/L used)

SOURCES

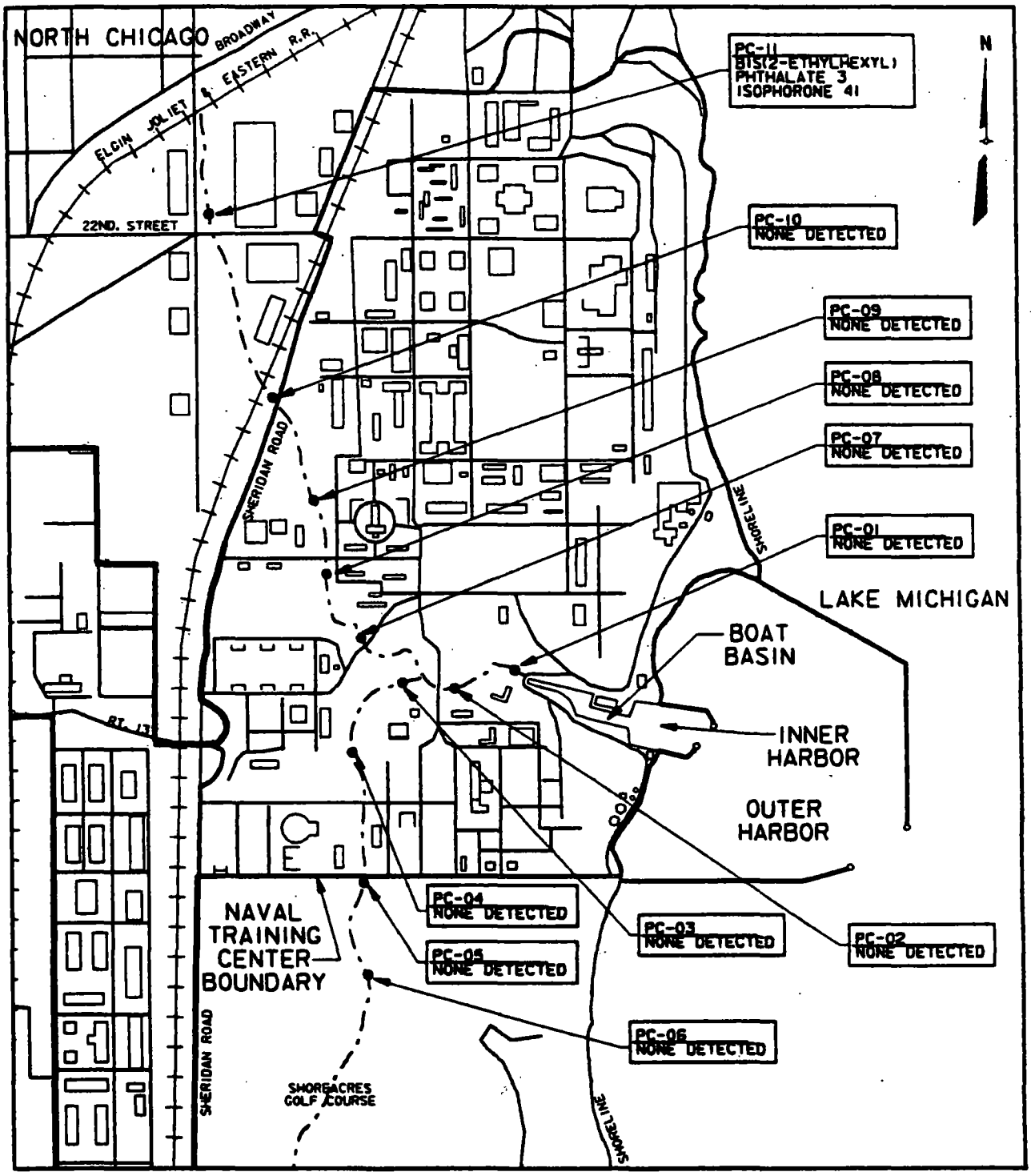
FAC, FCC - Federal Register and Quality Criteria for Water, 1976

Illinois General Use Standards - IEPA, Title 35, Subtitle C, Part 302, Subpart B, Section 302.208

Illinois Public and Food Processing Water Supply Standards - IEPA, Title 35, Subtitle C, Part 302, Subpart C, Section 302.304

R/63SID/AA2

SURFACE WATER SAMPLES



NOTE

IN NO CASE DID THE SURFACE WATER SAMPLES COLLECTED AT THESE LOCATIONS EXCEED FEDERAL OR STATE WATER QUALITY STANDARDS FOR SVOCs.

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1" = 1250'

	NAMES	DATE
	JC	
	WES	
	MS	
	MS	

FIGURE .3-31

SEMI-VOLATILE ORGANIC COMPOUNDS (ug/L) DETECTED IN PETTIBONE CREEK SURFACE WATER SAMPLES

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

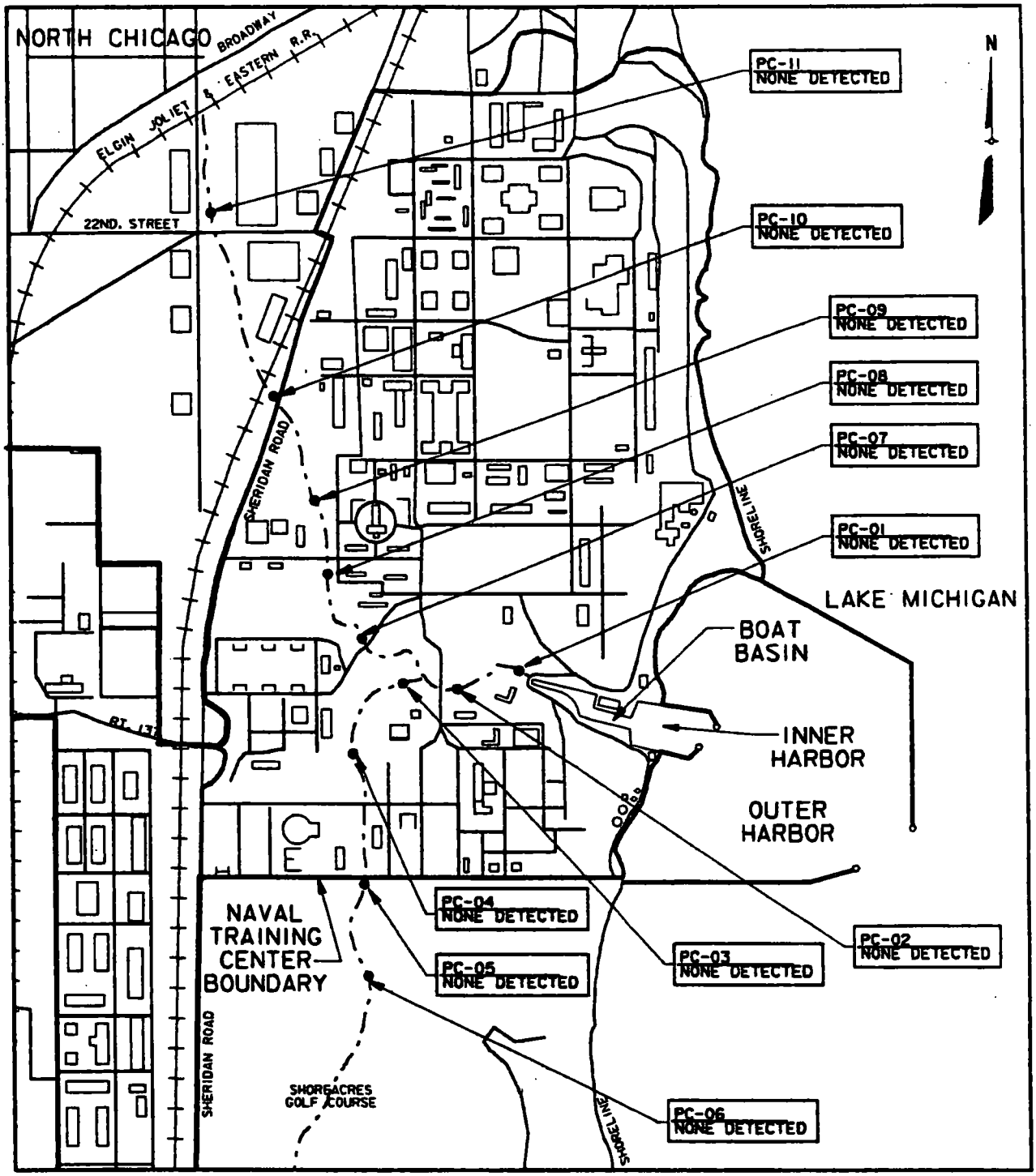
RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20642.060 DATE PLOTTED 3/2/93

CLIENT DWG. NUMBER

SECO DWG. NUMBER F:G3-31.DGN

SURFACE WATER SAMPLES



NOTE

IN NO CASE DID THE SURFACE WATER SAMPLES COLLECTED AT THESE LOCATIONS EXCEED FEDERAL OR STATE WATER QUALITY STANDARDS FOR PESTICIDES AND PCBs.

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1" = 1250'

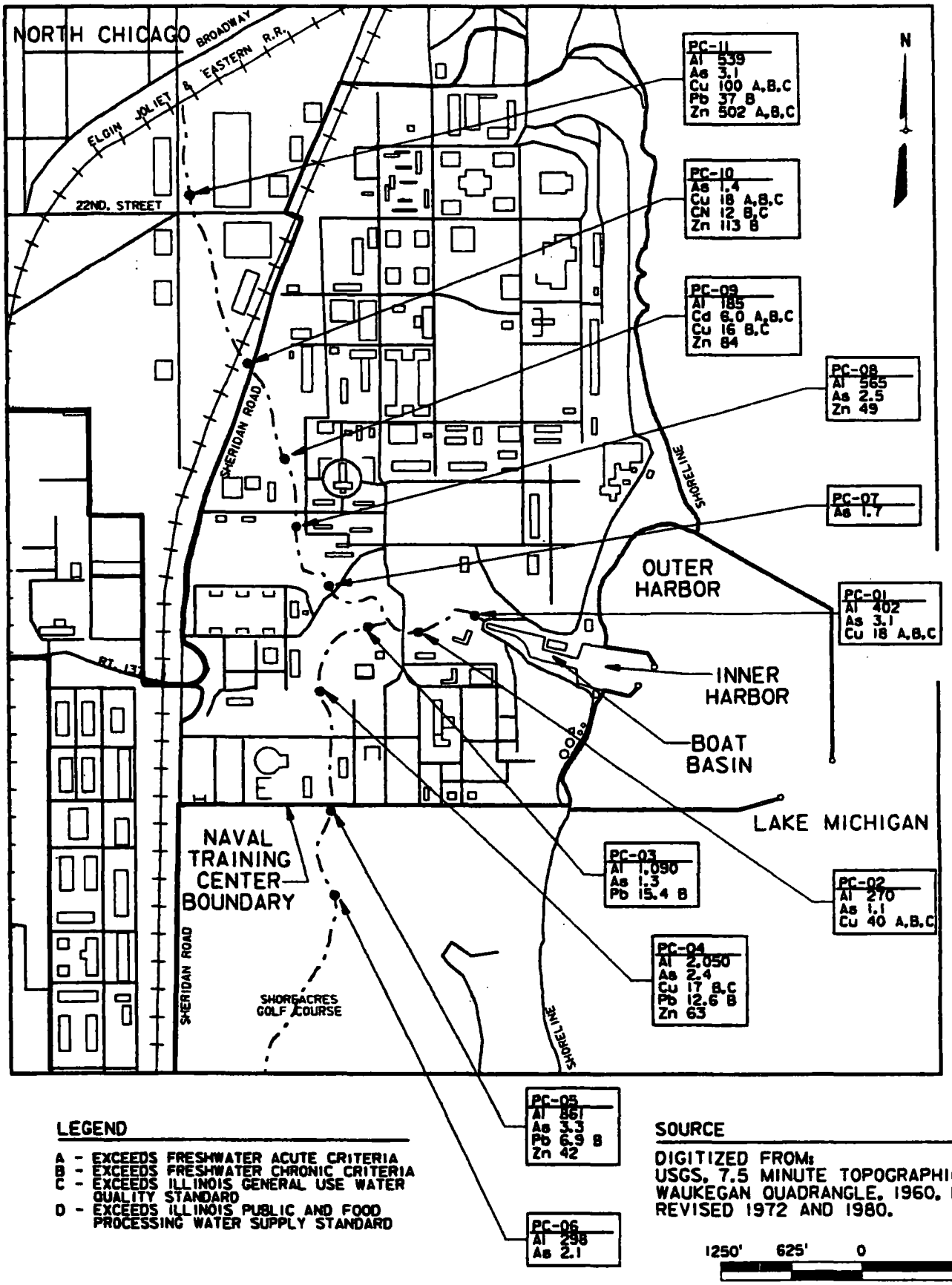
NAMES	DATE
JC	
WES	
MG	
MG	

FIGURE 3-32
PESTICIDES/PCBs (ug/L) DETECTED
IN PETTIBONE CREEK
SURFACE WATER SAMPLES
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER FIG3-32.DGN

SURFACE WATER SAMPLES - TOTAL METALS



LEGEND

A - EXCEEDS FRESHWATER ACUTE CRITERIA
B - EXCEEDS FRESHWATER CHRONIC CRITERIA
C - EXCEEDS ILLINOIS GENERAL USE WATER QUALITY STANDARD
D - EXCEEDS ILLINOIS PUBLIC AND FOOD PROCESSING WATER SUPPLY STANDARD

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1" = 1250'

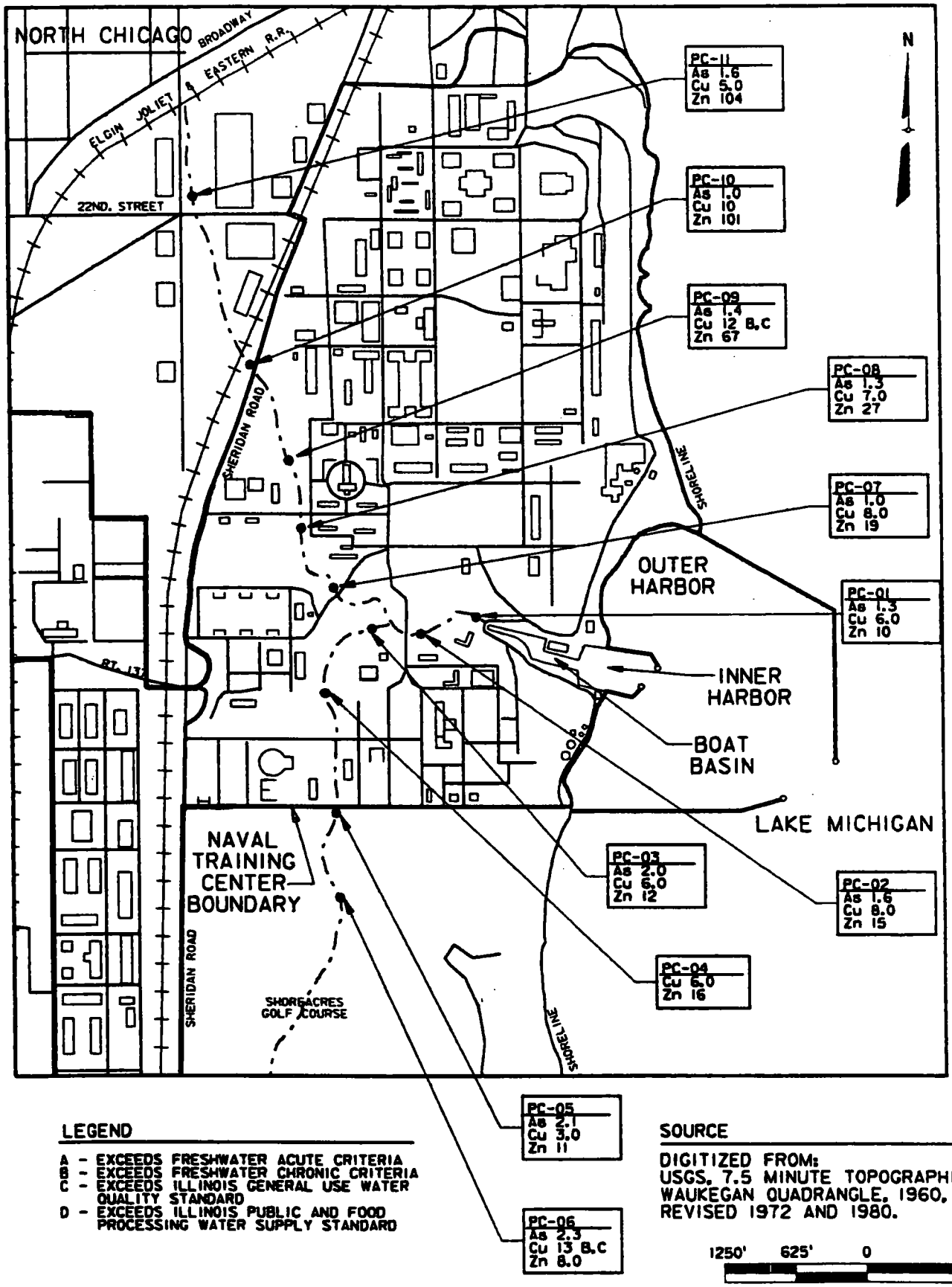
NAMES	DATE
JC	
WES	
MG	
MG	

FIGURE 3-33
TOTAL PRIORITY POLLUTANT METALS (ug/L) DETECTED IN PETTIBONE CREEK SURFACE WATER SAMPLES
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER FIG3-33.DGN

SURFACE WATER SAMPLES - DISSOLVED METALS



LEGEND

A - EXCEEDS FRESHWATER ACUTE CRITERIA
B - EXCEEDS FRESHWATER CHRONIC CRITERIA
C - EXCEEDS ILLINOIS GENERAL USE WATER QUALITY STANDARD
D - EXCEEDS ILLINOIS PUBLIC AND FOOD PROCESSING WATER SUPPLY STANDARD

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1" = 1250'

NAMES	DATE
JC	
WES	
MS	
MC	

FIGURE 3-34

DISSOLVED PRIORITY POLLUTANT METALS (ug/L) DETECTED IN PETTIBONE CREEK SURFACE WATER SAMPLES

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93

CLIENT DWG. NUMBER

SECO DWG. NUMBER FIG3-34.DGN

3.6.5 Water Quality Parameters

Water quality parameter concentrations are depicted on Figure 3-35. As can be seen on this figure, all 11 surface water samples exceeded the Federal Freshwater Chronic Criterion (FCC) for alkalinity of 20 mg/L. Alkalinity is a measure of a water's capacity to absorb hydrogen ions without significant pH change. In addition, seven of the samples exceeded the Illinois Public and Food Processing Water Supply Standard for total dissolved solids of 500 mg/L. However, this standard is not directly applicable as Pettibone Creek water is not used for potable water.

3.7 BOAT BASIN, INNER HARBOR, OUTER HARBOR, AND LAKE MICHIGAN SURFACE WATER SAMPLE DATA EVALUATION

Eleven surface water samples were collected during the SI from the following areas:

- Two samples in the Boat Basin at locations BB-01 and BB-03.
- Two samples in the Inner Harbor at locations IN-05 and IN-07.
- Two samples in the Outer Harbor at locations OH-11 and OH-13.
- Five samples in Lake Michigan at locations LM-16, LM-17, LM-18, LM-19 and LM-20.

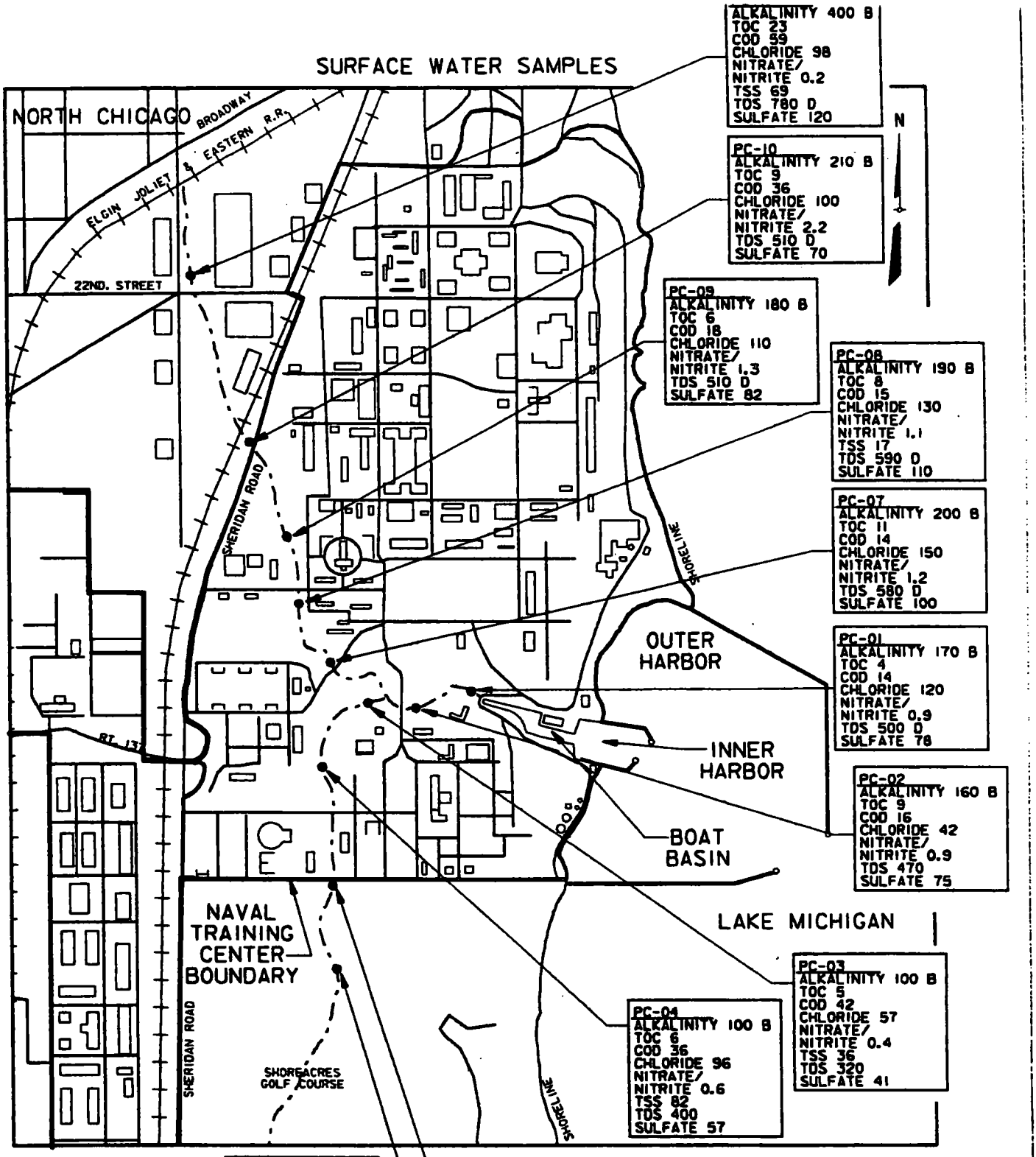
The 11 surface water samples were analyzed for TCL VOCs, SVOCs, pesticides, PCBs, and TAL metals and cyanide.

The following discussion presents the analytical results for these samples.

3.7.1 Volatile Organic Compounds

VOCs detected in Boat Basin, Inner Harbor, and Outer Harbor surface water samples are depicted on Figure 3-36. VOCs were not detected in Lake Michigan surface water samples, as shown on Figure 3-37.

VOCs were detected in only one surface water sample (SW-BB-03). This sample contained 4 ug/L of both toluene and total xylenes. These compounds are gasoline indicators. The facts that the Boat Basin receives runoff from streets and parking lots, and that the eastern portion of the Boat Basin is used to moor recreational craft during boating season, likely account for the presence of these compounds. The only federal or state water quality criterion for either of these two compounds is a FAC for toluene of 17,500 ug/L. Because the concentration of toluene detected was well below this FAC, we do not consider the VOCs detected in sample SW-BB-03 to indicate significant contamination.



SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1" = 1250'

LEGEND

A - EXCEEDS FRESHWATER ACUTE CRITERIA
B - EXCEEDS FRESHWATER CHRONIC CRITERIA
C - EXCEEDS ILLINOIS GENERAL USE WATER QUALITY STANDARD
D - EXCEEDS ILLINOIS PUBLIC AND FOOD PROCESSING WATER SUPPLY STANDARD

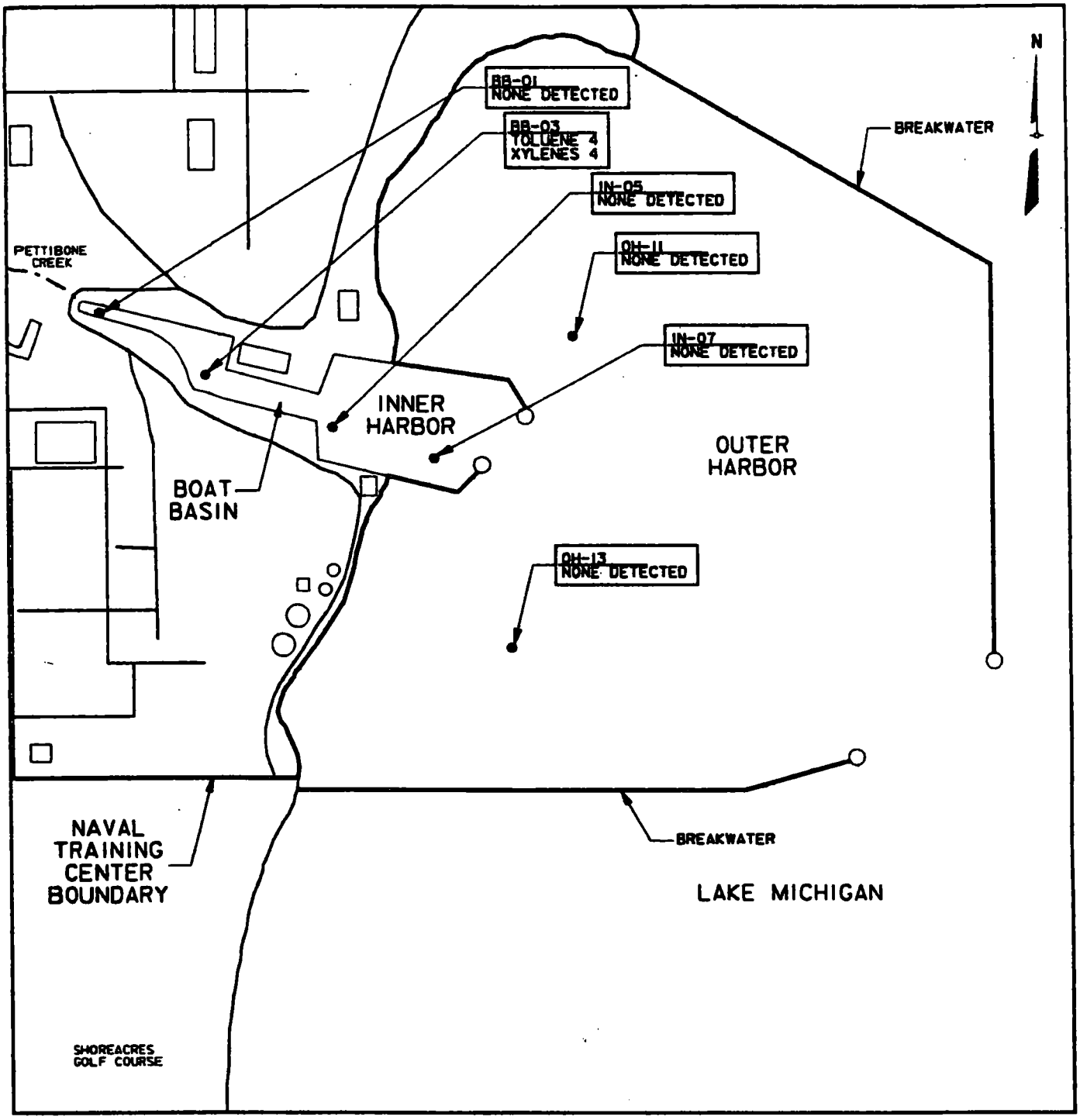
NAMES	DATE
JC	
WES	
MG	
MG	

FIGURE 3-35
WATER QUALITY PARAMETERS (mg/L)
DETECTED IN PETTIBONE CREEK
SURFACE WATER SAMPLES
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER FIG3-35.DGN

SURFACE WATER SAMPLES



NOTE

IN NO CASE DID THE SURFACE WATER SAMPLES COLLECTED AT THESE LOCATIONS EXCEED FEDERAL OR STATE WATER QUALITY STANDARDS FOR VOCs.

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1" = 500'

NAMES	DATE
JC	
WES	
MG	
MG	

FIGURE 3-36

VOLATILE ORGANIC COMPOUNDS (ug/L) DETECTED IN BOAT BASIN, INNER HARBOR AND OUTER HARBOR SURFACE WATER SAMPLES

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

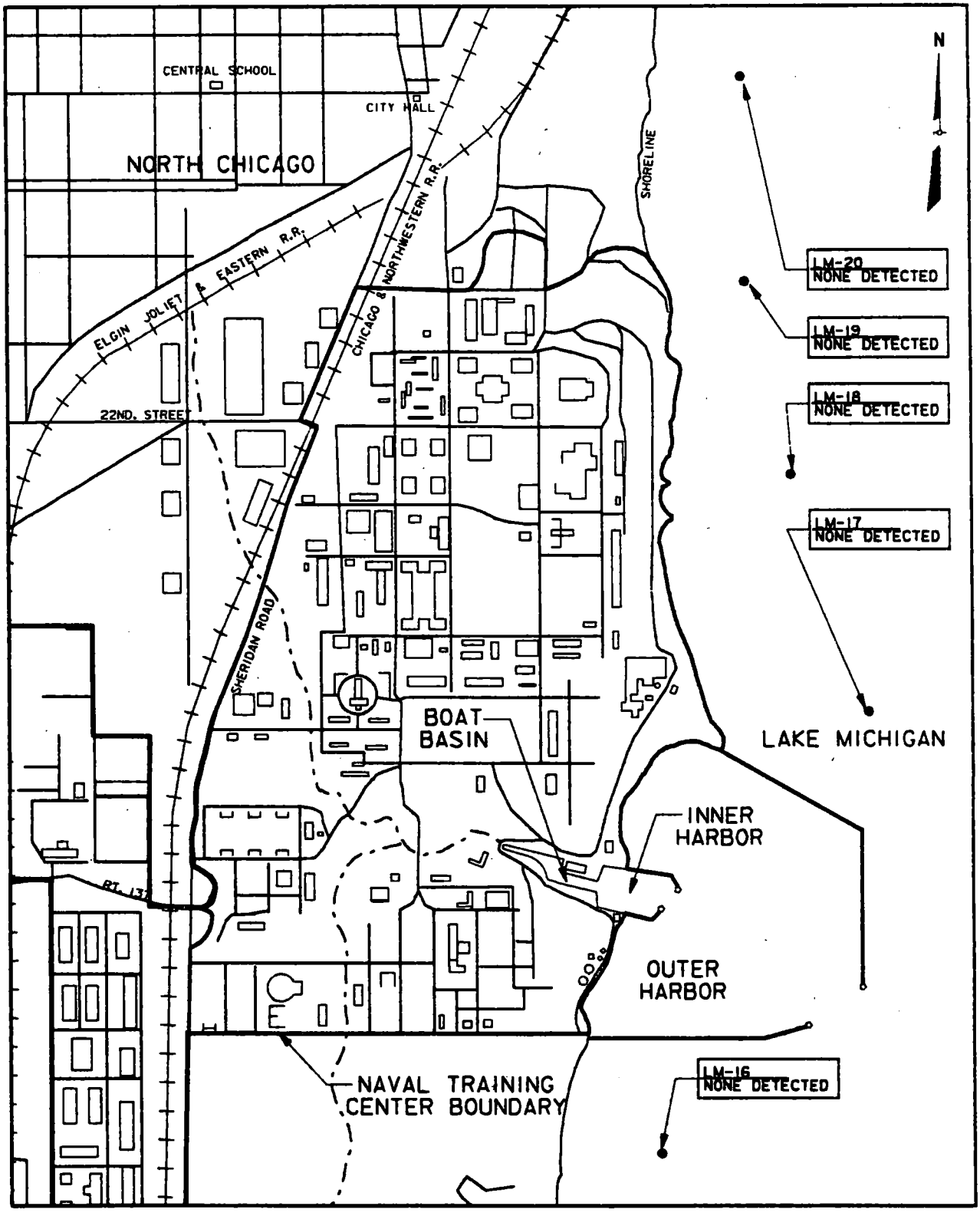
RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93

CLIENT DWG. NUMBER

SECO DWG. NUMBER F:G3-36.DGN

SURFACE WATER SAMPLES



NOTE

IN NO CASE DID THE SURFACE WATER SAMPLES COLLECTED AT THESE LOCATIONS EXCEED FEDERAL OR STATE WATER QUALITY STANDARDS FOR VOCs.

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1" = 1250'

	NAMES	DATE
R.	JC	
SGN.	WES	
C.	MG	
E	MG	
PP		
PP'D		

FIGURE 3-37
VOLATILE ORGANIC COMPOUNDS (ug/L)
DETECTED IN LAKE MICHIGAN
SURFACE WATER SAMPLES
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECD DWG. NUMBER FIG3-37.DGN

3.7.2 Semi-Volatile Organic Compounds

As can be seen on Figures 3-38 and 3-39, SVOCs were not detected in any surface water sample collected in the Boat Basin, Inner Harbor, Outer Harbor, or Lake Michigan.

3.7.3 Pesticides/PCBs

As can be seen on Figures 3-40 and 3-41, pesticides and PCBs were not detected in any surface water sample collected in the Boat Basin, Inner Harbor, Outer Harbor or Lake Michigan. This is not unusual considering the hydrophobic nature of these groups of compounds.

3.7.4 Metals

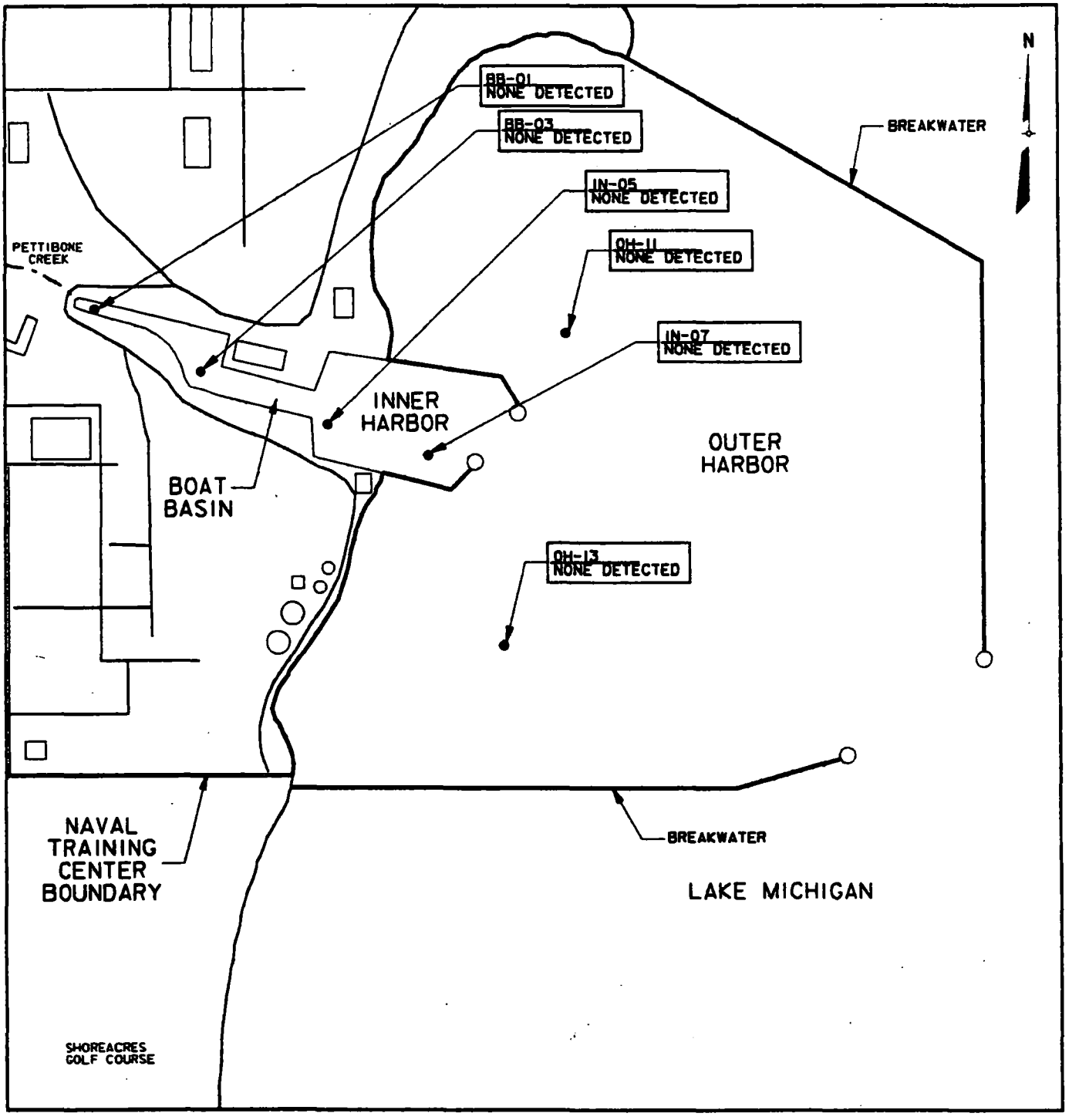
Surface water samples collected during the SI were analyzed for both total (unfiltered) and dissolved metals levels. Surface water samples for dissolved metal analysis were filtered through a 0.45 micron filter within 30 minutes of sampling in all cases.

Total priority pollutant metals detected in Boat Basin, Inner Harbor, Outer Harbor and Lake Michigan surface water samples are depicted on Figures 3-42 and 3-43, respectively. Dissolved priority pollutant metals detected in Boat Basin, Inner Harbor, Outer Harbor, and Lake Michigan surface water samples are depicted on Figures 3-44 and 3-45, respectively.

Of the 11 surface water samples analyzed for total metals, two contained lead above the FCC of 3.2 ug/L (SW-IN-05 at 12.9 ug/L, and SW-LM-17 at 6.0 ug/L). No other state or federal water quality standards were exceeded.

None of the 11 surface water samples analyzed for dissolved metals exceeded state or federal water quality criteria, indicating that the lead FCC exceedances noted in the total metals samples can be attributed to suspended material in the surface water samples.

SURFACE WATER SAMPLES



NOTE

IN NO CASE DID THE SURFACE WATER SAMPLES COLLECTED AT THESE LOCATIONS EXCEED FEDERAL OR STATE WATER QUALITY STANDARDS FOR SVOCs.

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1"=500'

	NAMES	DATE
DR.	JC	
DESIGN.	WES	
CK.	MG	
APP'D	MG	

FIGURE 3-38

SEMI-VOLATILE ORGANIC COMPOUNDS (ug/L) DETECTED IN BOAT BASIN, INNER HARBOR AND OUTER HARBOR SURFACE WATER SAMPLES

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

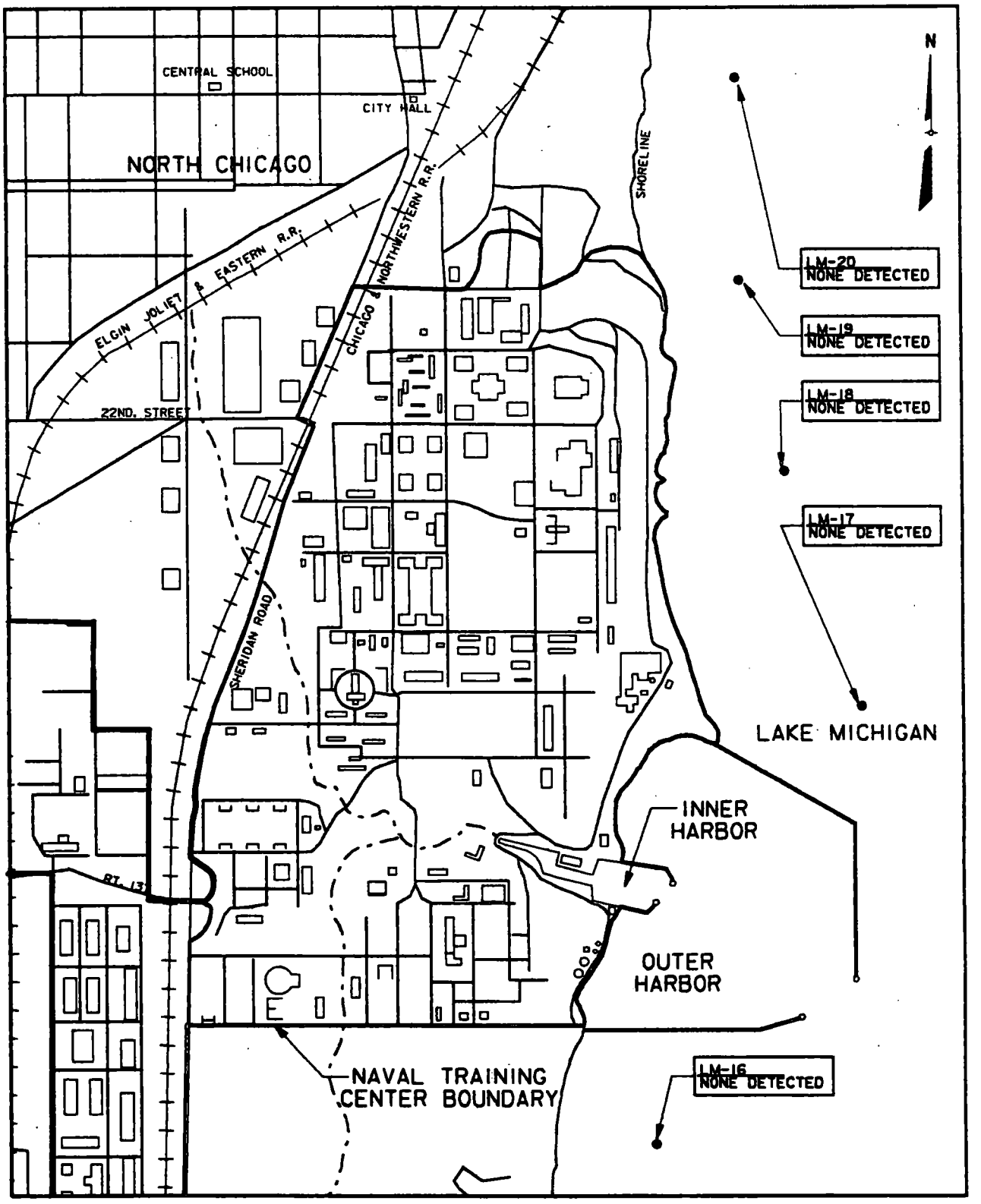
PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93

CLIENT DWG. NUMBER

SECO DWG. NUMBER

FIG3-38.DGN

SURFACE WATER SAMPLES



NOTE

IN NO CASE DID THE SURFACE WATER SAMPLES COLLECTED AT THESE LOCATIONS EXCEED FEDERAL OR STATE WATER QUALITY STANDARDS FOR SVOCs.

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1" = 1250'

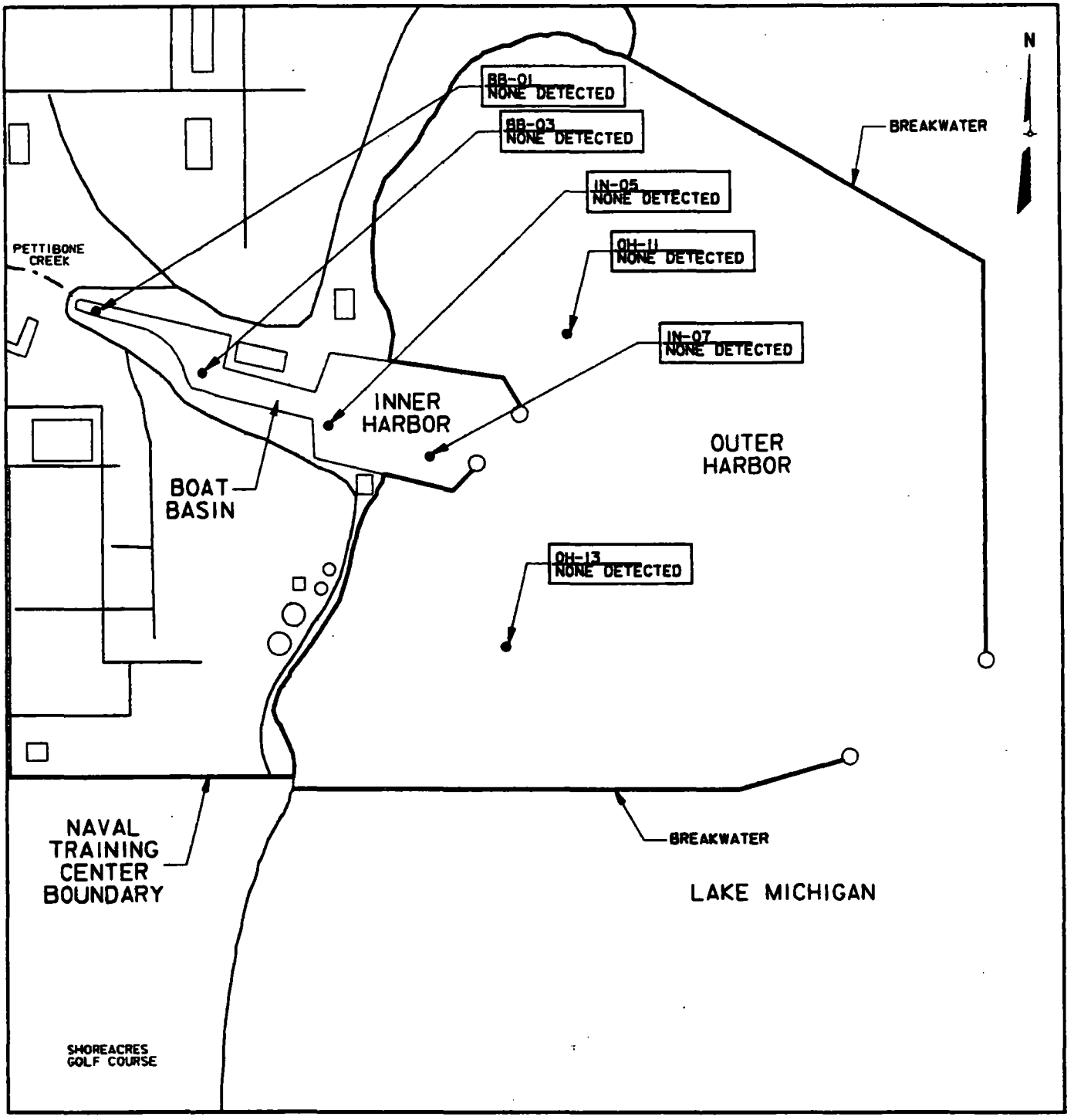
	NAMES	DATE
	JC	
DRL	WES	
	MG	
	MG	

FIGURE 3-39
SEMI-VOLATILE ORGANIC COMPOUNDS (ug/L) DETECTED IN BACKGROUND LAKE MICHIGAN SURFACE WATER SAMPLES
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER FIG3-39.DGN

SURFACE WATER SAMPLES



NOTE

IN NO CASE DID THE SURFACE WATER SAMPLES COLLECTED AT THESE LOCATIONS EXCEED FEDERAL OR STATE WATER QUALITY STANDARDS FOR PESTICIDES AND PCBs.

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1"=500'

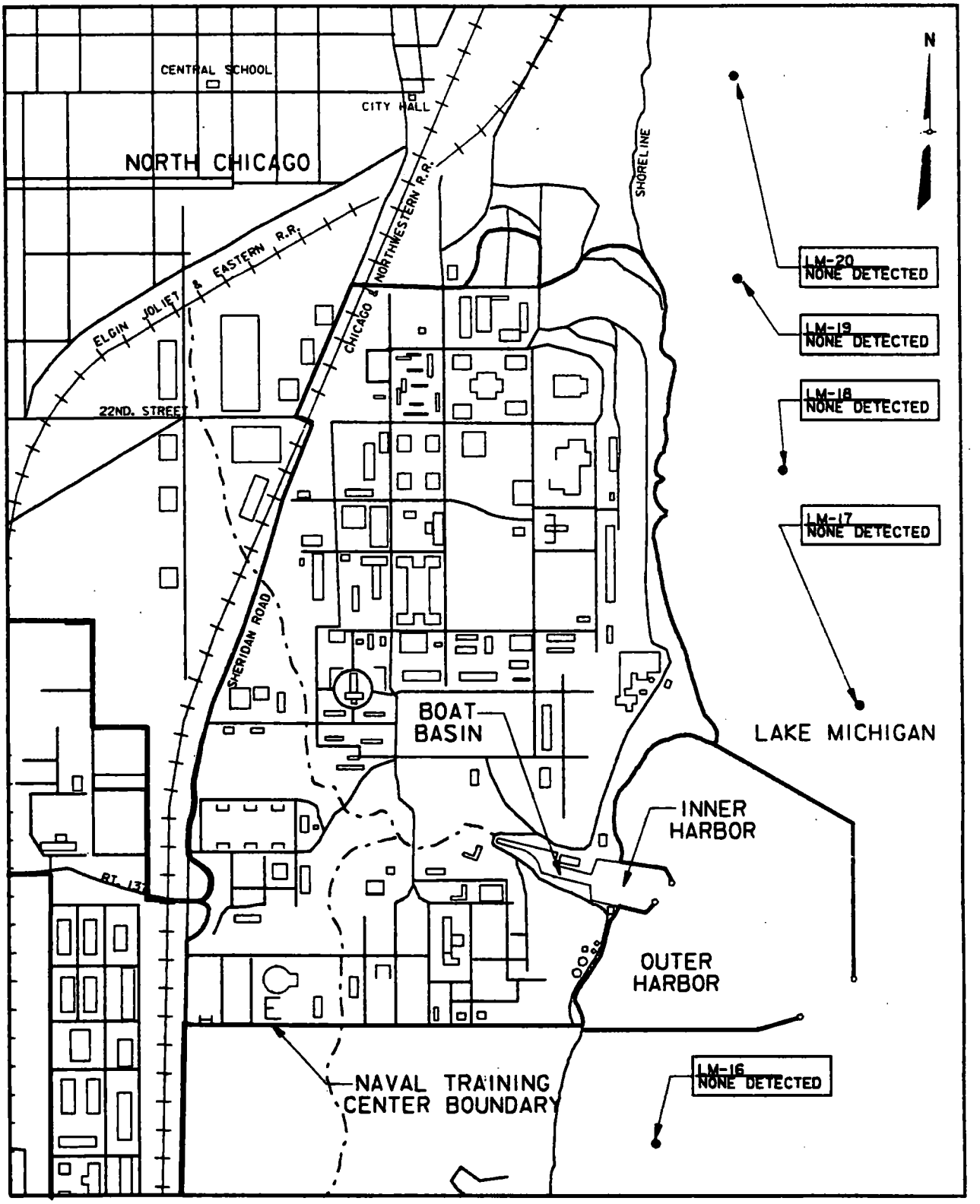
	NAMES	DATE
DR.	JC	
DSGN.	BES	
CK.	MG	
PE	MG	
APPD		
APPD		

FIGURE 3-40
PESTICIDES/PCBs (ug/L) DETECTED IN BOAT BASIN, INNER HARBOR AND OUTER HARBOR SURFACE WATER SAMPLES
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER FIG3-40.DGN

SURFACE WATER SAMPLES



NOTE

IN NO CASE DID THE SURFACE WATER SAMPLES COLLECTED AT THESE LOCATIONS EXCEED FEDERAL OR STATE WATER QUALITY STANDARDS FOR PESTICIDES AND PCBs.

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1"=1250'

	NAMES	DATE
DR.	JC	
DSGN.	WES	
CK.	MG	
PE	MG	
APP'D		

FIGURE 3-41

PESTICIDES/PCBs (ug/L) DETECTED IN LAKE MICHIGAN SURFACE WATER SAMPLES

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

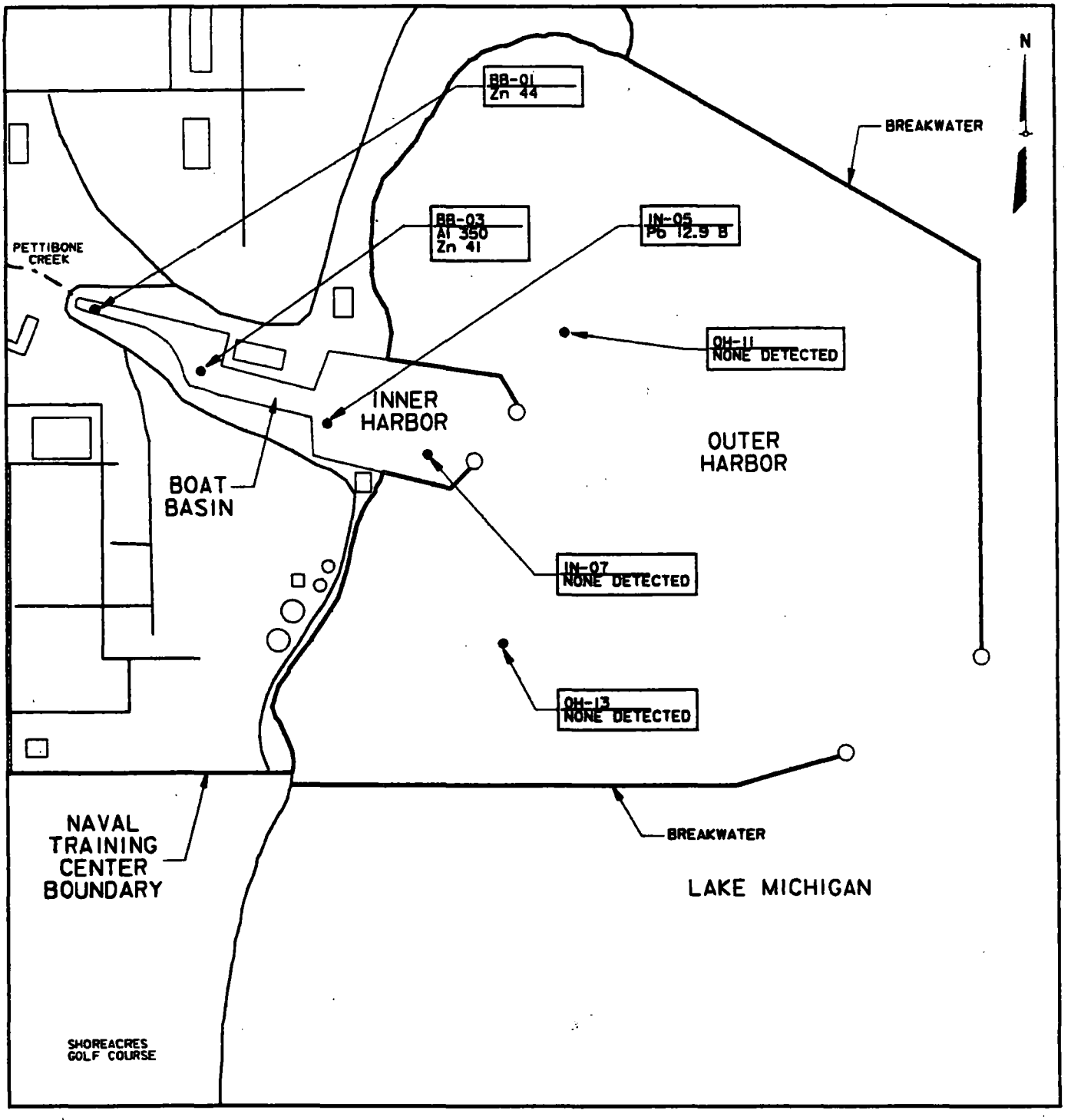
RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93

CLIENT DWG. NUMBER

SECD DWG. NUMBER FIG3-41.DGN

SURFACE WATER SAMPLES - TOTAL METALS



LEGEND

A - EXCEEDS FRESHWATER ACUTE CRITERIA
B - EXCEEDS FRESHWATER CHRONIC CRITERIA
C - EXCEEDS ILLINOIS GENERAL USE WATER QUALITY STANDARD
D - EXCEEDS ILLINOIS PUBLIC AND FOOD PROCESSING WATER SUPPLY STANDARD

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1"=500'

	NAMES	DATE
R.	JC	
SGN.	WES	
K.	MG	
E	MG	
PP.		
PP'D		

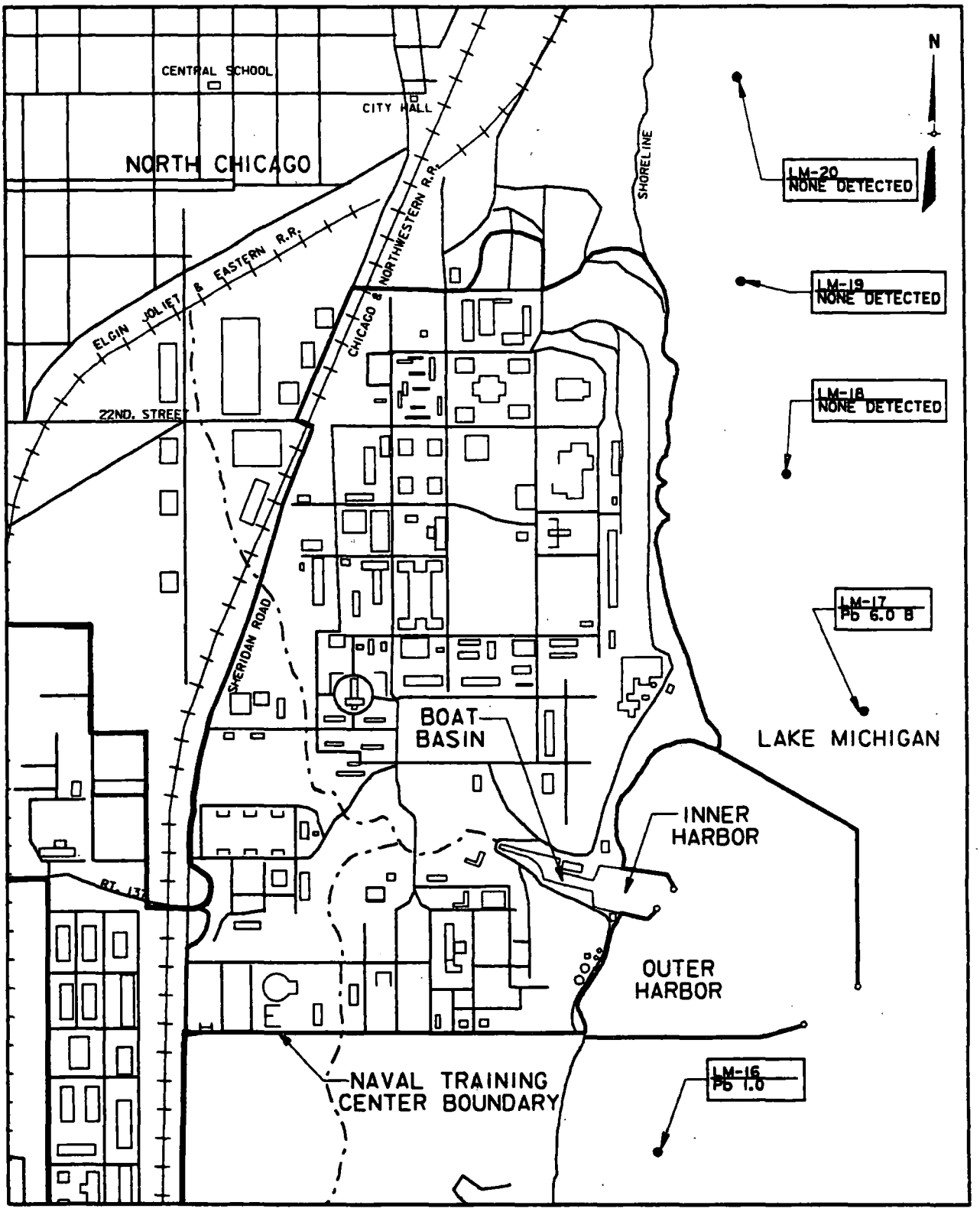
FIGURE 3-42
TOTAL PRIORITY POLLUTANT METALS (ug/L) DETECTED IN BOAT BASIN, INNER HARBOR AND OUTER HARBOR SURFACE WATER SAMPLES

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECD DWG. NUMBER FIG3-42.DGN

SURFACE WATER SAMPLES - TOTAL METALS



LEGEND:

A - EXCEEDS FRESHWATER ACUTE CRITERIA
B - EXCEEDS FRESHWATER CHRONIC CRITERIA
C - EXCEEDS ILLINOIS GENERAL USE WATER QUALITY STANDARD-ACUTE
D - EXCEEDS ILLINOIS PUBLIC AND FOOD PROCESSING WATER SUPPLY STANDARD

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1" = 1250'

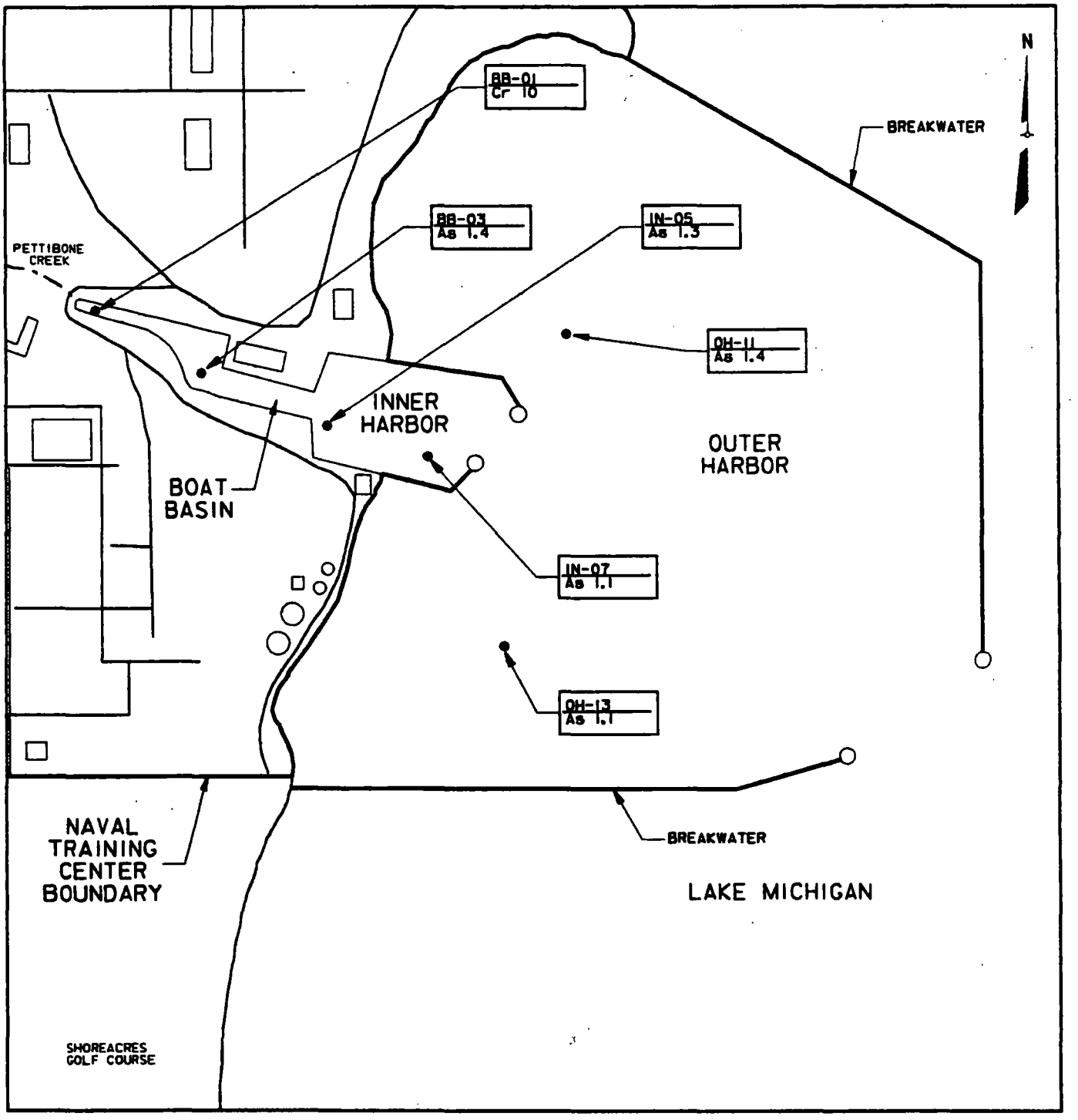
	NAMES	DATE
DR.	JC	
DSGN.	WES	
CK.	MG	
P	MG	
A	D	
APP'D		
APP'D		

FIGURE 3-43
TOTAL PRIORITY POLLUTANT METALS (ug/L) DETECTED IN LAKE MICHIGAN SURFACE WATER SAMPLES
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER FIG3-43.DGN

SURFACE WATER SAMPLES - DISSOLVED METALS



NOTE

IN NO CASE DID THE SURFACE WATER SAMPLES COLLECTED AT THESE LOCATIONS EXCEED FEDERAL OR STATE WATER QUALITY STANDARDS FOR METALS.

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1"=500'

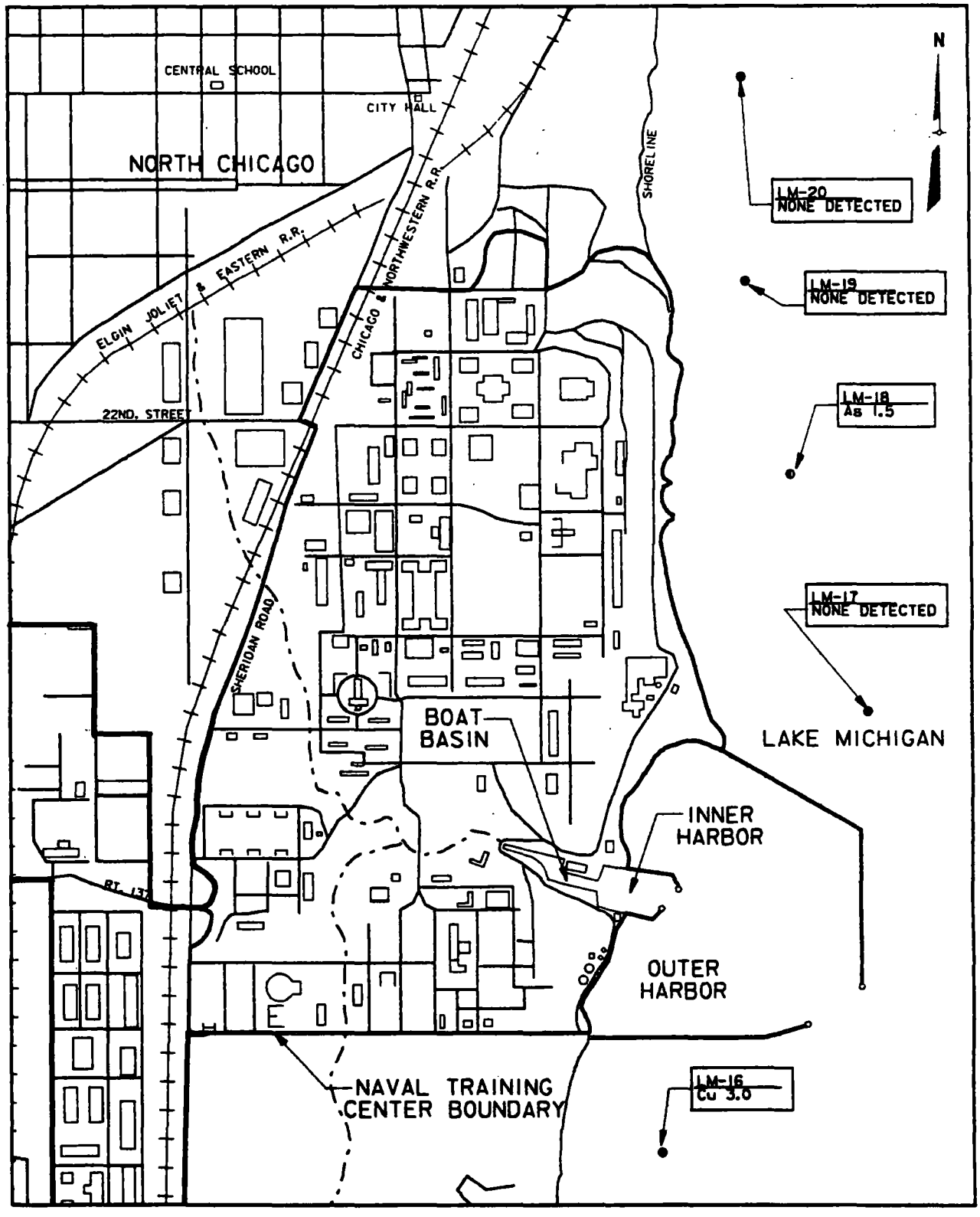
	NAMES	DATE
R.	JC	
SIGN.	WES	
K.	MG	
E	MG	
PP'D		
PP'D		

FIGURE 3-44
DISSOLVED PRIORITY POLLUTANT METALS (ug/L) DETECTED IN BOAT BASIN, INNER HARBOR AND OUTER HARBOR SURFACE WATER SAMPLES
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.080 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER FIG3-44.DGN

SURFACE WATER SAMPLES - DISSOLVED METALS



NOTE

IN NO CASE DID THE SURFACE WATER SAMPLES COLLECTED AT THESE LOCATIONS EXCEED FEDERAL OR STATE WATER QUALITY STANDARDS FOR METALS.

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1" = 1250'

	NAMES	DATE
DR	JC	
DSGN.	WES	
CK.	MG	
P	MG	
A		
APP'D		
APP'D		

FIGURE 3-45
DISSOLVED PRIORITY POLLUTANT METALS (ug/L) DETECTED IN LAKE MICHIGAN SURFACE WATER SAMPLES
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20812.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER FIG3-45.DGN

4.0 ANALYTICAL METHODOLOGIES AND DATA VALIDATION

Topics relating to the laboratory data are addressed by the following subsections. Section 4.1 provides a description of the analytical methodologies used by the project laboratory. Section 4.2 presents a discussion of the validation procedures employed to evaluate the integrity of the analytical data.

4.1 ANALYTICAL METHODOLOGIES

Sediment and surface water samples were collected and analyzed for some or all of the parameters listed in Table 4-1. The particular methodologies used are also provided in this table. These methodologies satisfy Naval Energy and Environmental Support Activity (NEESA) Level C quality assurance/quality control (QA/QC) requirements.

4.2 DATA VALIDATION

The data for the parameters listed in Table 4-1 were reported in NEESA Level C. Requirements pertaining to the designated QA/QC levels are defined in the NEESA guidance document "Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program" (20.2-047B), dated June 1988.

All of the data, with the exception of supernatant, elutriate, and TCLP data, were validated to substantiate the level of quality of the data generated, and to determine potential bias or limitations in use of the data for its intended purpose. As prescribed in the NEESA guidelines, the data were validated in accordance with guidance documents pertaining to USEPA Region V. Hence, the data were validated in accordance with the following documents: "National Functional Guidelines for Organic Data Validation" (February 1988), and "National Functional Guidelines for Inorganic Data Validation" (July 1988, revised February 1989).

Method-specific QC criteria were also considered during the evaluation process. The quality parameters against which the data were evaluated include completeness, holding times until preparation and analysis, calibration, laboratory and field blank results, matrix spike and Graphite Furnace Atomic Absorption (GFAA) post digestion spike recoveries, laboratory duplicate and laboratory control sample results, Inductively Coupled Plasma performance and GFAA data, and analyte identification and quantification.

Data which were compromised were flagged (qualified) in accordance with data validation protocol. Findings of the data validation process were summarized in letter reports to the Project Manager. These reports discuss the flags that were applied to the data and the rationale behind the qualification. Copies of these letter reports are available upon request. The validated data are included in Appendix A.

TABLE 4-1

ANALYTICAL METHODS
SITE INSPECTION AT PETTIBONE CREEK, INNER HARBOR AND OUTER HARBOR
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS
JUNE 1993

Parameter	Reference	Method
TCL		
Volatiles	CLP	OLM01.1
Semi-Volatiles	CLP	OLM01.1
Pesticides/PCBs	CLP	OLM01.1
TAL		
Inorganics	CLP	ILM01.0
Chemical Oxygen Demand	EPA	410.4
Total Dissolved Solids (TDS)	EPA	160.1
Total Suspended Solids (TSS)	EPA	160.2
Total Organic Carbon	EPA	415.1
Alkalinity	EPA	310.2
Chloride	EPA	325.2
Sulfate	EPA	375.2
Nitrate-Nitrite Nitrogen	EPA	353.2
TCLP		
Volatiles	SW846	1311/8240
Base/Neutrals and Acids	SW846	1311/8270
Herbicides	SW846/SM	1311/509B
Pesticides	SW846	1311/8080
Metals	SW846	1311/6010 (Hg 7470)
Supernatant	(1)	
Arsenic	SW846	6010
Copper	SW846	6010
Lead	SW846	7421
Mercury	SW846	7470
Nickel	SW846	6010
Zinc	SW846	6010
Percent Solids	EPA	160.3
Ammonia-Nitrogen	EPA	350.2
Total Suspended Solids (TSS)	EPA	160.2
Total Volatile Residue	EPA	160.4

TABLE 4-1 (Continued)

ANALYTICAL METHODS
SITE INSPECTION AT PETTIBONE CREEK, INNER HARBOR AND OUTER HARBOR
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS
JUNE 1993

Parameter	Reference	Method
Elutriate	(2)	
Arsenic	SW846	6010
Copper	SW846	6010
Lead	SW846	6010
Mercury	SW846	7470
Nickel	SW846	6010
Zinc	SW846	6010
Percent Solids	EPA	160.3
Ammonia-Nitrogen	EPA	350.2
Total Suspended Solids (TSS)	EPA	160.2
Total Volatile Residue	EPA	160.4
Particle Size	ASTM	D422

CLP - EPA Contract Laboratory Program Statements of Work

SW846 - Test Methods for Evaluating Solid Waste, November 1986.

SM - Standard Methods for Water and Wastewater Analysis, 17th edition, 1989.

EPA - Methods for Chemical Analysis of Water and Wastes, EPA 4/79/020, March 1983.

(1) Supernatant samples were prepared following the procedure provided in Appendix A. This procedure was derived from Material Analysis for Dredge and Fill Activities, Section 401 Water Quality Certification, Illinois EPA.

(2) The procedure for elutriate testing was derived from Procedures for Handling and Chemical Analysis of Sediment and Water Samples, U.S. EPA/U.S. Army Corps of Engineers Technical Committee on Criteria for Dredged and Fill Material, May 1981.

ASTM - Standard Method for Particle-Size Analysis of Soils, ASTM D422.

5.0 CONCLUSIONS

The significant findings of the SI are presented below:

1. Boat Basin, Inner Harbor, and Outer Harbor sediments contain elevated concentrations of SVOCs, pesticides, Aroclor 1254, metals, and cyanide.

2. Pettibone Creek sediments contain elevated concentrations of SVOCs, pesticides, and metals, and to a lesser extent, VOCs and Aroclor 1254.

3. Unidentified sources located upgradient of NTC Great Lakes in the City of North Chicago have likely contributed to the contamination now present in Pettibone Creek sediment on NTC Great Lakes property, and in Boat Basin, Inner Harbor, and Outer Harbor sediments.

   This statement is supported by the analytical results of sediment and surface water samples collected from Pettibone Creek in North Chicago, particularly at location PC-11. Sediment sample SD-PC-11 contained VOCs, SVOCs, and metals at concentrations higher than any found in the Boat Basin, Inner Harbor or Outer Harbor. SVOCs and metals were detected in every Pettibone Creek sediment sample collected downstream from location SD-PC-11, in generally decreasing concentrations. This indicates a migration pathway likely exists via Pettibone Creek into the Boat Basin. Additionally, a spill of mineral spirits is documented to have occurred in Pettibone Creek near sample PC-11 location which may have adversely impacted the quality of surface water and sediment in the creek.

4. In addition to the spill of mineral spirits, there are other documented cases of spills into the north and south branches of Pettibone Creek that may have contributed to the present contamination in these areas. The existing data are insufficient to assess the type and extent of contamination caused by the reported spills.

5. Contaminants from sources in the City of North Chicago via Pettibone Creek do not appear to be the sole contributors to the contamination present in Boat Basin, Inner Harbor, and Outer Harbor sediments. Samples SD-PC-05 and SD-PC-06, collected upgradient of NTC Great Lakes in the Shoreacres Country Club, in most cases did not contain elevated concentrations of SVOCs, pesticides, PCBs, or metals. However, the first sediment sample (SD-PC-04) collected on NTC Great Lakes property downgradient from samples SD-PC-05 and SD-PC-06 contained SVOCs and pesticides. This indicates that unidentified sources on NTC Great Lakes property may also be contributors to the contamination present in Pettibone Creek, Boat Basin, Inner Harbor and Outer Harbor sediments.

6. The proportions of the contaminants now present in Boat Basin, Inner Harbor and Outer Harbor sediments which originated from off-site sources in the City of North Chicago versus sources on NTC Great Lakes property is unknown.

7. There is no evidence to suggest that contaminants from sources north of NTC Great Lakes (such as Waukegan Harbor) have migrated southwards through Lake Michigan and entered the NTC Great Lakes Outer Harbor. This statement is supported by the lack of contamination detected in surface water and sediment samples collected at locations LM-17, LM-18, LM-19 and LM-20.

8. Boat Basin sediment contamination exists to at least a depth of six feet, the greatest depth sampled.

9. Inner Harbor sediment contamination was found to decrease with depth only in its southern half. A decreasing contamination pattern was not apparent in the northern half of the Inner Harbor.

10. The magnitude of Outer Harbor sediment contamination was found to be generally less than in the Boat Basin and Inner Harbor, indicating that Pettibone Creek is the likely migration route for contaminants to enter the NTC Great Lakes Harbor Areas. Also, Outer Harbor sediment contamination was found to decrease with increasing depth near the north and south breakwaters, but was found to remain generally constant to a depth of at least six feet in its center.

11. Concentrations of compounds and analytes in Boat Basin, Inner Harbor, and Outer Harbor surface water samples were found to be below state and federal water quality standards in most cases, indicating the surface water in these areas is uncontaminated.

12. Lake Michigan surface water was found to be free from contamination based upon comparison to water quality standards.

13. Pettibone Creek surface water was found to be of poor quality. Numerous state and federal water quality standards were exceeded in surface water samples collected from the creek. Generally, the water quality was found to be at its worst in the sample location PC-11 area in the city of North Chicago, north of 22nd Street. Not only are numerous chemical contaminants present in the creek water and sediments in this area, but large amounts of debris, such as tires, paper, glass, and metal pieces, have been disposed of both in the creek and on its banks. The creek's water quality was generally found to improve with increasing distance from the PC-11 sample location. Debris is for the most part absent in the creek and along its banks on NTC Great Lakes property.

6.0 REFERENCES

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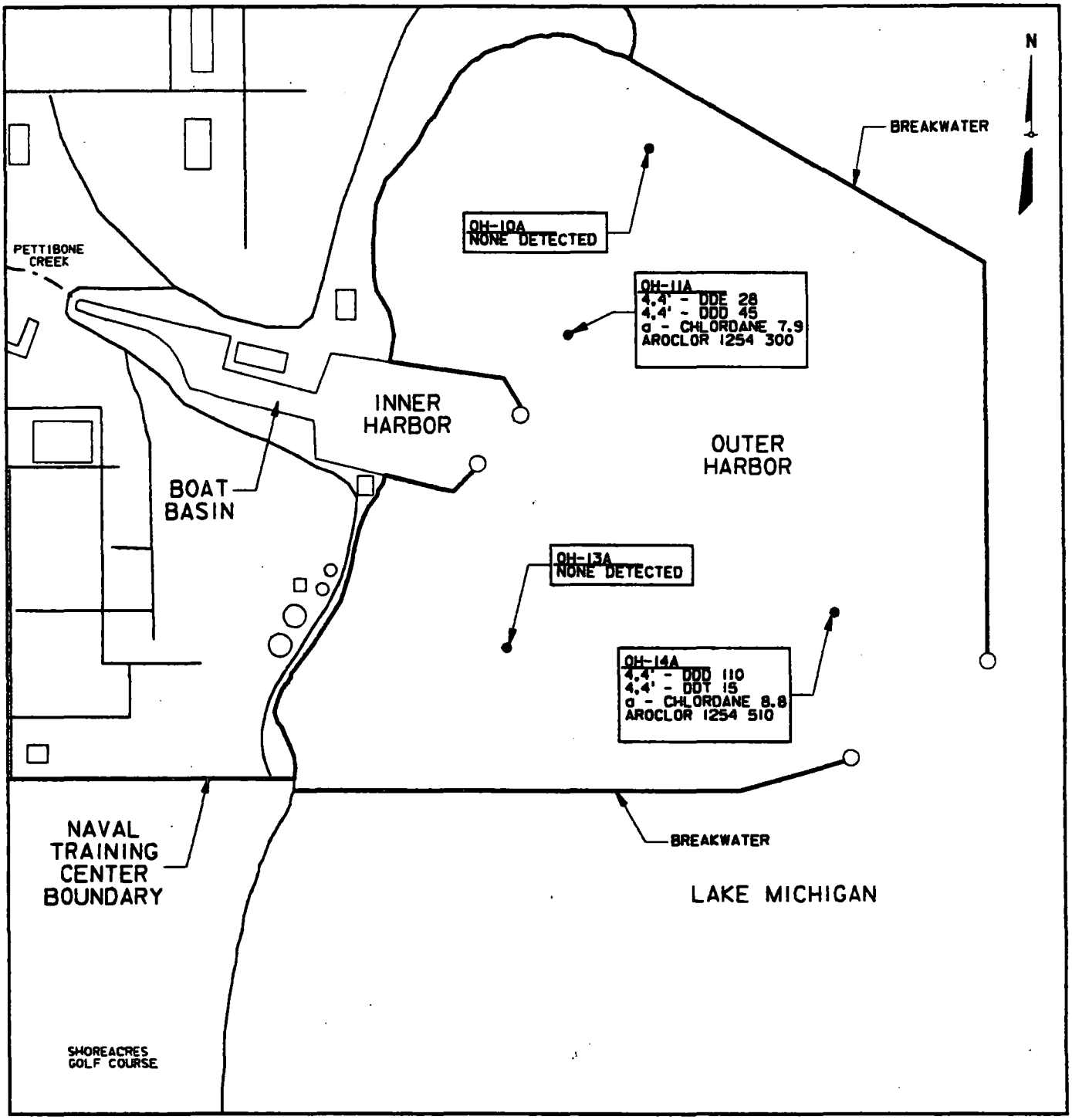
R/63SID/AA1

SEDIMENT 0 TO 3-FOOT SAMPLES



SOURCE

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USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1"=500'

	NAMES	DATE
DR.	JC	
DSGN.	WES	
CK.	MG	
PE	MG	
MPI		
MPI		
APP'D		

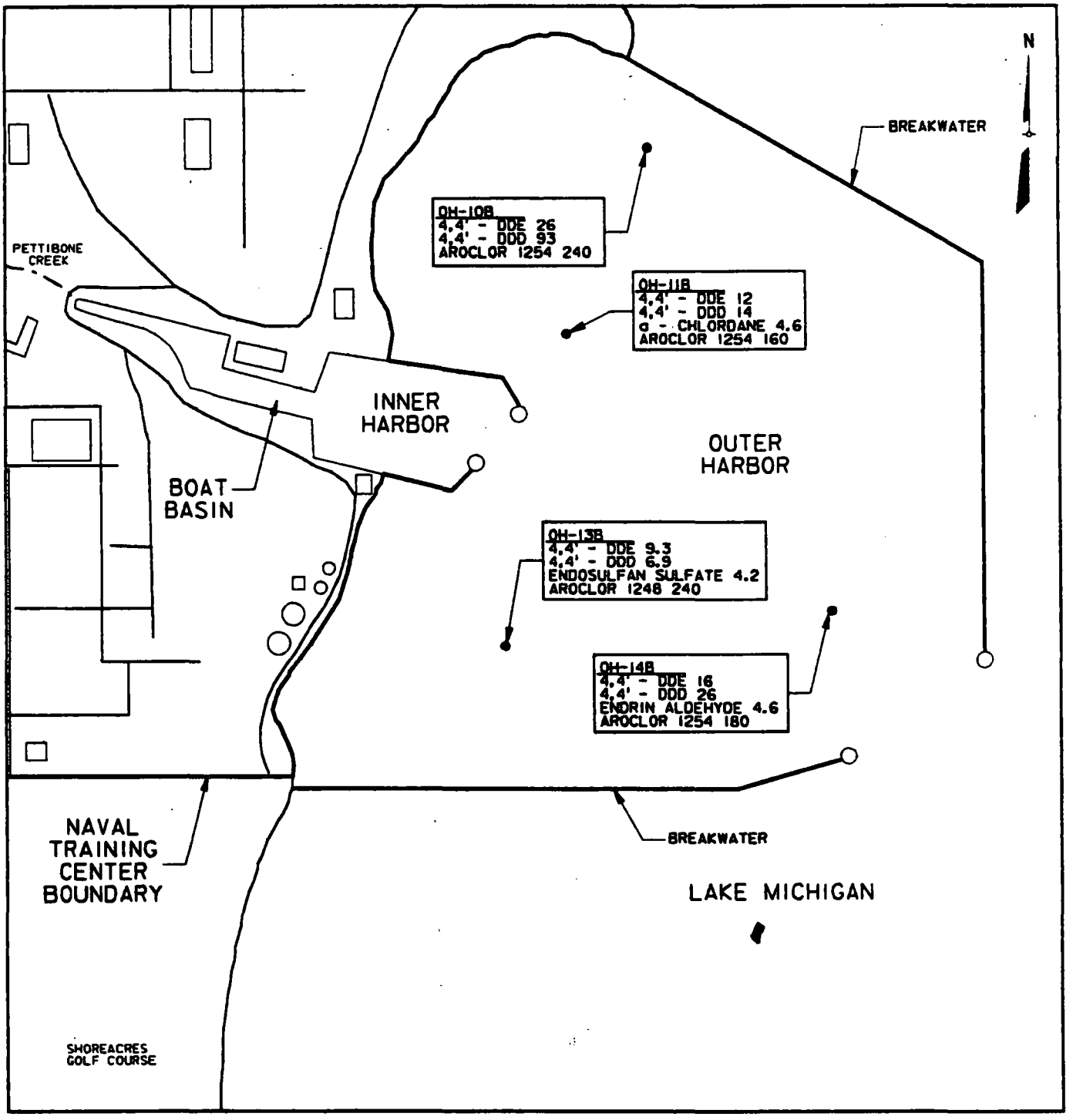
FIGURE 3-22
PESTICIDES/PCBs (ug/kg)
DETECTED IN OUTER HARBOR
SEDIMENTS-0 TO 3-FOOT SAMPLES

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECD DWG. NUMBER FIG3-22.DGN

SEDIMENT 3 TO 6-FOOT SAMPLES



SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1" = 500'

	NAMES	DATE
DR	JC	
DSGN.	WES	
CK.	MG	
PE	MG	
AP		
APP'D		
APP'D		

FIGURE 3-23

PESTICIDES/PCBs (ug/kg) DETECTED IN OUTER HARBOR SEDIMENTS-3 TO 6-FOOT SAMPLES

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

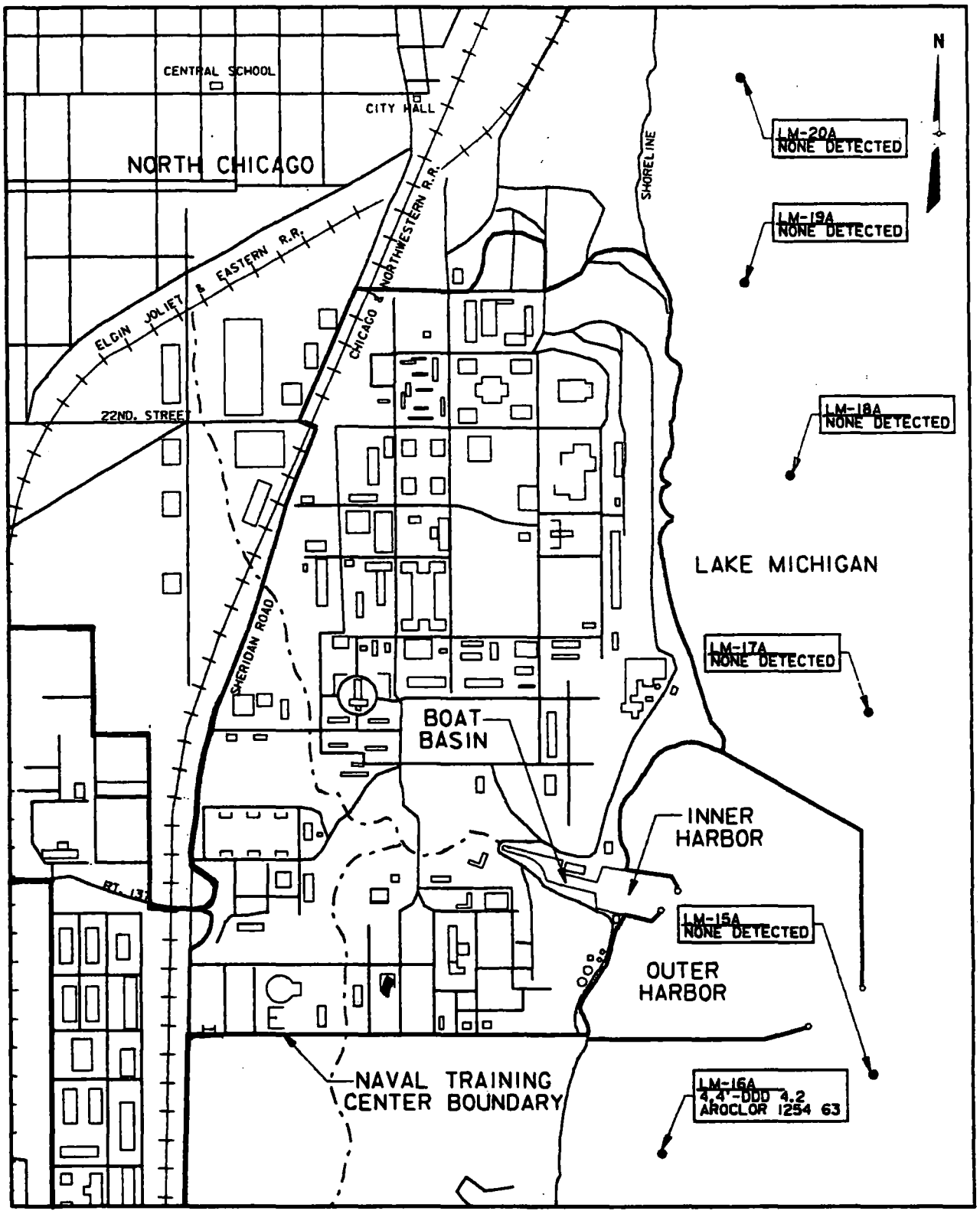
RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93

CLIENT DWG. NUMBER

SECO DWG. NUMBER FIG3-23.DGN

SEDIMENT 0 TO 3-FOOT SAMPLES



SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1"=1250'

	NAMES	DATE
DR.	JC	
DSGN.	WES	
CK.	MG	
PE	MG	
APP'D		

FIGURE 3-24
PESTICIDES/PCBs (ug/kg)
DETECTED IN LAKE MICHIGAN
SEDIMENTS-0 TO 3-FOOT SAMPLES
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECD DWG. NUMBER F103-24.DGN

We do not believe that pesticides/PCBs have migrated from the Outer Harbor for the following reasons. First, both DDD (log octanol water coefficient [K_{OW}] 5.56) and Aroclor 1254 (log K_{OW} 6.03) are highly hydrophobic compounds, meaning these compounds will tend to stay adsorbed to the harbor sediment, as opposed to releasing to the surface water in contact with the sediment. Compounds with a log K_{OW} greater than 4.0 are considered very hydrophobic (Nyer, 1993). Second, if pesticides and/or PCBs have migrated from the Outer Harbor into Lake Michigan, we believe that sample SD-LM-15A, the sample collected nearest the Outer Harbor mouth, would have shown some level of pesticide/PCB contamination, which it did not.

Pesticides and PCBs were not detected in the four Lake Michigan background sediment samples collected to the north of the NTC Great Lakes Harbor. This fact provides evidence that PCBs have not migrated via Lake Michigan currents toward the NTC Great Lakes Harbor from sources to the north. The most well-known source of PCBs located north of NTC Great Lakes is the Waukegan Harbor (located approximately four miles north of the NTC Great Lakes Harbor).

3.5.4 Metals

3.5.4.1 Boat Basin and Inner Harbor Samples

Priority pollutant metals detected in 0- to 3-foot and 3- to 6-foot sediment samples collected from the Boat Basin and the Inner Harbor are depicted on Figures 3-25 and 3-26, respectively.

Shown on these figures are the pollutional classifications previously discussed in Section 2.6.1 and provided on Table 2-1. Note that pollutional classifications were not established for aluminum, beryllium, selenium, and silver.

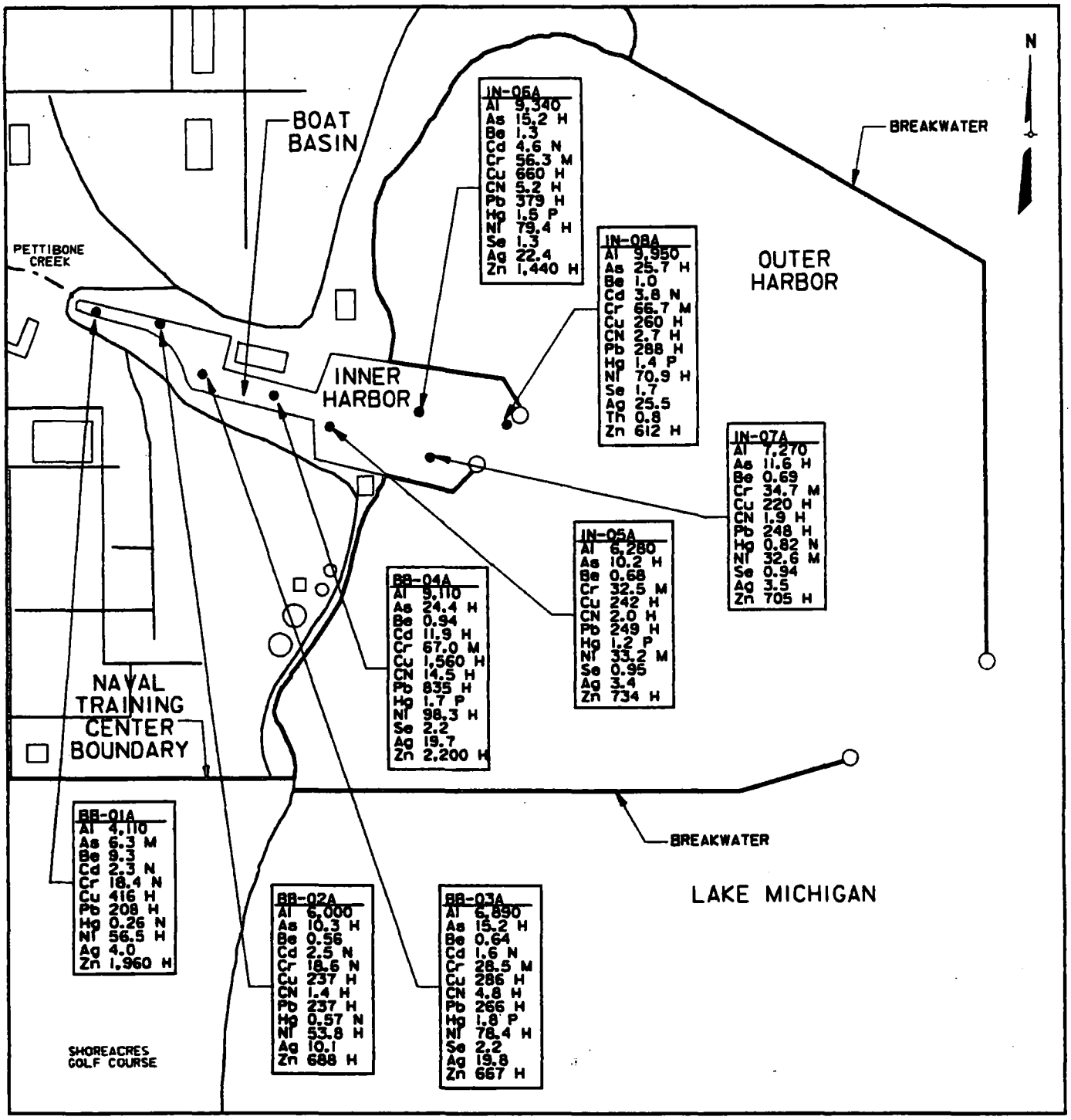
Based on the priority pollutant metal data, the following conclusions can be made:

- Numerous metals and cyanide were found to be present in Boat Basin and Inner Harbor sediments at levels considered to be highly polluted. Metals which were frequently detected at highly polluted levels include arsenic, copper, lead, nickel, and zinc. In addition, cadmium and chromium were detected at moderately or highly polluted levels in several samples.

- Metal concentrations were generally found to be of similar magnitude in both the Boat Basin and the Inner Harbor.

- In the Boat Basin and the Inner Harbor, metal concentrations were found to be of similar magnitude at both depths sampled.

SEDIMENT 0 TO 3-FOOT SAMPLES



POLLUTIONAL CLASSIFICATIONS

N - NOT POLLUTED
M - MODERATELY POLLUTED
H - HIGHLY POLLUTED
P - POLLUTED

NOTE

1. POLLUTIONAL CLASSIFICATIONS HAVE NOT BEEN ESTABLISHED FOR Al, Be, Se, AND Ag.

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1" = 500'

	NAMES	DATE
DR	JC	
DSGN.	WES	
CK.	MG	
PE	MG	
AP		
APP'D		
APP'D		

FIGURE 3-25
PRIORITY POLLUTANT METALS (mg/kg)
DETECTED IN BOAT BASIN AND INNER HARBOR
SEDIMENTS-0 TO 3-FOOT SAMPLES

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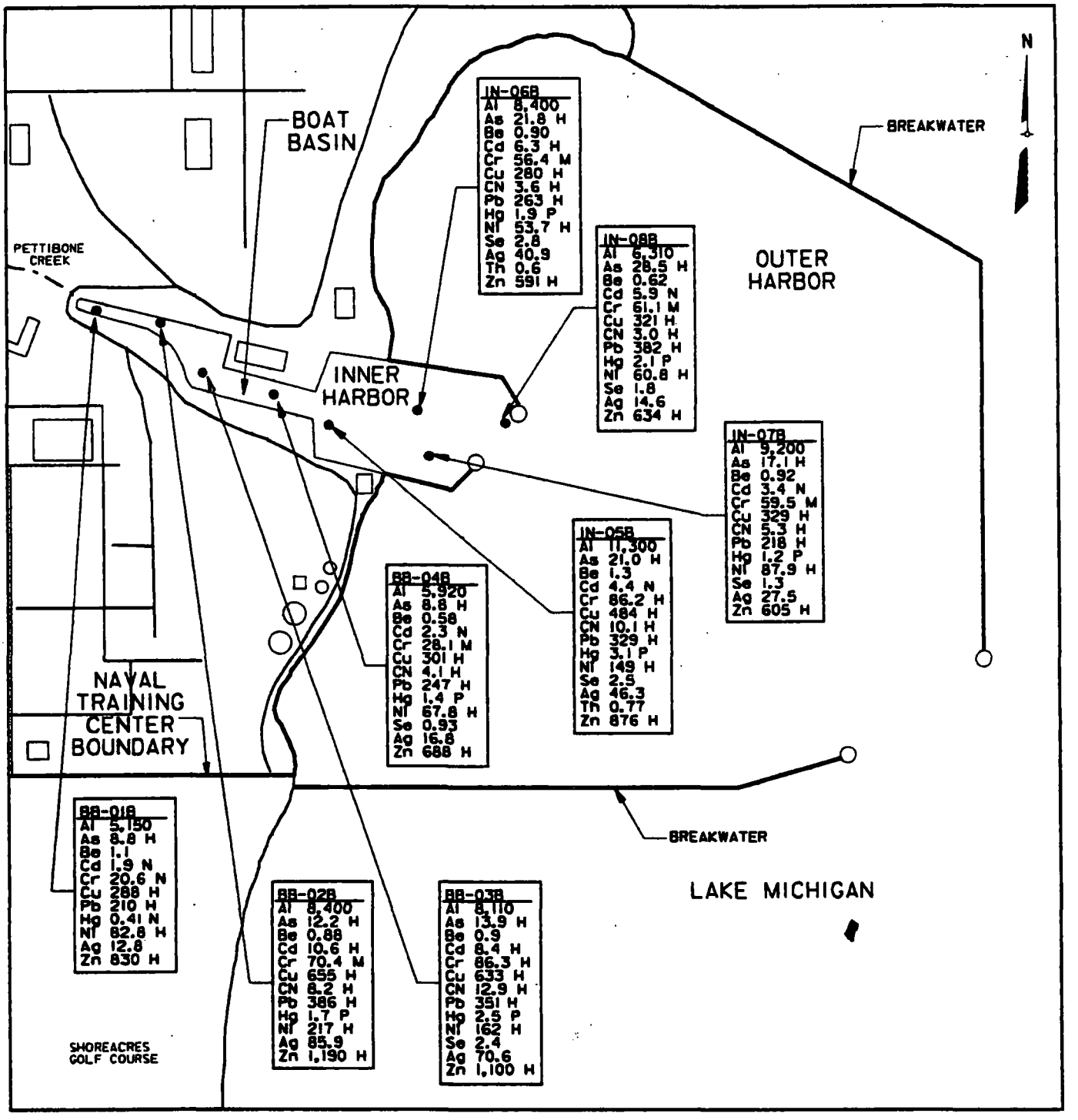
RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECD DWG. NUMBER FIG3-25.DGN

SEDIMENT 3 TO 6-FOOT SAMPLES



POLLUTIONAL CLASSIFICATIONS

N - NOT POLLUTED
M - MODERATELY POLLUTED
H - HIGHLY POLLUTED
P - POLLUTED

NOTE

1. POLLUTIONAL CLASSIFICATIONS HAVE NOT BEEN ESTABLISHED FOR Al, Be, Se, AND Ag.

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1"=500'

	NAMES	DATE
DR.	JC	
DSGN.	WES	
CK.	MG	
PE	MG	
PM		
APP'D		
APP'D		

FIGURE 3-26
PRIORITY POLLUTANT METALS (mg/kg)
DETECTED IN BOAT BASIN AND INNER HARBOR
SEDIMENTS-3 TO 6-FOOT SAMPLES

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RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECO DWG. NUMBER FIG3-26.DGN

- In most cases, the metal and cyanide concentrations detected at both intervals sampled in the Boat Basin and in the Inner Harbor were above Lake Michigan sediment background concentrations. Background metal concentrations were calculated using a statistical approach explained in Section 3.5.4.3.

3.5.4.2 Outer Harbor Samples

Priority pollutant metals detected in 0- to 3-foot and 3- to 6-foot sediment samples collected from the Outer Harbor are depicted on Figures 3-27 and 3-28. The following conclusions can be made from these data:

- Numerous metals and cyanide were found to be present in the Outer Harbor at levels considered to be moderately or highly polluted.

- Metal concentrations were generally found to be less in magnitude in the Outer Harbor than in the Boat Basin and the Inner Harbor. As stated previously, we believe this indicates that Pettibone Creek is the primary migration route by which contaminants have entered the NTC Great Lakes Harbor.

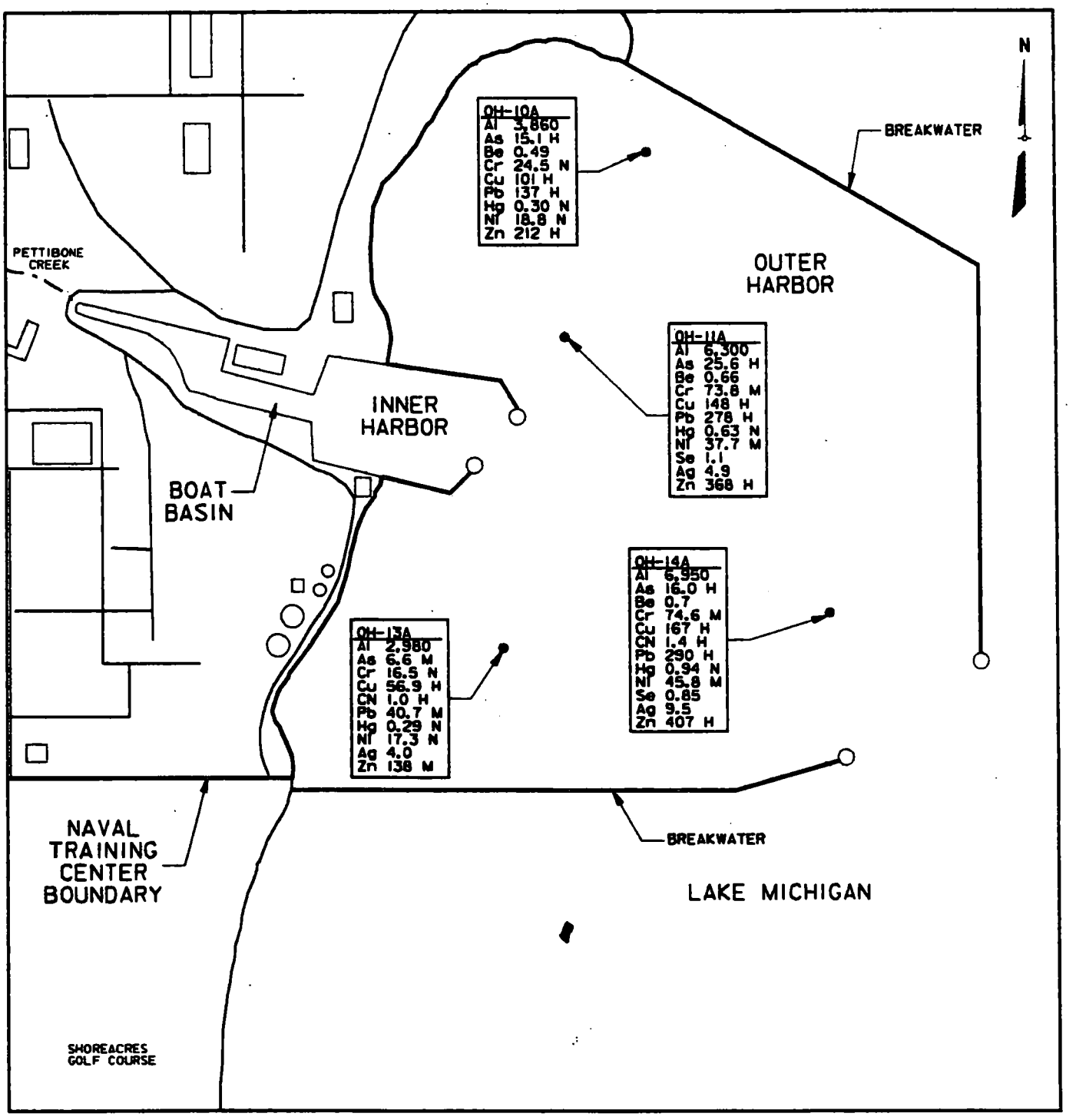
- At sample locations OH-10 and OH-13, metal and cyanide concentrations decreased with increasing depth sampled. At sample locations OH-11 and OH-14, metal and cyanide concentrations were found to be of similar magnitude at both depths sampled.

- In most cases, the metal and cyanide concentrations detected in the two intervals sampled in the Outer Harbor were above background concentrations. Background metal concentrations have been calculated using a statistical approach explained in Section 3.5.4.3.

3.5.4.3 Lake Michigan Samples

Priority pollutant metals detected in the six 0- to 3-foot background sediment samples collected in Lake Michigan are depicted on Figure 3-29. Statistical calculations were performed on the background sediment sample metal data to determine an upper limit background concentration for each metal. The upper limit background concentration is the highest value that can be considered to be part of the normal distribution of Lake Michigan sediment metal concentrations. The upper limit concentration was calculated by adding three sample standard deviations to the sample mean for each metal. If a metal was not detected in a particular sample, an arbitrary concentration of one-half the detection limit was used to calculate the sample mean and sample standard deviation. The results of the statistical calculations are provided in Table 3-4. Boat Basin, Inner Harbor, and Outer Harbor sediment sample metals data are compared to upper limit background concentrations on Table 3-5.

SEDIMENT 0 TO 3-FOOT SAMPLES



POLLUTIONAL CLASSIFICATIONS

N - NOT POLLUTED
M - MODERATELY POLLUTED
H - HIGHLY POLLUTED
P - POLLUTED

NOTE

1. POLLUTIONAL CLASSIFICATIONS HAVE NOT BEEN ESTABLISHED FOR Al, Be, Se, AND Ag.

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1"=500'

	NAMES	DATE
R.	JC	
SGN.	WES	
E.	MG	
E	MG	
PP		
PP'D		
PP'D		

FIGURE 3-27
PRIORITY POLLUTANT METALS (mg/kg)
DETECTED IN OUTER HARBOR
SEDIMENTS-0 TO 3-FOOT SAMPLES

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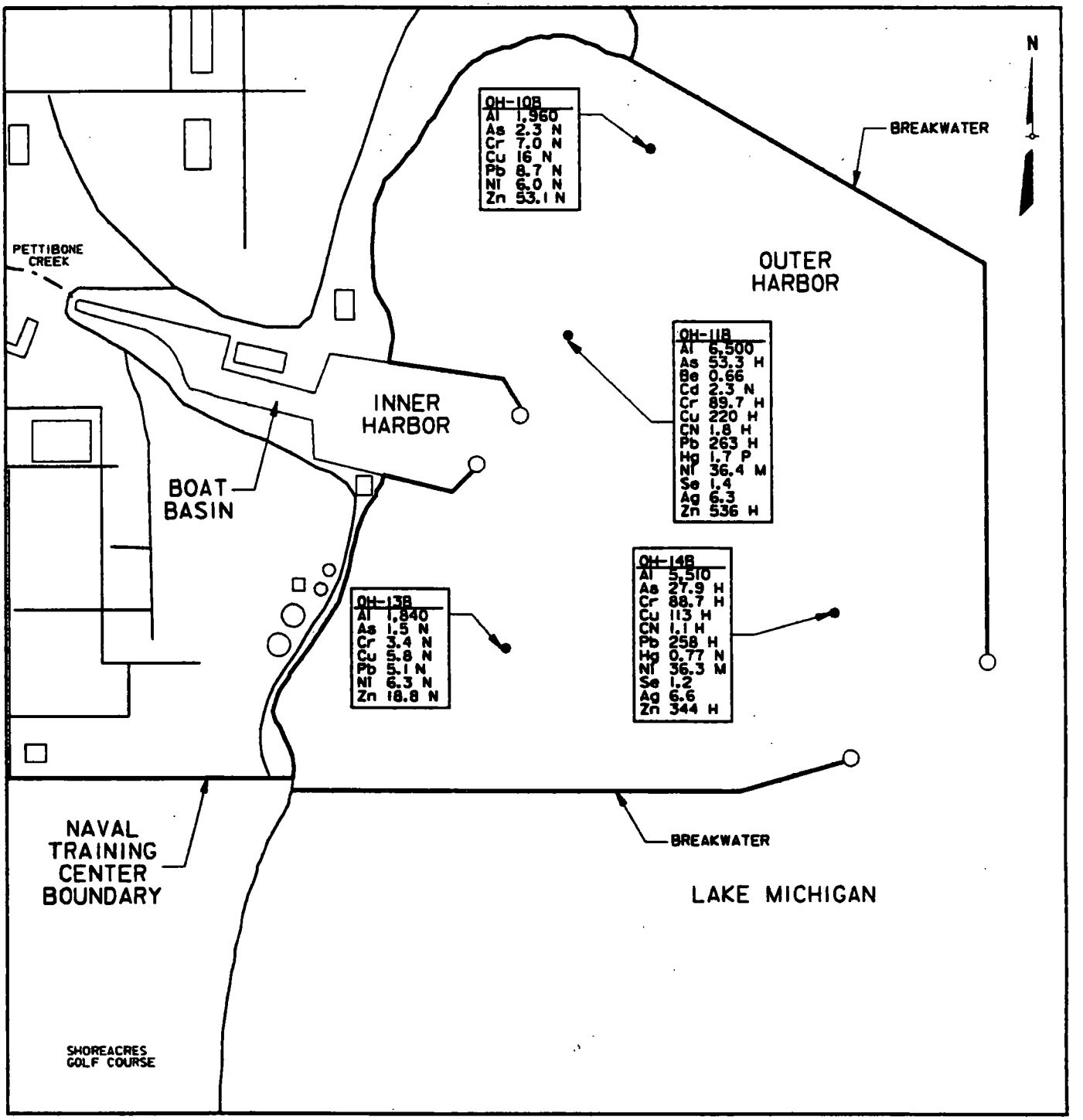
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECD DWG. NUMBER F:G3-27.GN

SEDIMENT 3 TO 6-FOOT SAMPLES



POLLUTIONAL CLASSIFICATIONS

N - NOT POLLUTED
M - MODERATELY POLLUTED
H - HIGHLY POLLUTED
P - POLLUTED

NOTE

1. POLLUTIONAL CLASSIFICATIONS HAVE NOT BEEN ESTABLISHED FOR Al, Be, Se, AND Ag.

SOURCE

DIGITIZED FROM:
USGS, 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

500' 250' 0 500'

SCALE: 1"=500'

	NAMES	DATE
R.	JC	
SGN.	WES	
K.	MG	
E	MG	
PP		
PP'D		

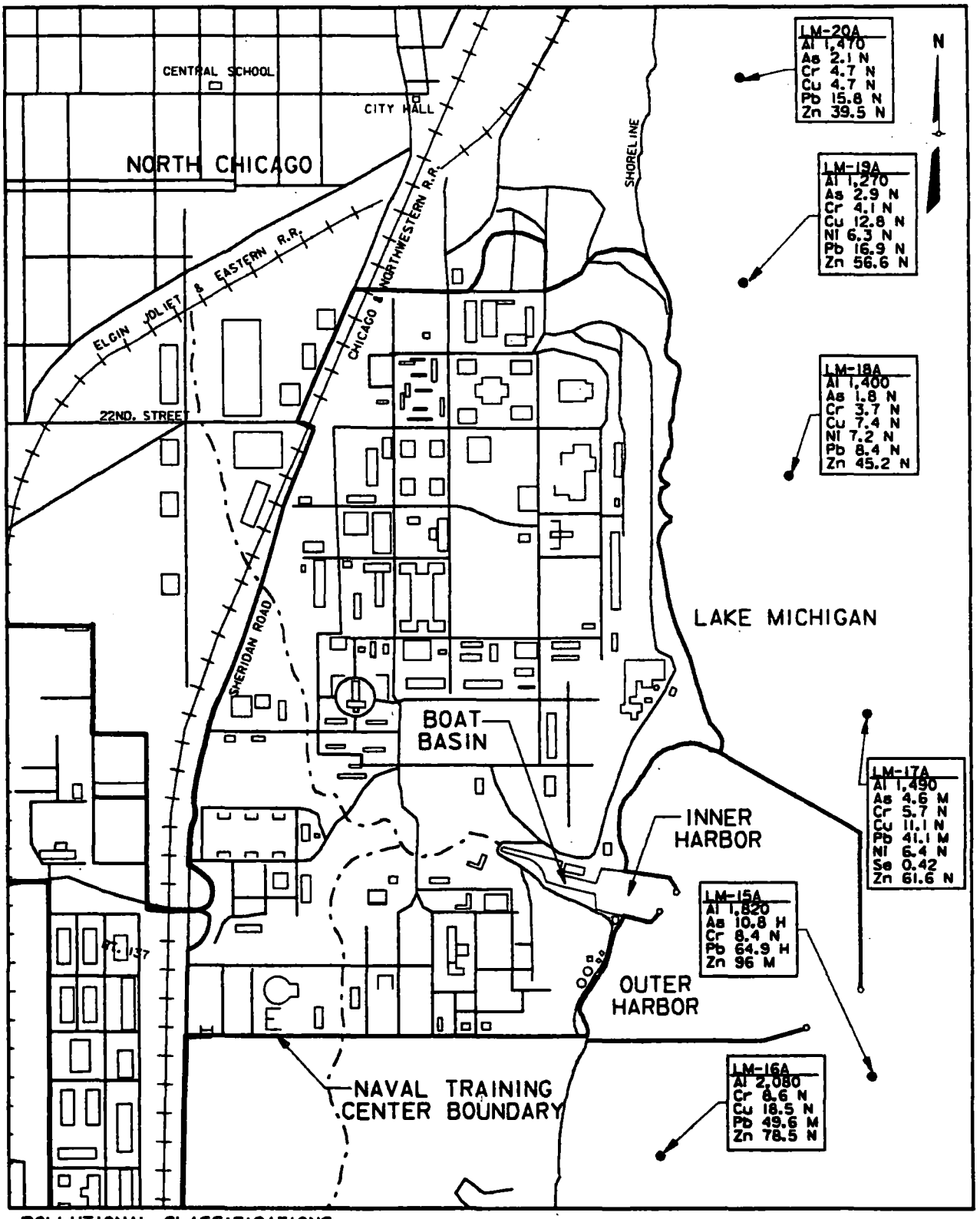
FIGURE 3-28
PRIORITY POLLUTANT METALS (mg/kg)
DETECTED IN OUTER HARBOR
SEDIMENTS-3 TO 6-FOOT SAMPLES

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECD DWG. NUMBER F'G3-28.DGN

SEDIMENT 0 TO 3-FOOT SAMPLES



POLLUTIONAL CLASSIFICATIONS

N - NOT POLLUTED
M - MODERATELY POLLUTED
H - HIGHLY POLLUTED
P - POLLUTED

NOTE

1. POLLUTIONAL CLASSIFICATIONS HAVE NOT BEEN ESTABLISHED FOR Al, Be, Se, AND Ag.
2. THE POLLUTIONAL CLASSIFICATIONS HAVE BEEN PROVIDED ON THIS FIGURE FOR COMPARISON PURPOSES ONLY. THESE CLASSIFICATIONS WERE ESTABLISHED FOR HARBOR SEDIMENTS, NOT LAKE MICHIGAN SEDIMENTS.

SOURCE

DIGITIZED FROM:
USGS. 7.5 MINUTE TOPOGRAPHIC MAP, WAUKEGAN QUADRANGLE, 1960, PHOTO REVISED 1972 AND 1980.

1250' 625' 0 1250'

SCALE: 1" = 1250'

	NAMES	DATE
D	JC	
DSGN.	WES	
CK.	MG	
F	MG	
A	0	
A	0	
APP	0	

FIGURE 3-29

PRIORITY POLLUTANT METALS (mg/kg) DETECTED IN LAKE MICHIGAN SEDIMENTS-0 TO 3-FOOT SAMPLES

NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT NUMBER 20612.060 DATE PLOTTED 3/2/93
CLIENT DWG. NUMBER
SECD DWG. NUMBER FIG3-29.DGN

TABLE 3-4

CALCULATION OF BACKGROUND METAL CONCENTRATIONS IN LAKE MICHIGAN SEDIMENTS
SITE INSPECTION AT PETTIBONE CREEK, BOAT BASIN AND HARBOR AREAS
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS
JUNE 1993

	BACKGROUND SAMPLES (mg/kg)						
METAL	SD-LM-15A	SD-LM-16A	SD-LM-17A	SD-LM-17AFD	SD-LM-18A	SD-LM-19A	SD-LM-20A
Aluminum	1,820	2,080	1,490	1,470	1,400	1,270	1,470
Arsenic	10.8	4.6	4.6	4.4	1.8	2.9	2.1
Beryllium	0.53 (U)	0.49 (U)	0.49 (U)	0.5 (U)	0.49 (U)	0.48 (U)	0.52 (U)
Cadmium	1.3 (U)	1.2 (U)	1.2 (U)	1.2 (U)	1.2 (U)	1.2 (U)	1.3 (U)
Chromium	8.4	8.6	4.9	5.7	3.7	4.1	4.7
Copper	13.5	18.5	11.1	10.9	7.4	12.8	4.7
Cyanide	0.65 (U)	0.62 (U)	0.62 (U)	0.62 (U)	0.61 (U)	0.60 (U)	0.64 (U)
Lead	64.9	49.6	38.2	41.1	8.4	16.9	15.8
Mercury	0.12 (U)	0.10 (U)	0.11	0.12	0.12	0.10	0.11
Nickel	7.7	7.9	6.4	5.2	7.2	6.3	5.2 (U)
Selenium	0.26 (U)	0.25 (U)	0.42	0.30	0.49	0.27	0.26
Silver	1.3 (U)	1.2 (U)	1.2 (U)	1.2 (U)	1.2 (U)	1.2 (U)	1.3 (U)
Thallium	0.53 (U)	0.49 (U)	0.49 (U)	0.5 (U)	0.49 (U)	0.48 (U)	0.52 (U)
Zinc	96.0	78.5	61.6	55.9	45.2	56.6	39.5

QUALIFIERS:

U - This flag indicates that the analyte was analyzed for but not detected above the provided detection limit. In this case, a value of one-half the detection limit was used to calculate the sample means and sample standard deviations presented on the next page.

NOTE: The upper limit concentration was calculated by adding three sample standard deviations to the background sample mean for each metal.

ABBREVIATIONS:

LM - Lake Michigan
SD - Sediment Sample

TABLE 3-4 (Continued)

CALCULATION OF BACKGROUND METAL CONCENTRATIONS IN LAKE MICHIGAN SEDIMENTS
SITE INSPECTION AT PETTIBONE CREEK, BOAT BASIN AND HARBOR AREAS
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIC
JUNE 1993

METAL	SAMPLE MEAN (mg/kg)	SAMPLE STANDARD DEVIATION	UPPER LIMIT BACKGROUND VALUE (mg/kg)
Aluminum	1,571	279.3	2,409
Arsenic	4.5	3.036	13.6
Beryllium	0.25	0.0091	0.28
Cadmium	0.61	0.0244	0.68
Chromium	5.7	1.996	11.7
Copper	11.3	4.433	24.6
Cyanide	0.31	0.0085	0.34
Lead	33.6	20.59	95.4
Mercury	0.06	0.0045	0.07
Nickel	6.2	1.833	11.7
Selenium	0.23	0.1109	0.56
Silver	0.61	0.0243	0.68
Thallium	0.25	0.0091	0.28
Zinc	61.9	19.51	120.4

QUALIFIERS:

U - This flag indicates that the analyte was analyzed for but not detected above the provided detection limit. In this case, a value of one-half the detection limit was used to calculate the sample means and sample standard deviations presented on the next page.

NOTE: The upper limit concentration was calculated by adding three sample standard deviations to the background sample mean for each metal.

ABBREVIATIONS:

LM - Lake Michigan
SD - Sediment Sample

R/63SID/AA6

TABLE 3-5

METALS DETECTED ABOVE UPPER LIMIT BACKGROUND CONCENTRATIONS IN BOAT BASIN, INNER HARBOR AND OUTER HABROR SEDIMENT SAMPLES NAVAL TRAINING CENTER GREAT LAKES, ILLINOIS JUNE 1993

Metal	Upper Limit Background Concentration	SD-BB-01A	SD-BB-01B	SD-BB-02A	SD-BB-02B	SD-BB-03A	SD-BB-03B	SD-BB-04A	SD-BB-04B	SD-IN-05A
Aluminum	2,409	4,110	5,150	6,000	8,400	6,890	8,110	9,110	5,920	6,280
Arsenic	13.6	-	-	-	-	15.2	13.9	24.4	-	-
Beryllium	0.28	9.3	1.1	0.56	0.88	0.64	0.9	0.94	0.58	0.68
Cadmium	0.68	2.3	1.9	2.5	10.6	1.6	8.4	11.9	2.3	1.7
Chromium	11.7	18.4	20.6	18.6	70.4	28.5	86.3	67.0	28.1	32.5
Copper	24.6	416	288	237	655	286	633	1,560	301	242
Cyanide	0.34	-	-	1.4	8.2	4.8	12.9	14.5	4.1	2.0
Lead	95.4	208	210	237	386	266	351	835	247	249
Mercury	0.07	0.26	0.41	0.57	1.7	1.8	2.5	1.7	1.4	1.2
Nickel	11.7	56.5	82.8	53.8	217	78.4	162	98.3	67.8	33.2
Selenium	0.56	-	-	-	-	2.2	2.4	2.2	0.93	0.95
Silver	0.68	4.0	12.8	10.1	85.9	19.8	70.6	19.7	16.8	3.4
Thallium	0.28	-	-	-	-	-	-	0.63	0.58	0.68
Zinc	120.4	1,960	830	688	1,190	667	1,100	2,200	688	734

- Designates below upper limit background concentration or not detected.

UNITS: mg/kg

TABLE 3-5 (Continued)

METALS DETECTED ABOVE UPPER LIMIT BACKGROUND CONCENTRATIONS IN BOAT BASIN, INNER HARBOR AND OUTER HABROR SEDIMENT SAMPLES
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS
JUNE 1993

Metal	Upper Limit Background Concentration	SD-IN-05B	SD-IN-06A	SD-IN-06B	SD-IN-07A	SD-IN-07B	SD-IN-08A	SD-IN-08B	SD-OH-10A	SD-OH-10B
Aluminum	2,409	11,300	9,340	8,400	7,270	9,200	9,950	6,310	3,860	-
Arsenic	13.6	21.0	15.2	21.8	-	17.1	25.7	28.5	15.1	-
Beryllium	0.28	1.30	1.3	0.9	0.69	0.92	1.0	0.62	0.49	0.5
Cadmium	0.68	4.40	4.6	6.3	1.7	3.4	3.8	5.9	1.2	1.3
Chromium	11.7	86.20	56.3	56.4	34.7	59.5	66.7	61.1	24.5	-
Copper	24.6	484.0	660	280	220	329	260	321	101	-
Cyanide	0.34	10.10	5.2	3.6	1.9	5.3	2.7	3.0	0.62	0.61
Lead	95.4	329.0	379	263	248	218	288	382	137	-
Mercury	0.07	3.10	1.5	1.9	0.82	1.2	1.4	2.1	0.3	0.11
Nickel	11.7	149.0	79.4	53.7	32.6	87.9	70.9	60.8	18.8	-
Selenium	0.56	2.5	1.3	2.8	0.94	1.3	1.7	1.8	-	-
Silver	0.68	46.30	22.4	40.9	3.5	27.5	25.5	14.6	1.2	1.3
Thallium	0.28	0.77	0.68	0.6	0.69	0.61	0.8	0.62	0.49	0.5
Zinc	120.4	876.0	1,440	591	705	605	612	634	212	-

- Designates below upper limit background concentration or not detected.

UNITS: mg/kg

TABLE 3-5 (Continued)

METALS DETECTED ABOVE UPPER LIMIT BACKGROUND CONCENTRATIONS IN BOAT BASIN, INNER HARBOR AND OUTER HABROR SEDIMENT SAMPLES NAVAL TRAINING CENTER GREAT LAKES, ILLINOIS JUNE 1993

Metal	Upper Limit Background Concentration	SD-OH-11A	SD-OH-11B	SD-OH-13A	SD-OH-13B	SD-OH-14A	SD-OH-14B
Aluminum	2,409	6,300	6,500	2,980	-	6,950	5,510
Arsenic	13.6	25.6	53.3	-	-	16.0	27.9
Beryllium	0.28	0.66	0.66	0.53	0.48	0.7	0.7
Cadmium	0.68	1.6	2.3	1.3	1.2	1.8	1.7
Chromium	11.7	73.8	89.7	16.5	-	74.6	88.7
Copper	24.6	148	220	56.9	-	167	113
Cyanide	0.34	0.83	1.8	1.0	0.6	1.4	1.1
Lead	95.4	278	263	-	-	290	258
Mercury	0.07	0.63	1.7	0.29	0.12	0.94	0.77
Nickel	11.7	37.7	36.4	17.3	-	45.8	36.3
Selenium	0.56	1.1	1.4	-	-	0.85	1.2
Silver	0.68	4.9	6.3	4.0	1.2	9.5	6.6
Thallium	0.28	0.66	0.66	0.53	0.48	0.7	0.7
Zinc	120.4	368	536	138	-	407	344

- Designates below upper limit background concentration or not detected.

UNITS: mg/kg

R/63SID/AA5

APPENDIX A

QUALIFIED ANALYTICAL DATA

VALIDATION CODES AND INTERPRETATIONS
SITE INSPECTION AT PETTIBONE CREEK, BOAT BASIN
AND HARBOR AREAS
NAVAL TRAINING CENTER
MARCH 1993

Validation Code		Interpretation
U	-	Nondetect
UJ	-	Estimated nondetect
J	-	Positive value estimated
R	-	Positive value rejected, considered to be unreliable
(a)	-	(organics only) . . . internal standard failure
(b)	-	Value is considered to be a false positive attributable to blank contamination
(c)	-	Calibration; (for inorganics, includes correlation coefficients for GFAA analytes and results quantitated via MSA; CDRL Standard analysis recoveries)
(d)	-	Laboratory duplicate imprecision
(e)	-	Response for compound exceeded instrument's calibrated linear range
(f)	-	Field duplicate imprecision
(g)	-	Noncompliant endrin and.or 4,4'-DDT percent breakdown
(h)	-	Maximum allowable holding time exceeded
(i)	-	(inorganics only) Interference based on ICP interference check sample results
(m)	-	Matrix spike
(n)	-	(inorganics only) Instrumental drift as evidenced by negative values reported for laboratory blank analyses

Validation Code		Interpretation
(o)	-	(inorganics only) Serial dilution %D exceeds quality control criteria
(p)	-	(inorganics only) Noncompliant graphite furnace post digestion analytical spike %R
(q)	-	. . .questionable quantitation; (to be used only for reasons other than standard quality control parameter non-compliances)
(s)	-	(organics only) Surrogate recovery
(y)	-	Questionable identification
(z)	-	Noncompliant Laboratory Control Sample or laboratory blank spike results

R/63SI/AB6

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Volatiles

SAMPLE ID:		GL63-SD-BB-01A	GL63-SD-BB-01B	GL63-SD-PC-01	GL63-SD-BB-02A	GL63-SD-BB-02B	GL63-SD-PC-02FD
DEPTH:		0-3	3-6	0-1	0-3	3-6	0-1
DATE SAMPLED:		21-AUG-92	21-AUG-92	24-AUG-92	21-AUG-92	21-AUG-92	24-AUG-92
COMPOUND							
Volatile Compounds							
Chloromethane	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
Bromomethane	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
Vinyl Chloride	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
Chloroethane	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
Methylene Chloride	UG/KG	55	16 U(b)	33 U(b)	14 U	15 U(b)	33 U(b)
Acetone	UG/KG	13 UJ(bc)	13 UJ(bc)	26 UJ(bc)	14 UJ(c)	50 UJ(bc)	13 UJ(c)
Carbon disulfide	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
1,1-Dichloroethene	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
1,1-Dichloroethane	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
1,2-Dichloroethane(total)	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
Chloroform	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
1,2-Dichloroethane	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
2-Butanone	UG/KG	13 U	13 J	13 U	11 U	9 J	13 U
1,1,1-Trichloroethane	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
Carbon Tetrachloride	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
Bromodichloromethane	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
1,2-Dichloropropane	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
cis-1,3-Dichloropropene	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
Trichloroethene	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
Dibromochloromethane	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
1,1,2-Trichloroethane	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
Benzene	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
trans-1,3-Dichloropropene	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
Bromoform	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
4-Methyl-2-Pentanone	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
2-Hexanone	UG/KG	13 U	13 U	13 U	14 U	15 UJ(c)	13 U
Tetrachloroethene	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
1,1,2,2-Tetrachloroethane	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
Toluene	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
Chlorobenzene	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
Ethyl Benzene	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
Styrene	UG/KG	13 U	13 U	13 U	14 U	15 U	13 U
Xylenes (Total)	UG/KG	13 U	13 U	13 U	14 U	4 J	13 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Volatiles

SAMPLE ID:		GL63-SD-OH-11A	GL63-SD-OH-11B	GL63-SD-OH-11BF	GL63-SD-PC-11FD	GL63-SD-PC-11	GL63-SD-OH-13A
DEPTH:		0-3	3-6	3-6	0-1	0-1	0-3
DATE SAMPLED:		19-AUG-92	19-AUG-92	19-AUG-92	25-AUG-92	25-AUG-92	20-AUG-92
COMPOUND							
Volatile Compounds							
Chloromethane	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
Bromomethane	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
Vinyl Chloride	UG/KG	16 U	16 U	17 U	59	81	13 U
Chloroethane	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
Methylene Chloride	UG/KG	16 U(b)	16 U(b)	17 U(b)	14 U(b)	14 U(b)	13 U
Acetone	UG/KG	21 UJ(bc)	26 UJ(bc)	40 UJ(bc)	14 UJ(c)	57 U(b)	13 UJ(bc)
Carbon disulfide	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
1,1-Dichloroethene	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
1,1-Dichloroethane	UG/KG	16 U	16 U	17 U	14 U	5 J	13 U
1,2-Dichloroethene(total)	UG/KG	16 U	16 U	17 U	58	95	13 U
Chloroform	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
1,2-Dichloroethane	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
2-Butanone	UG/KG	16 U	16 U	9 J	14 U	14 U	13 J
1,1,1-Trichloroethane	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
Carbon Tetrachloride	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
Bromodichloromethane	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
1,2-Dichloropropane	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
cis-1,3-Dichloropropene	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
Trichloroethene	UG/KG	16 U	16 U	17 U	8 J	15 J(f)	13 U
Dibromochloromethane	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
1,1,2-Trichloroethane	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
Benzene	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
trans-1,3-Dichloropropene	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
Bromoform	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
4-Methyl-2-Pentanone	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
2-Hexanone	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
Tetrachloroethene	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
1,1,2,2-Tetrachloroethane	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
Toluene	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
Chlorobenzene	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
Ethyl Benzene	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
Styrene	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U
Xylenes (Total)	UG/KG	16 U	16 U	17 U	14 U	14 U	13 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Volatiles

SAMPLE ID:		GL63-SD-OH-13B	GL63-SD-OH-13BF	GL63-SD-OH-14A	GL63-SD-OH-14B	GL63-SD-LM-15A	GL63-SD-LM-16A
DEPTH:		3-6	3-6	0-3	3-6	0-3	0-3
DATE SAMPLED:		20-AUG-92	20-AUG-92	19-AUG-92	19-AUG-92	21-AUG-92	21-AUG-92
COMPOUND							
Volatile Compounds							
Chloromethane	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
Bromomethane	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
Vinyl Chloride	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
Chloroethane	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
Methylene Chloride	UG/KG	12 U(b)	32 UJ(ab)	18 U(b)	18 U(b)	24 U(b)	62 U(b)
Acetone	UG/KG	21 UJ(bc)	12 UJ(ac)	36 UJ(bc)	62 UJ(bc)	13 UJ(bc)	120 UJ(bc)
Carbon disulfide	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
1,1-Dichloroethene	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
1,1-Dichloroethane	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
1,2-Dichloroethene(total)	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
Chloroform	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
1,2-Dichloroethane	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
2-Butanone	UG/KG	12 J	12 UJ(a)	18 U	13 J	13 U	62 U
1,1,1-Trichloroethane	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
Carbon Tetrachloride	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
Bromodichloromethane	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
1,2-Dichloropropane	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
cis-1,3-Dichloropropene	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
Trichloroethene	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
Dibromochloromethane	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
1,1,2-Trichloroethane	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
Benzene	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
trans-1,3-Dichloropropene	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
Bromoform	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
4-Methyl-2-Pentanone	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
2-Hexanone	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
Tetrachloroethene	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
1,1,2,2-Tetrachloroethane	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
Toluene	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
Chlorobenzene	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
Ethyl Benzene	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
Styrene	UG/KG	12 U	12 UJ(a)	18 U	18 U	13 U	62 U
Xylenes (Total)	UG/KG	5 J	12 UJ(a)	18 U	18 U	13 U	62 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Volatiles

SAMPLE ID:		GL63-SD-LM-17A	GL63-SD-LM-17AF	GL63-SD-LM-18A	GL63-SD-LM-19A	GL63-SD-LM-20A
DEPTH:		0-3	0-3	0-3	0-3	0-3
DATE SAMPLED:		20-AUG-92	20-AUG-92	20-AUG-92	20-AUG-92	20-AUG-92
COMPOUND						
Volatile Compounds						
Chloromethane	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 UJ(a)	13 U
Bromomethane	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
Vinyl Chloride	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
Chloroethane	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
Methylene Chloride	UG/KG	12 UJ(a)	12 U	62 UJ(a)	22 UJ(ab)	13 U
Acetone	UG/KG	12 UJ(ac)	12 UJ(c)	62 UJ(ac)	12 UJ(bc)	13 UJ(c)
Carbon disulfide	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
1,1-Dichloroethene	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
1,1-Dichloroethane	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
1,2-Dichloroethene(total)	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
Chloroform	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
1,2-Dichloroethane	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
2-Butanone	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 J
1,1,1-Trichloroethane	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
Carbon Tetrachloride	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
Bromodichloromethane	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
1,2-Dichloropropane	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
cis-1,3-Dichloropropene	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
Trichloroethene	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
Dibromochloromethane	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
1,1,2-Trichloroethane	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
Benzene	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
trans-1,3-Dichloropropene	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
Bromoform	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
4-Methyl-2-Pentanone	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
2-Hexanone	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
Tetrachloroethene	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
1,1,2,2-Tetrachloroethane	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
Toluene	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
Chlorobenzene	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
Ethyl Benzene	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
Styrene	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U
Xylenes (Total)	UG/KG	12 UJ(a)	12 U	62 UJ(a)	12 U	13 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Volatiles

SAMPLE ID:		GL63-SD-PC-02	GL63-SD-BB-03A	GL63-SD-BB-03B	GL63-SD-PC-03	GL63-SD-BB-04A	GL63-SD-BB-04B
DEPTH:		0-1	0-3	3-6	0-1	0-3	3-6
DATE SAMPLED:		24-AUG-92	18-AUG-92	18-AUG-92	26-AUG-92	18-AUG-92	18-AUG-92
COMPOUND							
Volatile Compounds							
Chloromethane	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
Bromomethane	UG/KG	12 U	16 U	15 U	11 J	16 U	14 U
Vinyl Chloride	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
Chloroethane	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
Methylene Chloride	UG/KG	12 U(b)	31 U(b)	15 U(b)	21 U(b)	16 U(b)	14 U(b)
Acetone	UG/KG	12 UJ(bc)	76 UJ(bc)	33 UJ(bc)	14 U(b)	35 UJ(bc)	45 UJ(bc)
Carbon disulfide	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
1,1-Dichloroethene	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
1,1-Dichloroethane	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
1,2-Dichloroethene(total)	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
Chloroform	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
1,2-Dichloroethane	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
2-Butanone	UG/KG	12 U	16 U	9 J	14 U	16 U	11 J
1,1,1-Trichloroethane	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
Carbon Tetrachloride	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
Bromodichloromethane	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
1,2-Dichloropropane	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
cis-1,3-Dichloropropene	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
Trichloroethene	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
Dibromochloromethane	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
1,1,2-Trichloroethane	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
Benzene	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
trans-1,3-Dichloropropene	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
Bromoform	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
4-Methyl-2-Pentanone	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
2-Hexanone	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
Tetrachloroethene	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
1,1,2,2-Tetrachloroethane	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
Toluene	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
Chlorobenzene	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
Ethyl Benzene	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
Styrene	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U
Xylenes (Total)	UG/KG	12 U	16 U	15 U	14 U	16 U	14 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Volatiles

SAMPLE ID:		GL63-SD-PC-04	GL63-SD-IN-05A	GL63-SD-IN-05B	GL63-SD-PC-05	GL63-SD-IN-06A	GL63-SD-IN-06AF
DEPTH:		0-1	0-3	3-6	0-1	0-3	0-3
DATE SAMPLED:		26-AUG-92	18-AUG-92	18-AUG-92	25-AUG-92	19-AUG-92	19-AUG-92
COMPOUND							
Volatile Compounds							
Chloromethane	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
Bromomethane	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
Vinyl Chloride	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
Chloroethane	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
Methylene Chloride	UG/KG	13 U(b)	17 U(b)	17 U(b)	47 U(b)	17 U(b)	16 U(b)
Acetone	UG/KG	15 U(b)	48 UJ(bc)	21 UJ(bc)	75 U(b)	17 UJ(c)	16 UJ(bc)
Carbon disulfide	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
1,1-Dichloroethene	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
1,1-Dichloroethane	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
1,2-Dichloroethene(total)	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
Chloroform	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
1,2-Dichloroethane	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
2-Butanone	UG/KG	13 U	8 J	17 U	12 U	17 U	16 U
1,1,1-Trichloroethane	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
Carbon Tetrachloride	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
Bromodichloromethane	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
1,2-Dichloropropane	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
cis-1,3-Dichloropropene	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
Trichloroethene	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
Dibromochloromethane	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
1,1,2-Trichloroethane	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
Benzene	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
trans-1,3-Dichloropropene	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
Bromoform	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
4-Methyl-2-Pentanone	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
2-Hexanone	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
Tetrachloroethene	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
1,1,2,2-Tetrachloroethane	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
Toluene	UG/KG	13 U	17 U	17 U	49	17 U	16 U
Chlorobenzene	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
Ethyl Benzene	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
Styrene	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U
Xylenes (Total)	UG/KG	13 U	17 U	17 U	12 U	17 U	16 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Volatiles

SAMPLE ID:		GL63-SD-IN-08B	GL63-SD-PC-06	GL63-SD-IN-07A	GL63-SD-IN-07B	GL63-SD-PC-07	GL63-SD-IN-08A
DEPTH:		3-6	0-1	0-3	3-6	0-1	0-3
DATE SAMPLED:		18-AUG-92	25-AUG-92	18-AUG-92	18-AUG-92	24-AUG-92	19-AUG-92
COMPOUND							
Volatile Compounds							
Chloromethane	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
Bromomethane	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
Vinyl Chloride	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
Chloroethane	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
Methylene Chloride	UG/KG	15 U(b)	35 U(b)	17 U(b)	15 U(b)	12 U(b)	18 U(b)
Acetone	UG/KG	35 UJ(bc)	6 J	53 UJ(bc)	57 UJ(bc)	57 U(b)	19 UJ(bc)
Carbon disulfide	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
1,1-Dichloroethene	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
1,1-Dichloroethane	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
1,2-Dichloroethene(total)	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
Chloroform	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
1,2-Dichloroethane	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
2-Butanone	UG/KG	15 U	12 UJ(c)	8 J	11 J	12 U	18 U
1,1,1-Trichloroethane	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
Carbon Tetrachloride	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
Bromodichloromethane	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
1,2-Dichloropropane	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
cis-1,3-Dichloropropene	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
Trichloroethene	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
Dibromochloromethane	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
1,1,2-Trichloroethane	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
Benzene	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
trans-1,3-Dichloropropene	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
Bromoform	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
4-Methyl-2-Pentanone	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
2-Hexanone	UG/KG	15 U	12 UJ(c)	17 U	15 U	12 U	18 U
Tetrachloroethene	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
1,1,2,2-Tetrachloroethane	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
Toluene	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
Chlorobenzene	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
Ethyl Benzene	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
Styrene	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U
Xylenes (Total)	UG/KG	15 U	12 U	17 U	15 U	12 U	18 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Volatiles

SAMPLE ID:		GL63-SD-IN-08B	GL63-SD-PC-08	GL63-SD-PC-09	GL63-SD-OH-10A	GL63-SD-OH-10B	GL63-SD-PC-10
DEPTH:		3-6	0-1	0-1	0-3	3-6	0-1
DATE SAMPLED:		18-AUG-92	24-AUG-92	25-AUG-92	19-AUG-92	19-AUG-92	25-AUG-92
COMPOUND							
Volatile Compounds							
Chloromethane	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
Bromomethane	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
Vinyl Chloride	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
Chloroethane	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
Methylene Chloride	UG/KG	16 U(b)	12 U	14 U(b)	12 UJ(ab)	12 U	14 U(b)
Acetone	UG/KG	50 UJ(bc)	800 J(c)	14 UJ(bc)	12 UJ(ac)	12 UJ(c)	85 U(b)
Carbon disulfide	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	5 J
1,1-Dichloroethene	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
1,1-Dichloroethane	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
1,2-Dichloroethene(total)	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
Chloroform	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
1,2-Dichloroethane	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
2-Butanone	UG/KG	16 J	12 U	14 UJ(c)	12 UJ(a)	12 U	16 J(c)
1,1,1-Trichloroethane	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
Carbon Tetrachloride	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
Bromodichloromethane	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
1,2-Dichloropropane	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
cis-1,3-Dichloropropene	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
Trichloroethene	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
Dibromochloromethane	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
1,1,2-Trichloroethane	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
Benzene	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	4 J
trans-1,3-Dichloropropene	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
Bromoform	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
4-Methyl-2-Pentanone	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
2-Hexanone	UG/KG	16 U	12 U	14 UJ(c)	12 UJ(a)	12 U	14 UJ(c)
Tetrachloroethene	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
1,1,2,2-Tetrachloroethane	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
Toluene	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	8 J
Chlorobenzene	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
Ethyl Benzene	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
Styrene	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	14 U
Xylenes (Total)	UG/KG	16 U	12 U	14 U	12 UJ(a)	12 U	7 J

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin,Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Semi-Volatiles

SAMPLE ID:		GL63-SD-BB-01A	GL63-SD-BB-01B	GL63-SD-PC-01	GL63-SD-BB-02A	GL63-SD-BB-02B	GL63-SD-PC-02FD
DEPTH:		0-3	3-6	0-1	0-3	3-6	0-1
DATE SAMPLED:		21-AUG-92	21-AUG-92	24-AUG-92	21-AUG-92	21-AUG-92	24-AUG-92
COMPOUND							
Semi-Volatile Compounds							
Phenol	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
bis(2-Chloroethyl) ether	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
2-Chlorophenol	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
1,3-Dichlorobenzene	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
1,4-Dichlorobenzene	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
1,2-Dichlorobenzene	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
2-Methylphenol	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
bis(2-Chloroisopropyl) ether	UG/KG	420 UJ(h)	440 U	420 UJ(c)	460 U	490 U	430 UJ(c)
4-Methylphenol	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
N-nitroso-di-n-dipropylamine	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
Hexachloroethane	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
Nitrobenzene	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
Isophorone	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
2-Nitrophenol	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
2,4-Dimethylphenol	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
bis(2-Chloroethoxy) methane	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
2,4-Dichlorophenol	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
1,2,4-Trichlorobenzene	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
Naphthalene	UG/KG	420 UJ(h)	290 J	420 U	460 U	490 U	430 U
4-Chloroaniline	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
Hexachlorobutadiene	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
4-Chloro-3-Methylphenol	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
2-Methylnaphthalene	UG/KG	420 UJ(h)	86 J	420 U	100 J	80 J	430 U
Hexachlorocyclopentadiene	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
2,4,6-Trichlorophenol	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
2,4,5-Trichlorophenol	UG/KG	1000 UJ(h)	1100 U	1000 U	1100 U	1200 U	1000 U
2-Chloronphthalene	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
2-Nitroaniline	UG/KG	1000 UJ(h)	1100 U	1000 U	1100 U	1200 U	1000 U
Dimethylphthalate	UG/KG	420 UJ(h)	440 U	420 U	460 U(b)	490 U	430 U
Acenaphthylene	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
2,6-Dinitrotoluene	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
3-Nitroaniline	UG/KG	1000 UJ(h)	1100 U	1000 U	1100 U	1200 U	1000 U
Acenaphthene	UG/KG	420 UJ(h)	260 J	420 U	140 J	110 J	130 J
2,4-Dinitrophenol	UG/KG	1000 UJ(h)	1100 U	1000 U	1100 U	1200 U	1100 U
4-Nitrophenol	UG/KG	1000 UJ(h)	1100 U	1000 U	1100 U	1200 U	1100 U
Dibenzofuran	UG/KG	420 UJ(h)	240 J	420 U	74 J	490 U	140 J
2,4-Dinitrotoluene	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
Diethylphthalate	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
4-Chlorophenyl Phenyl Ether	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
Fluorene	UG/KG	78 J	360 J	420 U	170 J	130 J	250 J
4-Nitroaniline	UG/KG	1000 UJ(h)	1100 U	1000 U	1100 U	1200 U	1100 U
4,6-Dinitro-2-methylphenol	UG/KG	1000 UJ(h)	1100 U	1000 U	1100 U	1200 U	1100 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Semi-Volatiles

SAMPLE ID:		GL63-SD-BB-01A	GL63-SD-BB-01B	GL63-SD-PC-01	GL63-SD-BB-02A	GL63-SD-BB-02B	GL63-SD-PC-02FD
DEPTH:		0-3	3-6	0-1	0-3	3-6	0-1
DATE SAMPLED:		21-AUG-92	21-AUG-92	24-AUG-92	21-AUG-92	21-AUG-92	24-AUG-92
COMPOUND							
Semi-Volatile Compounds							
N-nitrosodiphenylamine	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
4-Bromophenyl-phenylether	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
Hexachlorobenzene	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
Pentachlorophenol	UG/KG	1000 UJ(h)	1100 U	1000 U	1100 U	1200 U	1100 U
Phenanthrene	UG/KG	720 J(h)	3200	570	1500	980	1700 J(f)
Anthracene	UG/KG	170 J	430 J	120 J	120 J	100 J	410 J
Carbazole	UG/KG	420 UJ(h)	400 J	420 U	200 J	150 J	180 J
Di-n-butylphthalate	UG/KG	140 UJ(bh)	440 U(b)	420 U(b)	460 U(b)	570 U(b)	430 U(b)
Fluoranthene	UG/KG	790 J(h)	3100	660	2100	1400	1400 J(f)
Pyrene	UG/KG	580 J(h)	1900	550	1200	780	1100 J(f)
Butylbenzylphthalate	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
3,3-Dichlorobenzidine	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
Benzo(a)anthracene	UG/KG	300 J	1200	290 J	780	520	610 J(f)
Chrysene	UG/KG	350 J	1300	370 J	830	570	590 J(f)
bis(2-Ethylhexyl)phthalate	UG/KG	420 UJ(bh)	440 U(b)	420 U(b)	2000	1100	430 U(b)
Di-n-octyl Phthalate	UG/KG	420 UJ(h)	440 U	420 U	2100	1200	430 U
Benzo(b)fluoranthene	UG/KG	280 J	1000	190 J	930	630	350 J
Benzo(k)fluoranthene	UG/KG	200 J	1100	270 J	650	550	390 J
Benzo(a)pyrene	UG/KG	230 J	1000	200 J	610	450 J	320 J
Indeno(1,2,3-cd pyrene	UG/KG	420 UJ(h)	560	420 U	460 U	490 U	220 J
Dibenzo(a,h)anthracene	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	430 U
Benzo(g,h,i)perylene	UG/KG	420 UJ(h)	440 U	420 U	460 U	490 U	250 J

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Semi-Volatiles

SAMPLE ID:		GL63-SD-PC-02	GL63-SD-BB-03A	GL63-SD-BB-03B	GL63-SD-PC-03	GL63-SD-BB-04A	GL63-SD-BB-04B
DEPTH:		0-1	0-3	3-6	0-1	0-3	3-6
DATE SAMPLED:		24-AUG-92	18-AUG-92	18-AUG-92	26-AUG-92	18-AUG-92	18-AUG-92
COMPOUND							
Semi-Volatile Compounds							
Phenol	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
bis(2-Chloroethyl) ether	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
2-Chlorophenol	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
1,3-Dichlorobenzene	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
1,4-Dichlorobenzene	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
1,2-Dichlorobenzene	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
2-Methylphenol	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
bis(2-Chloroisopropyl) ether	UG/KG	410 UJ(c)	530 U	500 U	450 UJ(c)	520 U	480 U
4-Methylphenol	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
N-nitroso-di-n-dipropylamine	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
Hexachloroethane	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
Nitrobenzene	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
Isophorone	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
2-Nitrophenol	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
2,4-Dimethylphenol	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
bis(2-Chloroethoxy) methane	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
2,4-Dichlorophenol	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
1,2,4-Trichlorobenzene	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
Naphthalene	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
4-Chloroaniline	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
Hexachlorobutadiene	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
4-Chloro-3-Methylphenol	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
2-Methylnaphthalene	UG/KG	410 U	220 J	170 J	450 U	200 J	480 U
Hexachlorocyclopentadiene	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
2,4,6-Trichlorophenol	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
2,4,5-Trichlorophenol	UG/KG	1000 U	1300 U	1200 U	1100 U	1200 U	1200 U
2-Chloronphthalene	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
2-Nitroaniline	UG/KG	1000 U	1300 U	1200 U	1100 U	1200 U	1200 U
Dimethylphthalate	UG/KG	410 U	530 U	500 U(b)	450 U	520 U	480 U(b)
Acenaphthylene	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
2,6-Dinitrotoluene	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
3-Nitroaniline	UG/KG	1000 U	1300 U	1200 U	1100 U	1200 U	1200 U
Acenaphthene	UG/KG	410 U	150 J	500 U	450 U	150 J	98 J
2,4-Dinitrophenol	UG/KG	1000 U	1300 U	1200 U	1100 U	1200 U	1200 U
4-Nitrophenol	UG/KG	1000 U	1300 U	1200 U	1100 U	1200 U	1200 U
Dibenzofuran	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
2,4-Dinitrotoluene	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
Diethylphthalate	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
4-Chlorophenyl Phenyl Ether	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
Fluorene	UG/KG	410 U	280 J	100 J	450 U	210 J	110 J
4-Nitroaniline	UG/KG	1000 U	1300 U	1200 U	1100 U	1200 U	1200 U
4,6-Dinitro-2-methylphenol	UG/KG	1000 U	1300 U	1200 U	1100 U	1200 U	1200 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Semi-Volatiles

SAMPLE ID:		GL63-SD-PC-02	GL63-SD-BB-03A	GL63-SD-BB-03B	GL63-SD-PC-03	GL63-SD-BB-04A	GL63-SD-BB-04B
DEPTH:		0-1	0-3	3-6	0-1	0-3	3-6
DATE SAMPLED:		24-AUG-92	18-AUG-92	18-AUG-92	26-AUG-92	18-AUG-92	18-AUG-92
COMPOUND							
Semi-Volatile Compounds							
N-nitrosodiphenylamine	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
4-Bromophenyl-phenylether	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
Hexachlorobenzene	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
Pentachlorophenol	UG/KG	1000 U	1300 U	1200 U	1100 U	1200 U	1200 U
Phenanthrene	UG/KG	200 J	1700	740	85 J	2200	1100
Anthracene	UG/KG	410 U	170 J	500 U	450 U	520 U	78 J
Carbazole	UG/KG	410 U	110 J	500 U	450 U	520 U	110 J
Di-n-butylphthalate	UG/KG	410 U(b)	530 U(b)	500 U(b)	560 U(b)	520 U(b)	480 U(b)
Fluoranthene	UG/KG	310 J	2400	1000	180 J	3200	1700
Pyrene	UG/KG	300 J	1400	670	160 J	1800	1000
Butylbenzylphthalate	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
3,3-Dichlorobenzidine	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
Benzo(a)anthracene	UG/KG	150 J	1000	400 J	100 J	1200	710
Chrysene	UG/KG	190 J	880	390 J	130 J	1200	550
bis(2-Ethylhexyl)phthalate	UG/KG	410 U(b)	3000	660 U(b)	95 J	520 U(b)	2700
Di-n-octyl Phthalate	UG/KG	410 U	530 U	500 U	450 U	520 U	910
Benzo(b)fluoranthene	UG/KG	410 U	1000	490 J	450 U	1300	970
Benzo(k)fluoranthene	UG/KG	290 J	620	380 J	180 J	1300	590
Benzo(a)pyrene	UG/KG	130 J	600	290 J	450 U	760	500
Indeno(1,2,3-cd pyrene	UG/KG	410 U	530 U	500 U	450 U	320 J	480 U
Dibenzo(a,h)anthracene	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U
Benzo(g,h,i)perylene	UG/KG	410 U	530 U	500 U	450 U	520 U	480 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin,Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Semi-Volatiles

SAMPLE ID:		GL63-SD-PC-04	GL63-SD-IN-05A	GL63-SD-IN-05B	GL63-SD-PC-05	GL63-SD-IN-06A	GL63-SD-IN-06AF
DEPTH:		0-1	0-3	3-6	0-1	0-3	0-3
DATE SAMPLED:		26-AUG-92	18-AUG-92	18-AUG-92	25-AUG-92	19-AUG-92	19-AUG-92
COMPOUND							
Semi-Volatile Compounds							
Phenol	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
bis(2-Chloroethyl) ether	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
2-Chlorophenol	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
1,3-Dichlorobenzene	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
1,4-Dichlorobenzene	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
1,2-Dichlorobenzene	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
2-Methylphenol	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
bis(2-Chloroisopropyl) ether	UG/KG	420 UJ(c)	560 U	550 U	390 UJ(c)	560 U	540 U
4-Methylphenol	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
N-nitroso-di-n-dipropylamine	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
Hexachloroethane	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
Nitrobenzene	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
Isophorone	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
2-Nitrophenol	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
2,4-Dimethylphenol	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
bis(2-Chloroethoxy) methane	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
2,4-Dichlorophenol	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
1,2,4-Trichlorobenzene	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
Naphthalene	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
4-Chloroaniline	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
Hexachlorobutadiene	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
4-Chloro-3-Methylphenol	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
2-Methylnaphthalene	UG/KG	420 U	560 U	180 J	390 U	560 U	540 U
Hexachlorocyclopentadiene	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
2,4,6-Trichlorophenol	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
2,4,5-Trichlorophenol	UG/KG	1000 U	1400 U	1300 U	950 U	1400 U	1300 U
2-Chloronphthalene	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
2-Nitroaniline	UG/KG	1000 U	1400 U	1300 U	950 U	1400 U	1300 U
Dimethylphthalate	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
Acenaphthylene	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
2,6-Dinitrotoluene	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
3-Nitroaniline	UG/KG	1000 U	1400 U	1300 U	950 U	1400 U	1300 U
Acenaphthene	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
2,4-Dinitrophenol	UG/KG	1000 U	1400 U	1300 U	950 U	1400 U	1300 U
4-Nitrophenol	UG/KG	1000 U	1400 U	1300 U	950 U	1400 U	1300 U
Dibenzofuran	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
2,4-Dinitrotoluene	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
Diethylphthalate	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
4-Chlorophenyl Phenyl Ether	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
Fluorene	UG/KG	420 U	120 J	98 J	390 U	560 U	87 J
4-Nitroaniline	UG/KG	1000 U	1400 U	1300 U	950 U	1400 U	1300 U
4,6-Dinitro-2-methylphenol	UG/KG	1000 U	1400 U	1300 U	950 U	1400 U	1300 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Semi-Volatiles

SAMPLE ID:		GL63-SD-PC-04	GL63-SD-IN-05A	GL63-SD-IN-05B	GL63-SD-PC-05	GL63-SD-IN-06A	GL63-SD-IN-06AF
DEPTH:		0-1	0-3	3-6	0-1	0-3	0-3
DATE SAMPLED:		26-AUG-92	18-AUG-92	18-AUG-92	25-AUG-92	19-AUG-92	19-AUG-92
COMPOUND							
Semi-Volatile Compounds							
N-nitrosodiphenylamine	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
4-Bromophenyl-phenylether	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
Hexachlorobenzene	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
Pentachlorophenol	UG/KG	1000 U	1400 U	1300 U	950 U	1400 U	1300 U
Phenanthrene	UG/KG	330 J	1100	780	390 U	510 J	580
Anthracene	UG/KG	420 U	100 J	550 U	390 U	560 U	540 U
Carbazole	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
Di-n-butylphthalate	UG/KG	470 U(b)	560 U(b)	550 U(b)	490 U(b)	560 U	540 U
Fluoranthene	UG/KG	510	2100	1000	390 U	670	790
Pyrene	UG/KG	400 J	1300	700	390 U	530 J	580
Butylbenzylphthalate	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
3,3-Dichlorobenzidine	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
Benzo(a)anthracene	UG/KG	180 J	800	420 J	390 U	310 J	360 J
Chrysene	UG/KG	220 J	930	380 J	390 U	290 J	370 J
bis(2-Ethylhexyl)phthalate	UG/KG	94 J	10000 D	700 U(b)	390 U	2200	2000
Di-n-octyl Phthalate	UG/KG	420 U	270 J	550 U	390 U	560 U	540 U
Benzo(b)fluoranthene	UG/KG	110 J	1400	660	390 U	340 J	370 J
Benzo(k)fluoranthene	UG/KG	180 J	1000	440 J	390 U	350 J	340 J
Benzo(a)pyrene	UG/KG	140 J	670	280 J	390 U	200 J	250 J
Indeno(1,2,3-cd pyrene	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
Dibenzo(a,h)anthracene	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U
Benzo(g,h,i)perylene	UG/KG	420 U	560 U	550 U	390 U	560 U	540 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Semi-Volatiles

SAMPLE ID:		GL63-SD-IN-06B	GL63-SD-PC-06	GL63-SD-IN-07A	GL63-SD-IN-07B	GL63-SD-PC-07	GL63-SD-IN-08A
DEPTH:		3-6	0-1	0-3	3-6	0-1	0-3
DATE SAMPLED:		19-AUG-92	25-AUG-92	18-AUG-92	18-AUG-92	24-AUG-92	19-AUG-92
COMPOUND							
Semi-Volatile Compounds							
Phenol	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
bis(2-Chloroethyl) ether	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
2-Chlorophenol	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
1,3-Dichlorobenzene	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
1,4-Dichlorobenzene	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
1,2-Dichlorobenzene	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
2-Methylphenol	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
bis(2-Chloroisopropyl) ether	UG/KG	490 U	390 UJ(c)	570 U	500 U	410 UJ(c)	580 U
4-Methylphenol	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
N-nitroso-di-n-dipropylamine	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
Hexachloroethane	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
Nitrobenzene	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
Isophorone	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
2-Nitrophenol	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
2,4-Dimethylphenol	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
bis(2-Chloroethoxy) methane	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
2,4-Dichlorophenol	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
1,2,4-Trichlorobenzene	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
Naphthalene	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
4-Chloroaniline	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
Hexachlorobutadiene	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
4-Chloro-3-Methylphenol	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
2-Methylnaphthalene	UG/KG	200 J	390 U	570 U	150 J	410 U	580 U
Hexachlorocyclopentadiene	UG/KG	490 U	390 UJ(c)	570 U	500 U	410 U	580 U
2,4,6-Trichlorophenol	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
2,4,5-Trichlorophenol	UG/KG	1200 U	940 U	1400 U	1200 U	1000 U	1400 U
2-Chloronphthalene	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
2-Nitroaniline	UG/KG	1200 U	940 UJ(c)	1400 U	1200 U	1000 U	1400 U
Dimethylphthalate	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U(b)
Acenaphthylene	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
2,6-Dinitrotoluene	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
3-Nitroaniline	UG/KG	1200 U	940 U	1400 U	1200 U	1000 U	1400 U
Acenaphthene	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
2,4-Dinitrophenol	UG/KG	1200 U	940 U	1400 U	1200 U	1000 U	1400 U
4-Nitrophenol	UG/KG	1200 U	940 U	1400 U	1200 U	1000 U	1400 U
Dibenzofuran	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
2,4-Dinitrotoluene	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
Diethylphthalate	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
4-Chlorophenyl Phenyl Ether	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
Fluorene	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
4-Nitroaniline	UG/KG	1200 U	940 U	1400 U	1200 U	1000 U	1400 U
4,6-Dinitro-2-methylphenol	UG/KG	1200 U	940 U	1400 U	1200 U	1000 U	1400 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin,Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Semi-Volatiles

SAMPLE ID:		GL63-SD-IN-06B	GL63-SD-PC-06	GL63-SD-IN-07A	GL63-SD-IN-07B	GL63-SD-PC-07	GL63-SD-IN-08A
DEPTH:		3-6	0-1	0-3	3-6	0-1	0-3
DATE SAMPLED:		19-AUG-92	25-AUG-92	18-AUG-92	18-AUG-92	24-AUG-92	19-AUG-92
COMPOUND							
Semi-Volatile Compounds							
N-nitrosodiphenylamine	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
4-Bromophenyl-phenylether	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
Hexachlorobenzene	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
Pentachlorophenol	UG/KG	1200 U	940 U	1400 U	1200 U	1000 U	1400 U
Phenanthrene	UG/KG	880	390 U	690	420 J	530 U	450 J
Anthracene	UG/KG	490 U	390 U	570 U	500 U	75 J	580 U
Carbazole	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
Di-n-butylphthalate	UG/KG	490 U(b)	390 U(b)	570 U(b)	500 U(b)	410 U(b)	580 U(b)
Fluoranthene	UG/KG	1200	390 U	1000	550	600	530 J
Pyrene	UG/KG	910	390 U	660	400 J	510	450 J
Butylbenzylphthalate	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
3,3-Dichlorobenzidine	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
Benzo(a)anthracene	UG/KG	430 J	390 U	450 J	500 U	260 J	270 J
Chrysene	UG/KG	530	390 U	520 J	340 J	280 J	260 J
bis(2-Ethylhexyl)phthalate	UG/KG	490 U(b)	390 U	7400 D	620 U(b)	390 J	1200
Di-n-octyl Phthalate	UG/KG	490 U	390 U	140 J	500 U	410 U	580 U
Benzo(b)fluoranthene	UG/KG	740	390 U	560 J	290 J	410 U	580
Benzo(k)fluoranthene	UG/KG	430 J	390 U	530 J	250 J	490	580 U
Benzo(a)pyrene	UG/KG	360 J	390 U	340 J	150 J	210 J	180 J
Indeno(1,2,3-cd pyrene	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
Dibenzo(a,h)anthracene	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U
Benzo(g,h,i)perylene	UG/KG	490 U	390 U	570 U	500 U	410 U	580 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Semi-Volatiles

SAMPLE ID:		GL63-SD-IN-08B	GL63-SD-PC-08	GL63-SD-PC-09	GL63-SD-OH-10A	GL63-SD-OH-10B	GL63-SD-PC-10
DEPTH:		3-6	0-1	0-1	0-3	3-6	0-1
DATE SAMPLED:		19-AUG-92	24-AUG-92	25-AUG-92	19-AUG-92	19-AUG-92	25-AUG-92
COMPOUND							
Semi-Volatile Compounds							
Phenol	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
bis(2-Chloroethyl) ether	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
2-Chlorophenol	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
1,3-Dichlorobenzene	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
1,4-Dichlorobenzene	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
1,2-Dichlorobenzene	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
2-Methylphenol	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
bis(2-Chloroisopropyl) ether	UG/KG	520 U	400 UJ(c)	480 UJ(c)	410 U	410 U	450 UJ(c)
4-Methylphenol	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
N-nitroso-di-n-dipropylamine	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
Hexachloroethane	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
Nitrobenzene	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
Isophorone	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
2-Nitrophenol	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
2,4-Dimethylphenol	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
bis(2-Chloroethoxy) methane	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
2,4-Dichlorophenol	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
1,2,4-Trichlorobenzene	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
Naphthalene	UG/KG	120 J	400 U	170 J	410 U	410 U	270 J
4-Chloroaniline	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
Hexachlorobutadiene	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
4-Chloro-3-Methylphenol	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
2-Methylnaphthalene	UG/KG	520 U	400 U	85 J	410 U	410 U	160 J
Hexachlorocyclopentadiene	UG/KG	520 U	400 U	480 U	410 U	410 U	450 UJ(c)
2,4,6-Trichlorophenol	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
2,4,5-Trichlorophenol	UG/KG	1200 U	980 U	1200 U	990 U	1000 U	1100 U
2-Chloronphthalene	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
2-Nitroaniline	UG/KG	1200 U	980 U	1200 U	990 U	1000 U	1100 UJ(c)
Dimethylphthalate	UG/KG	520 U	980 U(b)	480 U	410 U(b)	410 U	190 J
Acenaphthylene	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
2,6-Dinitrotoluene	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
3-Nitroaniline	UG/KG	1200 U	980 U	1200 U	990 U	1000 U	1100 U
Acenaphthene	UG/KG	520 U	160 J	500	410 U	410 U	610
2,4-Dinitrophenol	UG/KG	1200 U	980 U	1200 U	990 U	1000 U	1100 U
4-Nitrophenol	UG/KG	1200 U	980 U	1200 U	990 U	1000 U	1100 U
Dibenzofuran	UG/KG	520 U	120 J	310 J	410 U	410 U	470
2,4-Dinitrotoluene	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
Diethylphthalate	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
4-Chlorophenyl Phenyl Ether	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
Fluorene	UG/KG	520 U	220 J	510	410 U	410 U	580
4-Nitroaniline	UG/KG	1200 U	980 U	1200 U	990 U	1000 U	1100 U
4,6-Dinitro-2-methylphenol	UG/KG	1200 U	980 U	1200 U	990 U	1000 U	1100 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin,Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Semi-Volatiles

SAMPLE ID:		GL63-SD-IN-08B	GL63-SD-PC-08	GL63-SD-PC-09	GL63-SD-OH-10A	GL63-SD-OH-10B	GL63-SD-PC-10
DEPTH:		3-6	0-1	0-1	0-3	3-6	0-1
DATE SAMPLED:		19-AUG-92	24-AUG-92	25-AUG-92	19-AUG-92	19-AUG-92	25-AUG-92
COMPOUND							
Semi-Volatile Compounds							
N-nitrosodiphenylamine	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
4-Bromophenyl-phenylether	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
Hexachlorobenzene	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
Pentachlorophenol	UG/KG	1200 U	980 U	1200 U	990 U	1000 U	1100 U
Phenanthrene	UG/KG	950	1700	4800 D	470	160 J	6800 D
Anthracene	UG/KG	150 J	320 J	910	84 J	120 J	580
Carbazole	UG/KG	520 U	180 J	600	410 U	410 U	830
Di-n-butylphthalate	UG/KG	520 U(b)	400 U(b)	480 U(b)	530 U(b)	410 U(b)	450 U(b)
Fluoranthene	UG/KG	1400	1700	5600 D	610	230 J	5900 D
Pyrene	UG/KG	1100	1400	4200 D	490	250 J	4700 D
Butylbenzylphthalate	UG/KG	520 U	400 U	85 J	410 U	410 U	450 U
3,3-Dichlorobenzidine	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
Benzo(a)anthracene	UG/KG	480 J	760	2400	270 J	140 J	2200
Chrysene	UG/KG	600	790	2700	320 J	150 J	2600
bis(2-Ethylhexyl)phthalate	UG/KG	520 U	400 U(b)	1900	1400	600 U(b)	1000
Di-n-octyl Phthalate	UG/KG	520 U	400 U	480 U	410 U	410 U	450 U
Benzo(b)fluoranthene	UG/KG	880	520	2400	410 U	410 U	450 U
Benzo(k)fluoranthene	UG/KG	580	450	1800	410 U	160 J	1500 U
Benzo(a)pyrene	UG/KG	310 J	490	1700	230 J	95 J	1800
Indeno(1,2,3-cd pyrene	UG/KG	520 U	220 J	520 J(c)	410 U	410 U	903
Dibenzo(a,h)anthracene	UG/KG	520 U	400 U	480 U	410 U	410 U	370 J
Benzo(g,h,i)perylene	UG/KG	520 U	400 U	580	410 U	410 U	960

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Semi-Volatiles

SAMPLE ID:		GL63-SD-OH-11A	GL63-SD-OH-11B	GL63-SD-OH-11BF	GL63-SD-PC-11FD	GL63-SD-PC-11	GL63-SD-OH-13A
DEPTH:		0-3	3-6	3-6	0-1	0-1	0-3
DATE SAMPLED:		19-AUG-92	19-AUG-92	19-AUG-92	25-AUG-92	25-AUG-92	20-AUG-92
COMPOUND							
Semi-Volatile Compounds							
Phenol	UG/KG	540 U	540 U	550 U	84 J	120 J	440 U
bis(2-Chloroethyl) ether	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
2-Chlorophenol	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
1,3-Dichlorobenzene	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
1,4-Dichlorobenzene	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
1,2-Dichlorobenzene	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
2-Methylphenol	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
bis(2-Chloroisopropyl) ether	UG/KG	540 U	540 U	550 U	450 UJ(c)	450 UJ(c)	440 U
4-Methylphenol	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
N-nitroso-di-n-dipropylamine	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
Hexachloroethane	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
Nitrobenzene	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
Isophorone	UG/KG	540 U	540 U	550 U	450 U	86 J	440 U
2-Nitrophenol	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
2,4-Dimethylphenol	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
bis(2-Chloroethoxy) methane	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
2,4-Dichlorophenol	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
1,2,4-Trichlorobenzene	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
Naphthalene	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
4-Chloroaniline	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
Hexachlorobutadiene	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
4-Chloro-3-Methylphenol	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
2-Methylnaphthalene	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
Hexachlorocyclopentadiene	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
2,4,6-Trichlorophenol	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
2,4,5-Trichlorophenol	UG/KG	1300 U	1300 U	1300 U	1100 U	1100 U	1100 U
2-Chloronphthalene	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
2-Nitroaniline	UG/KG	1300 U	1300 U	1300 U	1100 U	1100 U	1100 U
Dimethylphthalate	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
Acenaphthylene	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
2,6-Dinitrotoluene	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
3-Nitroaniline	UG/KG	1300 U	1300 U	1300 U	1100 U	1100 U	1100 U
Acenaphthene	UG/KG	540 U	540 U	550 U	76 J	450 U	440 U
2,4-Dinitrophenol	UG/KG	1300 U	1300 U	1300 U	1100 U	1100 U	1100 U
4-Nitrophenol	UG/KG	1300 U	1300 U	1300 U	1100 U	1100 U	1100 U
Dibenzofuran	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
2,4-Dinitrotoluene	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
Diethylphthalate	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
4-Chlorophenyl Phenyl Ether	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
Fluorene	UG/KG	540 U	540 U	550 U	88 J	450 U	440 U
4-Nitroaniline	UG/KG	1300 U	1300 U	1300 U	1100 U	1100 U	1100 U
4,6-Dinitro-2-methylphenol	UG/KG	1300 U	1300 U	1300 U	1100 U	1100 U	1100 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin,Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Semi-Volatiles

	SAMPLE ID:	GL63-SD-OH-11A	GL63-SD-OH-11B	GL63-SD-OH-11BF	GL63-SD-PC-11FD	GL63-SD-PC-11	GL63-SD-OH-13A
	DEPTH:	0-3	3-6	3-6	0-1	0-1	0-3
	DATE SAMPLED:	19-AUG-92	19-AUG-92	19-AUG-92	25-AUG-92	25-AUG-92	20-AUG-92
COMPOUND							
Semi-Volatile Compounds							
N-nitrosodiphenylamine	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
4-Bromophenyl-phenylether	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
Hexachlorobenzene	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
Pentachlorophenol	UG/KG	1300 U	1300 U	1300 U	1100 U	1100 U	1100 U
Phenanthrene	UG/KG	170 J	130 J	130 J	850 J(f)	460 J(f)	120 J
Anthracene	UG/KG	540 U	540 U	550 U	130 J	450 U	440 U
Carbazole	UG/KG	540 U	540 U	550 U	110 J	450 U	440 U
Di-n-butylphthalate	UG/KG	540 U	540 U(b)	550 U	450 U(b)	450 U(b)	510 U(b)
Fluoranthene	UG/KG	230 J	210 J	200 J	1100	840	99 J
Pyrene	UG/KG	200 J	160 J	190 J	870	590	120 J
Butylbenzylphthalate	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
3,3-Dichlorobenzidine	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
Benzo(a)anthracene	UG/KG	110 J	92 J	89 J	430 J	350 J	440 U
Chrysene	UG/KG	110 J	100 J	550 U	480	380 J	440 U
bis(2-Ethylhexyl)phthalate	UG/KG	540 U(b)	540 U	550 U	1800	2100	440 U
Di-n-octyl Phthalate	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
Benzo(b)fluoranthene	UG/KG	220 J	540 U	550 U	510 J(f)	290 J	440 U
Benzo(k)fluoranthene	UG/KG	540 U	540 U	550 U	370 J	360 J	440 U
Benzo(a)pyrene	UG/KG	540 U	540 U	550 U	370 J	270 J	440 U
Indeno(1,2,3-cd pyrene	UG/KG	540 U	540 U	550 U	450 U	150 J	440 U
Dibenzo(a,h)anthracene	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U
Benzo(g,h,i)perylene	UG/KG	540 U	540 U	550 U	450 U	450 U	440 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Semi-Volatiles

SAMPLE ID:		GL63-SD-OH-13B	GL63-SD-OH-13BF	GL63-SD-OH-14A	GL63-SD-OH-14B	GL63-SD-LM-15A	GL63-SD-LM-16A
DEPTH:		3-6	3-6	0-3	3-6	0-3	0-3
DATE SAMPLED:		20-AUG-92	20-AUG-92	19-AUG-92	19-AUG-92	21-AUG-92	21-AUG-92
COMPOUND							
Semi-Volatile Compounds							
Phenol	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
bis(2-Chloroethyl) ether	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
2-Chlorophenol	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
1,3-Dichlorobenzene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
1,4-Dichlorobenzene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
1,2-Dichlorobenzene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
2-Methylphenol	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
bis(2-Chloroisopropyl) ether	UG/KG	400 U	400 U	580 U	580 U	430 U	410 UJ(c)
4-Methylphenol	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
N-nitroso-di-n-dipropylamine	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
Hexachloroethane	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
Nitrobenzene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
Isophorone	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
2-Nitrophenol	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
2,4-Dimethylphenol	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
bis(2-Chloroethoxy) methane	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
2,4-Dichlorophenol	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
1,2,4-Trichlorobenzene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
Naphthalene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
4-Chloroaniline	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
Hexachlorobutadiene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
4-Chloro-3-Methylphenol	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
2-Methylnaphthalene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
Hexachlorocyclopentadiene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
2,4,6-Trichlorophenol	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
2,4,5-Trichlorophenol	UG/KG	960 U	960 U	1400 U	1400 U	1100 U	990 U
2-Chloronphthalene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
2-Nitroaniline	UG/KG	960 U	960 U	1400 U	1400 U	1100 U	990 U
Dimethylphthalate	UG/KG	400 U(b)	400 U	580 U(b)	580 U	430 U	410 U
Acenaphthylene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
2,6-Dinitrotoluene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
3-Nitroaniline	UG/KG	960 U	960 U	1400 U	1400 U	1100 U	990 U
Acenaphthene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
2,4-Dinitrophenol	UG/KG	960 U	960 U	1400 U	1400 U	1100 U	990 U
4-Nitrophenol	UG/KG	960 U	960 U	1400 U	1400 U	1100 U	990 U
Dibenzofuran	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
2,4-Dinitrotoluene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
Diethylphthalate	UG/KG	400 U	400 U	580 U(b)	580 U	430 U	410 U
4-Chlorophenyl Phenyl Ether	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
Fluorene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
4-Nitroaniline	UG/KG	960 U	960 U	1400 U	1400 U	1100 U	990 U
4,6-Dinitro-2-methylphenol	UG/KG	960 U	960 U	1400 U	1400 U	1100 U	990 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Semi-Volatiles

SAMPLE ID:		GL63-SD-OH-13B	GL63-SD-OH-13BF	GL63-SD-OH-14A	GL63-SD-OH-14B	GL63-SD-LM-15A	GL63-SD-LM-16A
DEPTH:		3-6	3-6	0-3	3-6	0-3	0-3
DATE SAMPLED:		20-AUG-92	20-AUG-92	19-AUG-92	19-AUG-92	21-AUG-92	21-AUG-92
COMPOUND							
Semi-Volatile Compounds							
N-nitrosodiphenylamine	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
4-Bromophenyl-phenylether	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
Hexachlorobenzene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
Pentachlorophenol	UG/KG	960 U	960 U	1400 U	1400 U	1100 U	990 U
Phenanthrene	UG/KG	200 J	400 U	260 J	280 J	430 U	130 J
Anthracene	UG/KG	400 U	400 U	580 U	580 U	430 U	81 J
Carbazole	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
Di-n-butylphthalate	UG/KG	400 U(b)	610 U(b)	580 U(b)	580 U(b)	430 U(b)	410 U(b)
Fluoranthene	UG/KG	240 J	400 U	400 J	480 J	430 U	140 J
Pyrene	UG/KG	220 J	400 U	260 J	340 J	430 U	160 J
Butylbenzylphthalate	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
3,3-Dichlorobenzidine	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
Benzo(a)anthracene	UG/KG	120 J	400 U	170 J	210 J	430 U	410 U
Chrysene	UG/KG	140 J	400 U	210 J	230 J	430 U	410 U
bis(2-Ethylhexyl)phthalate	UG/KG	400 U(b)	400 U	580 U(b)	580 U(b)	430 U	410 U
Di-n-octyl Phthalate	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
Benzo(b)fluoranthene	UG/KG	110 J	400 U	210 J	360 J	430 U	410 U
Benzo(k)fluoranthene	UG/KG	110 J	400 U	170 J	580 U	430 U	410 U
Benzo(a)pyrene	UG/KG	110 J	400 U	170 J	130 J	430 U	410 U
Indeno(1,2,3-cd pyrene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
Dibenzo(a,h)anthracene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U
Benzo(g,h,i)perylene	UG/KG	400 U	400 U	580 U	580 U	430 U	410 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Semi-Volatiles

SAMPLE ID:		GL63-SD-LM-17A	GL63-SD-LM-17AF	GL63-SD-LM-18A	GL63-SD-LM-19A	GL63-SD-LM-20A
DEPTH:		0-3	0-3	0-3	0-3	0-3
DATE SAMPLED:		20-AUG-92	20-AUG-92	20-AUG-92	20-AUG-92	20-AUG-92
COMPOUND						
Semi-Volatile Compounds						
Phenol	UG/KG	410 U	410 U	410 U	400 U	430 U
bis(2-Chloroethyl) ether	UG/KG	410 U	410 U	410 U	400 U	430 U
2-Chlorophenol	UG/KG	410 U	410 U	410 U	400 U	430 U
1,3-Dichlorobenzene	UG/KG	410 U	410 U	410 U	400 U	430 U
1,4-Dichlorobenzene	UG/KG	410 U	410 U	410 U	400 U	430 U
1,2-Dichlorobenzene	UG/KG	410 U	410 U	410 U	400 U	430 U
2-Methylphenol	UG/KG	410 U	410 U	410 U	400 U	430 U
bis(2-Chloroisopropyl) ether	UG/KG	410 U	410 U	410 U	400 U	430 U
4-Methylphenol	UG/KG	410 U	410 U	410 U	400 U	430 U
N-nitroso-di-n-dipropylamine	UG/KG	410 U	410 U	410 U	400 U	430 U
Hexachloroethane	UG/KG	410 U	410 U	410 U	400 U	430 U
Nitrobenzene	UG/KG	410 U	410 U	410 U	400 U	430 U
Isophorone	UG/KG	410 U	410 U	410 U	400 U	430 U
2-Nitrophenol	UG/KG	410 U	410 U	410 U	400 U	430 U
2,4-Dimethylphenol	UG/KG	410 U	410 U	410 U	400 U	430 U
bis(2-Chloroethoxy) methane	UG/KG	410 U	410 U	410 U	400 U	430 U
2,4-Dichlorophenol	UG/KG	410 U	410 U	410 U	400 U	430 U
1,2,4-Trichlorobenzene	UG/KG	410 U	410 U	410 U	400 U	430 U
Naphthalene	UG/KG	410 U	410 U	410 U	400 U	430 U
4-Chloroaniline	UG/KG	410 U	410 U	410 U	400 U	430 U
Hexachlorobutadiene	UG/KG	410 U	410 U	410 U	400 U	430 U
4-Chloro-3-Methylphenol	UG/KG	410 U	410 U	410 U	400 U	430 U
2-Methylnaphthalene	UG/KG	410 U	410 U	410 U	400 U	430 U
Hexachlorocyclopentadiene	UG/KG	410 U	410 U	410 U	400 U	430 U
2,4,6-Trichlorophenol	UG/KG	410 U	410 U	410 U	400 U	430 U
2,4,5-Trichlorophenol	UG/KG	990 U	990 U	990 U	960 U	1100 U
2-Chloronphthalene	UG/KG	410 U	410 U	410 U	400 U	430 U
2-Nitroaniline	UG/KG	990 U	990 U	990 U	960 U	1100 U
Dimethylphthalate	UG/KG	410 U	470 U(b)	410 U	400 U	430 U
Acenaphthylene	UG/KG	410 U	410 U	410 U	400 U	430 U
2,6-Dinitrotoluene	UG/KG	410 U	410 U	410 U	400 U	430 U
3-Nitroaniline	UG/KG	990 U	990 U	990 U	960 U	1100 U
Acenaphthene	UG/KG	410 U	410 U	410 U	400 U	430 U
2,4-Dinitrophenol	UG/KG	990 U	990 U	990 U	960 U	1100 U
4-Nitrophenol	UG/KG	990 U	990 U	990 U	960 U	1100 U
Dibenzofuran	UG/KG	410 U	410 U	410 U	400 U	430 U
2,4-Dinitrotoluene	UG/KG	410 U	410 U	410 U	400 U	430 U
Diethylphthalate	UG/KG	410 U	410 U(b)	410 U	400 U	430 U
4-Chlorophenyl Phenyl Ether	UG/KG	410 U	410 U	410 U	400 U	430 U
Fluorene	UG/KG	410 U	410 U	410 U	400 U	430 U
4-Nitroaniline	UG/KG	990 U	990 U	990 U	960 U	1100 U
4,6-Dinitro-2-methylphenol	UG/KG	990 U	990 U	990 U	960 U	1100 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Semi-Volatiles

	SAMPLE ID:	GL63-SD-LM-17A	GL63-SD-LM-17AF	GL63-SD-LM-18A	GL63-SD-LM-19A	GL63-SD-LM-20A
	DEPTH:	0-3	0-3	0-3	0-3	0-3
	DATE SAMPLED:	20-AUG-92	20-AUG-92	20-AUG-92	20-AUG-92	20-AUG-92
COMPOUND						
Semi-Volatile Compounds						
N-nitrosodiphenylamine	UG/KG	410 U	410 U	410 U	400 U	430 U
4-Bromophenyl-phenylether	UG/KG	410 U	410 U	410 U	400 U	430 U
Hexachlorobenzene	UG/KG	410 U	410 U	410 U	400 U	430 U
Pentachlorophenol	UG/KG	990 U	990 U	990 U	960 U	1100 U
Phenanthrene	UG/KG	410 U	410 U	96 J	400 U	430 U
Anthracene	UG/KG	410 U	410 U	410 U	400 U	430 U
Carbazole	UG/KG	410 U	410 U	410 U	400 U	430 U
Di-n-butylphthalate	UG/KG	580 U(b)	410 U(b)	430 U(b)	680 U(b)	430 U(b)
Fluoranthene	UG/KG	410 U	410 U	120 J	400 U	430 U
Pyrene	UG/KG	410 U	410 U	120 J	400 U	430 U
Butylbenzylphthalate	UG/KG	410 U	410 U	410 U	400 U	430 U
3,3-Dichlorobenzidine	UG/KG	410 U	410 U	410 U	400 U	430 U
Benzo(a)anthracene	UG/KG	410 U	410 U	410 U	400 U	430 U
Chrysene	UG/KG	410 U	410 U	410 U	400 U	430 U
bis(2-Ethylhexyl)phthalate	UG/KG	930	410 U	1100	950	430 U
Di-n-octyl Phthalate	UG/KG	410 U	410 U	410 U	400 U	430 U
Benzo(b)fluoranthene	UG/KG	410 U	410 U	410 U	400 U	430 U
Benzo(k)fluoranthene	UG/KG	410 U	410 U	410 U	400 U	430 U
Benzo(a)pyrene	UG/KG	410 U	410 U	410 U	400 U	430 U
Indeno(1,2,3-cd pyrene	UG/KG	410 U	410 U	410 U	400 U	430 U
Dibenzo(a,h)anthracene	UG/KG	410 U	410 U	410 U	400 U	430 U
Benzo(g,h,i)perylene	UG/KG	410 U	410 U	410 U	400 U	430 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - PCB/Pesticides

SAMPLE ID:		GL63-SD-BB-01A	GL63-SD-BB-01B	GL63-SD-PC-01	GL63-SD-BB-02A	GL63-SD-BB-02B	GL63-SD-PC-02FD
DEPTH:		0-3	3-6	0-1	0-3	3-6	0-1
DATE SAMPLED:		21-AUG-92	21-AUG-92	24-AUG-92	21-AUG-92	21-AUG-92	24-AUG-92
COMPOUND							
Pesticide/PCBs							
Alpha-BHC	UG/KG	22 U	11 U	11 U	12 U	13 U	11 U
Beta-BHC	UG/KG	22 U	11 U	11 U	12 U	13 U	11 U
Delta-BHC	UG/KG	22 U	11 U	11 U	12 U	13 U	11 U
Gamma-BHC(lindane)	UG/KG	22 U	11 U	11 U	12 U	13 U	11 U
Heptachlor	UG/KG	22 U	11 U	11 U	12 U	13 U	11 U
Aldrin	UG/KG	22 U	11 U	11 U	12 U	13 U	11 U
Heptachlor Epoxide	UG/KG	22 U	11 U	11 U	12 U	13 U	11 U
Endosulfan I	UG/KG	22 U	11 U	11 U	12 U	13 U	11 U
Dieldrin	UG/KG	42 U	22 U	21 U	23 U	24 U	21 U
4,4-DDE	UG/KG	130 J(qs)	100 J(qs)	50 J(s)	130 J(s)	150 J(s)	68 J(s)
Endrin	UG/KG	42 U	22 U	21 U	23 U	24 U	21 U
Endosulfan II	UG/KG	42 U	22 U	21 U	23 U	24 U	21 U
4,4-DDD	UG/KG	230 J(qs)	240 J(qs)	42 J(q,s)	250 J(s)	350 J(s)	61 J(s)
Endosulfan Sulfate	UG/KG	42 U	22 U	21 U	23 U	24 U	21 U
4,4-DDT	UG/KG	120 J(s)	77 J(s)	38 J(q,s)	68 J(s)	64 J(s)	91 J(s)
Methoxychlor	UG/KG	220 U	110 U	110 U	120 U	130 U	110 U
Endrin Ketone	UG/KG	42 U	22 U	21 U	23 U	24 U	21 U
Endrin Aldehyde	UG/KG	42 U	22 U	21 U	23 U	24 U	21 U
Alpha-Chlordane	UG/KG	22 U	11 U	11 U	13 J(qs)	13 U	11 U
Gamma-Chlordane	UG/KG	22 U	11 U	11 U	12 U	13 U	11 U
Toxaphene	UG/KG	2200 U	1100 U	1100 U	1200 U	1300 U	1100 U
Aroclor-1016	UG/KG	420 U	220 U	210 U	230 U	240 U	210 U
Aroclor-1221	UG/KG	850 U	450 U	420 U	470 U	480 U	420 U
Aroclor-1232	UG/KG	420 U	220 U	210 U	230 U	240 U	210 U
Aroclor-1242	UG/KG	420 U	220 U	210 U	230 U	240 U	210 U
Aroclor-1248	UG/KG	420 U	220 U	210 U	230 U	240 U	210 U
Aroclor-1254	UG/KG	420 U	220 U	210 U	230 U	1200 J(s)	210 U
Aroclor-1260	UG/KG	420 U	220 U	210 U	230 U	240 U	210 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - PCB/Pesticides

SAMPLE ID:		GL63-SD-PC-02	GL63-SD-BB-03A	GL63-SD-BB-03B	GL63-SD-PC-03	GL63-SD-BB-04A	GL63-SD-BB-04B
DEPTH:		0-1	0-3	3-6	0-1	0-3	3-6
DATE SAMPLED:		24-AUG-92	18-AUG-92	18-AUG-92	26-AUG-92	18-AUG-92	18-AUG-92
COMPOUND							
Pesticide/PCBs							
Alpha-BHC	UG/KG	11 U	27 U	26 U	2.3 U	13 U	12 U
Beta-BHC	UG/KG	11 U	27 U	26 U	2.3 U	13 U	12 U
Delta-BHC	UG/KG	11 U	27 U	26 U	2.3 U	13 U	12 U
Gamma-BHC(lindane)	UG/KG	11 U	27 U	26 U	2.3 U	13 U	12 U
Heptachlor	UG/KG	11 U	27 U	26 U	2.3 U	13 U	12 U
Aldrin	UG/KG	11 U	27 U	26 U	2.3 U	13 U	12 U
Heptachlor Epoxide	UG/KG	11 U	27 U	26 U	2.3 U	13 U	12 U
Endosulfan I	UG/KG	11 U	27 U	26 U	2.3 U	13 U	12 U
Dieldrin	UG/KG	21 U	53 U	50 U	4.5 U	26 U	24 U
4,4-DDE	UG/KG	67 J(q,s)	200 J(s)	160	8.8	74 J(qs)	140 J(s)
Endrin	UG/KG	21 U	53 U	50 U	4.5 U	26 U	24 U
Endosulfan II	UG/KG	21 U	53 U	50 U	4.5 U	26 U	24 U
4,4-DDD	UG/KG	48 J(q,s)	510 J(s)	720	15 J(q)	210 J(qs)	260 J(qs)
Endosulfan Sulfate	UG/KG	21 U	53 U	50 U	4.5 U	26 U	24 U
4,4-DDT	UG/KG	80 J(s)	110 J(qs)	84 J(q)	10	51 J(qs)	75 J(qs)
Methoxychlor	UG/KG	110 U	270 U	260 U	23 U	130 U	120 U
Endrin Ketone	UG/KG	21 U	53 U	50 U	4.5 U	26 U	24 U
Endrin Aldehyde	UG/KG	21 U	53 U	50 U	4.5 U	26 U	24 U
Alpha-Chlordane	UG/KG	11 U	27 U	21 J	2.3 U	19 J(qs)	17 J(qs)
Gamma-Chlordane	UG/KG	11 U	27 U	26 U	2.3 U	13 U	12 U
Toxaphene	UG/KG	1100 U	2700 U	2600 U	230 U	1300 U	1200 U
Aroclor-1016	UG/KG	210 U	530 U	500 U	45 U	260 U	240 U
Aroclor-1221	UG/KG	420 U	1100 U	1000 U	92 U	520 U	490 U
Aroclor-1232	UG/KG	210 U	530 U	500 U	45 U	260 U	240 U
Aroclor-1242	UG/KG	210 U	530 U	500 U	45 U	260 U	240 U
Aroclor-1248	UG/KG	210 U	530 U	500 U	45 U	260 U	240 U
Aroclor-1254	UG/KG	210 U	1200 J(s)	1500	45 U	1100 J(s)	820 J(s)
Aroclor-1260	UG/KG	210 U	530 U	500 U	45 U	260 U	240 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - PCB/Pesticides

SAMPLE ID:		GL63-SD-PC-04	GL63-SD-IN-05A	GL63-SD-IN-05B	GL63-SD-PC-05	GL63-SD-IN-06A	GL63-SD-IN-06AF
DEPTH:		0-1	0-3	3-6	0-1	0-3	0-3
DATE SAMPLED:		26-AUG-92	18-AUG-92	18-AUG-92	25-AUG-92	19-AUG-92	19-AUG-92
COMPOUND							
Pesticide/PCBs							
Alpha-BHC	UG/KG	2.2 U	14 U	57 U	2.0 U	5.8 U	5.6 U
Beta-BHC	UG/KG	2.2 U	14 U	57 U	2.0 U	5.8 U	5.6 U
Delta-BHC	UG/KG	2.2 U	14 U	57 U	2.0 U	5.8 U	5.6 U
Gamma-BHC(lindane)	UG/KG	2.2 U	14 U	57 U	2.0 U	5.8 U	5.6 U
Heptachlor	UG/KG	2.2 U	14 U	57 U	2.0 U	5.8 U	5.6 U
Aldrin	UG/KG	2.2 U	14 U	57 U	2.0 U	5.8 U	5.6 U
Heptachlor Epoxide	UG/KG	2.2 U	14 U	57 U	2.0 U	6.0 J(q)	5.8 J(q)
Endosulfan I	UG/KG	2.2 U	14 U	57 U	2.0 U	5.8 U	5.6 U
Dieldrin	UG/KG	4.2 U	28 U	110 U	3.9 U	11 U	11 U
4,4-DDE	UG/KG	10	170 J(s)	270 J(s)	3.9 U	86	80
Endrin	UG/KG	4.2 U	28 U	110 U	3.9 U	11 U	11 U
Endosulfan II	UG/KG	4.2 U	28 U	110 U	3.9 U	11 U	11 U
4,4-DDD	UG/KG	18 J(s)	230 J(s)	1000 J(qs)	3.9 U	200 J(eq)	210 J(eq)
Endosulfan Sulfate	UG/KG	4.3 U	28 U	110 U	3.9 U	11 U	11 U
4,4-DDT	UG/KG	7.9	100 J(s)	110 U	3.9 U	40	45
Methoxychlor	UG/KG	22 U	140 U	570 U	20 U	58 U	12 J
Endrin Ketone	UG/KG	4.2 U	28 U	110 U	3.9 U	11 U	11 U
Endrin Aldehyde	UG/KG	4.2 U	28 U	110 U	3.9 U	11 U	11 U
Alpha-Chlordane	UG/KG	2.2 U	14 U	57 U	2.0 U	10 J(q)	12
Gamma-Chlordane	UG/KG	2.2 U	14 U	57 U	2.0 U	5.8 U	5.6 U
Toxaphene	UG/KG	220 U	1400 U	5700 U	200 U	580 U	560 U
Aroclor-1016	UG/KG	42 U	280 U	1100 U	39 U	110 U	110 U
Aroclor-1221	UG/KG	85 U	570 U	2200 U	80 U	230 U	220 U
Aroclor-1232	UG/KG	42 U	280 U	1100 U	39 U	110 U	110 U
Aroclor-1242	UG/KG	42 U	280 U	1100 U	39 U	110 U	110 U
Aroclor-1248	UG/KG	42 U	280 U	1100 U	39 U	110 U	110 U
Aroclor-1254	UG/KG	42 U	560 J(s)	2700 J(s)	39 U	630	750
Aroclor-1260	UG/KG	42 U	280 U	1100 U	39 U	110 U	110 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - PCB/Pesticides

SAMPLE ID:		GL63-SD-IN-06B	GL63-SD-PC-06	GL63-SD-IN-07A	GL63-SD-IN-07B	GL63-SD-PC-07	GL63-SD-IN-08A
DEPTH:		3-6	0-1	0-3	3-6	0-1	0-3
DATE SAMPLED:		19-AUG-92	25-AUG-92	18-AUG-92	18-AUG-92	24-AUG-92	19-AUG-92
COMPOUND							
Pesticide/PCBs							
Alpha-BHC	UG/KG	2.5 U	2.0 U	15 U	26 U	11 U	6 U
Beta-BHC	UG/KG	2.5 U	2.0 U	15 U	26 U	11 U	6 U
Delta-BHC	UG/KG	2.5 U	2.0 U	15 U	26 U	11 U	6 U
Gamma-BHC(lindane)	UG/KG	2.5 U	2.0 U	15 U	26 U	11 U	6 U
Heptachlor	UG/KG	2.5 U	2.0 U	15 U	26 U	11 U	6 U
Aldrin	UG/KG	2.5 U	2.0 U	15 U	26 U	11 U	6 U
Heptachlor Epoxide	UG/KG	2.5 U	2.0 U	15 U	26 U	11 U	6 U
Endosulfan I	UG/KG	2.5 U	2.0 U	15 U	26 U	11 U	6 U
Dieldrin	UG/KG	4.9 U	3.9 U	28 U	50 U	21 U	12 U
4,4-DDE	UG/KG	14 J(q)	3.9 U	130 J(s)	210 J(s)	58	78
Endrin	UG/KG	4.9 U	3.9 U	28 U	50 U	21 U	12 U
Endosulfan II	UG/KG	4.9 U	3.9 U	28 U	50 U	21 U	12 U
4,4-DDD	UG/KG	43 J(q)	3.9 U	150 J(qs)	680 J(s)	49	150 J(q)
Endosulfan Sulfate	UG/KG	4.9 U	3.9 U	28 U	50 U	21 U	12 U
4,4-DDT	UG/KG	4.9 J(q)	3.9 U	52 J(msq)	53 J(qs)	75 J(q)	30
Methoxychlor	UG/KG	25 U	20 U	150 U	260 U	110 U	60 U
Endrin Ketone	UG/KG	4.9 U	3.9 U	28 U	50 U	21 U	12 U
Endrin Aldehyde	UG/KG	4.9 U	3.9 U	28 U	50 U	21 U	12 U
Alpha-Chlordane	UG/KG	4.6	2.0 U	15 U	26 U	11 U	12 J(q)
Gamma-Chlordane	UG/KG	2.5 U	2.0 U	15 U	26 U	11 U	6 U
Toxaphene	UG/KG	250 U	200 U	1500 U	2600 U	1100 U	600 U
Aroclor-1016	UG/KG	49 U	39 U	280 U	500 U	210 U	120 U
Aroclor-1221	UG/KG	100 U	80 U	580 U	1000 U	420 U	240 U
Aroclor-1232	UG/KG	49 U	39 U	280 U	500 U	210 U	120 U
Aroclor-1242	UG/KG	49 U	39 U	280 U	500 U	210 U	120 U
Aroclor-1248	UG/KG	49 U	39 U	280 U	500 U	210 U	120 U
Aroclor-1254	UG/KG	240	39 U	490 J(s)	2100 J(s)	210 U	590 J(q)
Aroclor-1260	UG/KG	49 U	39 U	280 U	500 U	210 U	120 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - PCB/Pesticides

SAMPLE ID:		GL63-SD-IN-08B	GL63-SD-PC-08	GL63-SD-PC-09	GL63-SD-OH-10A	GL63-SD-OH-10B	GL63-SD-PC-10
DEPTH:		3-6	0-1	0-1	0-3	3-6	0-1
DATE SAMPLED:		19-AUG-92	24-AUG-92	25-AUG-92	19-AUG-92	19-AUG-92	25-AUG-92
COMPOUND							
Pesticide/PCBs							
Alpha-BHC	UG/KG	5.3 U	4.1 U	25 U	2.1 U	11 U	47 U
Beta-BHC	UG/KG	5.3 U	4.1 U	25 U	2.1 U	11 U	47 U
Delta-BHC	UG/KG	5.3 U	4.1 U	25 U	2.1 U	11 U	47 U
Gamma-BHC(lindane)	UG/KG	5.3 U	4.1 U	25 U	2.1 U	11 U	47 U
Heptachlor	UG/KG	5.3 U	4.1 U	25 U	2.1 U	11 U	47 U
Aldrin	UG/KG	5.3 U	4.1 U	25 U	2.1 U	11 U	47 U
Heptachlor Epoxide	UG/KG	5.3 U	4.1 U	25 U	2.1 U	11 U	47 U
Endosulfan I	UG/KG	5.3 U	4.1 U	25 U	2.1 U	11 U	47 U
Dieldrin	UG/KG	10 U	8.0 U	48 U	4.1 U	21 U	90 U
4,4-DDE	UG/KG	34 J(q)	48 J(s)	110 J(s)	4.1 U	26	90 U
Endrin	UG/KG	10 U	8.0 U	48 U	4.1 U	21 U	90 U
Endosulfan II	UG/KG	10 U	8.0 U	48 U	4.1 U	21 U	90 U
4,4-DDD	UG/KG	87 J(q)	55 J(q,s)	170 J(q,s)	4.1 U	93 J(q)	90 U
Endosulfan Sulfate	UG/KG	10 U	8.0 U	48 U	4.1 U	21 U	90 U
4,4-DDT	UG/KG	21 J(q)	34 J(q,s)	120 J(s)	4.1 U	21 U	90 U
Methoxychlor	UG/KG	53 U	41 U	250 U	21 U	110 U	470 U
Endrin Ketone	UG/KG	10 U	8.0 U	48 U	4.1 U	21 U	90 U
Endrin Aldehyde	UG/KG	10 U	8.0 U	48 U	4.1 U	21 U	90 U
Alpha-Chlordane	UG/KG	8.9	7.7 J(q,s)	25 U	2.1 U	11 U	47 U
Gamma-Chlordane	UG/KG	5.3 U	4.1 U	25 U	2.1 U	11 U	47 U
Toxaphene	UG/KG	530 U	410 U	2500 U	210 U	1100 U	4700 U
Aroclor-1016	UG/KG	100 U	80 U	480 U	41 U	210 U	900 U
Aroclor-1221	UG/KG	210 U	160 U	970 U	83 U	420 U	1800 U
Aroclor-1232	UG/KG	100 U	80 U	480 U	41 U	210 U	900 U
Aroclor-1242	UG/KG	100 U	80 U	480 U	41 U	210 U	900 U
Aroclor-1248	UG/KG	100 U	80 U	480 U	41 U	210 U	900 U
Aroclor-1254	UG/KG	380 J(q)	510 J(s)	480 U	41 U	240	900 U
Aroclor-1260	UG/KG	100 U	80 U	480 U	41 U	210 U	90 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - PCB/Pesticides

SAMPLE ID:		GL63-SD-OH-11A	GL63-SD-OH-11B	GL63-SD-OH-11BF	GL63-SD-PC-11FD	GL63-SD-PC-11	GL63-SD-OH-13A
DEPTH:		0-3	3-6	3-6	0-1	0-1	0-3
DATE SAMPLED:		19-AUG-92	19-AUG-92	19-AUG-92	25-AUG-92	25-AUG-92	20-AUG-92
COMPOUND							
Pesticide/PCBs							
Alpha-BHC	UG/KG	5.6 U	2.8 U	2.8 U	4.7 U	4.7 U	2.3 UJ(s)
Beta-BHC	UG/KG	5.6 U	2.8 U	2.8 U	4.7 U	4.7 U	2.3 UJ(s)
Delta-BHC	UG/KG	5.6 U	2.8 U	2.8 U	4.7 U	4.7 U	2.3 UJ(s)
Gamma-BHC(lindane)	UG/KG	5.6 U	2.8 U	2.8 U	4.7 U	4.7 U	2.3 UJ(s)
Heptachlor	UG/KG	5.6 U	1.8 U	1.8 U	4.7 U	4.7 U	2.3 UJ(s)
Aldrin	UG/KG	5.6 U	2.8 U	2.8 U	4.7 U	4.7 U	2.3 UJ(s)
Heptachlor Epoxide	UG/KG	5.6 U	2.8 U	2.8 U	6.2 J(q,s)	4.7 U	2.3 UJ(s)
Endosulfan I	UG/KG	5.6 U	2.8 U	2.8 U	4.7 U	4.7 U	2.3 UJ(s)
Dieldrin	UG/KG	11 U	5.4 U	5.5 U	9.0 U	9.0 U	4.4 UJ(s)
4,4-DDE	UG/KG	28 J(q)	10 J(q)	12 J(q)	22 J(q,s)	16 J(q)	4.4 UJ(s)
Endrin	UG/KG	11 U	5.4 U	5.5 U	9.0 U	9.0 U	4.4 UJ(s)
Endosulfan II	UG/KG	11 U	5.4 U	5.5 U	9.0 U	9.0 U	4.4 UJ(s)
4,4-DDD	UG/KG	45 J(q)	13	14 J(q)	9.9 J(q,s)	9.0 U	4.4 UJ(s)
Endosulfan Sulfate	UG/KG	11 U	5.4 U	5.5 U	9.0 P	9.0 U	4.4 UJ(s)
4,4-DDT	UG/KG	11 U	5.4 U	5.5 U	9.0 U	9.1 J(q)	4.4 UJ(s)
Methoxychlor	UG/KG	56 U	28 U	28 U	47 U	47 U	23 UJ(s)
Endrin Ketone	UG/KG	11 U	5.4 U	5.5 U	9.0 U	9.0 U	4.4 UJ(s)
Endrin Aldehyde	UG/KG	11 U	5.4 U	5.5 U	9.0 U	9.0 U	4.4 UJ(s)
Alpha-Chlordane	UG/KG	7.9 J(q)	4 J(q)	4.6 J(q)	4.7 U	9.0 J(q)	2.3 UJ(s)
Gamma-Chlordane	UG/KG	5.6 U	2.8 U	2.8 U	4.7 U	4.7 U	2.3 UJ(s)
Toxaphene	UG/KG	560 U	280 U	280 U	470 U	470 U	230 UJ(s)
Aroclor-1016	UG/KG	110 U	54 U	55 U	90 U	90 U	44 UJ(s)
Aroclor-1221	UG/KG	220 U	110 U	110 U	180 U	180 U	89 UJ(s)
Aroclor-1232	UG/KG	110 U	54 U	55 U	90 U	90 U	44 UJ(s)
Aroclor-1242	UG/KG	110 U	54 U	55 U	90 U	90 U	44 UJ(s)
Aroclor-1248	UG/KG	110 U	54 U	55 U	90 U	90 U	44 UJ(s)
Aroclor-1254	UG/KG	300	150	160	780 J(q,s)	550 J(q)	44 UJ(s)
Aroclor-1260	UG/KG	110 U	54 U	55 U	90 U	90 U	44 UJ(s)

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - PCB/Pesticides

SAMPLE ID:		GL63-SD-OH-13B	GL63-SD-OH-13BF	GL63-SD-OH-14A	GL63-SD-OH-14B	GL63-SD-LM-15A	GL63-SD-LM-16A
DEPTH:		3-6	3-6	0-3	3-6	0-3	0-3
DATE SAMPLED:		20-AUG-92	20-AUG-92	19-AUG-92	19-AUG-92	21-AUG-92	21-AUG-92
COMPOUND							
Pesticide/PCBs							
Alpha-BHC	UG/KG	2.0 U	2.0 U	6 U	3 U	2.2 U	2.1 U
Beta-BHC	UG/KG	2.0 U	2.0 U	6 U	3 U	2.2 U	2.1 U
Delta-BHC	UG/KG	2.0 U	2.0 U	6 U	3 U	2.2 U	2.1 U
Gamma-BHC(lindane)	UG/KG	2.0 U	2.0 U	6 U	3 U	2.2 U	2.1 U
Heptachlor	UG/KG	2.0 U	2.0 U	6 UJ(m)	3 U	2.2 U	2.1 U
Aldrin	UG/KG	2.0 U	2.0 U	6 U	3 U	2.2 U	2.1 U
Heptachlor Epoxide	UG/KG	2.0 U	2.0 U	6 U	3 U	2.2 U	2.1 U
Endosulfan I	UG/KG	2.0 U	2.0 U	6 U	3 U	2.2 U	2.1 U
Dieldrin	UG/KG	4.0 U	2.0 U	12 U	5.8 U	4.3 U	4.1 U
4,4-DDE	UG/KG	9.3 J(q)	4.0 U	50 U	16 J(q)	4.3 U	4.1 U
Endrin	UG/KG	4.0 U	4.0 U	12 U	5.8 U	4.3 U	4.1 U
Endosulfan II	UG/KG	4.0 U	4.0 U	12 U	5.8 U	4.3 U	4.1 U
4,4-DDD	UG/KG	6.9 J(q)	4.0 U	110 J(q)	26	4.3 U	4.2
Endosulfan Sulfate	UG/KG	4.2 J(q)	4.0 U	12 U	5.8 U	4.3 U	4.1 U
4,4-DDT	UG/KG	4.0 U	4.0 U	15 J(q)	5.8 U	4.3 U	4.1 U
Methoxychlor	UG/KG	20 U	20 U	60 U	30 U	22 U	21 U
Endrin Ketone	UG/KG	4.0 U	4.0 U	12 U	5.8 U	4.3 U	4.1 U
Endrin Aldehyde	UG/KG	4.0 U	4.0 U	12 U	4.6 J(q)	4.3 U	4.1 U
Alpha-Chlordane	UG/KG	2.0 U	2.0 U	8.8 J(q)	3.0 U	2.2 U	2.1 U
Gamma-Chlordane	UG/KG	2.0 U	2.0 U	6 U	300 U	2.2 U	2.1 U
Toxaphene	UG/KG	200 U	200 U	600 U	58 U	220 U	210 U
Aroclor-1016	UG/KG	40 U	40 U	120 U	120 U	43 U	41 U
Aroclor-1221	UG/KG	81 U	81 U	240 U	58 U	88 U	83 U
Aroclor-1232	UG/KG	40 U	40 U	120 U	58 U	43 U	41 U
Aroclor-1242	UG/KG	40 U	40 U	120 U	58 U	43 U	41 U
Aroclor-1248	UG/KG	240	240 U	120 U	58 U	43 U	41 U
Aroclor-1254	UG/KG	40 U	40 U	510 J(q)	180	43 U	63
Aroclor-1260	UG/KG	40 U	40 U	120 U	58 U	43 U	41 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - PCB/Pesticides

SAMPLE ID:		GL63-SD-LM-17A	GL63-SD-LM-17AF	GL63-SD-LM-18A	GL63-SD-LM-19A	GL63-SD-LM-20A
DEPTH:		0-3	0-3	0-3	0-3	0-3
DATE SAMPLED:		20-AUG-92	20-AUG-92	20-AUG-92	20-AUG-92	20-AUG-92
COMPOUND						
Pesticide/PCBs						
Alpha-BHC	UG/KG	2.1 U	2.1 U	2.1 U	2.0 U	2.2 U
Beta-BHC	UG/KG	2.1 U	2.1 U	2.1 U	2.0 U	2.2 U
Delta-BHC	UG/KG	2.1 U	2.1 U	2.1 U	2.0 U	2.2 U
Gamma-BHC(lindane)	UG/KG	2.1 U	2.1 U	2.1 U	2.0 U	2.2 U
Heptachlor	UG/KG	2.1 U	2.1 U	2.1 U	2.0 U	2.2 U
Aldrin	UG/KG	2.1 U	2.1 U	2.1 U	2.0 U	2.2 U
Heptachlor Epoxide	UG/KG	2.1 U	2.1 U	2.1 U	2.0 U	2.2 U
Endosulfan I	UG/KG	2.1 U	2.1 U	2.1 U	2.0 U	2.2 U
Dieldrin	UG/KG	4.1 U	4.1 U	4.1 U	4.0 U	4.3 U
4,4-DDE	UG/KG	4.1 U	4.1 U	4.1 U	4.0 U	4.3 U
Endrin	UG/KG	4.1 U	4.1 U	4.1 U	4.0 U	4.3 U
Endosulfan II	UG/KG	4.1 U	4.1 U	4.1 U	4.0 U	4.3 U
4,4-DDD	UG/KG	4.1 U	4.1 U	4.1 U	4.0 U	4.3 U
Endosulfan Sulfate	UG/KG	4.1 U	4.1 U	4.1 U	4.0 U	4.3 U
4,4-DDT	UG/KG	4.1 U	4.1 U	4.1 U	4.0 U	4.3 U
Methoxychlor	UG/KG	21 U	21 U	21 U	20 U	22 U
Endrin Ketone	UG/KG	4.1 U	4.1 U	4.1 U	4.0 U	4.3 U
Endrin Aldehyde	UG/KG	4.1 U	4.1 U	4.1 U	4.0 U	4.3 U
Alpha-Chlordane	UG/KG	2.1 U	2.1 U	2.1 U	2.0 U	2.2 U
Gamma-Chlordane	UG/KG	2.1 U	2.1 U	2.1 U	2.0 U	2.2 U
Toxaphene	UG/KG	210 U	210 U	41 U	200 U	220 U
Aroclor-1016	UG/KG	41 U	41 U	83 U	40 U	43 U
Aroclor-1221	UG/KG	83 U	83 U	41 U	81 U	88 U
Aroclor-1232	UG/KG	41 U	41 U	41 U	40 U	43 U
Aroclor-1242	UG/KG	41 U	41 U	41 U	40 U	43 U
Aroclor-1248	UG/KG	41 U	41 U	41 U	40 U	43 U
Aroclor-1254	UG/KG	41 U	41 U	41 U	40 U	43 U
Aroclor-1260	UG/KG	41 U	41 U	41 U	40 U	43 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin,Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Metals

SAMPLE ID:		GL63-SD-BB-01A	GL63-SD-BB-01B	GL63-SD-PC-01	GL63-SD-BB-02A	GL63-SD-BB-02B	GL63-SD-PC-02FD
DEPTH:		0-3	3-6	0-1	0-3	3-6	0-1
DATE SAMPLED:		21-AUG-92	21-AUG-92	24-AUG-92	21-AUG-92	21-AUG-92	24-AUG-92
COMPOUND							
Metals							
Aluminum, Total	MG/KG	4110.00	5150.00	4900.00	6000.00	8400.00	4090.00
Antimony, Total	MG/KG	5.00 U	5.30 U	5.10 U	5.60 U	5.90 U	5.10 U
Arsenic, Total	MG/KG	6.30	8.80	8.50	10.30	12.20	4.40
Barium, Total	MG/KG	38.60	53.90	27.30	53.50	100.00	41.90
Beryllium, Total	MG/KG	9.30	1.10	0.76	0.56	0.88	0.51
Cadmium, Total	MG/KG	2.30	1.90	2.80	2.50	10.60	1.30 U
Calcium, Total	MG/KG	39300.00	39400.00	52800.00	71400.00	67200.00	41000.00
Chromium, Total	MG/KG	18.40 J(d)	20.60 J(d)	12.90 J(d)	18.60 J(d)	70.40 J(d)	13.80 J(d)
Cobalt, Total	MG/KG	6.30	6.40	5.10 U	7.30	9.40	6.60
Copper, Total	MG/KG	416.00 J(d)	288.00 J(d)	53.20 J(d)	237.00 J(d)	655.00 J(d)	55.20 J(d)
Iron, Total	MG/KG	14400.00	13500.00	14100.00	14900.00	18400.00	13500.00
Lead, Total	MG/KG	208.00 J(d,m	210.00 J(d,m	40.50 J(d,m	237.00 J(d,m	386.00 J(d,m	48.30 J(d,m
Magnesium, Total	MG/KG	19400.00	19800.00	25700.00	35700.00	33900.00	22400.00
Manganese, Total	MG/KG	433.00 K(m)	405.00 K(m)	428.00 K(m)	601.00 K(m)	599.00 K(m)	343.00 K(m)
Mercury, Total	MG/KG	0.26 J(d)	0.41 J(d)	0.11 U	0.57 J(d)	1.70 J(d)	0.12 U
Nickel, Total	MG/KG	56.50	82.80	18.70	53.80	217.00	17.40
Potassium, Total	MG/KG	796.00	1190.00	847.00	1400.00	2030.00	1010.00
Selenium, Total	MG/KG	0.53 U(b)	0.40 U(b)	0.25 UL(m)	0.79 U(b)	1.50 U(b)	0.26 UL(m)
Silver, Total	MG/KG	4.00	12.80	2.00	10.10	85.90	1.30 U
Sodium, Total	MG/KG	337.00	280.00	204.00	241.00	281.00	159.00
Thallium, Total	MG/KG	0.50 U	0.53 U	0.51 U	0.56 U	0.59 U	0.51 U
Vanadium, Total	MG/KG	12.40	16.00	14.90	16.60	23.20	12.30
Zinc, Total	MG/KG	1960.00 J(d)	830.00 J(d)	262.00 J(d)	688.00 J(d)	1190.00 J(d)	234.00 J(d)
Cyanide, Total	MG/KG	0.63 U	0.65 U	0.62 U	1.40	8.20	0.64 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Metals

SAMPLE ID:		GL63-SD-PC-02	GL63-SD-BB-03A	GL63-SD-BB-03B	GL63-SD-PC-03	GL63-SD-BB-04A	GL63-SD-BB-04B
DEPTH:		0-1	0-3	3-6	0-1	0-3	3-6
DATE SAMPLED:		24-AUG-92	18-AUG-92	18-AUG-92	26-AUG-92	18-AUG-92	18-AUG-92
COMPOUND							
Metals							
Aluminum, Total	MG/KG	2570.00	6890.00	8110.00	4080.00	9110.00	5920.00
Antimony, Total	MG/KG	5.00 U	6.40 UL(m)	6.00 UL(m)	1.60 R	6.30 UL(m)	5.80 UL(m)
Arsenic, Total	MG/KG	4.50	15.20	13.90	5.80	24.40	8.80
Barium, Total	MG/KG	29.70	78.10	111.00	27.70 J(m)	150.00	55.10
Beryllium, Total	MG/KG	0.50 U	0.64	0.90	0.55 U	0.94	0.58
Cadmium, Total	MG/KG	1.20 U	1.60	8.40	1.40 U	11.90	2.30
Calcium, Total	MG/KG	66600.00	63900.00	63900.00	42100.00	60300.00	60300.00
Chromium, Total	MG/KG	9.50 J(d)	28.50	86.30	16.50 J(f)	67.00	28.10
Cobalt, Total	MG/KG	5.00 U	8.30	10.30	8.20	12.50	6.70
Copper, Total	MG/KG	38.00 J(d)	286.00 L(m)	633.00 L(m)	19.00 J(f)	1560.00 L(m)	301.00 L(m)
Iron, Total	MG/KG	11100.00	17800.00	19100.00	16800.00	24000.00	15600.00
Lead, Total	MG/KG	45.40 J(d,m	266.00 L(m)	351.00 L(m)	43.10	835.00 L(m)	247.00 L(m)
Magnesium, Total	MG/KG	34200.00	32500.00	31400.00	23600.00 J(d)	29800.00	30900.00
Manganese, Total	MG/KG	465.00 K(m)	624.00	676.00	367.00	755.00	540.00
Mercury, Total	MG/KG	0.15 J(d)	1.80 K(m)	2.50 K(m)	0.11 UJ(m)	1.70 K(m)	1.40 K(m)
Nickel, Total	MG/KG	10.00	78.40	162.00	18.70 J(m,f)	98.30	67.80
Potassium, Total	MG/KG	652.00	1380.00	1570.00	648.00	1810.00	1080.00
Selenium, Total	MG/KG	0.25 UL(m)	2.20 L(m)	2.40 L(cpm)	0.27 UJ(m)	2.20 L(m)	0.93 L(m)
Silver, Total	MG/KG	1.20 U	19.80	70.60	1.60	19.70	16.80
Sodium, Total	MG/KG	146.00	217.00	226.00	155.00	243.00	170.00
Thallium, Total	MG/KG	0.50 U	0.64 U	0.60 U	0.55 U	0.63 U	0.58 U
Vanadium, Total	MG/KG	10.50	17.90	20.80	19.20	23.20	15.90
Zinc, Total	MG/KG	190.00 J(d)	667.00 L(m)	1100.00 L(m)	78.60 J(f)	2200.00 L(m)	688.00 L(m)
Cyanide, Total	MG/KG	0.58 U	4.80	12.90	0.66 UJ(m)	14.50	4.10

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Metals

SAMPLE ID:		GL63-SD-PC-04	GL63-SD-IN-05A	GL63-SD-IN-05B	GL63-SD-PC-05	GL63-SD-IN-06A	GL63-SD-IN-06AF
DEPTH:		0-1	0-3	3-6	0-1	0-3	0-3
DATE SAMPLED:		26-AUG-92	18-AUG-92	18-AUG-92	25-AUG-92	19-AUG-92	19-AUG-92
COMPOUND							
Metals							
Aluminum, Total	MG/KG	4040.00	6280.00	11300.00	10800.00	9340.00	8600.00
Antimony, Total	MG/KG	1.50 R	6.80 UL(m)	6.70 UL(m)	1.40 R	6.80 UL(m)	6.60 UL(m)
Arsenic, Total	MG/KG	4.80	10.20	21.00	7.60	14.40	15.20
Barium, Total	MG/KG	26.80 J(m)	56.90	115.00	44.40 J(m)	75.50	81.40
Beryllium, Total	MG/KG	0.51 U	0.68	1.30	0.72 J(d,f)	1.00	1.30
Cadmium, Total	MG/KG	1.30 U	1.70 U	4.40	1.40	2.00	4.60
Calcium, Total	MG/KG	31400.00	69200.00	77700.00	74600.00	69400.00	74400.00
Chromium, Total	MG/KG	9.60 J(f)	32.50	86.20	21.00 J(f)	50.40	56.30
Cobalt, Total	MG/KG	6.30	9.80	10.10	10.50	9.80	10.20
Copper, Total	MG/KG	14.20 J(f)	242.00 L(m)	484.00 L(m)	23.20 J(f)	451.00 L(m)	660.00 L(m)
Iron, Total	MG/KG	10900.00	17300.00	22400.00	19700.00	21500.00	20500.00
Lead, Total	MG/KG	25.50	249.00 L(m)	329.00 L(m)	19.80	343.00 L(m)	379.00 L(m)
Magnesium, Total	MG/KG	16300.00 J(d)	35600.00	35100.00	37000.00 J(d)	35100.00	36600.00
Manganese, Total	MG/KG	383.00	575.00	885.00	559.00	613.00	691.00
Mercury, Total	MG/KG	0.10 UJ(m)	1.20 K(m)	3.10 K(m)	0.23 J(d,m)	1.30 K(m)	1.50 K(m)
Nickel, Total	MG/KG	13.10 J(m,f)	33.20	149.00	25.30 J(m,f)	71.10	79.40
Potassium, Total	MG/KG	974.00	1170.00	2790.00	3290.00	1840.00	1650.00
Selenium, Total	MG/KG	0.25 UJ(m,p)	0.95 L(p,m)	2.50 L(m)	0.24 UJ(m,p)	1.30 L(m,p)	0.99 L(m,p)
Silver, Total	MG/KG	1.30 U	3.40	46.30	1.20 U	17.90	22.40
Sodium, Total	MG/KG	141.00	171.00	287.00	262.00	206.00	218.00
Thallium, Total	MG/KG	0.51 U	0.68 U	0.77	0.53	0.68 U	0.66 U
Vanadium, Total	MG/KG	13.10	16.20	27.90	24.10	22.70	20.80
Zinc, Total	MG/KG	64.20 J(f)	734.00 L(m)	876.00 L(m)	63.20 J(f)	1030.00 L(m)	1440.00 L(m)
Cyanide, Total	MG/KG	0.57 UJ(m)	2.00	10.10	0.59 UJ(m)	5.10	5.20

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin,Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Metals

	SAMPLE ID:	GL63-SD-IN-06B	GL63-SD-PC-06	GL63-SD-IN-07A	GL63-SD-IN-07B	GL63-SD-PC-07	GL63-SD-IN-08A
	DEPTH:	3-6	0-1	0-3	3-6	0-1	0-3
	DATE SAMPLED:	19-AUG-92	25-AUG-92	18-AUG-92	18-AUG-92	24-AUG-92	19-AUG-92
COMPOUND							
Metals							
Aluminum, Total	MG/KG	8400.00	9200.00	7270.00	9200.00	4060.00	9950.00
Antimony, Total	MG/KG	6.00 UL(m)	1.40 R	6.90 UL(m)	6.10 UL(m)	1.50 R	7.00 UL(m)
Arsenic, Total	MG/KG	21.80	23.90	11.60	17.10	27.10	25.70
Barium, Total	MG/KG	129.00	42.20 J(m)	60.10	73.60	24.90 J(m)	92.10
Beryllium, Total	MG/KG	0.90	0.70 J(d,f)	0.69	0.92	1.30 J(d,f)	1.00
Cadmium, Total	MG/KG	6.30	1.20	1.70 U	3.40	1.30 U	3.80
Calcium, Total	MG/KG	67900.00	80700.00	74200.00	77200.00	70800.00	80500.00
Chromium, Total	MG/KG	56.40	15.90 J(f)	34.70	59.50	12.80 J(f)	66.70
Cobalt, Total	MG/KG	12.50	9.80	9.00	9.80	5.80	11.50
Copper, Total	MG/KG	280.00 L(m)	21.10 J(f)	220.00 L(m)	329.00 L(m)	131.00 J(f)	260.00 L(m)
Iron, Total	MG/KG	20400.00	18500.00	19600.00	19800.00	14900.00	22700.00
Lead, Total	MG/KG	263.00 L(m)	20.60	248.00 L(m)	218.00 L(m)	91.70	288.00 L(m)
Magnesium, Total	MG/KG	31900.00	41100.00 J(d)	38300.00	37400.00	38200.00 J(d)	39200.00
Manganese, Total	MG/KG	965.00	573.00	613.00	635.00	523.00	783.00
Mercury, Total	MG/KG	1.90 K(m)	0.11 UJ(m)	0.82 K(m)	1.20 K(m)	0.10 UJ(m)	1.40 K(m)
Nickel, Total	MG/KG	53.70	25.10 J(m,f)	32.60	87.90	23.40 J(m,f)	70.90
Potassium, Total	MG/KG	1800.00	2920.00	1290.00	2260.00	912.00	2160.00
Selenium, Total	MG/KG	2.80 L(m,p)	0.23 UJ(m)	0.94 L(m)	1.30 L(m)	0.25 UJ(m)	1.70 L(m)
Silver, Total	MG/KG	40.90	1.20 U	3.50	27.50	1.30 U	25.50
Sodium, Total	MG/KG	239.00	221.00	169.00	227.00	354.00	232.00
Thallium, Total	MG/KG	0.60	0.47 U	0.69 U	0.61 U	0.50 U	0.80
Vanadium, Total	MG/KG	22.10	21.80	18.10	22.30	12.30	23.70
Zinc, Total	MG/KG	591.00 L(m)	55.60 J(f)	705.00 L(m)	605.00 L(m)	1000.00 J(f)	612.00 L(m)
Cyanide, Total	MG/KG	3.60	0.60 UJ(m)	1.90	5.30	0.61 UJ(m)	2.70

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin,Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Metals

SAMPLE ID:		GL63-SD-IN-08B	GL63-SD-PC-08	GL63-SD-PC-09	GL63-SD-OH-10A	GL63-SD-OH-10B	GL63-SD-PC-10
DEPTH:		3-6	0-1	0-1	0-3	3-6	0-1
DATE SAMPLED:		19-AUG-92	24-AUG-92	25-AUG-92	19-AUG-92	19-AUG-92	25-AUG-92
COMPOUND							
Metals							
Aluminum, Total	MG/KG	6310.00	2810.00	4000.00	3860.00	1960.00	6730.00
Antimony, Total	MG/KG	6.20 UL(m)	4.90 U	5.80 U	4.90 U	5.00 U	1.60 R
Arsenic, Total	MG/KG	28.50	5.30	9.50	15.10	2.30	18.70
Barium, Total	MG/KG	109.00	23.30	39.60	37.10	10.00	62.60 J(m)
Beryllium, Total	MG/KG	0.62	0.49	1.50	0.49	0.50 U	1.60 J(d,f)
Cadmium, Total	MG/KG	5.90	1.20 U	2.30	1.20 U	1.30 U	1.60
Calcium, Total	MG/KG	69600.00	57200.00	51100.00	76100.00	88300.00	89400.00
Chromium, Total	MG/KG	61.10	5.90 J(d)	31.40 J(d)	24.50 J(d)	7.00 J(d)	31.30 J(f)
Cobalt, Total	MG/KG	13.60	4.90 U	5.80 U	4.90 U	5.00 U	9.90
Copper, Total	MG/KG	321.00 L(m)	50.80 J(d)	1030.00 J(d)	101.00 J(d)	16.00 J(d)	568.00 J(f)
Iron, Total	MG/KG	20100.00	22400.00	14000.00	15100.00	9800.00	19500.00
Lead, Total	MG/KG	382.00 L(m)	40.20 J(d,m	392.00 J(d,m	137.00 J(d,m	8.70	303.00
Magnesium, Total	MG/KG	34500.00	28200.00	24800.00	35200.00	40400.00	47100.00 J(d)
Manganese, Total	MG/KG	741.00	396.00 K(m)	398.00 K(m)	469.00 K(m)	280.00 K(m)	1130.00
Mercury, Total	MG/KG	2.10 K(m)	0.11 U	1.20 J(d)	0.30 J(d)	0.11 U	1.10 J(d,m)
Nickel, Total	MG/KG	60.80	17.90	45.10	18.80	6.00	43.10 J(m,f)
Potassium, Total	MG/KG	1150.00	684.00	717.00	932.00	445.00	1610.00
Selenium, Total	MG/KG	1.80 L(m,p)	0.25 UL(m)	0.70 U(b)	0.25 UL(m)	0.25 UL(m)	5.30 J(,cp)
Silver, Total	MG/KG	14.60	1.20 U	3.80	1.20 U	1.30 U	8.50
Sodium, Total	MG/KG	187.00	238.00	264.00	192.00	210.00	614.00
Thallium, Total	MG/KG	0.62 U	0.49 UL(p)	0.58 U	0.49 U	0.50 U	0.55 U
Vanadium, Total	MG/KG	17.10	7.60	11.90	12.40	36.00	20.90
Zinc, Total	MG/KG	634.00 L(m)	213.00 J(d)	2730.00 J(d)	212.00 J(d)	53.10 J(d)	2050.00 J(f)
Cyanide, Total	MG/KG	3.00	0.61 U	3.60	0.62 U	0.61 U	2.00 J(d,m)

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Metals

SAMPLE ID:		GL63-SD-OH-11A	GL63-SD-OH-11B	GL63-SD-OH-11BF	GL63-SD-PC-11FD	GL63-SD-PC-11	GL63-SD-OH-13A
DEPTH:		0-3	3-6	3-6	0-1	0-1	0-3
DATE SAMPLED:		19-AUG-92	19-AUG-92	19-AUG-92	25-AUG-92	25-AUG-92	20-AUG-92
COMPOUND							
Metals							
Aluminum, Total	MG/KG	6300	6110.00	6500.00	8090.00	10200.00	2980.00
Antimony, Total	MG/KG	6.6 UL(m)	6.50 UL(m)	6.60 UL(m)	18.60 J(m)	10.40 J(m)	5.30 U
Arsenic, Total	MG/KG	25.6	45.10	53.30	10.30	7.00	6.60
Barium, Total	MG/KG	51.50	65.00	65.20	187.00 J(m)	148.00 J(m)	19.90
Beryllium, Total	MG/KG	.66	0.65	0.66	11.20 J(d,f)	26.90 J(d,f)	0.53 U
Cadmium, Total	MG/KG	1.6 U	2.30	2	4.70	7.40	1.30 U
Calcium, Total	MG/KG	89300.00	81300.00	79900.00	51000.00	37900.00	78800.00
Chromium, Total	MG/KG	73.80	86.90	89.70	50.60 J(f)	107.00 J(f)	16.50 J(d)
Cobalt, Total	MG/KG	7.50	7.50	6.60 U	10.90	17.90	5.30 U
Copper, Total	MG/KG	148.00 L(m)	220.00 L(m)	177.00 L(m)	10800.00 J(f)	20200.00 J(f)	56.90 J(d)
Iron, Total	MG/KG	18900.00	23600.00	24200.00	30400.00	36700.00	10700.00
Lead, Total	MG/KG	278.00 L(m)	263.00 L(m)	250.00 L(m)	3790.00	5720.00	40.70 J(d,m)
Magnesium, Total	MG/KG	43300.00	38800.00	38100.00	27800.00 J(d)	20200.00 J(d)	36900.00
Manganese, Total	MG/KG	623	651.00	661.00	735.00	1010.00	338.00 K(m)
Mercury, Total	MG/KG	.63 K(m)	1.70 K(m)	1.40 K(m)	0.64 J(d,m)	0.72 J(d,m)	0.29 J(d)
Nickel, Total	MG/KG	37.70	35.90	36.40	160.00 J(m,f)	288.00 J(m,f)	17.30
Potassium, Total	MG/KG	1240.00	1070.00	1200.00	754.00	549.00	735.00
Selenium, Total	MG/KG	1.10 L(m,p)	0.98 L(m,p)	1.40 L(m,p)	1.30 J(m)	0.27 UJ(m)	0.45 U(b)
Silver, Total	MG/KG	4.90	5.20	6.30	3.60	7.10	4.00
Sodium, Total	MG/KG	189.00	172.00	185.00	1440.00	1790.00	213.00
Thallium, Total	MG/KG	.66 U	0.65 U	0.66 U	0.55 U	0.55 U	0.53 U
Vanadium, Total	MG/KG	16.4	17.60	17.50	17.20	16.20	18.60
Zinc, Total	MG/KG	368 L(m)	536.00 L(m)	522.00 L(m)	21600.00 J(f)	45100.00 J(f)	138.00 J(d)
Cyanide, Total	MG/KG	0.83 U	1.80	1.70	0.68 UJ(h,m	0.69 UJ(h,m	1.00

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin,Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Metals

SAMPLE ID:		GL63-SD-OH-13B	GL63-SD-OH-13BF	GL63-SD-OH-14A	GL63-SD-OH-14B	GL63-SD-LM-15A	GL63-SD-LM-16A
DEPTH:		3-6	3-6	0-3	3-6	0-3	0-3
DATE SAMPLED:		20-AUG-92	20-AUG-92	19-AUG-92	19-AUG-92	21-AUG-92	21-AUG-92
COMPOUND							
Metals							
Aluminum, Total	MG/KG	1840.00	1690.00	6950.00	5510.00	1820.00	2080.00
Antimony, Total	MG/KG	4.80 U	4.80 U	7.00 UL(m)	7.00 UL(m)	5.30 U	4.90 U
Arsenic, Total	MG/KG	1.50	1.40	16.00	27.90	10.80	4.60
Barium, Total	MG/KG	7.00	6.30	62.00	48.20	9.80	9.40
Beryllium, Total	MG/KG	0.48 U	0.48 U	0.70	0.70 U	0.53 U	0.49 U
Cadmium, Total	MG/KG	1.20 U	1.20 U	1.80 U	1.70 U	1.30 U	1.20 U
Calcium, Total	MG/KG	61900.00	60600.00	102000.00	91200.00	74000.00	75300.00
Chromium, Total	MG/KG	2.70 J(d)	3.40 J(d)	74.60	88.70	8.40 J(d)	8.60 J(d)
Cobalt, Total	MG/KG	4.80 U	4.80 U	7.00 U	7.30	5.30 U	4.90 U
Copper, Total	MG/KG	3.60 J(d)	5.80 J(d)	167.00 L(m)	113.00 L(m)	13.50 J(d)	18.50 J(d)
Iron, Total	MG/KG	4300.00	4360.00	20000.00	21200.00	7700.00	9040.00
Lead, Total	MG/KG	5.10 J(cLp)	3.20	290.00 L(m)	258.00 L(m)	64.90 J(d,m	49.60 J(d,m
Magnesium, Total	MG/KG	27300.00	26800.00	49200.00	43200.00	34500.00	34600.00
Manganese, Total	MG/KG	206.00 K(m)	201.00 K(m)	718.00	617.00	281.00 K(m)	295.00 K(m)
Mercury, Total	MG/KG	0.11 U	0.12 U	0.94 K(m)	0.77 K(m)	0.12 U	0.10 U
Nickel, Total	MG/KG	5.80	6.30	45.80	36.30	7.70	7.90
Potassium, Total	MG/KG	426.00	365.00	1470.00	1160.00	377.00	492.00
Selenium, Total	MG/KG	0.24 UL(m)	0.24 UL(m)	0.85 L(m)	1.20 L(m,p)	0.26 UL(m)	0.25 UL(m,p
Silver, Total	MG/KG	1.20 U	1.20 U	9.50	6.60	1.30 U	1.20 U
Sodium, Total	MG/KG	194.00	160.00	224.00	189.00	183.00	186.00
Thallium, Total	MG/KG	0.48 U	0.48 U	0.70 U	0.70 U	0.53 U	0.49 U
Vanadium, Total	MG/KG	6.30	6.50	19.40	16.80	9.20	10.40
Zinc, Total	MG/KG	17.10 J(d)	18.80 J(d)	407.00 L(m)	344.00 L(m)	96.00 J(d)	78.50 J(d)
Cyanide, Total	MG/KG	0.60 U	0.60 U	1.40	1.10	0.65 U	0.62 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Sediment - Metals

SAMPLE ID:		GL63-SD-LM-17A	GL63-SD-LM-17AF	GL63-SD-LM-18A	GL63-SD-LM-19A	GL63-SD-LM-20A
DEPTH:		0-3	0-3	0-3	0-3	0-3
DATE SAMPLED:		20-AUG-92	20-AUG-92	20-AUG-92	20-AUG-92	20-AUG-92
COMPOUND						
Metals						
Aluminum, Total	MG/KG	1490.00	1470.00	1400.00	1270.00	1470.00
Antimony, Total	MG/KG	4.90 U	5.00 U	4.90 UL(m)	4.80 U	5.20 U
Arsenic, Total	MG/KG	4.60	4.40	1.80	2.90	2.10
Barium, Total	MG/KG	7.10	6.70	7.90	7.00	6.30
Beryllium, Total	MG/KG	0.49 U	0.50 U	0.49 U	0.48 U	0.52 U
Cadmium, Total	MG/KG	1.20 U	1.20 U	1.20 U	1.20 U	1.30 U
Calcium, Total	MG/KG	83200.00	82500.00	85200.00	83000.00	78300.00
Chromium, Total	MG/KG	4.90 J(d)	5.70 J(d)	3.70	4.10 J(d)	4.70 J(d)
Cobalt, Total	MG/KG	4.90 U	5.00 U	4.90 U	4.80 U	5.20 U
Copper, Total	MG/KG	11.10 J(d)	10.90 J(d)	7.40 L(m)	12.80 J(d)	4.70 J(d)
Iron, Total	MG/KG	6600.00	6430.00	5200.00	7220.00	5540.00
Lead, Total	MG/KG	38.20 J(d,m	41.10	8.40	16.90	15.80
Magnesium, Total	MG/KG	40000.00	39500.00	39900.00	39900.00	37200.00
Manganese, Total	MG/KG	260.00 K(m)	257.00 K(m)	234.00	275.00 K(m)	223.00 K(m)
Mercury, Total	MG/KG	0.11 U	0.12 U	0.12 U	0.10 U	0.11 U
Nickel, Total	MG/KG	6.40	5.20	7.20	6.30	5.20 U
Potassium, Total	MG/KG	302.00	315.00	283.00	258.00	310.00
Selenium, Total	MG/KG	0.42 U(b)	0.30 U(b)	0.49 UL(m)	0.27 U(b)	0.26 UL(m)
Silver, Total	MG/KG	1.20 U	1.20 U	1.20 U	1.20 U	1.30 U
Sodium, Total	MG/KG	175.00	165.00	150.00	150.00	161.00
Thallium, Total	MG/KG	0.49 U	0.50 U	0.49 U	0.48 U	0.52 U
Vanadium, Total	MG/KG	11.30	10.90	11.10	13.70	18.30
Zinc, Total	MG/KG	61.60 J(d)	55.90 J(d)	45.20 L(m)	56.60 J(d)	39.50 J(d)
Cyanide, Total	MG/KG	0.62 U	0.62 U	0.61 U	0.60 U	0.64 U

SITE INSPECTION FOR PETTIBONE CREEK, BOAT BASIN, INNER HARBOR, AND OUTER HARBOR
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS
MARCH 1993

SEDIMENT MISCELLANEOUS PARAMETERS

Parameter	Sample ID:	GL63-SD-BB-01A	GL63-SD-BB-01B	GL63-SD-BB-02A	GL63-SD-BB-02B	GL63-SD-BB-03A
	Depth:	0-3	3-6	0-3	3-6	0-3
	Date Sampled:	21-AUG-92	21-AUG-92	21-AUG-92	21-AUG-92	18-AUG-92
Percent Solids (%)		79.3	74.9	71.0	68.2	62.5
Total Organic Carbon (mg/kg)		3,531	7,210	16,901	29,326	–
Grain Size (% Passing)						
1 inch				100.0		
3/4 inch		100.0	100.0	99.5		100.0
1/2 inch		96.6	99.1	99.5	100.0	99.6
3/8 inch		94.0	97.3	98.6	99.7	98.6
Sieve No. 4		85.1	94.2	95.7	99.3	97.6
Sieve No. 10		71.8	88.6	90.5	98.7	96.2
Sieve No. 20		55.0	83.5	84.3	97.7	94.9
Sieve No. 40		38.8	75.1	81.1	96.7	92.5
Sieve No. 60		19.2	50.3	77.8	95.3	88.7
Sieve No. 140		6.7	20.2	66.1	87.6	71.4
Sieve No. 200		5.7	17.5	60.5	82.5	66.2
Particle Size 0.021mm		5.0	14.4	33.0	52.2	40.1
Particle Size 0.007mm		4.3	10.8	19.1	29.0	21.5
Particle Size 0.001mm		2.9	7.3	10.4	15.5	12.1
Reactive Sulfide (mg/kg)		<13				<16

SITE INSPECTION FOR PETTIBONE CREEK, BOAT BASIN, INNER HARBOR, AND OUTER HARBOR
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS
MARCH 1993

SEDIMENT MISCELLANEOUS PARAMETERS

Parameter	Sample ID:	GL63-SD-BB-03B	GL63-SD-BB-04A	GL63-SD-BB-04B	GL63-SD-IN-05A	GL63-SD-IN-05B
	Depth:	3-6	0-3	3-6	0-3	3-6
	Date Sampled:	18-AUG-92	18-AUG-92	18-AUG-92	18-AUG-92	18-AUG-92
Percent Solids (%)		66.3	63.9	69.0	59.1	59.6
Total Organic Carbon (mg/kg)		24,133	21,909	20,290	–	25,168
Grain Size (% Passing)						
1 inch						
3/4 inch			100.0			
1/2 inch			99.6			
3/8 inch			99.6	100.0	100.0	
Sieve No. 4		100.0	99.2	99.8	99.9	
Sieve No. 10		99.8	98.7	99.5	99.6	100.0
Sieve No. 20		99.4	98.1	98.9	99.2	99.4
Sieve No. 40		98.8	97.7	97.9	98.6	99.2
Sieve No. 60		98.0	96.1	96.3	97.8	98.8
Sieve No. 140		94.2	85.7	86.2	94.4	96.4
Sieve No. 200		90.6	83.3	81.2	91.4	94.8
Particle Size 0.021mm		62.3	56.9	50.6	54.5	73.7
Particle Size 0.007mm		34.6	30.9	23.9	27.,7	39.4
Particle Size 0.001mm		17.8	16.0	13.3	15.3	18.2
Reactive Sulfide (mg/kg)					137	59.6

SITE INSPECTION FOR PETTIBONE CREEK, BOAT BASIN, INNER HARBOR, AND OUTER HARBOR
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS
MARCH 1993

SEDIMENT MISCELLANEOUS PARAMETERS

Parameter	Sample ID:	GL63-SD-OH-09A	GL63-SD-OH-10A	GL63-SD-OH-10B	GL63-SD-OH-11A	GL63-SD-OH-11B
	Depth:	0-3	0-3	3-6	0-3	3-6
	Date Sampled:	20-AUG-92	19-AUG-92	19-AUG-92	19-AUG-92	19-AUG-92
Percent Solids (%)		74.8	72.9	83.0	61.0	61.2
Total Organic Carbon (mg/kg)		3,610	5,761	783	15,246	14,052
Grain Size (% Passing)						
1 inch						
3/4 inch						
1/2 inch						
3/8 inch		100.0		100.0	100.0	
Sieve No. 4		99.8	100.0	99.8	99.9	
Sieve No. 10		99.5	99.9	99.4	99.9	100.0
Sieve No. 20		99.0	99.7	99.3	99.9	99.8
Sieve No. 40		98.1	99.5	99.2	99.9	99.6
Sieve No. 60		92.7	98.9	99.0	99.9	99.6
Sieve No. 140		15.7	74.1	19.8	98.5	98.4
Sieve No. 200		8.7	61.1	4.7	96.7	97.2
Particle Size 0.021mm		4.0	25.0	1.0	65.0	75.6
Particle Size 0.007mm		3.0	11.0	1.0	33.6	39.9
Particle Size 0.001mm		3.0	5.0	1.0	14.7	16.8
Reactive Sulfide (mg/kg)		<13			<10	

SITE INSPECTION FOR PETTIBONE CREEK, BOAT BASIN, INNER HARBOR, AND OUTER HARBOR
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS
MARCH 1993

SEDIMENT MISCELLANEOUS PARAMETERS

Parameter	Sample ID:	GL63-SD-OH-11BFD	GL63-SD-OH-12A	GL63-SD-OH-12B
	Depth:	3-6	0-3	3-6
	Date Sampled:	18-AUG-92	21-AUG-92	21-AUG-92
Percent Solids (%)		60.4	82.2	79.8
Total Organic Carbon (mg/kg)		14,735	8,881	3,008
Grain Size (% Passing)				
1 inch				
3/4 inch				
1/2 inch				
3.8 inch				
Sieve No. 4			100.0	100.0
Sieve No. 10			99.9	99.8
Sieve No. 20			99.8	99.4
Sieve No. 40			99.5	98.9
Sieve No. 60			97.9	97.8
Sieve No. 140			15.8	35.4
Sieve No. 200			6.6	22.4
Particle Size 0.021mm			3.0	7.9
Particle Size 0.007mm			2.5	4.0
Particle Size (0.001mm			2.0	3.0
Reactive Sulfide (mg/kg)				

R/63SIRD/AB4

CTO 63 - Site Inspection for Pettibone Creek
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Volatiles

SAMPLE ID:		GL63-SW-BB-01	GL63-SW-PC-01	GL63-SW-PC-02	GL63-SW-PC-02FD	GL63-SW-BB-03	GL63-SW-PC-03
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		20-AUG-92	24-AUG-92	24-AUG-92	24-AUG-92	18-AUG-92	26-AUG-92
COMPOUND							
Volatile Compounds							
Chloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	UG/L	10 U	34	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene(total)	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	UG/L	10 U	10 U	10 U	10 U	4 J	10 U
Chlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Ethyl Benzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (Total)	UG/L	10 U	10 U	10 U	10 U	4 J	10 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Volatiles

SAMPLE ID:		GL63-SW-PC-04	GL63-SW-IN-05RE	GL63-SW-IN-05	GL63-SW-PC-05	GL63-SW-PC-06	GL63-SW-IN-07
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		26-AUG-92	18-AUG-92	19-AUG-92	25-AUG-92	25-AUG-92	19-AUG-92
COMPOUND							
Volatile Compounds							
Chloromethane	UG/L	10 U		10 U	10 U	10 U	10 U
Bromomethane	UG/L	10 U		10 U	10 U	10 U	10 U
Vinyl Chloride	UG/L	10 U		10 U	10 U	10 U	10 U
Chloroethane	UG/L	10 U		10 U	10 U	10 U	10 U
Methylene Chloride	UG/L	10 U		10 U	10 U	10 U	10 U
Acetone	UG/L	10 U		10 U	10 U	10 U	10 U
Carbon disulfide	UG/L	10 U		10 U	12	10 U	10 U
1,1-Dichloroethene	UG/L	10 U		10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/L	10 U		10 U	10 U	10 U	10 U
1,2-Dichloroethene(total)	UG/L	10 U		10 U	10 U	10 U	10 U
Chloroform	UG/L	10 U		10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/L	10 U		10 U	10 U	10 U	10 U
2-Butanone	UG/L	10 U		10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/L	10 U		10 U	10 U	10 U	10 U
Carbon Tetrachloride	UG/L	10 U		10 U	10 U	10 U	10 U
[BBromodichloromethane	UG/L	10 U		10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/L	10 U		10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	UG/L	10 U		10 U	10 U	10 U	10 U
Trichloroethene	UG/L	10 U		10 U	10 U	10 U	10 U
Dibromochloromethane	UG/L	10 U		10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/L	10 U		10 U	10 U	10 U	10 U
Benzene	UG/L	10 U		10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	UG/L	10 U		10 U	10 U	10 U	10 U
Bromoform	UG/L	10 U		10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	UG/L	10 U		10 U	10 U	10 U	10 U
2-Hexanone	UG/L	10 U		10 U	10 U	10 U	10 U
Tetrachloroethene	UG/L	10 U		10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/L	10 U		10 U	10 U	10 U	10 U
Toluene	UG/L	10 U		10 U	10 U	10 U	10 U
Chlorobenzene	UG/L	10 U		10 U	10 U	10 U	10 U
Ethyl Benzene	UG/L	10 U		10 U	10 U	10 U	10 U
Styrene	UG/L	10 U		10 U	10 U	10 U	10 U
Xylenes (Total)	UG/L	10 U		10 U	10 U	10 U	10 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Volatiles

SAMPLE ID:		GL63-SW-PC-07	GL63-SW-PC-08	GL63-SW-PC-09	GL63-SW-PC-10	GL63-SW-OH-11FD	GL63-SW-OH-11
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		24-AUG-92	24-AUG-92	25-AUG-92	25-AUG-92	20-AUG-92	20-AUG-92
COMPOUND							
Volatile Compounds							
Chloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene(total)	UG/L	10 U	10 U	10 U	8 J	10 U	10 U
Chloroform	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/L	10 U	10 U	10 U	8 J	10 U	10 U
Dibromochloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Ethyl Benzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (Total)	UG/L	10 U	10 U	10 U	10 U	10 U	10 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Volatiles

SAMPLE ID:		GL63-SW-PC-11	GL63-SW-PC-11FD	GL63-SW-OH-13	GL63-SW-LM-16	GL63-SW-LM-17	GL63-SW-LM-18FD
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		25-AUG-92	25-AUG-92	21-AUG-92	21-AUG-92	21-AUG-92	21-AUG-92
COMPOUND							
Volatile Compounds							
Chloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	UG/L	6 J	9 J	10 U	10 U	10 U	10 U
Chloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	UG/L	56	60	10 U	10 U	10 U	10 U
Acetone	UG/L	10 U	10 U	10 UJ(c)	10 U	10 U	10 U
Carbon disulfide	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/L	8 J	10	10 U	10 U	10 U	10 U
1,2-Dichloroethene(total)	UG/L	69	80	10 U	10 U	10 U	10 U
Chloroform	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/L	72	66	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Ethyl Benzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (Total)	UG/L	10 U	10 U	10 U	10 U	10 U	10 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin,Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Volatiles

	SAMPLE ID:	GL63-SW-LM-18	GL63-SW-LM-19	GL63-SW-LM-20
	DEPTH:	-	-	-
	DATE SAMPLED:	21-AUG-92	21-AUG-92	21-AUG-92
COMPOUND				
Volatile Compounds				
Chloromethane	UG/L	10 U	10 U	10 U
Bromomethane	UG/L	10 U	10 U	10 U
Vinyl Chloride	UG/L	10 U	10 U	10 U
Chloroethane	UG/L	10 U	10 U	10 U
Methylene Chloride	UG/L	10 U	10 U	10 U
Acetone	UG/L	10 U	10 U	10 UJ(c)
Carbon disulfide	UG/L	10 U	10 U	10 U
1,1-Dichloroethene	UG/L	10 U	10 U	10 U
1,1-Dichloroethane	UG/L	10 U	10 U	10 U
1,2-Dichloroethene(total)	UG/L	10 U	10 U	10 U
Chloroform	UG/L	10 U	10 U	10 U
1,2-Dichloroethane	UG/L	10 U	10 U	10 U
2-Butanone	UG/L	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/L	10 U	10 U	10 U
Carbon Tetrachloride	UG/L	10 U	10 U	10 U
Bromodichloromethane	UG/L	10 U	10 U	10 U
1,2-Dichloropropane	UG/L	10 U	10 U	10 U
cis-1,3-Dichloropropene	UG/L	10 U	10 U	10 U
Trichloroethene	UG/L	10 U	10 U	10 U
Dibromochloromethane	UG/L	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/L	10 U	10 U	10 U
Benzene	UG/L	10 U	10 U	10 U
trans-1,3-Dichloropropene	UG/L	10 U	10 U	10 U
Bromoform	UG/L	10 U	10 U	10 U
4-Methyl-2-Pentanone	UG/L	10 U	10 U	10 U
2-Hexanone	UG/L	10 U	10 U	10 U
Tetrachloroethene	UG/L	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	10 U
Toluene	UG/L	10 U	10 U	10 U
Chlorobenzene	UG/L	10 U	10 U	10 U
Ethyl Benzene	UG/L	10 U	10 U	10 U
Styrene	UG/L	10 U	10 U	10 U
Xylenes (Total)	UG/L	10 U	10 U	10 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Semi-Volatiles

SAMPLE ID:		GL63-SW-BB-01	GL63-SW-PC-01	GL63-SW-PC-02	GL63-SW-PC-02FD	GL63-SW-BB-03	GL63-SW-PC-03
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		20-AUG-92	24-AUG-92	24-AUG-92	24-AUG-92	18-AUG-92	26-AUG-92
COMPOUND							
Semi-Volatile Compounds							
Phenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl) ether	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroisopropyl) ether	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
N-nitroso-di-n-dipropylamine	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	UG/L	11 U	11 U	11 U	11 U	11 U	11 U
bis(2-Chloroethoxy) methane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
2-Chloronphthalene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
Dimethylphthalate	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
Acenaphthene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
4-Nitrophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
Dibenzofuran	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl Phenyl Ether	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Semi-Volatiles

SAMPLE ID:		GL63-SW-BB-01	GL63-SW-PC-01	GL63-SW-PC-02	GL63-SW-PC-02FD	GL63-SW-BB-03	GL63-SW-PC-03
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		20-AUG-92	24-AUG-92	24-AUG-92	24-AUG-92	18-AUG-92	26-AUG-92
COMPOUND							
Semi-Volatile Compounds							
N-nitrosodiphenylamine	UG/L	16 U	16 U	16 U	16 U	16 U	16 U
4-Bromophenyl-phenylether	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
Phenanthrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	UG/L	10 U	10 U(b)	10 U(b)	10 U	10 U	10 U(b)
Fluoranthene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Butylbenzylphthalate	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
3,3-Dichlorobenzidine	UG/L	15 U	15 U	15 U	15 U	15 U	15 U
Benzo(a)anthracene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octyl Phthalate	UG/L	12 U	12 U	12 U	12 U	12 U	12 U
Benzo(b)fluoranthene	UG/L	14 U	14 U	14 U	14 U	14 U	14 U
Benzo(k)fluoranthene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd pyrene	UG/L	12 U	12 U	12 U	12 U	12 U	12 U
Dibenzo(a,h)anthracene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	UG/L	12 U	12 U	12 U	12 U	12 U	12 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Semi-Volatiles

SAMPLE ID:		GL63-SW-PC-04	GL63-SW-IN-05RE	GL63-SW-IN-05	GL63-SW-PC-05	GL63-SW-PC-06	GL63-SW-IN-07
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		26-AUG-92	18-AUG-92	19-AUG-92	25-AUG-92	25-AUG-92	19-AUG-92
COMPOUND							
Semi-Volatile Compounds							
Phenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl) ether	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
2-Chlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
2-Methylphenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroisopropyl) ether	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
4-Methylphenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
N-nitroso-di-n-dipropylamine	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Hexachloroethane	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Nitrobenzene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Isophorone	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
2-Nitrophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	UG/L	11 U	11 U	11 U	11 U	11 U	11 U
bis(2-Chloroethoxy) methane	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
2,4-Dichlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Naphthalene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
4-Chloroaniline	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Hexachlorobutadiene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
4-Chloro-3-Methylphenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Hexachlorocyclopentadiene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
2,4,6-Trichlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
2-Chloronphthalene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
2-Nitroaniline	UG/L	25 U	25 U	25 UJ(h)	25 U	25 U	25 U
Dimethylphthalate	UG/L	10 U	10 U	10 UJ(h)	10 U(b)	10 U(b)	10 U
Acenaphthylene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
2,6-Dinitrotoluene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
3-Nitroaniline	UG/L	25 U	25 U	25 UJ(h)	25 U	25 U	25 U
Acenaphthene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
2,4-Dinitrophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
4-Nitrophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
Dibenzofuran	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
2,4-Dinitrotoluene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Diethylphthalate	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
4-Chlorophenyl Phenyl Ether	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Fluorene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
4-Nitroaniline	UG/L	25 U	25 U	25 UJ(h)	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Semi-Volatiles

SAMPLE ID:		GL63-SW-PC-04	GL63-SW-IN-05RE	GL63-SW-IN-05	GL63-SW-PC-05	GL63-SW-PC-06	GL63-SW-IN-07
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		26-AUG-92	18-AUG-92	19-AUG-92	25-AUG-92	25-AUG-92	19-AUG-92
COMPOUND							
Semi-Volatile Compounds							
N-nitrosodiphenylamine	UG/L	16 U	16 U	16 UJ(h)	16 U	16 U	16 U
4-Bromophenyl-phenylether	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Hexachlorobenzene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Pentachlorophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
Phenanthrene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Anthracene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Carbazole	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Di-n-butylphthalate	UG/L	10 U(b)	2 BJ	10 U(b)	10 U(b)	10 U(b)	10 U(b)
Fluoranthene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Pyrene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Butylbenzylphthalate	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
3,3-Dichlorobenzidine	UG/L	15 U	15 U	15 UJ(h)	15 U	15 U	15 U
Benzo(a)anthracene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Chrysene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Di-n-octyl Phthalate	UG/L	12 U	12 U	12 UJ(h)	12 U	12 U	12 U
Benzo(b)fluoranthene	UG/L	14 U	14 U	14 UJ(h)	14 U	14 U	14 U
Benzo(k)fluoranthene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Benzo(a)pyrene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Indeno(1,2,3-cd pyrene	UG/L	12 U	12 U	12 UJ(h)	12 U	12 U	12 U
Dibenzo(a,h)anthracene	UG/L	10 U	10 U	10 UJ(h)	10 U	10 U	10 U
Benzo(g,h,i)perylene	UG/L	12 U	12 U	12 UJ(h)	12 U	12 U	12 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Semi-Volatiles

SAMPLE ID:		GL63-SW-PC-07	GL63-SW-PC-08	GL63-SW-PC-09	GL63-SW-PC-10	GL63-SW-OH-11FD	GL63-SW-OH-11
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		24-AUG-92	24-AUG-92	25-AUG-92	25-AUG-92	20-AUG-92	20-AUG-92
COMPOUND							
Semi-Volatile Compounds							
Phenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl) ether	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/L	10 U	10 U	10 UJ(m)	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroisopropyl) ether	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
N-nitroso-di-n-dipropylamine	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	UG/L	11 U	11 U	11 U	11 U	11 U	11 U
bis(2-Chloroethoxy) methane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
2-Chloronphthalene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
Dimethylphthalate	UG/L	10 U	10 U	10 U	10 U(b)	10 U	10 U
Acenaphthylene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
Acenaphthene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
4-Nitrophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
Dibenzofuran	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl Phenyl Ether	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Semi-Volatiles

SAMPLE ID:		GL63-SW-PC-07	GL63-SW-PC-08	GL63-SW-PC-09	GL63-SW-PC-10	GL63-SW-OH-11FD	GL63-SW-OH-11
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		24-AUG-92	24-AUG-92	25-AUG-92	25-AUG-92	20-AUG-92	20-AUG-92
COMPOUND							
Semi-Volatile Compounds							
N-nitrosodiphenylamine	UG/L	16 U	16 U	16 U	16 U	16 U	16 U
4-Bromophenyl-phenylether	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
Phenanthrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	UG/L	10 U(b)	10 U(b)	400 U(b)	10 U(b)	10 U	10 U
Fluoranthene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Butylbenzylphthalate	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
3,3-Dichlorobenzidine	UG/L	15 U	15 U	15 U	15 U	15 U	15 U
Benzo(a)anthracene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octyl Phthalate	UG/L	12 U	12 U	12 U	12 U	12 U	12 U
Benzo(b)fluoranthene	UG/L	14 U	14 U	14 U	14 U	14 U	14 U
Benzo(k)fluoranthene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd pyrene	UG/L	12 U	12 U	12 U	12 U	12 U	12 U
Dibenzo(a,h)anthracene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	UG/L	12 U	12 U	12 U	12 U	12 U	12 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin,Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Semi-Volatiles

SAMPLE ID:		GL63-SW-PC-11	GL63-SW-PC-11FD	GL63-SW-OH-13	GL63-SW-LM-16	GL63-SW-LM-17	GL63-SW-LM-18FD
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		25-AUG-92	25-AUG-92	21-AUG-92	21-AUG-92	21-AUG-92	21-AUG-92
COMPOUND							
Semi-Volatile Compounds							
Phenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl) ether	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroisopropyl) ether	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
N-nitroso-di-n-dipropylamine	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	UG/L	41	31	10 U	10 U	10 U	10 U
2-Nitrophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	UG/L	11 U	11 U	11 U	11 U	11 U	11 U
bis(2-Chloroethoxy) methane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
2-Chloronphthalene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
Dimethylphthalate	UG/L	10 U(b)	10 U(b)	10 U	10 U	10 U	10 U
Acenaphthylene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
Acenaphthene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
4-Nitrophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
Dibenzofuran	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl Phenyl Ether	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Semi-Volatiles

SAMPLE ID:		GL63-SW-PC-11	GL63-SW-PC-11FD	GL63-SW-OH-13	GL63-SW-LM-16	GL63-SW-LM-17	GL63-SW-LM-18FD
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		25-AUG-92	25-AUG-92	21-AUG-92	21-AUG-92	21-AUG-92	21-AUG-92
COMPOUND							
Semi-Volatile Compounds							
N-nitrosodiphenylamine	UG/L	16 U	16 U	16 U	16 U	16 U	16 U
4-Bromophenyl-phenylether	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
Phenanthrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	UG/L	10 U(b)	10 U(b)	10 U(b)	10 U(b)	10 U(b)	10 U
Fluoranthene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Butylbenzylphthalate	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
3,3-Dichlorobenzidine	UG/L	15 U	15 U	15 U	15 U	15 U	15 U
Benzo(a)anthracene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	UG/L	3 J	2 J	10 U	10 U	10 U	10 U
Di-n-octyl Phthalate	UG/L	12 U	12 U	12 U	12 U	12 U	12 U
Benzo(b)fluoranthene	UG/L	14 U	14 U	14 U	14 U	14 U	14 U
Benzo(k)fluoranthene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd pyrene	UG/L	12 U	12 U	12 U	12 U	12 U	12 U
Dibenzo(a,h)anthracene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	UG/L	12 U	12 U	12 U	12 U	12 U	12 U

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Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Semi-Volatiles

SAMPLE ID:		GL63-SW-LM-18	GL63-SW-LM-19	GL63-SW-LM-20
DEPTH:		-	-	-
DATE SAMPLED:		21-AUG-92	21-AUG-92	21-AUG-92
COMPOUND				
Semi-Volatile Compounds				
Phenol	UG/L	10 U	10 U	10 U
bis(2-Chloroethyl) ether	UG/L	10 U	10 U	10 U
2-Chlorophenol	UG/L	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/L	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/L	10 U	10 UJ(m)	10 U
1,2-Dichlorobenzene	UG/L	10 U	10 U	10 U
2-Methylphenol	UG/L	10 U	10 U	10 U
bis(2-Chloroisopropyl) ether	UG/L	10 U	10 U	10 U
4-Methylphenol	UG/L	10 U	10 U	10 U
N-nitroso-di-n-dipropylamine	UG/L	10 U	10 U	10 U
Hexachloroethane	UG/L	10 U	10 U	10 U
Nitrobenzene	UG/L	10 U	10 U	10 U
Isophorone	UG/L	10 U	10 U	10 U
2-Nitrophenol	UG/L	10 U	10 U	10 U
2,4-Dimethylphenol	UG/L	11 U	11 U	11 U
bis(2-Chloroethoxy) methane	UG/L	10 U	10 U	10 U
2,4-Dichlorophenol	UG/L	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/L	10 U	10 UJ(m)	10 U
Naphthalene	UG/L	10 U	10 U	10 U
4-Chloroaniline	UG/L	10 U	10 U	10 U
Hexachlorobutadiene	UG/L	10 U	10 U	10 U
4-Chloro-3-Methylphenol	UG/L	10 U	10 U	10 U
2-Methylnaphthalene	UG/L	10 U	10 U	10 U
Hexachlorocyclopentadiene	UG/L	10 U	10 U	10 U
2,4,6-Trichlorophenol	UG/L	10 U	10 U	10 U
2,4,5-Trichlorophenol	UG/L	25 U	25 U	25 U
2-Chloronphthalene	UG/L	10 U	10 U	10 U
2-Nitroaniline	UG/L	25 U	25 U	25 U
Dimethylphthalate	UG/L	10 U	10 U	10 U
Acenaphthylene	UG/L	10 U	10 U	10 U
2,6-Dinitrotoluene	UG/L	10 U	10 U	10 U
3-Nitroaniline	UG/L	25 U	25 U	25 U
Acenaphthene	UG/L	10 U	10 U	10 U
2,4-Dinitrophenol	UG/L	25 U	25 U	25 U
4-Nitrophenol	UG/L	25 U	25 U	25 U
Dibenzofuran	UG/L	10 U	10 U	10 U
2,4-Dinitrotoluene	UG/L	10 U	10 U	10 U
Diethylphthalate	UG/L	10 U	10 U	10 U
4-Chlorophenyl Phenyl Ether	UG/L	10 U	10 U	10 U
Fluorene	UG/L	10 U	10 U	10 U
4-Nitroaniline	UG/L	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol	UG/L	25 U	25 U	25 U

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Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Semi-Volatiles

SAMPLE ID:		GL63-SW-LM-18	GL63-SW-LM-19	GL63-SW-LM-20
DEPTH:		-	-	-
DATE SAMPLED:		21-AUG-92	21-AUG-92	21-AUG-92
COMPOUND				
Semi-Volatile Compounds				
N-nitrosodiphenylamine	UG/L	16 U	16 U	16 U
4-Bromophenyl-phenylether	UG/L	10 U	10 U	10 U
Hexachlorobenzene	UG/L	10 U	10 U	10 U
Pentachlorophenol	UG/L	25 U	25 U	25 U
Phenanthrene	UG/L	10 U	10 U	10 U
Anthracene	UG/L	10 U	10 U	10 U
Carbazole	UG/L	10 U	10 U	10 U
Di-n-butylphthalate	UG/L	10 U	10 U	10 U(b)
Fluoranthene	UG/L	10 U	10 U	10 U
Pyrene	UG/L	10 U	10 U	10 U
Butylbenzylphthalate	UG/L	10 U	10 U	10 U
3,3-Dichlorobenzidine	UG/L	15 U	15 U	15 U
Benzo(a)anthracene	UG/L	10 U	10 U	10 U
Chrysene	UG/L	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	UG/L	10 U(b)	10 U	10 U
Di-n-octyl Phthalate	UG/L	12 U	12 U	12 U
Benzo(b)fluoranthene	UG/L	14 U	14 U	14 U
Benzo(k)fluoranthene	UG/L	10 U	10 U	10 U
Benzo(a)pyrene	UG/L	10 U	10 U	10 U
Indeno(1,2,3-cd pyrene	UG/L	12 U	12 U	12 U
Dibenzo(a,h)anthracene	UG/L	10 U	10 U	10 U
Benzo(g,h,i)perylene	UG/L	12 U	12 U	12 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - PCB/Pesticides

SAMPLE ID:		GL63-SW-BB-01	GL63-SW-PC-01	GL63-SW-PC-02	GL63-SW-PC-02FD	GL63-SW-BB-03	GL63-SW-PC-03
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		20-AUG-92	24-AUG-92	24-AUG-92	24-AUG-92	18-AUG-92	26-AUG-92
COMPOUND							
Pesticide/PCBs							
Alpha-BHC	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Beta-BHC	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Delta-BHC	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Gamma-BHC(lindane)	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Heptachlor	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Aldrin	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Heptachlor Epoxide	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Endosulfan I	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Dieldrin	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4,4-DDE	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endrin	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan II	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4,4-DDD	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan Sulfate	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4,4-DDT	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Methoxychlor	UG/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Endrin Ketone	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endrin Aldehyde	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Alpha-Chlordane	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Gamma-Chlordane	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Toxaphene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor-1016	UG/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1221	UG/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Aroclor-1232	UG/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1242	UG/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1248	UG/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1254	UG/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1260	UG/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - PCB/Pesticides

SAMPLE ID:		GL63-SW-PC-04	GL63-SW-IN-05RE	GL63-SW-IN-05	GL63-SW-PC-05	GL63-SW-PC-06	GL63-SW-IN-07
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		26-AUG-92	18-AUG-92	19-AUG-92	25-AUG-92	25-AUG-92	19-AUG-92
COMPOUND							
Pesticide/PCBs							
Alpha-BHC	UG/L	0.050 U		0.050 U	0.050 U	0.050 U	0.050 U
Beta-BHC	UG/L	0.050 U		0.050 U	0.050 U	0.050 U	0.050 U
Delta-BHC	UG/L	0.050 U		0.050 U	0.050 U	0.050 U	0.050 U
Gamma-BHC(lindane)	UG/L	0.050 U		0.050 U	0.050 U	0.050 U	0.050 U
Heptachlor	UG/L	0.050 U		0.050 U	0.050 U	0.050 U	0.050 U
Aldrin	UG/L	0.050 U		0.050 U	0.050 U	0.050 U	0.050 U
Heptachlor Epoxide	UG/L	0.050 U		0.050 U	0.050 U	0.050 U	0.050 U
Endosulfan I	UG/L	0.050 U		0.050 U	0.050 U	0.050 U	0.050 U
Dieldrin	UG/L	0.10 U		0.10 U	0.10 U	0.10 U	0.10 U
4,4-DDE	UG/L	0.10 U		0.10 U	0.10 U	0.10 U	0.10 U
Endrin	UG/L	0.10 U		0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan II	UG/L	0.10 U		0.10 U	0.10 U	0.10 U	0.10 U
4,4-DDD	UG/L	0.10 U		0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan Sulfate	UG/L	0.10 U		0.10 U	0.10 U	0.10 U	0.10 U
4,4-DDT	UG/L	0.10 U		0.10 U	0.10 U	0.10 U	0.10 U
Methoxychlor	UG/L	0.50 U		0.50 U	0.50 U	0.50 U	0.50 U
Endrin Ketone	UG/L	0.10 U		0.10 U	0.10 U	0.10 U	0.10 U
Endrin Aldehyde	UG/L	0.10 U		0.10 U	0.10 U	0.10 U	0.10 U
Alpha-Chlordane	UG/L	0.050 U		0.050 U	0.050 U	0.050 U	0.050 U
Gamma-Chlordane	UG/L	0.050 U		0.050 U	0.050 U	0.050 U	0.050 U
Toxaphene	UG/L	5.0 U		5.0 U	5.0 U	5.0 U	5.0 U
Aroclor-1016	UG/L	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1221	UG/L	2.0 U		2.0 U	2.0 U	2.0 U	2.0 U
Aroclor-1232	UG/L	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1242	UG/L	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1248	UG/L	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1254	UG/L	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1260	UG/L	1.0 U		1.0 U	1.0 U	1.0 U	1.0 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin,Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - PCB/Pesticides

	SAMPLE ID:	GL63-SW-PC-07	GL63-SW-PC-08	GL63-SW-PC-09	GL63-SW-PC-10	GL63-SW-OH-11FD	GL63-SW-OH-11
	DEPTH:	-	-	-	-	-	-
	DATE SAMPLED:	24-AUG-92	24-AUG-92	25-AUG-92	25-AUG-92	20-AUG-92	20-AUG-92
COMPOUND							
Pesticide/PCBs							
Alpha-BHC	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Beta-BHC	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Delta-BHC	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Gamma-BHC(lindane)	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Heptachlor	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Aldrin	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Heptachlor Epoxide	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Endosulfan I	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Dieldrin	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4,4-DDE	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endrin	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan II	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4,4-DDD	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan Sulfate	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4,4-DDT	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Methoxychlor	UG/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Endrin Ketone	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endrin Aldehyde	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Alpha-Chlordane	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Gamma-Chlordane	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Toxaphene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor-1016	UG/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1221	UG/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Aroclor-1232	UG/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1242	UG/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1248	UG/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1254	UG/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1260	UG/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - PCB/Pesticides

SAMPLE ID:		GL63-SW-PC-11	GL63-SW-PC-11FD	GL63-SW-OH-13	GL63-SW-LM-16	GL63-SW-LM-17	GL63-SW-LM-18FD
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		25-AUG-92	25-AUG-92	21-AUG-92	21-AUG-92	21-AUG-92	21-AUG-92
COMPOUND							
Pesticide/PCBs							
Alpha-BHC	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Beta-BHC	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Delta-BHC	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Gamma-BHC(lindane)	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Heptachlor	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Aldrin	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Heptachlor Epoxide	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Endosulfan I	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Dieldrin	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4,4-DDE	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endrin	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan II	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4,4-DDD	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan Sulfate	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4,4-DDT	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Methoxychlor	UG/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Endrin Ketone	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endrin Aldehyde	UG/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Alpha-Chlordane	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Gamma-Chlordane	UG/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Toxaphene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor-1016	UG/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1221	UG/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Aroclor-1232	UG/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1242	UG/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1248	UG/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1254	UG/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1260	UG/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - PCB/Pesticides

	SAMPLE ID:	GL63-SW-LM-18	GL63-SW-LM-19	GL63-SW-LM-20
	DEPTH:	-	-	-
	DATE SAMPLED:	21-AUG-92	21-AUG-92	21-AUG-92
COMPOUND				
Pesticide/PCBs				
Alpha-BHC	UG/L	0.050 U	0.050 U	0.050 U
Beta-BHC	UG/L	0.050 U	0.050 U	0.050 U
Delta-BHC	UG/L	0.050 U	0.050 U	0.050 U
Gamma-BHC(lindane)	UG/L	0.050 U	0.050 U	0.050 U
Heptachlor	UG/L	0.050 U	0.050 U	0.050 U
Aldrin	UG/L	0.050 U	0.050 U	0.050 U
Heptachlor Epoxide	UG/L	0.050 U	0.050 U	0.050 U
Endosulfan I	UG/L	0.050 U	0.050 U	0.050 U
Dieldrin	UG/L	0.10 U	0.10 U	0.10 U
4,4-DDE	UG/L	0.10 U	0.10 U	0.10 U
Endrin	UG/L	0.10 U	0.10 U	0.10 U
Endosulfan II	UG/L	0.10 U	0.10 U	0.10 U
4,4-DDD	UG/L	0.10 U	0.10 U	0.10 U
Endosulfan Sulfate	UG/L	0.10 U	0.10 U	0.10 U
4,4-DDT	UG/L	0.10 U	0.10 U	0.10 U
Methoxychlor	UG/L	0.50 U	0.50 U	0.50 U
Endrin Ketone	UG/L	0.10 U	0.10 U	0.10 U
Endrin Aldehyde	UG/L	0.10 U	0.10 U	0.10 U
Alpha-Chlordane	UG/L	0.050 U	0.050 U	0.050 U
Gamma-Chlordane	UG/L	0.050 U	0.050 U	0.050 U
Toxaphene	UG/L	5.0 U	5.0 U	5.0 U
Aroclor-1016	UG/L	1.0 U	1.0 U	1.0 U
Aroclor-1221	UG/L	2.0 U	2.0 U	2.0 U
Aroclor-1232	UG/L	1.0 U	1.0 U	1.0 U
Aroclor-1242	UG/L	1.0 U	1.0 U	1.0 U
Aroclor-1248	UG/L	1.0 U	1.0 U	1.0 U
Aroclor-1254	UG/L	1.0 U	1.0 U	1.0 U
Aroclor-1260	UG/L	1.0 U	1.0 U	1.0 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Metals

SAMPLE ID:		GL63-SW-BB-01	GL63-SW-PC-01	GL63-SW-PC-02	GL63-SW-PC-02FD	GL63-SW-BB-03	GL63-SW-PC-03
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		20-AUG-92	24-AUG-92	24-AUG-92	24-AUG-92	18-AUG-92	26-AUG-92
COMPOUND							
Metals							
Aluminum, Total	UG/L	240.00 U(b)	402.00	223.00 U	270.00	350.00	1090.00
Antimony, Total	UG/L	6.00 U	20.00 U	20.00 U	20.00 U	6.00 U	20.00 U
Arsenic, Total	UG/L	1.20 U(b)	3.10 L(p)	1.10	1.10	1.00 U(b)	1.30
Barium, Total	UG/L	33.00	43.00	39.00	39.00	31.00	28.00
Beryllium, Total	UG/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
Cadmium, Total	UG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Calcium, Total	UG/L	52500.00	65600.00	64500.00	63900.00	47000.00	37100.00
Chromium, Total	UG/L	10.00 U	10.00 U	10.00 U	10.00 U	10.00 U	10.00 U
Cobalt, Total	UG/L	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U
Copper, Total	UG/L	11.00 U(b)	18.00	40.00	40.00	9.00 U(b)	8.00 U(b)
Iron, Total	UG/L	449.00	720.00	496.00	571.00	554.00	1530.00
Lead, Total	UG/L	2.00 U(b)	2.20 U(b)	1.20 U(b)	2.00 U(b)	3.60 U(b)	15.40 L(m)
Magnesium, Total	UG/L	20800.00	25800.00	24400.00	24300.00	17800.00	13900.00
Manganese, Total	UG/L	31.00	43.00	32.00	33.00	36.00	78.00
Mercury, Total	UG/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel, Total	UG/L	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U
Potassium, Total	UG/L	2920.00	3680.00	3510.00	3500.00	2300.00	4030.00
Selenium, Total	UG/L	2.00 U	1.00 U(b)	1.30 U(b)	1.00 U(b)	2.00 U	1.00 U
Silver, Total	UG/L	5.00 UJ(n)	5.00 U	5.00 U	5.00 U	5.00 UJ(n)	5.00 U
Sodium, Total	UG/L	42100.00	60200.00	52500.00	51700.00	28100.00	28700.00
Thallium, Total	UG/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
Vanadium, Total	UG/L	8.00 U	8.00 U	8.00 U	8.00 U	8.00 U	8.00 U
Zinc, Total	UG/L	44.00	31.00 U(b)	23.00 U(b)	28.00 U(b)	41.00	24.00 U(b)
Cyanide, Total	UG/L	10.00 U	10.00 U	10.00 U	10.00 U	10.00 U	10.00 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Metals

SAMPLE ID:		GL63-SW-PC-04	GL63-SW-IN-05RE	GL63-SW-IN-05	GL63-SW-PC-05	GL63-SW-PC-06	GL63-SW-IN-07
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		26-AUG-92	18-AUG-92	19-AUG-92	25-AUG-92	25-AUG-92	19-AUG-92
COMPOUND							
Metals							
Aluminum, Total	UG/L	2050.00		95 U(b)	861.00	298.00	91 U(b)
Antimony, Total	UG/L	20.00 U		6.00 U	20.00 U	20.00 U	6.00 U
Arsenic, Total	UG/L	2.40		1.4 U(b)	3.30	2.10	1.3 U(b)
Barium, Total	UG/L	39.00		22 U(b)	65.00	40.00	20 U(b)
Beryllium, Total	UG/L	2.00 U		2 U	2.00 U	2.00 U	2 U
Cadmium, Total	UG/L	5.00 U		5 U	5.00 U	5.00 U	5 U
Calcium, Total	UG/L	43900.00		36400	85300.00	69200.00	35300
Chromium, Total	UG/L	10.00 U		10 U	10.00 U	10.00 U	10.00 U
Cobalt, Total	UG/L	20.00 U		20 U	20.00 U	20.00 U	20.00 U
Copper, Total	UG/L	17.00		5 U(b)	8.00 U(b)	8.00 U(b)	6 U(b)
Iron, Total	UG/L	2880.00 J(f)		177 U(b)	2350.00 J(f)	455.00	152 U(b)
Lead, Total	UG/L	12.60 L(m)		12.9	6.90 J(m)	2.10 U(b)	2.7 U(b)
Magnesium, Total	UG/L	16500.00		12300	37700.00	27800.00	11900
Manganese, Total	UG/L	123.00		15	230.00	89.00	11
Mercury, Total	UG/L	0.20 U		.2 U	0.20 U	0.20 U	.2 U
Nickel, Total	UG/L	20.00 U		20 U	20.00 U	20.00 U	20 U
Potassium, Total	UG/L	4530.00		1500	4350.00	4080.00	1440
Selenium, Total	UG/L	1.20 U(b)		2 U	1.00 U	1.00 U(b)	2 U
Silver, Total	UG/L	5.00 U		5 UJ(n)	5.00 U	5.00 U	5 UJ(n)
Sodium, Total	UG/L	49800.00		8920	89800.00	42000.00	8500
Thallium, Total	UG/L	2.00 U		2 U	2.00 U	2.00 U	2 U
Vanadium, Total	UG/L	8.00 U		8 U	8.00 U	8.00 U	8 U
Zinc, Total	UG/L	63.00		27 U(b)	42.00	11.00 U(b)	19 U(b)
Cyanide, Total	UG/L	10.00 U		10 U	10.00 U	10.00 U	10 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin,Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Metals

SAMPLE ID:		GL63-SW-PC-07	GL63-SW-PC-08	GL63-SW-PC-09	GL63-SW-PC-10	GL63-SW-OH-11FD	GL63-SW-OH-11
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		24-AUG-92	24-AUG-92	25-AUG-92	25-AUG-92	20-AUG-92	20-AUG-92
COMPOUND							
Metals							
Aluminum, Total	UG/L	119.00 U(b)	565.00	185.00	104.00 U(b)	147.00 U(b)	135.00 U(b)
Antimony, Total	UG/L	20.00 U	20.00 U	20.00 U	20.00 U	6.00 U	6.00 U
Arsenic, Total	UG/L	1.70	2.50	1.00 U	1.40	1.10 U(b)	1.60 U(b)
Barium, Total	UG/L	48.00	47.00	41.00	40.00	20.00 U(b)	20.00 U(b)
Beryllium, Total	UG/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
Cadmium, Total	UG/L	5.00 U	5.00 U	6.00	5.00 U	5.00 U	5.00 U
Calcium, Total	UG/L	81000.00	79200.00	70700.00	67500.00	34700.00	34700.00
Chromium, Total	UG/L	10.00 U	10.00 U	10.00 U	10.00 U	10.00 U	10.00 U
Cobalt, Total	UG/L	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U
Copper, Total	UG/L	9.00 U(b)	12.00 U(b)	16.00	18.00	4.00 U(b)	5.00 U(b)
Iron, Total	UG/L	253.00	699.00	354.00	329.00	211.00 U(b)	288.00 U(b)
Lead, Total	UG/L	1.30 U(b)	2.10 U(b)	3.00 U(b)	3.40 U(b)	2.10 U(b)	2.50 U(b)
Magnesium, Total	UG/L	31500.00	30500.00	26100.00	26100.00	11600.00	11600.00
Manganese, Total	UG/L	33.00	51.00	51.00	82.00	10.00	11.00
Mercury, Total	UG/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel, Total	UG/L	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U
Potassium, Total	UG/L	4560.00	5230.00	5140.00	7910.00	1420.00	1420.00
Selenium, Total	UG/L	2.00 U(b)	1.00 U(b)	1.00 U	1.00 U	2.00 U	2.00 U
Silver, Total	UG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 UJ(n)	5.00 UJ(n)
Sodium, Total	UG/L	73000.00	68700.00	56700.00	58700.00	6930.00	6760.00
Thallium, Total	UG/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
Vanadium, Total	UG/L	8.00 U	8.00 U	8.00 U	8.00 U	8.00 U	8.00 U
Zinc, Total	UG/L	34.00 U(b)	49.00	84.00	113.00	20.00 U(b)	15.00 U(b)
Cyanide, Total	UG/L	10.00 U	10.00 U	10.00 U	12.00	10.00 U	10.00 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Metals

SAMPLE ID:		GL63-SW-PC-11	GL63-SW-PC-11FD	GL63-SW-OH-13	GL63-SW-LM-16	GL63-SW-LM-17	GL63-SW-LM-18FD
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		25-AUG-92	25-AUG-92	21-AUG-92	21-AUG-92	21-AUG-92	21-AUG-92
COMPOUND							
Metals							
Aluminum, Total	UG/L	539.00	378.00	100.00 U(b)	47.00 U(b)	30.00 U	36.00 U(b)
Antimony, Total	UG/L	20.00 U	20.00 U	6.00 U	20.00 U	6.00 U	6.00 U
Arsenic, Total	UG/L	3.10	2.50	1.20 U(b)	1.30	1.10 U(b)	1.40 U(b)
Barium, Total	UG/L	103.00	95.00	19.00 U(b)	14.00	17.00 U(b)	18.00 U(b)
Beryllium, Total	UG/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
Cadmium, Total	UG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Calcium, Total	UG/L	123000.00	124000.00	34900.00	34000.00	34400.00	34200.00
Chromium, Total	UG/L	10.00 U	10.00 U	10.00 U	10.00 U	10.00 U	10.00 U
Cobalt, Total	UG/L	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U
Copper, Total	UG/L	100.00	80.00	3.00 U(b)	3.00 U	3.00 U	3.00 U
Iron, Total	UG/L	4270.00 J(f)	2740.00 J(f)	188.00 U(b)	26.00	51.00 U(b)	61.00 U(b)
Lead, Total	UG/L	36.80 J(c,m)	37.00 J(m)	2.60 U(b)	1.00 U(n)	6.00	1.00 U
Magnesium, Total	UG/L	43600.00	43800.00	11700.00	11200.00	11400.00	11300.00
Manganese, Total	UG/L	548.00	461.00	7.00	3.00 U	3.00	3.00 U
Mercury, Total	UG/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel, Total	UG/L	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U
Potassium, Total	UG/L	8160.00	8240.00	1400.00	1270.00	1320.00	1310.00
Selenium, Total	UG/L	1.30 U(b)	1.00 U	2.00 U	1.00 U	2.00 U	2.00 U
Silver, Total	UG/L	5.00 U	5.00 U	5.00 UJ(n)	5.00 U	5.00 UJ(n)	5.00 UJ(n)
Sodium, Total	UG/L	41800.00	52100.00	6790.00	5510.00	5710.00	5630.00
Thallium, Total	UG/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
Vanadium, Total	UG/L	8.00 U	8.00 U	8.00 U	8.00 U	8.00 U	8.00 U
Zinc, Total	UG/L	502.00	418.00	13.00 U(b)	10.00 U(b)	14.00 U(b)	7.00 U(b)
Cyanide, Total	UG/L	10.00 U	10.00 U	10.00 U	10.00 U	10.00 U	10.00 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin,Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Metals

SAMPLE ID:		GL63-SW-LM-18	GL63-SW-LM-19	GL63-SW-LM-20
DEPTH:		-	-	-
DATE SAMPLED:		21-AUG-92	21-AUG-92	21-AUG-92
COMPOUND				
Metals				
Aluminum, Total	UG/L	30.00 U	45.00 U(b)	51.00 U(b)
Antimony, Total	UG/L	6.00 U	6.00 U	6.00 U
Arsenic, Total	UG/L	1.00 U	1.00 U	1.20 U(b)
Barium, Total	UG/L	18.00 U(b)	13.00 U(b)	14.00 U(b)
Beryllium, Total	UG/L	2.00 U	2.00 U	2.00 U
Cadmium, Total	UG/L	5.00 U	5.00 U	5.00 U
Calcium, Total	UG/L	33800.00	33700.00	34400.00
Chromium, Total	UG/L	10.00 U	10.00 U	10.00 U
Cobalt, Total	UG/L	20.00 U	20.00 U	20.00 U
Copper, Total	UG/L	3.00 U	3.00 U	3.00 U(b)
Iron, Total	UG/L	37.00 U(b)	154.00 U(b)	83.00 U(b)
Lead, Total	UG/L	1.00 U	1.40 U(b)	1.10 U(b)
Magnesium, Total	UG/L	11100.00	11200.00	11400.00
Manganese, Total	UG/L	3.00	3.00	3.00 U
Mercury, Total	UG/L	0.20 U	0.20 U	0.20 U
Nickel, Total	UG/L	20.00 U	20.00 U	20.00 U
Potassium, Total	UG/L	1280.00	1290.00	1310.00
Selenium, Total	UG/L	2.00 U	2.00 U	2.00 U
Silver, Total	UG/L	5.00 UJ(n)	5.00 UJ(n)	5.00 UJ(n)
Sodium, Total	UG/L	5520.00	5570.00	5670.00
Thallium, Total	UG/L	2.00 U	2.00 U	2.00 U
Vanadium, Total	UG/L	8.00 U	8.00 U	8.00 U
Zinc, Total	UG/L	9.00 U(b)	13.00 U(b)	8.00 U(b)
Cyanide, Total	UG/L	10.00 U	10.00 U	10.00 U

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin,Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Metals, Dissolved

SAMPLE ID:		GL63-SW-BB-01	GL63-SW-PC-01	GL63-SW-PC-02	GL63-SW-PC-02FD	GL63-SW-BB-03	GL63-SW-PC-03
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		20-AUG-92	24-AUG-92	24-AUG-92	24-AUG-92	18-AUG-92	26-AUG-92
COMPOUND							
Metals, Dissolved							
Aluminum, Dissolved	UG/L	30.00 U	54.00 U(b)	48.00 U(b)	67.00 U(b)	88.00 U(b)	49.00 U(b)
Antimony, Dissolved	UG/L	6.00 U	6.00 U	6.00 U	6.00 U	6.00 U	6.00 U
Arsenic, Dissolved	UG/L	1.00 U	1.30	1.60	1.30	1.40	2.00
Beryllium, Dissolved	UG/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
Barium, Dissolved	UG/L	34.00	44.00	37.00	55.00	31.00	41.00
Cadmium, Dissolved	UG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Calcium, Dissolved	UG/L	50200.00	68900.00	62500.00	63200.00	44300.00	37500.00
Chromium, Dissolved	UG/L	10.00	10.00 U	10.00 U	10.00 U	10.00 U	10.00 U
Cobalt, Dissolved	UG/L	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U
Copper, Dissolved	UG/L	6.00 U(b)	6.00	7.00	8.00	4.00 U(b)	6.00
Iron, Dissolved	UG/L	32.00 U(b)	20.00 U	20.00 U	20.00 U(b)	72.00 U(b)	43.00 U(b)
Lead, Dissolved	UG/L	1.00 U	2.60 U(b)	1.00 L(pd)	1.00 UJ(d)	1.80 U(b)	1.00 U(b)
Magnesium, Dissolved	UG/L	19800.00	27600.00	24200.00	24500.00	16700.00	13900.00
Manganese, Dissolved	UG/L	8.00	28.00	22.00	23.00	24.00	18.00
Mercury, Dissolved	UG/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel, Dissolved	UG/L	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U
Potassium, Dissolved	UG/L	2640.00	3770.00	3400.00	3440.00	1970.00	3720.00
Selenium, Dissolved	UG/L	1.00 U	1.20 U(b)	1.00 U	1.90 U(b)	1.00 U	1.00 U
Thallium, Dissolved	UG/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
Silver, Dissolved	UG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Sodium, Dissolved	UG/L	41000.00	64600.00	51100.00	51900.00	25200.00	30200.00
Vanadium, Dissolved	UG/L	8.00 U	8.00 U	8.00 U	8.00 U	8.00 U	8.00 U
Zinc, Dissolved	UG/L	18.00 U(b)	10.00	9.00	15.00	11.00 U(b)	12.00

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Metals, Dissolved

SAMPLE ID:		GL63-SW-PC-04	GL63-SW-IN-05RE	GL63-SW-IN-05	GL63-SW-PC-05	GL63-SW-PC-06	GL63-SW-IN-07
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		26-AUG-92	18-AUG-92	19-AUG-92	25-AUG-92	25-AUG-92	19-AUG-92
COMPOUND							
Metals, Dissolved							
Aluminum, Dissolved	UG/L	37.00 U(b)		30.00 U	40.00 U(b)	197.00	30.00 U
Antimony, Dissolved	UG/L	6.00 U		6.00 U	6.00 U	6.00 U	6.00 U
Arsenic, Dissolved	UG/L	1.00 U		1.30	2.10	2.30	1.10
Beryllium, Dissolved	UG/L	2.00 U		2.00 U	2.00 U	2.00 U	2.00 U
Barium, Dissolved	UG/L	67.00		22.00	70.00	41.00	21.00
Cadmium, Dissolved	UG/L	5.00 U		5.00 U	5.00 U	5.00 U	5.00 U
Calcium, Dissolved	UG/L	41500.00		35800.00	86300.00	68300.00	34900.00
Chromium, Dissolved	UG/L	10.00 U		10.00 U	10.00 U	10.00 U	10.00 U
Cobalt, Dissolved	UG/L	20.00 U		20.00 U	20.00 U	20.00 U	20.00 U
Copper, Dissolved	UG/L	6.00		4.00 U(b)	3.00	13.00	6.00 U(b)
Iron, Dissolved	UG/L	43.00 U(b)		20.00 U	28.00 U(b)	20.00 U	38.00 U(b)
Lead, Dissolved	UG/L	1.00 UJ(d)		1.00 U	1.00 UJ(d)	5.90 U(b)	1.50 U(b)
Magnesium, Dissolved	UG/L	14800.00		12100.00	38700.00	28000.00	11700.00
Manganese, Dissolved	UG/L	20.00		7.00	54.00	70.00	5.00
Mercury, Dissolved	UG/L	0.20 U		0.20 U	0.20 U	0.20 U	0.20 U
Nickel, Dissolved	UG/L	20.00 U		20.00 U	20.00 U	20.00 U	20.00 U
Potassium, Dissolved	UG/L	3950.00		1400.00	4180.00	3920.00	1390.00
Selenium, Dissolved	UG/L	1.00 U		1.00 U	1.00 U	1.00 U	1.00 U
Thallium, Dissolved	UG/L	2.00 U		2.00 U	2.00 U	2.00 U	2.00 U
Silver, Dissolved	UG/L	5.00 U		5.00 U	5.00 U	5.00 U	5.00 U
Sodium, Dissolved	UG/L	49600.00		10200.00	91800.00	42100.00	9160.00
Vanadium, Dissolved	UG/L	8.00 U		8.00 U	8.00 U	8.00 U	8.00 U
Zinc, Dissolved	UG/L	16.00		11.00 U(b)	11.00	8.00	13.00 U(b)

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Metals, Dissolved

SAMPLE ID:		GL63-SW-PC-07	GL63-SW-PC-08	GL63-SW-PC-09	GL63-SW-PC-10	GL63-SW-OH-11FD	GL63-SW-OH-11
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		24-AUG-92	24-AUG-92	25-AUG-92	25-AUG-92	20-AUG-92	20-AUG-92
COMPOUND							
Metals, Dissolved							
Aluminum, Dissolved	UG/L	67.00 U(b)	59.00 U(b)	89.00 U(b)	71.00 U(b)	30.00 U	30.00 U
Antimony, Dissolved	UG/L	6.00 U	6.00 U	6.00 U	6.00 U	6.00 U	6.00 U
Arsenic, Dissolved	UG/L	1.00	1.30	1.40	1.00	1.40	1.20
Beryllium, Dissolved	UG/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
Barium, Dissolved	UG/L	51.00	55.00	38.00	44.00	20.00	18.00
Cadmium, Dissolved	UG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Calcium, Dissolved	UG/L	78700.00	78200.00	68300.00	66200.00	34000.00	33900.00
Chromium, Dissolved	UG/L	10.00 U	10.00 U	10.00 U	10.00 U	10.00 U	10.00 U
Cobalt, Dissolved	UG/L	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U
Copper, Dissolved	UG/L	8.00	7.00	12.00	10.00	3.00 U(b)	4.00 U(b)
Iron, Dissolved	UG/L	20.00 U	20.00 U	21.00 U(b)	31.00 U(b)	21.00 U(b)	20.00 U
Lead, Dissolved	UG/L	1.00 UJ(d)	1.00 UL(pd)	2.20 U(b)	1.50 U(b)	1.00 U	1.00 U
Magnesium, Dissolved	UG/L	31000.00	30900.00	25500.00	26000.00	11200.00	11200.00
Manganese, Dissolved	UG/L	28.00	36.00	44.00	86.00	3.00 U	3.00
Mercury, Dissolved	UG/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel, Dissolved	UG/L	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U
Potassium, Dissolved	UG/L	4410.00	4940.00	5120.00	7760.00	1270.00	1300.00
Selenium, Dissolved	UG/L	1.00 U(b)	1.60 U(b)	1.00 U	1.00 U	1.00 U	1.00 U
Thallium, Dissolved	UG/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
Silver, Dissolved	UG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Sodium, Dissolved	UG/L	70200.00	69600.00	54400.00	56800.00	6960.00	6930.00
Vanadium, Dissolved	UG/L	8.00 U	8.00 U	8.00 U	8.00 U	8.00 U	8.00 U
Zinc, Dissolved	UG/L	19.00	27.00	67.00	101.00	7.00 U(b)	9.00 U(b)

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Metals, Dissolved

SAMPLE ID:		GL63-SW-PC-11	GL63-SW-PC-11FD	GL63-SW-OH-13	GL63-SW-LM-16	GL63-SW-LM-17	GL63-SW-LM-18FD
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		25-AUG-92	25-AUG-92	21-AUG-92	21-AUG-92	21-AUG-92	21-AUG-92
COMPOUND							
Metals, Dissolved							
Aluminum, Dissolved	UG/L	30.00 U	44.00 U(b)	30.00 U	30.00 U	30.00 U	30.00 U
Antimony, Dissolved	UG/L	6.00 U	6.00 U	6.00 U	6.00 U	6.00 U	6.00 U
Arsenic, Dissolved	UG/L	1.50	1.60	1.10	1.00 U	1.00 U	1.50
Beryllium, Dissolved	UG/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
Barium, Dissolved	UG/L	95.00	92.00	18.00	15.00	15.00	16.00
Cadmium, Dissolved	UG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Calcium, Dissolved	UG/L	126000.00	126000.00	33900.00	33100.00	33500.00	34000.00
Chromium, Dissolved	UG/L	10.00 U	10.00 U	10.00 U	10.00 U	10.00 U	10.00 U
Cobalt, Dissolved	UG/L	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U
Copper, Dissolved	UG/L	5.00	5.00	4.00 U(b)	3.00	3.00 U(b)	3.00 U(b)
Iron, Dissolved	UG/L	22.00 U(b)	20.00 U	20.00 U	20.00 U	36.00 U(b)	20.00 U
Lead, Dissolved	UG/L	2.10 U(b)	1.40 U(b)	1.00 U	1.00 UJ(d)	1.00 U	1.00 U
Magnesium, Dissolved	UG/L	45400.00	45400.00	11100.00	11200.00	10900.00	11100.00
Manganese, Dissolved	UG/L	353.00	363.00	3.00 U	3.00 U	3.00 U	3.00 U
Mercury, Dissolved	UG/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel, Dissolved	UG/L	22.00	20.00 U	20.00 U	20.00 U	20.00 U	20.00 U
Potassium, Dissolved	UG/L	8460.00	8530.00	1270.00	1230.00	1150.00	1230.00
Selenium, Dissolved	UG/L	1.00 U	1.10 U(b)	1.00 U	1.00 U(b)	1.00 U	1.00 U
Thallium, Dissolved	UG/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
Silver, Dissolved	UG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Sodium, Dissolved	UG/L	54100.00	54000.00	6590.00	5450.00	5600.00	5640.00
Vanadium, Dissolved	UG/L	8.00 U	8.00 U	8.00 U	8.00 U	8.00 U	8.00 U
Zinc, Dissolved	UG/L	104.00	104.00	13.00 U(b)	6.00 U	8.00 U(b)	11.00 U(b)

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin,Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Metals, Dissolved

	SAMPLE ID:	GL63-SW-LM-18	GL63-SW-LM-19	GL63-SW-LM-20
	DEPTH:	-	-	-
	DATE SAMPLED:	21-AUG-92	21-AUG-92	21-AUG-92
COMPOUND				
Metals, Dissolved				
Aluminum, Dissolved	UG/L	30.00 U	40.00 U(b)	30.00 U
Antimony, Dissolved	UG/L	6.00 U	6.00 U	6.00 U
Arsenic, Dissolved	UG/L	1.30	1.00 U	1.00 U
Beryllium, Dissolved	UG/L	2.00 U	2.00 U	2.00 U
Barium, Dissolved	UG/L	15.00	14.00	14.00
Cadmium, Dissolved	UG/L	5.00 U	5.00 U	5.00 U
Calcium, Dissolved	UG/L	32400.00	34400.00	33900.00
Chromium, Dissolved	UG/L	10.00 U	10.00 U	10.00 U
Cobalt, Dissolved	UG/L	20.00 U	20.00 U	20.00 U
Copper, Dissolved	UG/L	3.00 U(b)	3.00 U(b)	3.00 U(b)
Iron, Dissolved	UG/L	20.00 U	55.00 U(b)	67.00 U(b)
Lead, Dissolved	UG/L	1.00 U	1.00 U	1.00 U
Magnesium, Dissolved	UG/L	10500.00	11200.00	11000.00
Manganese, Dissolved	UG/L	3.00 U	3.00 U	3.00 U
Mercury, Dissolved	UG/L	0.20 U	0.20 U	0.20 U
Nickel, Dissolved	UG/L	20.00 U	20.00 U	20.00 U
Potassium, Dissolved	UG/L	1130.00	1230.00	1240.00
Selenium, Dissolved	UG/L	1.00 U	1.00 U	1.00 U
Thallium, Dissolved	UG/L	2.00 U	2.00 U	2.00 U
Silver, Dissolved	UG/L	5.00 U	5.00 U	5.00 U
Sodium, Dissolved	UG/L	5380.00	5750.00	5620.00
Vanadium, Dissolved	UG/L	8.00 U	8.00 U	8.00 U
Zinc, Dissolved	UG/L	8.00 U(b)	17.00 U(b)	8.00 U(b)

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Water Quality

SAMPLE ID:		GL63-SW-BB-01	GL63-SW-PC-01	GL63-SW-PC-02	GL63-SW-PC-02FD	GL63-SW-BB-03	GL63-SW-PC-03
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		20-AUG-92	24-AUG-92	24-AUG-92	24-AUG-92	18-AUG-92	26-AUG-92
COMPOUND							
Water Quality							
Carbon, Organic	mg/L		4	5	9		5
Alkalinity, Total (as CaCO3)	mg/L		170	160	160		100
COD (O2)	mg/L		14	16	13		42
Chloride	mg/L		120	42	41		57
Nitrate/Nitrite	mg/L		0.9 B	0.8 B	0.9 B		0.4 B
Solids, Suspended at 103C	mg/L		10 J(z)	10 J(z)	10 J(z)		36 J(z)
Solids, Dissolved at 180C	mg/L		500	460	470		320
Sulfate, Turbidimetric	mg/L		78	68	75		41

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Water Quality

SAMPLE ID:		GL63-SW-PC-04	GL63-SW-IN-05RE	GL63-SW-IN-05	GL63-SW-PC-05	GL63-SW-PC-06	GL63-SW-IN-07
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		26-AUG-92	18-AUG-92	19-AUG-92	25-AUG-92	25-AUG-92	19-AUG-92
COMPOUND							
Water Quality							
Carbon, Organic	mg/L	6			5	7	
Alkalinity, Total (as CaCO3)	mg/L	100			250	190	
COD (O2)	mg/L	36			28	16	
Chloride	mg/L	96			170	86	
Nitrate/Nitrite	mg/L	0.6 B			0.9 B	0.6 B	
Solids, Suspended at 103C	mg/L	82 J(z)			26 J(h,z)	10 J(z)	
Solids, Dissolved at 180C	mg/L	400			690	480	
Sulfate, Turbidimetric	mg/L	57			100	73	

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Water Quality

SAMPLE ID:		GL63-SW-PC-07	GL63-SW-PC-08	GL63-SW-PC-09	GL63-SW-PC-10	GL63-SW-OH-11FD	GL63-SW-OH-11
DEPTH:		-	-	-	-	-	-
DATE SAMPLED:		24-AUG-92	24-AUG-92	25-AUG-92	25-AUG-92	20-AUG-92	20-AUG-92
COMPOUND							
Water Quality							
Carbon, Organic	mg/L	11	8	6	9		
Alkalinity, Total (as CaCO3)	mg/L	200	190	180	210		
COD (O2)	mg/L	14	15	18	36		
Chloride	mg/L	150	130	110	100		
Nitrate/Nitrite	mg/L	1.2	1.1	1.3	2.2		
Solids, Suspended at 103C	mg/L	10 J(z)	17 J(z)	10 J(z)	10 J(z)		
Solids, Dissolved at 180C	mg/L	580	590	510	510		
Sulfate, Turbidimetric	mg/L	100	110	82	70		

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Water Quality

	SAMPLE ID:	GL63-SW-PC-11	GL63-SW-PC-11FD	GL63-SW-OH-13	GL63-SW-LM-16	GL63-SW-LM-17	GL63-SW-LM-18FD
	DEPTH:	-	-	-	-	-	-
	DATE SAMPLED:	25-AUG-92	25-AUG-92	21-AUG-92	21-AUG-92	21-AUG-92	21-AUG-92
COMPOUND							
Water Quality							
Carbon, Organic	mg/L	17	23				
Alkalinity, Total (as CaCO3)	mg/L	400	370				
COD (O2)	mg/L	59	58				
Chloride	mg/L	95	98				
Nitrate/Nitrite	mg/L	0.2 B	0.2 B				
Solids, Suspended at 103C	mg/L	10 J(h,z)	69 J(h,z)				
Solids, Dissolved at 180C	mg/L	780	780				
Sulfate, Turbidimetric	mg/L	120	120				

CTO 63 - Site Inspection for Pettibone Creek,
Boat Basin, Inner Harbor and Outer Harbor
Naval Training Center
Surface Water - Water Quality

SAMPLE ID:	GL63-SW-LM-18	GL63-SW-LM-19	GL63-SW-LM-20
DEPTH:	-	-	-
DATE SAMPLED:	21-AUG-92	21-AUG-92	21-AUG-92

COMPOUND

APPENDIX B

SEDIMENT CORE LOGS

(Note: The photographs on the core logs in this Appendix will be reproduced in color for the final version of this report)

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. BB-01A

SITE: NTC CTO 63 DATE: 8/21/92

BY: AHMED PROJECT NO. 20612.020

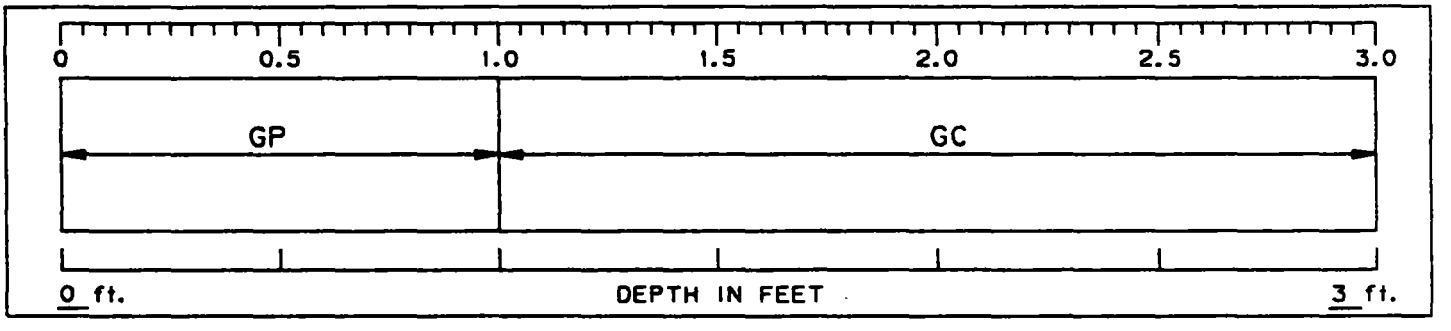
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/21/92
DATE COMPLETE: 8/21/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-1' GP 5YR 2.5/1

1'-3' GC 5YR 2.5/1

% CORE RECOVERY: 95

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. BB-01B

SITE: NTC CTO 63 DATE: 8/21/92

BY: AHMED PROJECT NO. 20612.020

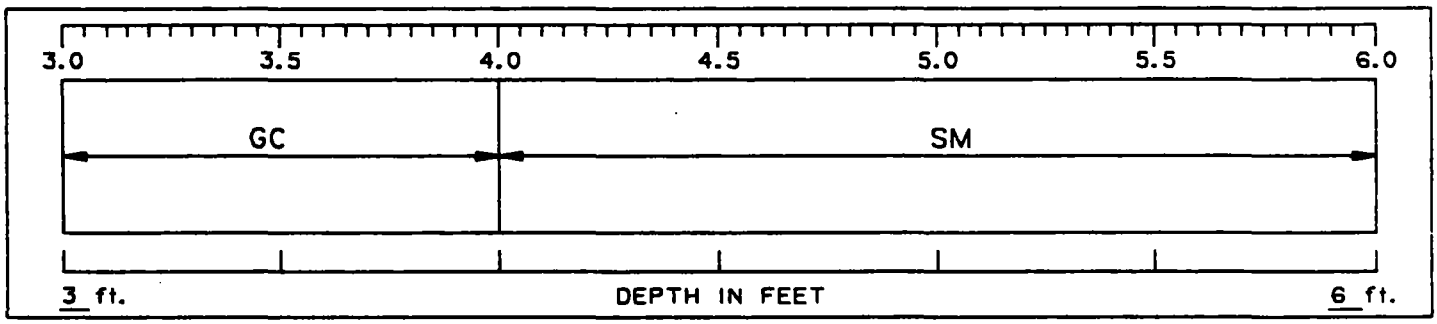
SAMPLE DEPTH 3' TO 6'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/21/92
DATE COMPLETE: 8/21/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 3'-4' GC 5YR 2.5/1

4'-6' SM 5YR 2.5/1

% CORE RECOVERY: 95

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. BB-02A

SITE: NTC CTO 63 DATE: 8/21/92

BY: AHMED PROJECT NO. 20612.020

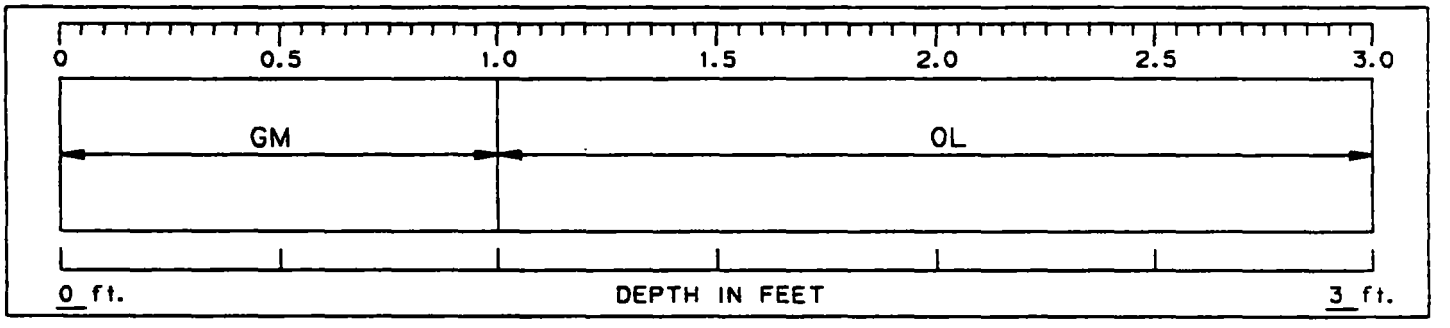
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/21/92
DATE COMPLETE: 8/21/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-1' GM - POORLY GRADED GRAVEL WITH MIXTURE OF SAND/SILT
1'-3' OL - CLAY/SILT, LOW PLASTICITY
WOOD CHIPS, PEBBLES

% CORE RECOVERY: 95

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. BB-028

SITE: NTC CTO 63 DATE: 8/21/92

BY: AHMED PROJECT NO. 20612.020

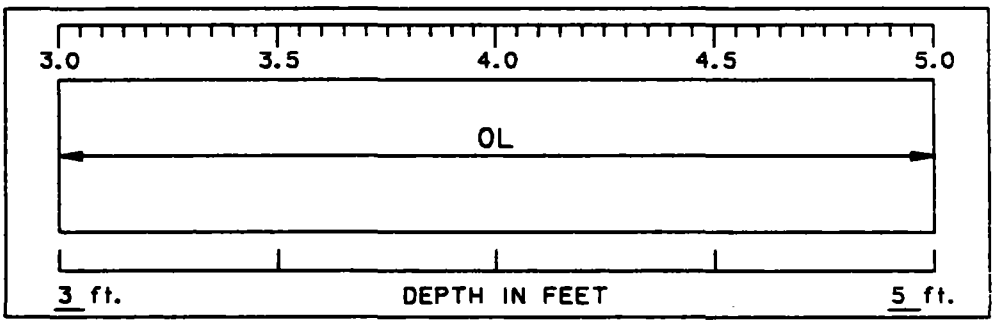
SAMPLE DEPTH 3' TO 5'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/21/92
DATE COMPLETE: 8/21/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 3'-5' OL 5Y 2.5/1

% CORE RECOVERY: 67

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. BB-03A

SITE: NTC CTO 63 DATE: 8/18/92

BY: AHMED PROJECT NO. 20612.020

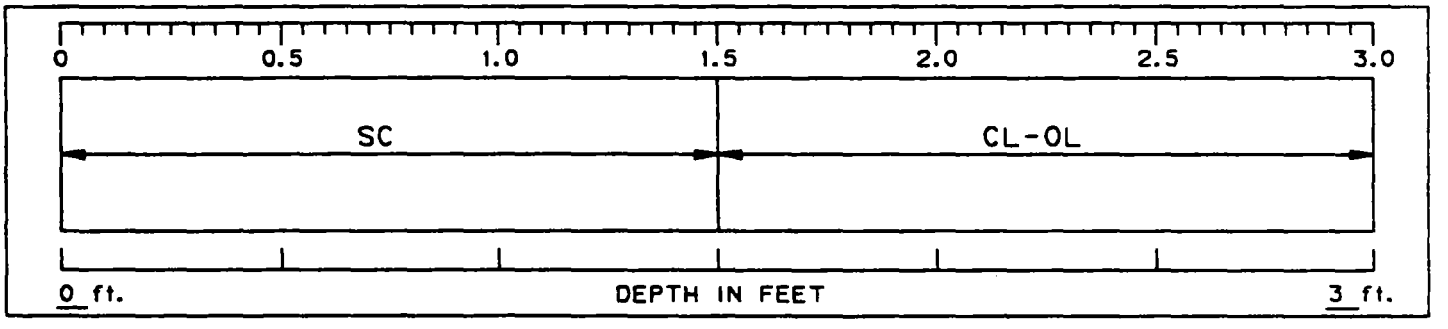
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/18/92
DATE COMPLETE: 8/18/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-1.5' SC 5Y 3/1 TWIGS, LEAVES

1.5'-3' CL-OL

% CORE RECOVERY: 95

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. BB-03B

SITE: NTC CTO 63 DATE: 8/18/92

BY: AHMED PROJECT NO. 20612.020

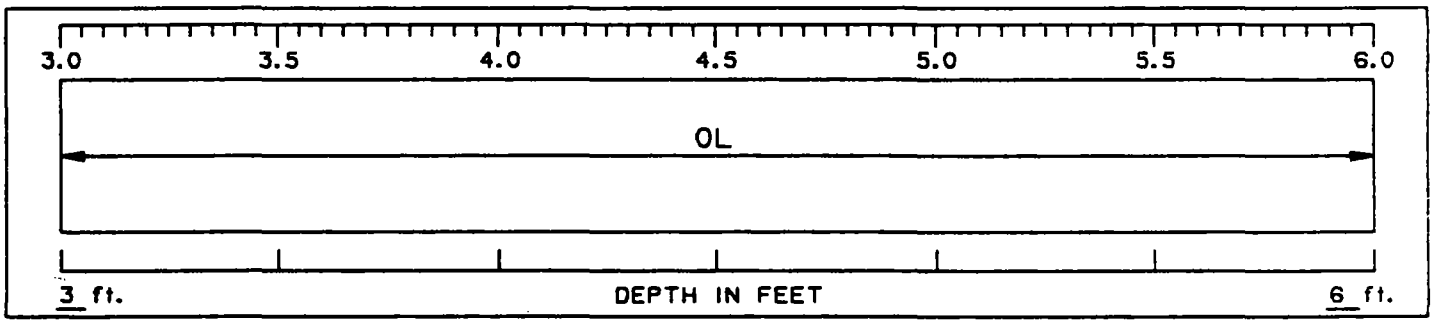
SAMPLE DEPTH 3' TO 6'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/18/92
DATE COMPLETE: 8/18/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 3'-6' OL 5Y 3/1 DARK GREY CLAY

% CORE RECOVERY: 80

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. BB-04A

SITE: NTC CTO 63 DATE: 8/18/92

BY: AHMED PROJECT NO. 20612.020

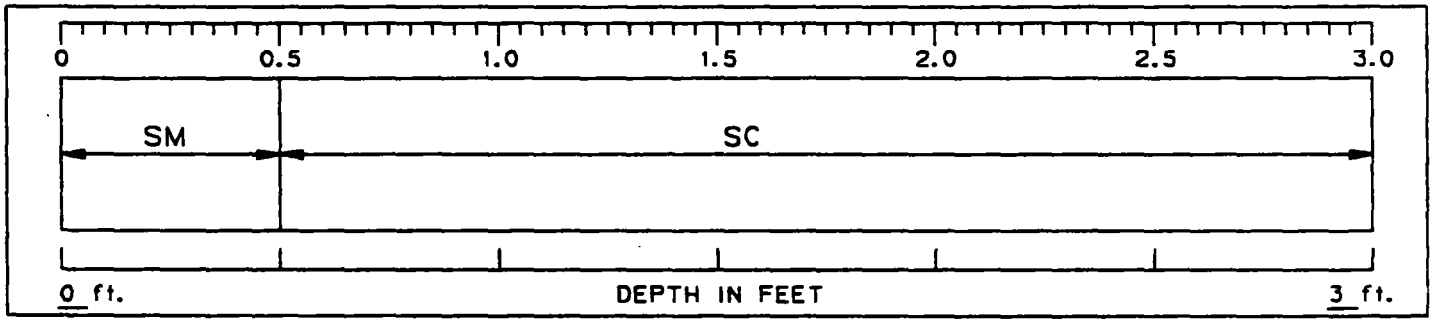
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/18/92
DATE COMPLETE: 8/18/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-0.5' SM 5Y 3/1

0.5'-3' SC 5Y 2.5/2

% CORE RECOVERY: 90

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. BB-048

SITE: NTC CTO 63 DATE: 8/18/92

BY: AHMED PROJECT NO. 20612.020

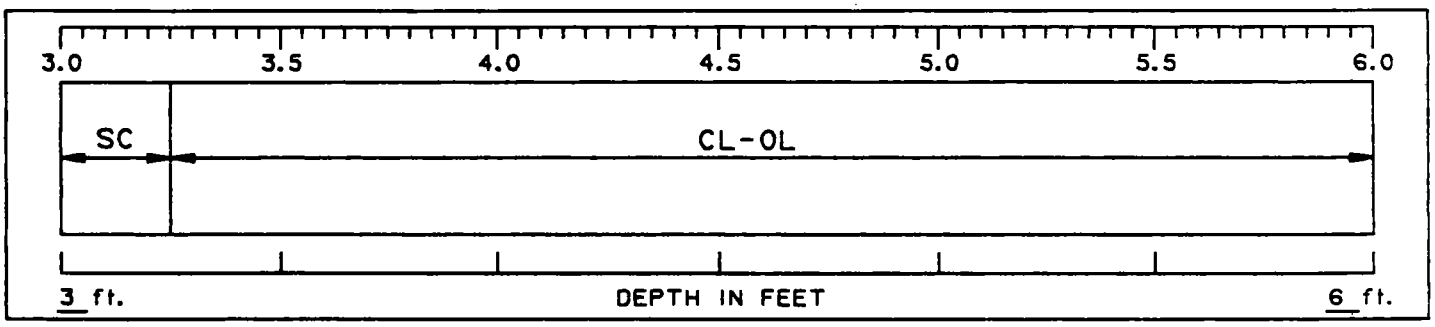
SAMPLE DEPTH 3' TO 6'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/18/92
DATE COMPLETE: 8/18/92

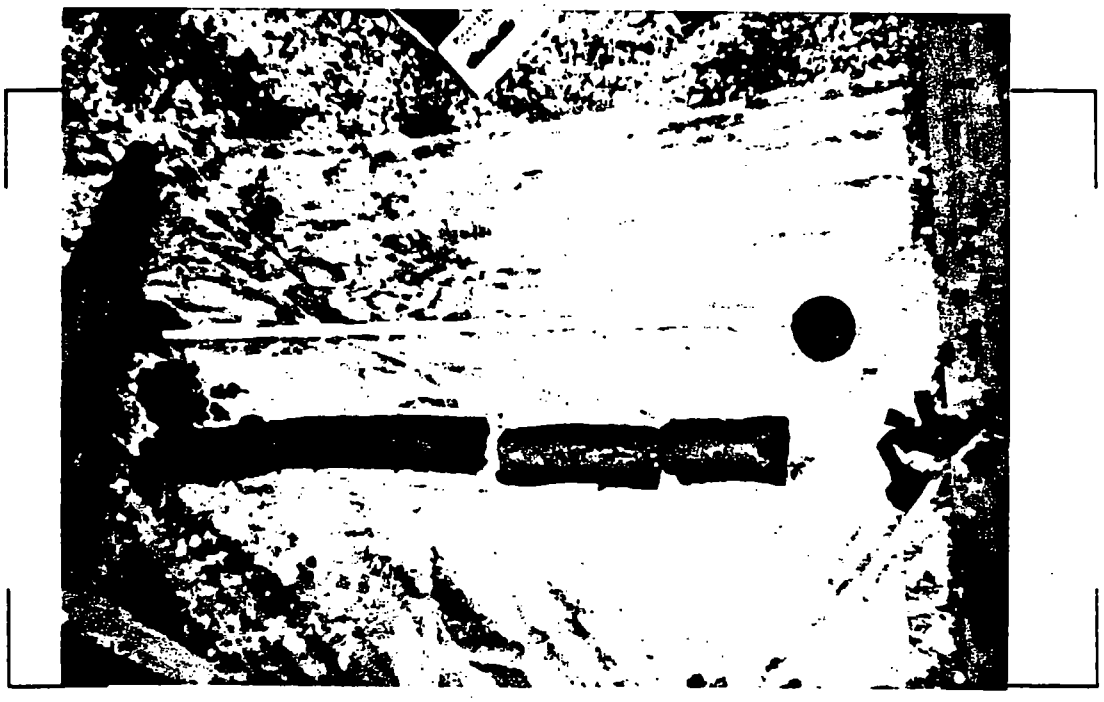
SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 3'-3.25' SC 5Y 3/1

3.25'-6' CL-OL 5Y 3/1

% CORE RECOVERY: 75



RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. IN-05A

SITE: NTC CTO 63 DATE: 8/18/92

BY: AHMED PROJECT NO. 20612.020

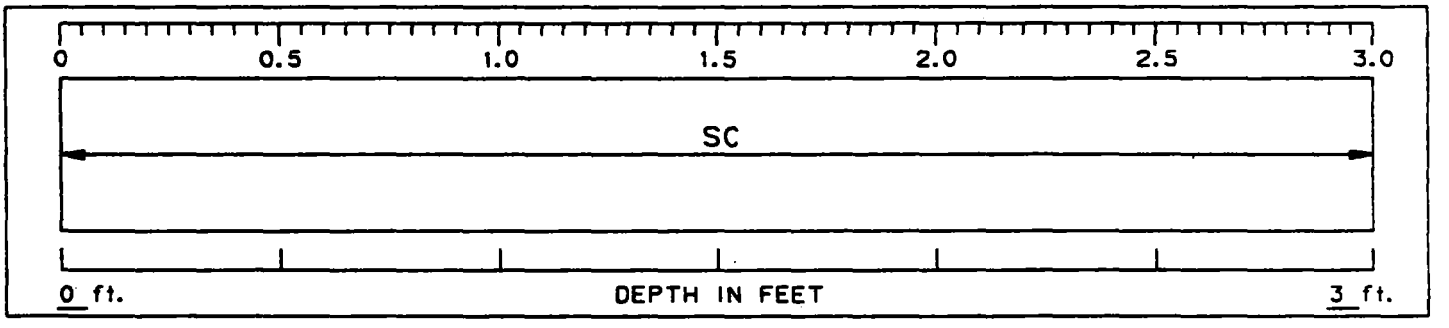
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/18/92
DATE COMPLETE: 8/18/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-3' SC 5Y 3/1

OIL SHEEN VISIBLE FROM 0'-2.8', PETROLEUM ODOR,

HNu 4.2 PPM MAX ABOVE BACKGROUND

% CORE RECOVERY: 90

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. IN-05B

SITE: NTC CTO 63 DATE: 8/18/92

BY: AHMED PROJECT NO. 20612.020

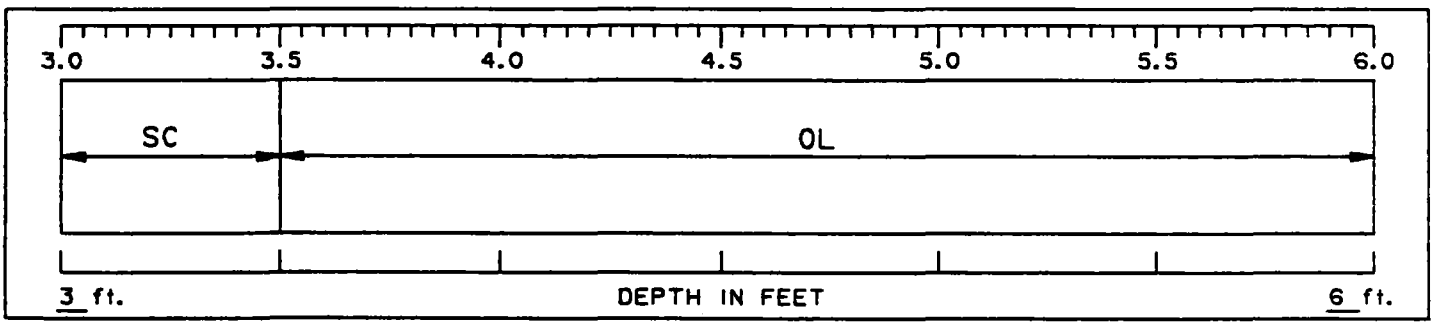
SAMPLE DEPTH 3' TO 6'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/18/92
DATE COMPLETE: 8/18/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 3'-3.5' SC 5Y 3/1

3.5'-6' OL 2.5Y 5/2

NO OIL SHEEN PRESENT, NO HNu READINGS

% CORE RECOVERY: 90

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. IN-06A

SITE: NTC CTO 63 DATE: 8/19/92

BY: AHMED PROJECT NO. 20612.020

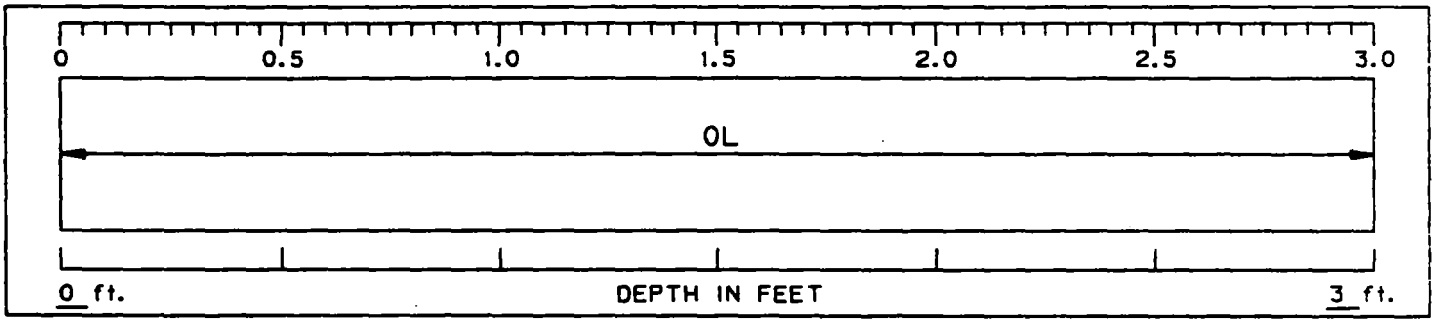
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

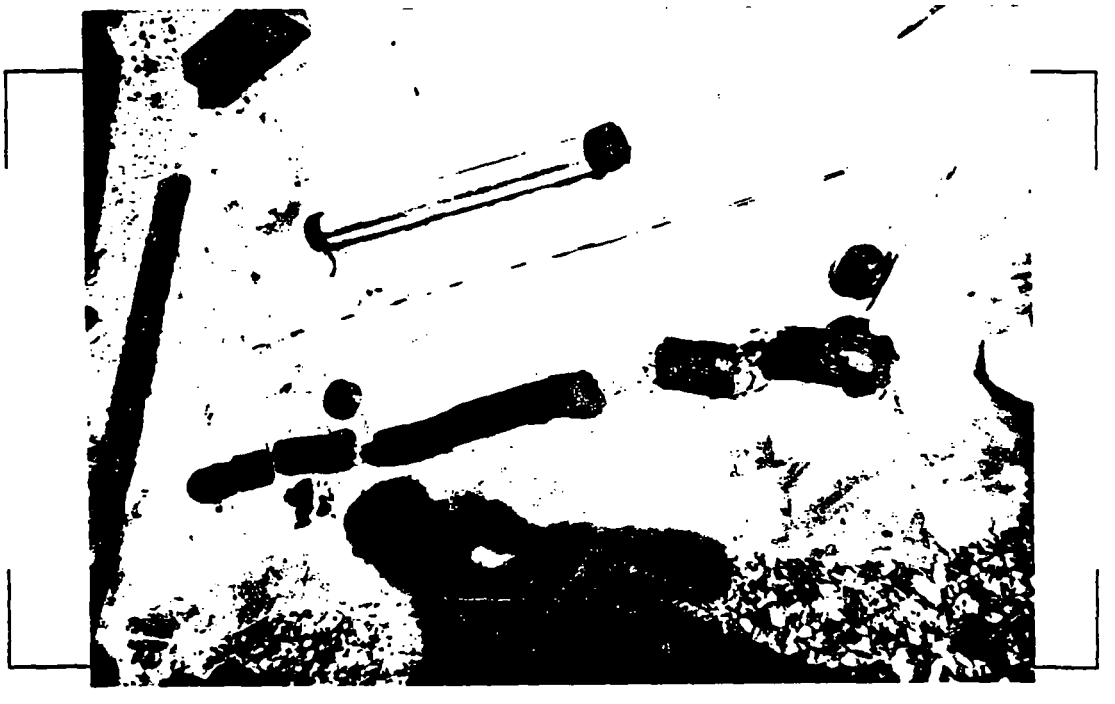
DATE START: 8/19/92
DATE COMPLETE: 8/19/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-3' OL 5Y 2.5/1
ORGANIC SILTS AND ORGANIC SILTY CLAYS, SMALL PEBBLES,
LOW PLASTICITY, GELATINOUS

% CORE RECOVERY: 90



RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. IN-06B

SITE: NTC CTO 63 DATE: 8/19/92

BY: AHMED PROJECT NO. 20612.020

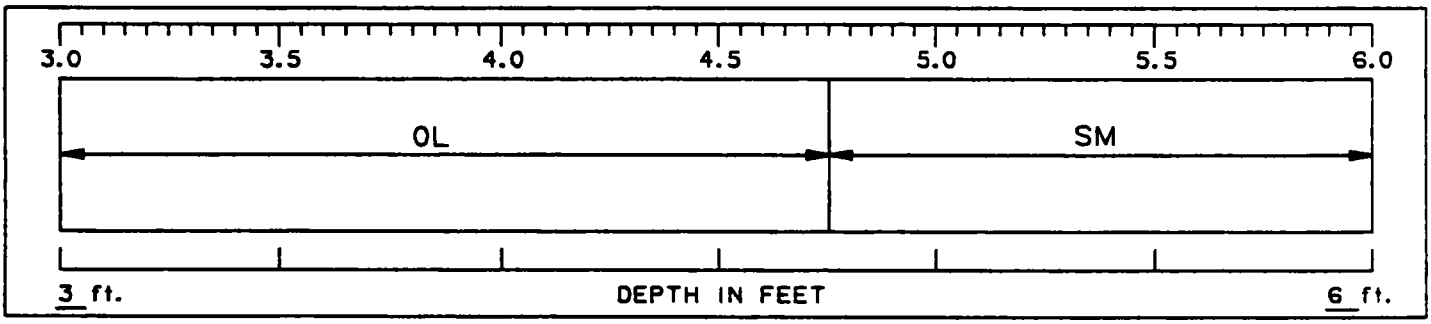
SAMPLE DEPTH 3' TO 6'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/19/92
DATE COMPLETE: 8/19/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 3'-4.7' OL 5Y 2.5/1 LOW PLASTICITY

4.7'-6' SM

% CORE RECOVERY: 80

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. IN-07A

SITE: NTC CTO 63 DATE: 8/18/92

BY: AHMED PROJECT NO. 20612.020

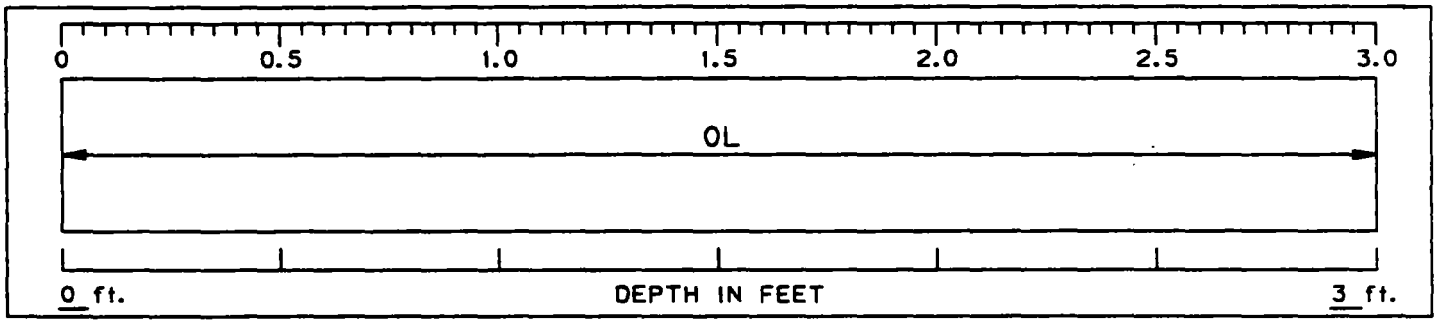
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

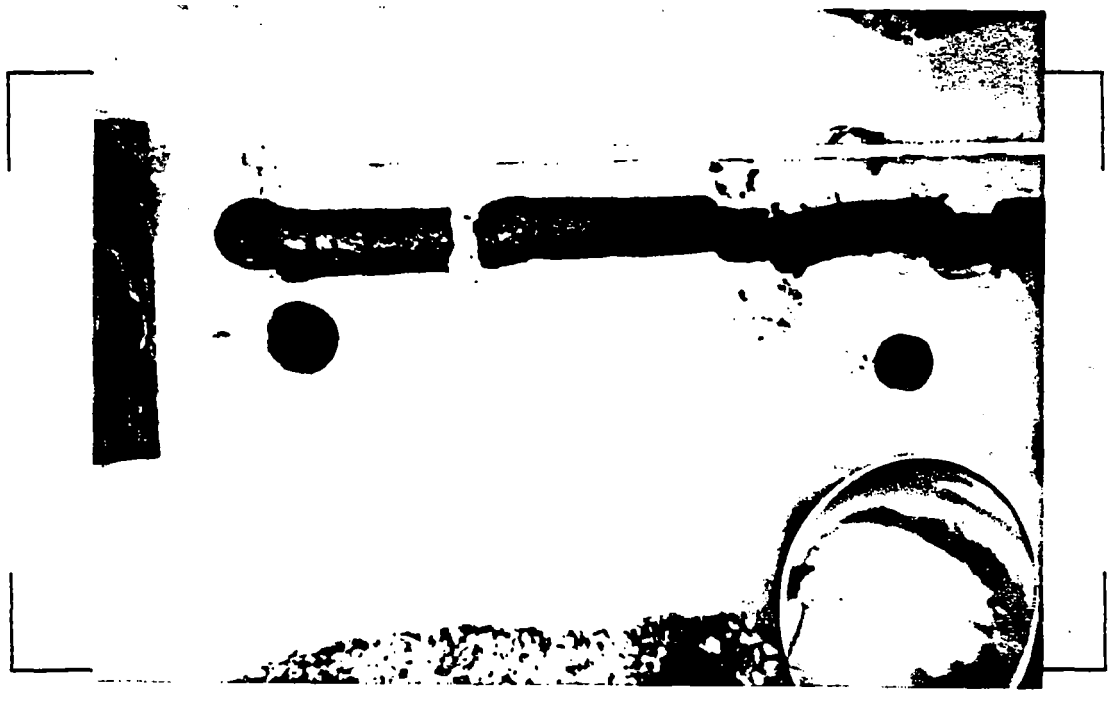
DATE START: 8/18/92
DATE COMPLETE: 8/18/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-3' OL 5Y 3/1

% CORE RECOVERY: 95



RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. IN-07B

SITE: NTC CTO 63 DATE: 8/18/92

BY: AHMED PROJECT NO. 20612.020

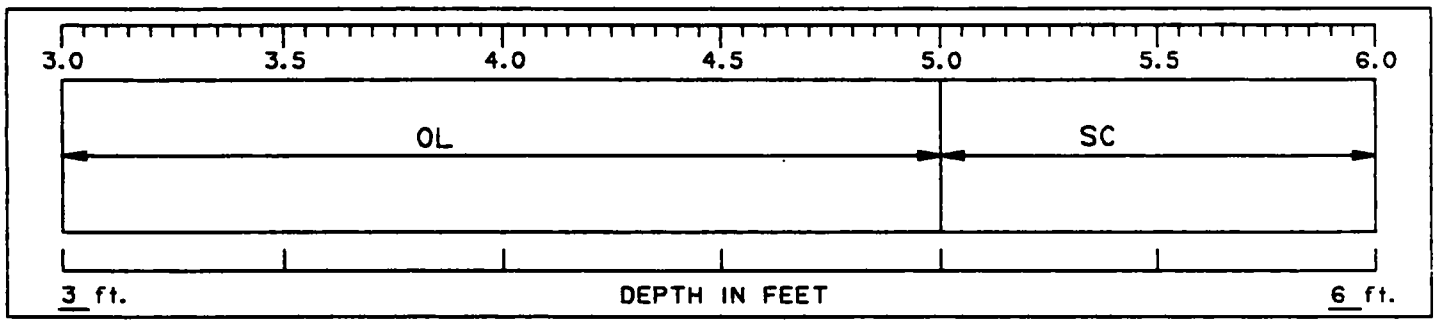
SAMPLE DEPTH 3' TO 6'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/18/92
DATE COMPLETE: 8/18/92

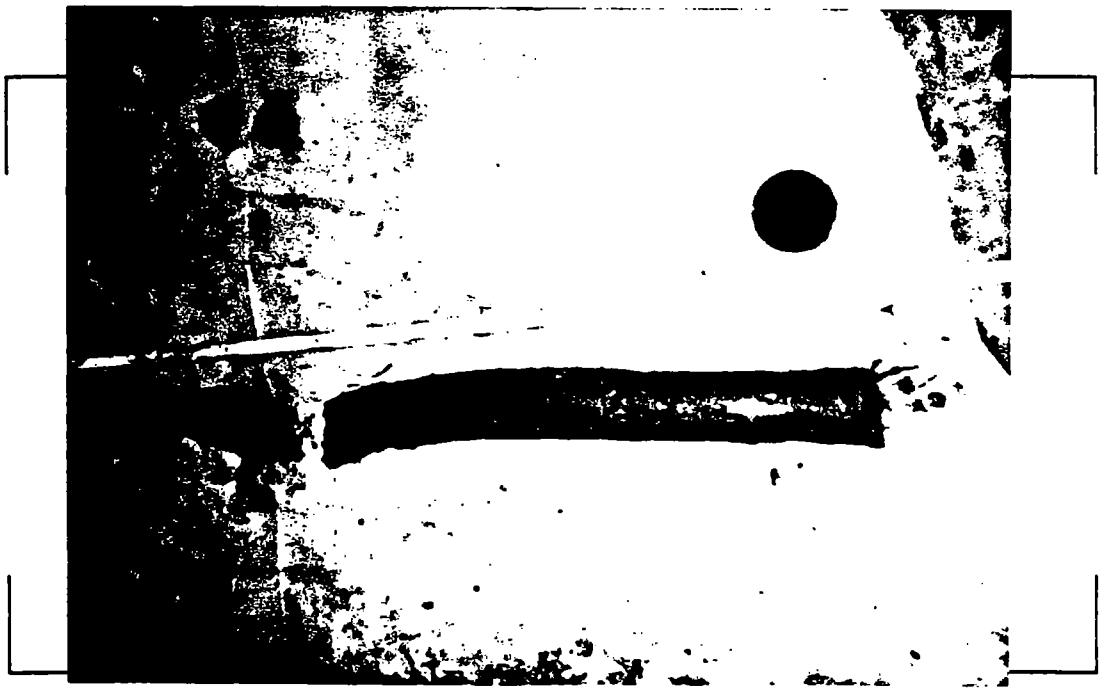
SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 3'-5' OL 5Y 3/1

5'-6' SC 10YR 6/2

% CORE RECOVERY: 95



RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. IN-08A

SITE: NTC CTO 63 DATE: 8/19/92

BY: AHMED PROJECT NO. 20612.020

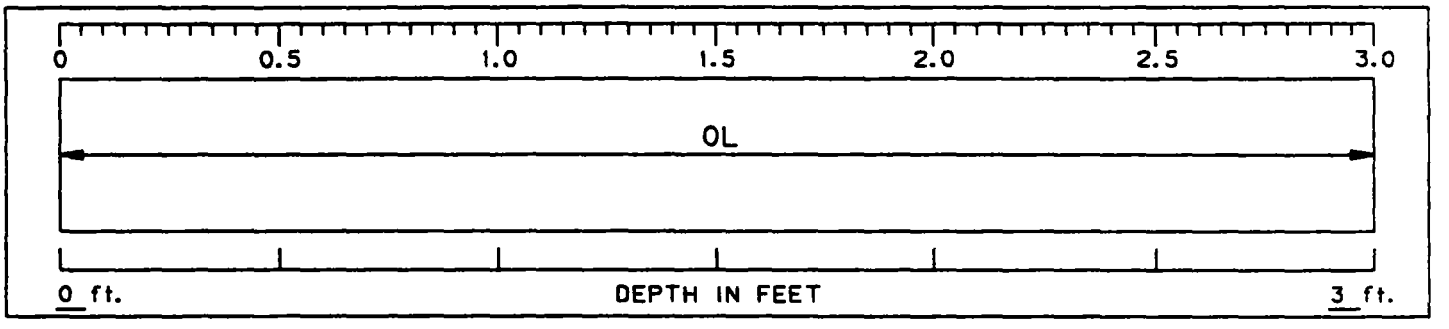
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/19/92
DATE COMPLETE: 8/19/92

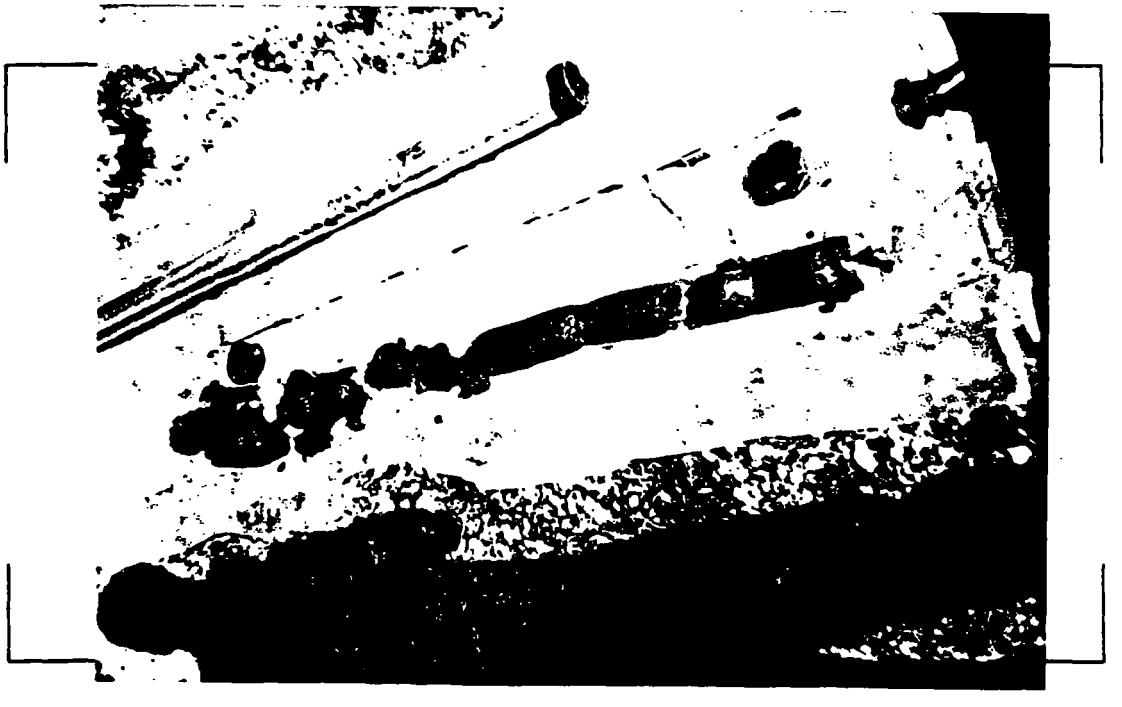
SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-3' OL 5Y 2.5/1

GELATINOUS, LEAF AT 2.5'

% CORE RECOVERY: 95



RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. IN-08B

SITE: NTC CTO 63 DATE: 8/19/92

BY: AHMED PROJECT NO. 20612.020

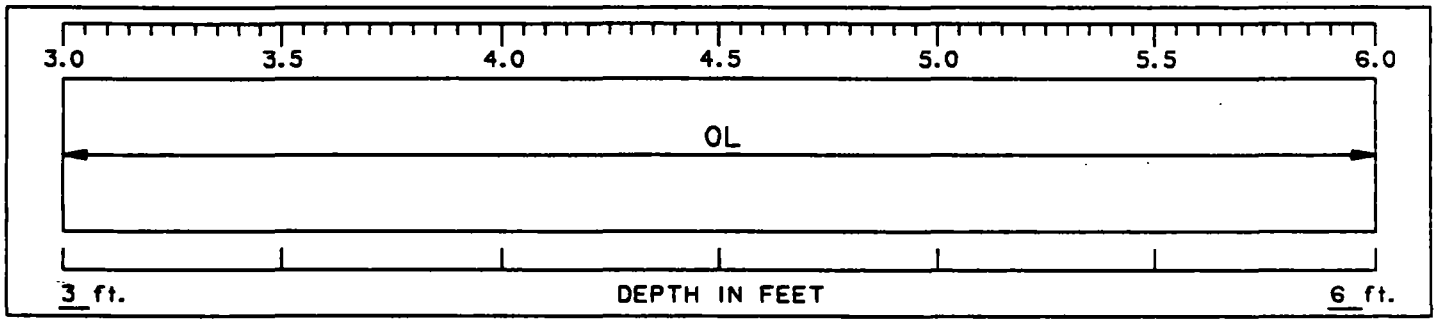
SAMPLE DEPTH 3' TO 6'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/19/92
DATE COMPLETE: 8/19/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 3'-6' OL 5Y 2.5/1

GELATINOUS, LOW PLASTICITY

% CORE RECOVERY: 95

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. OH-09A

SITE: NTC CTO 63 DATE: 8/20/92

BY: AHMED PROJECT NO. 20612.020

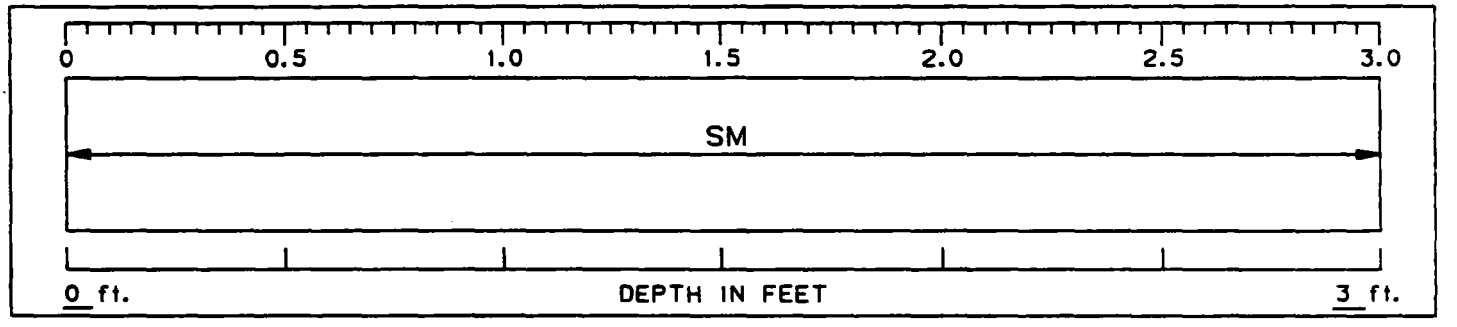
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/20/92
DATE COMPLETE: 8/20/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-3' SM 5Y 4/1

SAND/SILT MIXTURE, MOSTLY SAND, NOT PLASTIC

NOTE: DUE TO VIBRO CORE REFUSAL, A 3'-6' SAMPLE WAS NOT COLLECTED

% CORE RECOVERY: 67

SEDIMENT CORE PHOTOGRAPH

NOT TAKEN

CAMERA IN CORING VESSEL

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. 0H-10A

SITE: NTC CTO 63 DATE: 8/19/92

BY: AHMED PROJECT NO. 20612.020

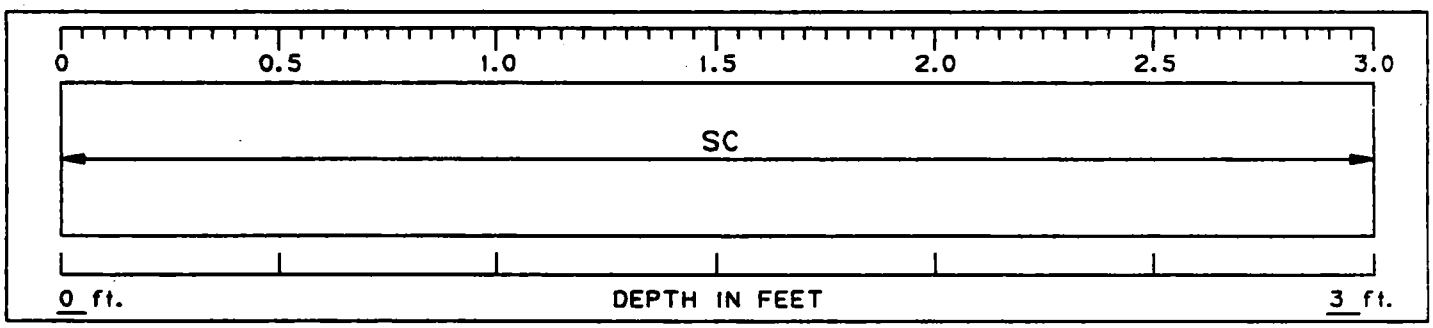
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

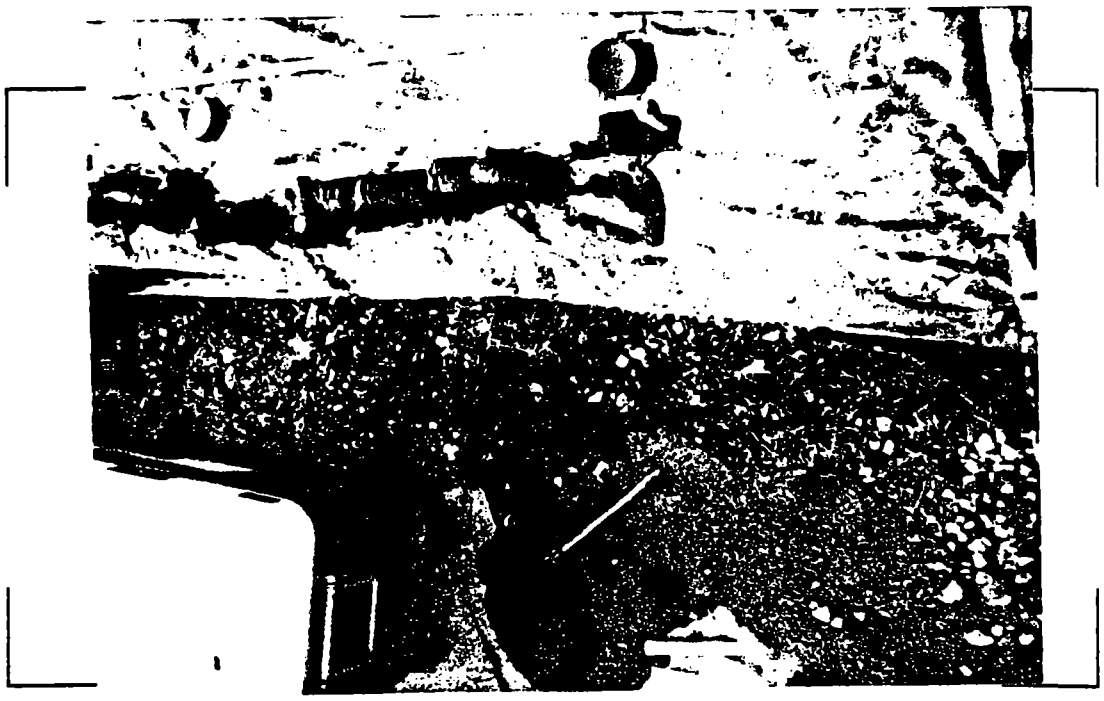
DATE START: 8/19/92
DATE COMPLETE: 8/19/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-3' SC 5Y 3/1 LOW PLASTICITY

% CORE RECOVERY: 95



RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. OH-10B

SITE: NTC CTO 63 DATE: 8/19/92

BY: AHMED PROJECT NO. 20612.020

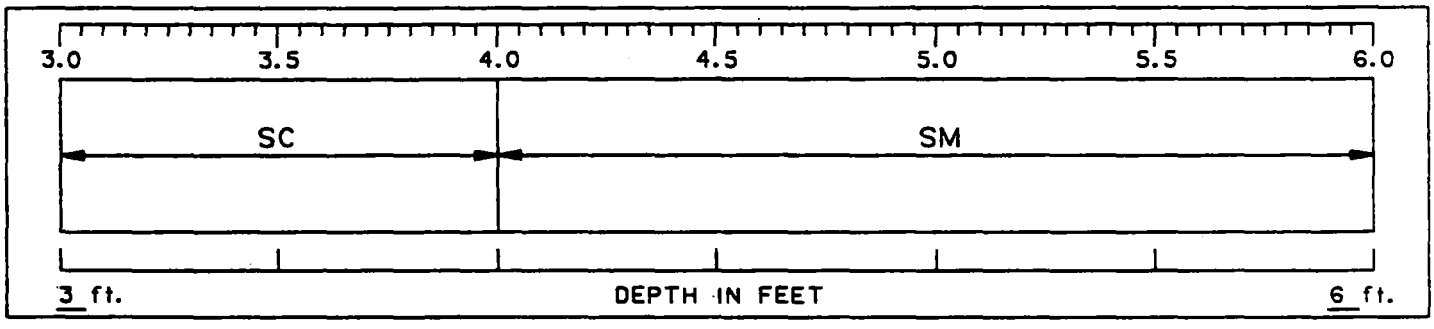
SAMPLE DEPTH 3' TO 6'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/19/92
DATE COMPLETE: 8/19/92

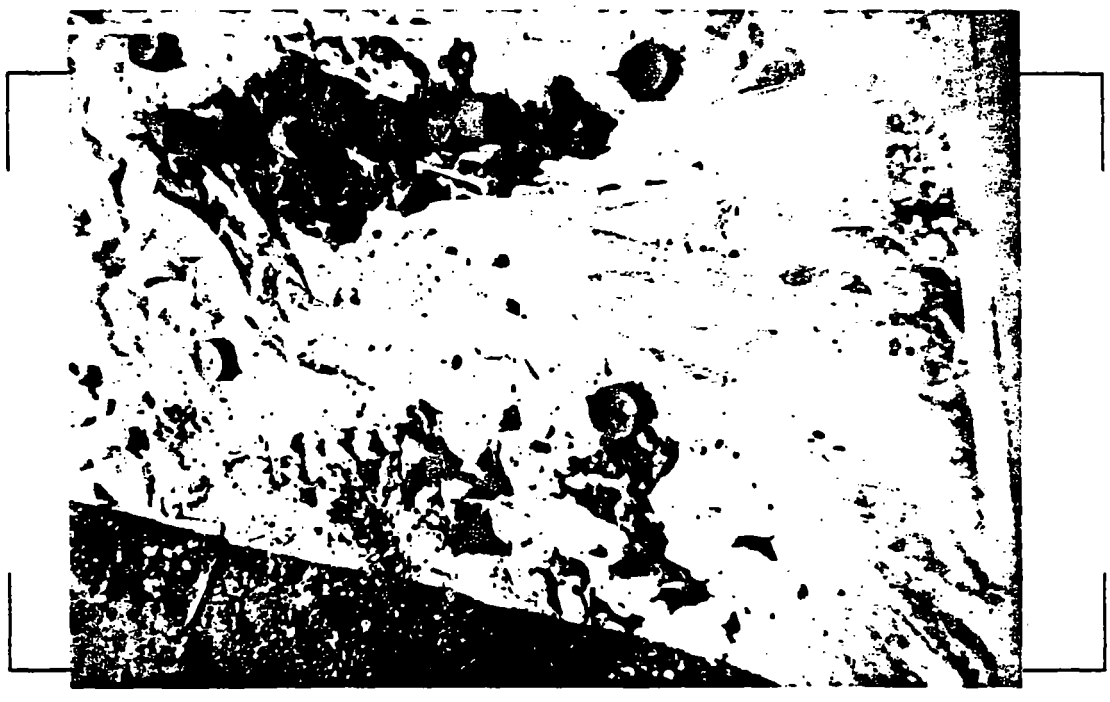
SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 3'-4' SC 5Y 2.5/1 CLAYEY SEDIMENT MIXED WITH SAND, LOW PLASTICITY

4'-6' SM 5Y 4/1 SAND/SILT

% CORE RECOVERY: 90



RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. OH-11A

SITE: NTC CTO 63 DATE: 8/19/92

BY: AHMED PROJECT NO. 20612.020

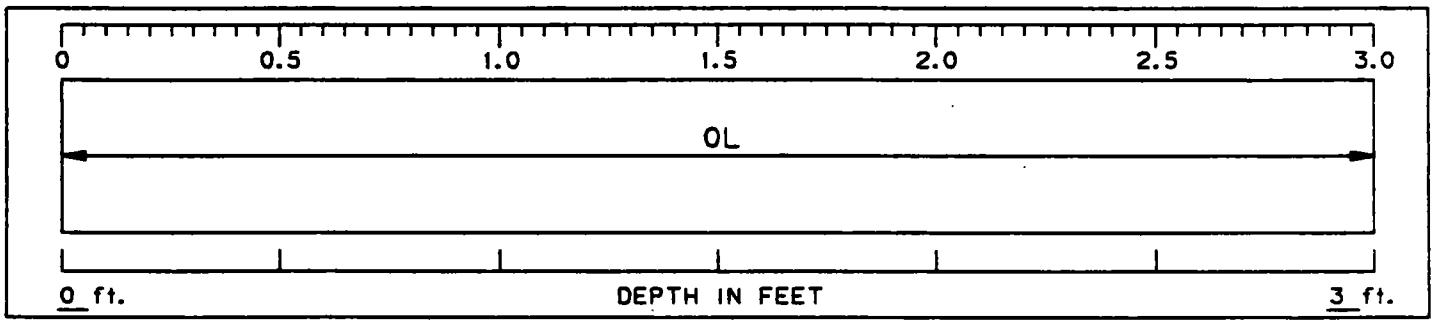
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/19/92
DATE COMPLETE: 8/19/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-3' OL 5Y 2.5/1 CLAYEY SEDIMENT, LOW PLASTICITY

% CORE RECOVERY: 95

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. OH-11B

SITE: NTC CTO 63 DATE: 8/19/92

BY: AHMED PROJECT NO. 20612.020

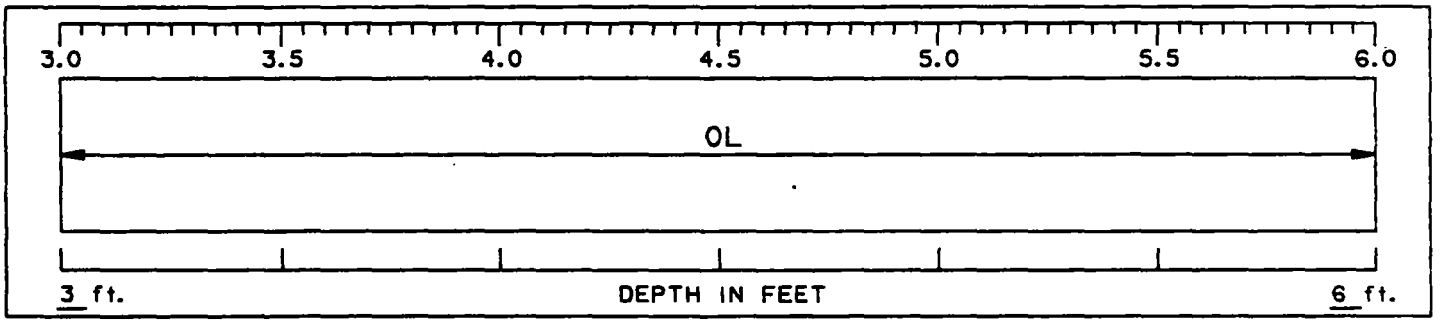
SAMPLE DEPTH 3' TO 6'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/19/92
DATE COMPLETE: 8/19/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 3'-6' OL 5Y 2.5/1

% CORE RECOVERY: 95

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. OH-12A

SITE: NTC CTO 63 DATE: 8/21/92

BY: AHMED PROJECT NO. 20612.020

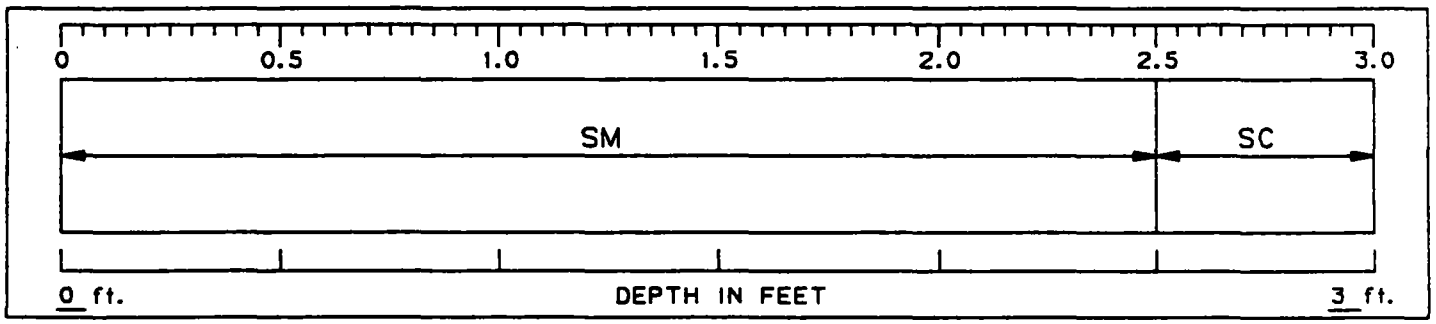
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/21/92
DATE COMPLETE: 8/21/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-2.5' SM 5Y 4/1

2.5'-3' SC 5Y 3/1

% CORE RECOVERY: 90

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. OH-12B

SITE: NTC CTO 63 DATE: 8/21/92

BY: AHMED PROJECT NO. 20612.020

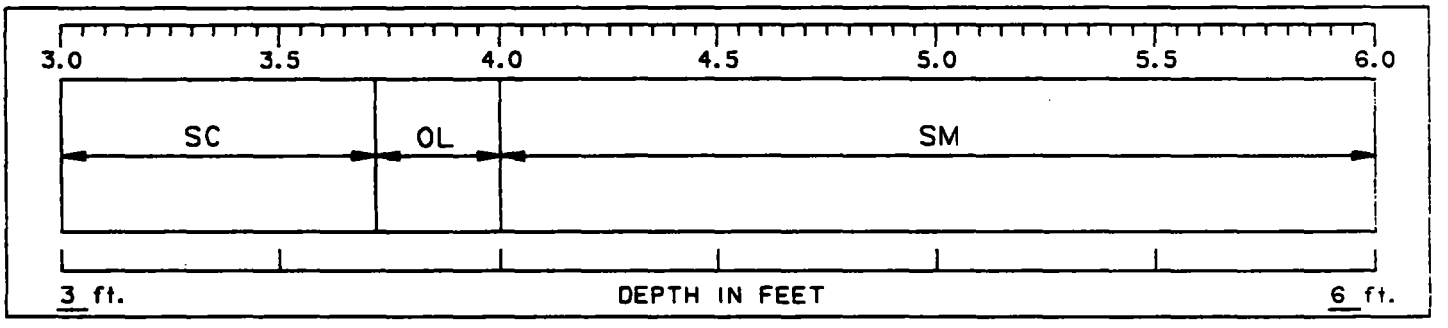
SAMPLE DEPTH 3' TO 6'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/21/92
DATE COMPLETE: 8/21/92

SEDIMENT CORE SKETCH

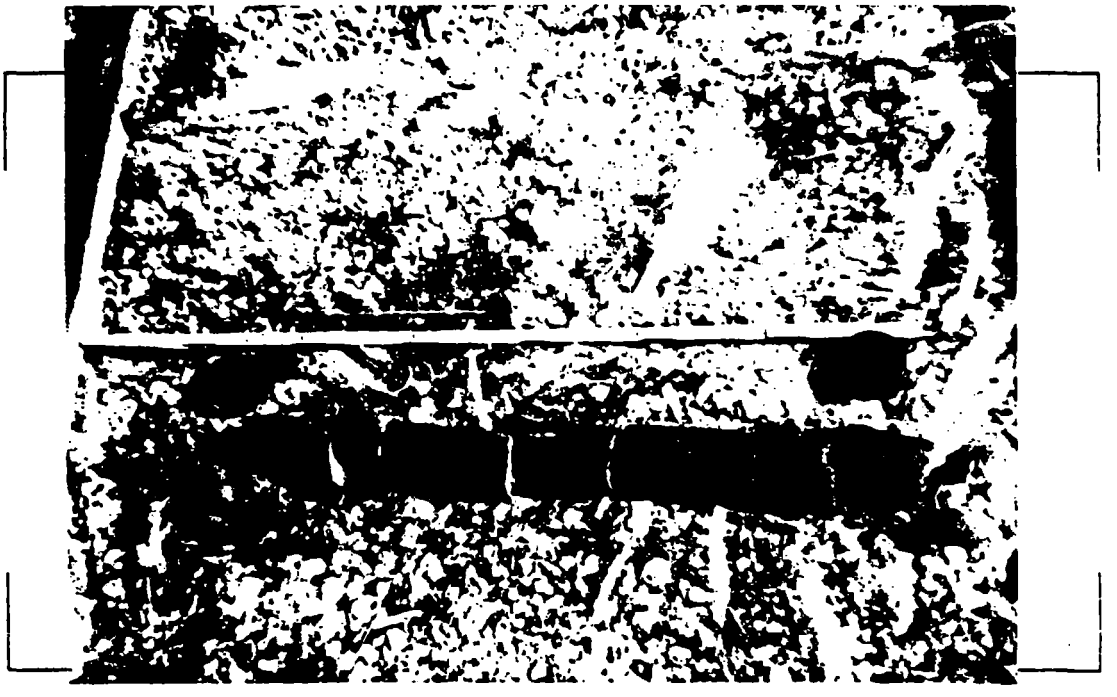


SEDIMENT CORE DESCRIPTION: 3'-3.7' SC 5Y 3/1

3.7'-4' OL

4'-6' SM 5Y 5/1

% CORE RECOVERY: 95



RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. OH-13A

SITE: NTC CTO 63 DATE: 8/20/92

BY: AHMED PROJECT NO. 20612.020

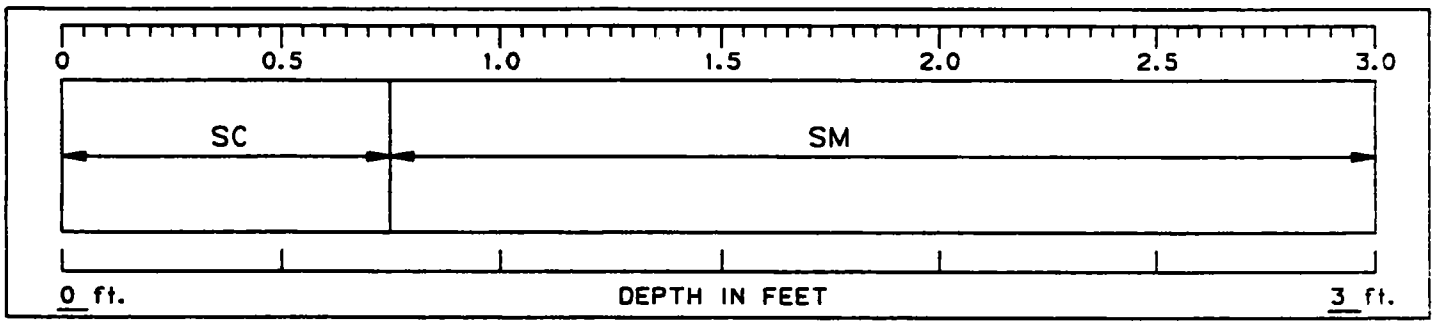
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/20/92
DATE COMPLETE: 8/20/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-0.75' SC 5Y 3/1

0.75'-3' SM 5Y 5/2

% CORE RECOVERY: 95

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. OH-13B

SITE: NTC CTO 63 DATE: 8/20/92

BY: AHMED PROJECT NO. 20612.020

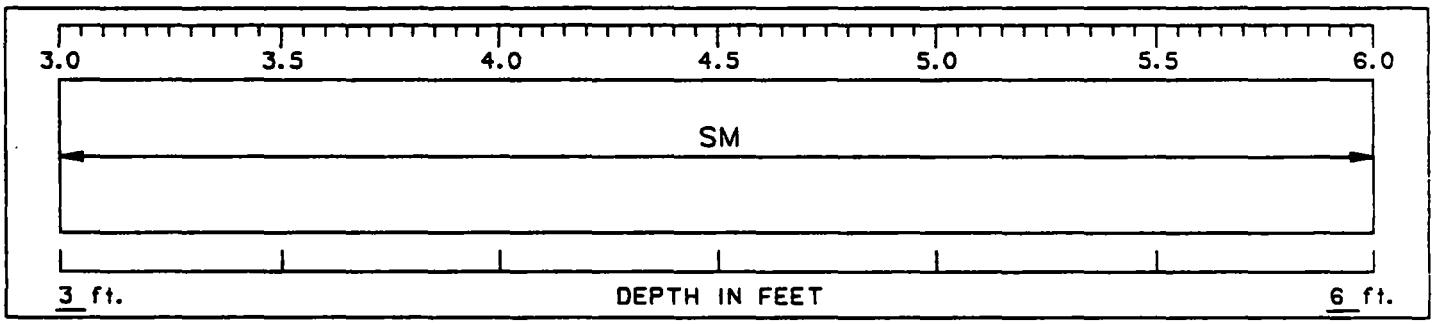
SAMPLE DEPTH 3' TO 6'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/20/92
DATE COMPLETE: 8/20/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 3'-6' SM 5Y 5/2

% CORE RECOVERY: 95

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. OH-14A

SITE: NTC CTO 63 DATE: 8/19/92

BY: AHMED PROJECT NO. 20612.020

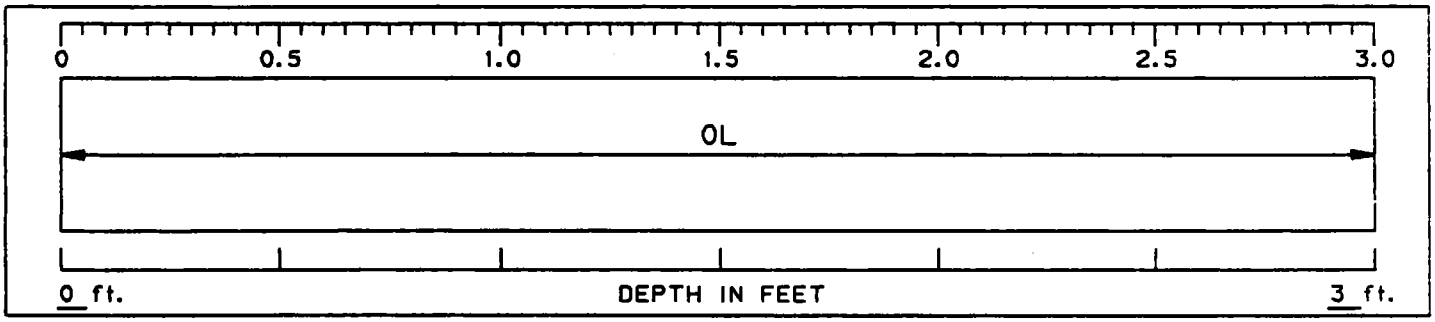
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

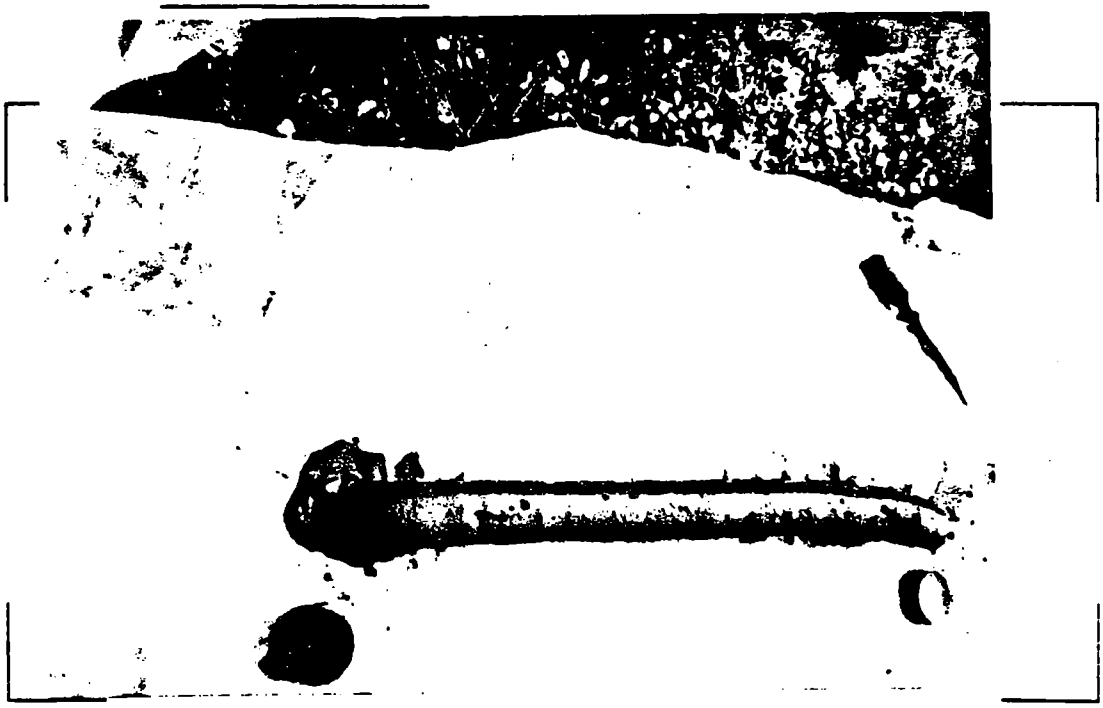
DATE START: 8/19/92
DATE COMPLETE: 8/19/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-3' OL 5Y 2.5/1

% CORE RECOVERY: 90



RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. OH-14B

SITE: NTC CTO 63 DATE: 8/19/92

BY: AHMED PROJECT NO. 20612.020

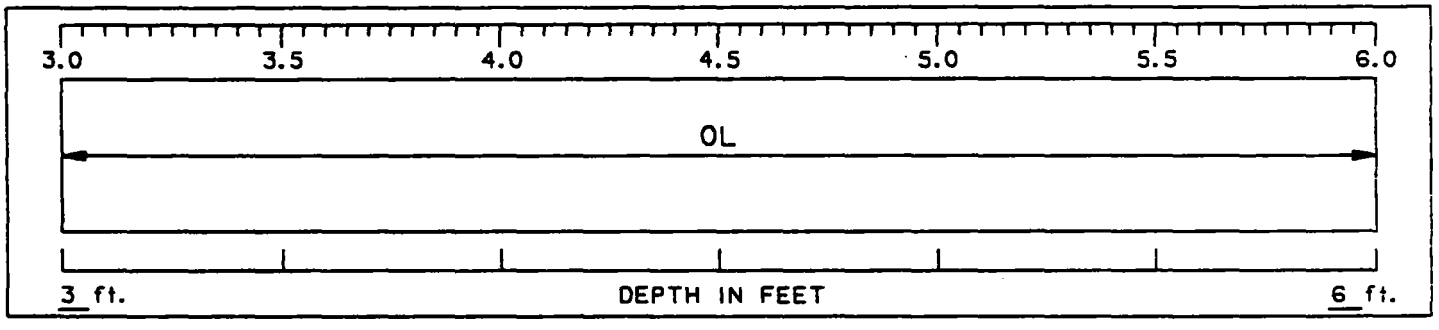
SAMPLE DEPTH 3' TO 6'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/19/92
DATE COMPLETE: 8/19/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 3'-6' OL 5Y 2.5/1

% CORE RECOVERY: 95

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. LM-15A

SITE: NTC CTO 63 DATE: 8/21/92

BY: AHMED PROJECT NO. 20612.020

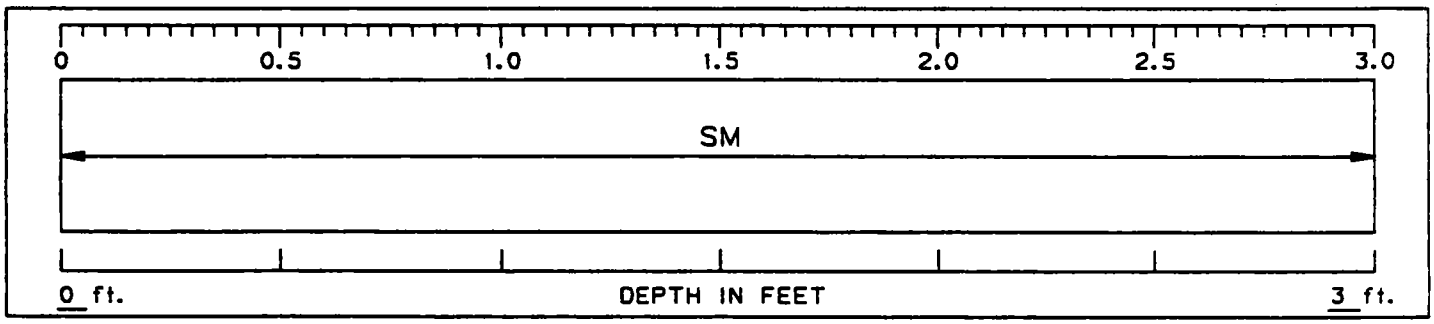
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/21/92
DATE COMPLETE: 8/21/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-3' SM 5Y 6/2 INTERMINGLED WITH 5Y 3/1

% CORE RECOVERY: 95

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. LM-16A

SITE: NTC CTO 63 DATE: 8/21/92

BY: AHMED PROJECT NO. 20612.020

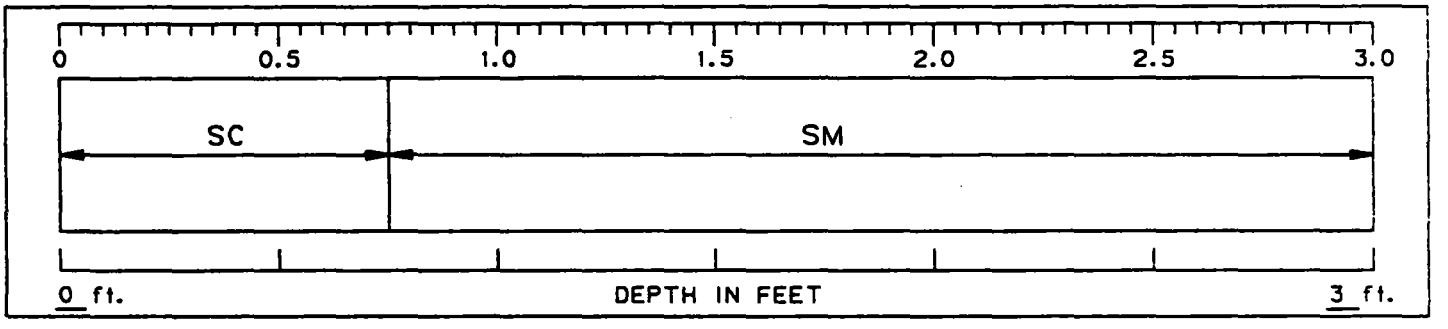
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/21/92
DATE COMPLETE: 8/21/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-0.7' SC 5Y 3/1

0.7'-3' SM 5Y 5/2

% CORE RECOVERY: 95

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. LM-17A

SITE: NTC CTO 63 DATE: 8/21/92

BY: AHMED PROJECT NO. 20612.020

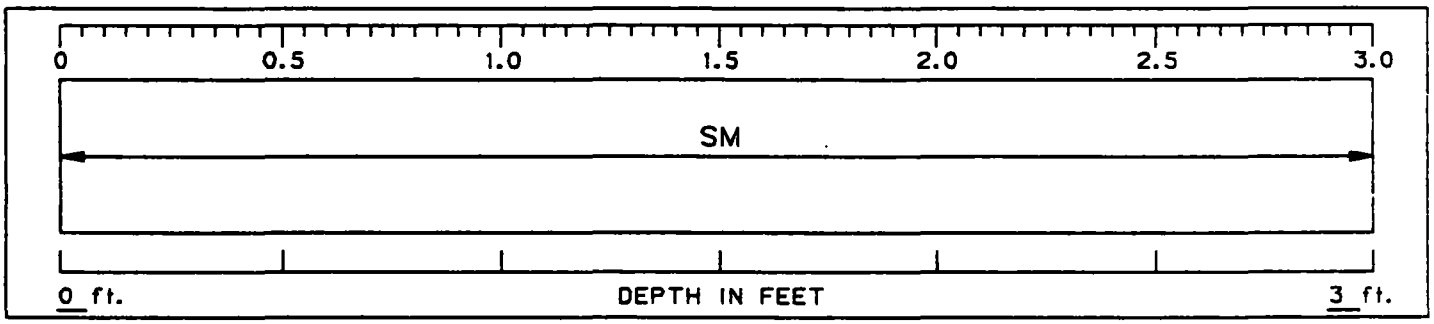
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/21/92
DATE COMPLETE: 8/21/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-3' SM 5Y 5/1

% CORE RECOVERY: 95

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. LM-18A

SITE: NTC CTO 63 DATE: 8/21/92

BY: AHMED PROJECT NO. 20612.020

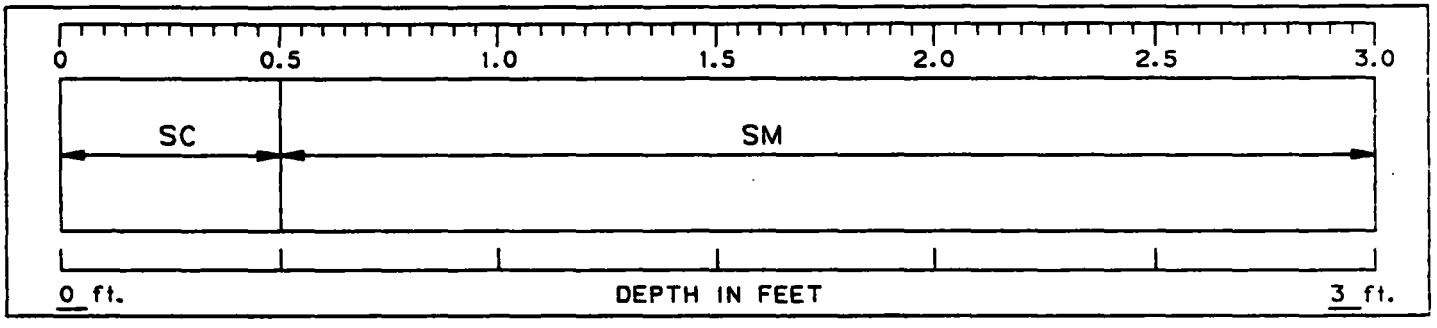
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/21/92
DATE COMPLETE: 8/21/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-0.5' SC 5Y 2.5/1

0.5'-3' SM 5Y 5/1

% CORE RECOVERY: 95

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. LM-19A

SITE: NTC CTO 63 DATE: 8/21/92

BY: AHMED PROJECT NO. 20612.020

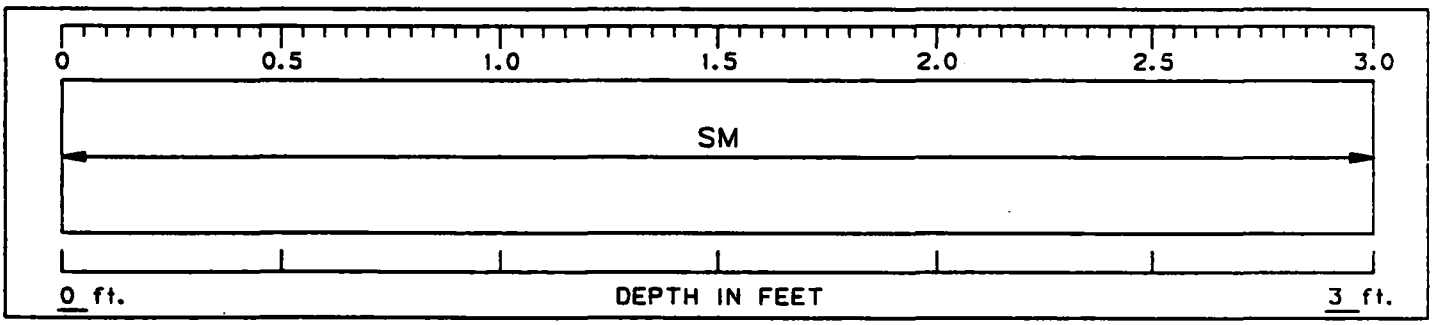
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/21/92
DATE COMPLETE: 8/21/92

SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-3' SM 5Y 5/1

% CORE RECOVERY: 95

RUST ENVIRONMENT & INFRASTRUCTURE

SEDIMENT CORE LOG

CORE NO. LM-20A

SITE: NTC CTO 63 DATE: 8/21/92

BY: AHMED PROJECT NO. 20612.020

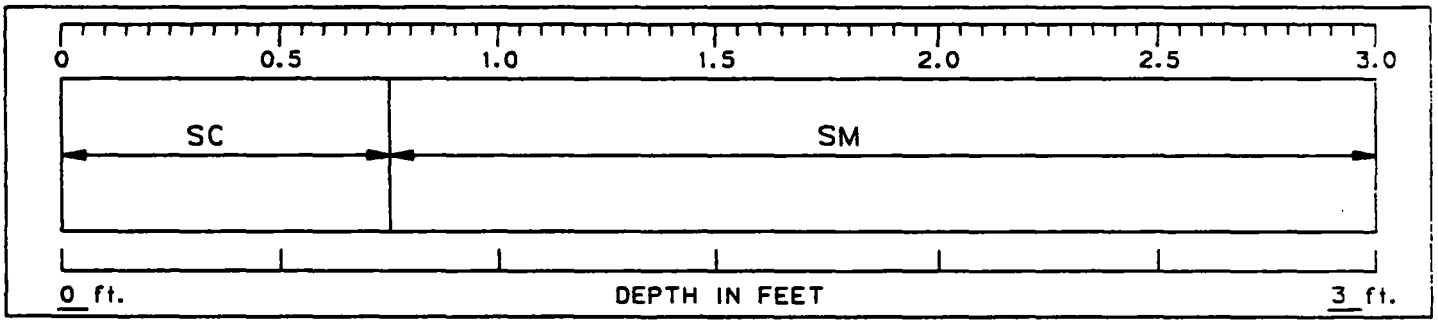
SAMPLE DEPTH 0' TO 3'

DRILLING METHOD: VIBRO CORE
CORING FOREMAN: S GADOMSKI
ASSISTANT: S. NICHOLS

SAMPLE TYPE: VIBRO CORE
LOG BY: Z. AHMED

DATE START: 8/21/92
DATE COMPLETE: 8/21/92

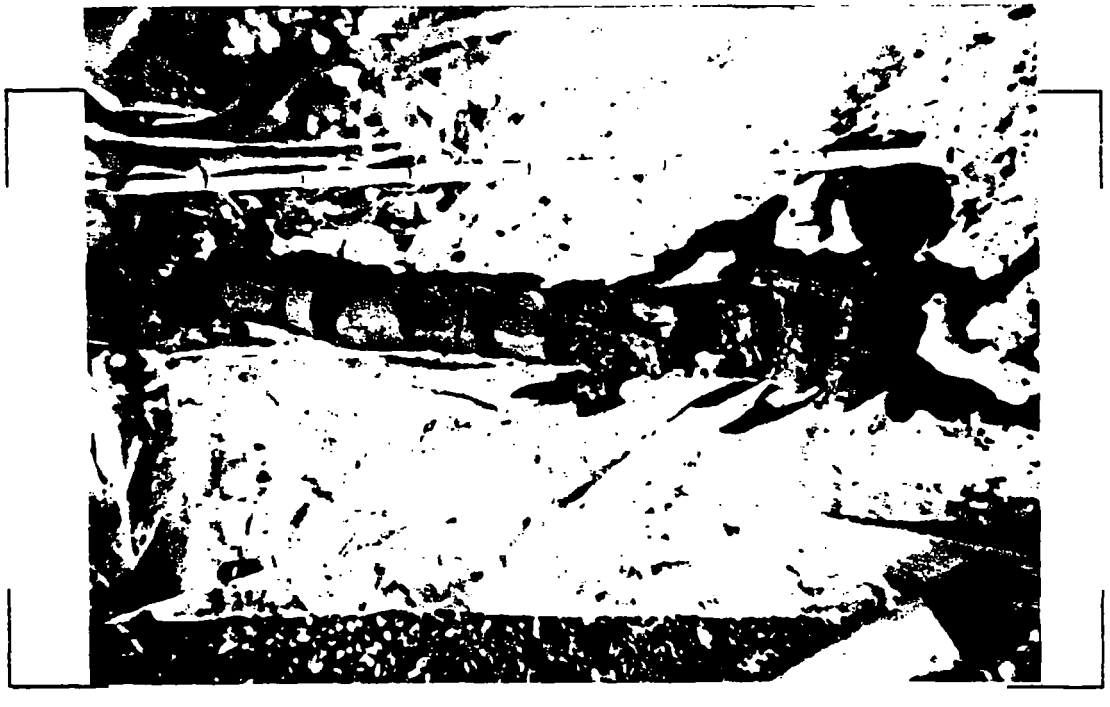
SEDIMENT CORE SKETCH



SEDIMENT CORE DESCRIPTION: 0'-0.75' SC 5Y 5/3

0.75'-3' SM 5Y 5/1

% CORE RECOVERY: 90



APPENDIX C

SURFACE WATER QUALITY DATA

SURFACE WATER QUALITY FOR PETTIBONE CREEK
SITE INSPECTION AT PETTIBONE CREEK, BOAT BASIN
AND HARBOR AREAS
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS
MARCH 1993

SAMPLE NUMBER

PARAMETERS	GL63-SW-PC-01	GL63-SW-PC-02	GL63-SW-PC-03	GL63-SW-PC-04	GL63-SW-PC-05	GL63-SW-PC-06
pH	7.32	7.74	7.0	6.5	8.07	8.01
Temperature (°F)	80.6	79.4	70.2	67.3	70.6	72.1
Conductivity (uS)	823	707	426	502	866	579
Turbidity (NTU)	16.12	10.93	30.00	43.00	13.67	5.18

SURFACE WATER QUALITY FOR PETTIBONE CREEK
SITE INSPECTION AT PETTIBONE CREEK, BOAT BASIN
AND HARBOR AREAS
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS
MARCH 1993

SAMPLE NUMBER

PARAMETERS	GL63-SW-PC-07	GL63-SW-PC-08	GL63-SW-PC-09	GL63-SW-PC-10	GL63-SW-PC-11
pH	8.11	8.08	8.46	7.54	8.25
Temperature (°F)	78.2	75.3	58.6	64.0	70.1
Conductivity	905	882	574	600	827
Turbidity (NTU)	7.89	18.50	3.69	10.40	1.76

R/63SIRD/AB5

Donohue

Engineers & Architects & Scientists

WATER QUALITY PROFILE FORM

Site: CTO 63 Date: 08-19-92

By: Zafar Ahmed Project No.: 20612.020

Sample Location Number: SW - BB - 01

Loran-C Coor. _____ Lat. _____ Long.

Initial Loran-C Coor: _____ Lat. _____ Long.

Final Loran-C Coor: _____ Lat. _____ Long.

Start Time: 1440:00

End Time: _____

Water Depth: 1.2'

Lake Conditions: _____

Reading Depth	Temperature	pH	Dissolved Oxygen	Conductivity	Turbidity	Comments
Surface	73.8	8.93	NOT TAKEN	549 µS/cm	31.5 NTU	

Donohue

WATER QUALITY PROFILE FORM

Site: CTO 63 Date: 8/17/92

By: SCHAEFER Project No.: 20612.020

Sample Location Number: SW-BB-03

Loran-C Coor: _____ Lat. _____ Long.

Engineers & Architects & Scientists

Initial Loran-C Coor: _____ Lat. _____ Long.

Final Loran-C Coor: _____ Lat. _____ Long.

Start Time: 17:36:26

End Time: 17:39:52

Water Depth: 13.103'

Lake Conditions: _____

Reading Depth (ft)	Temperature °F	pH	Dissolved Oxygen mg/L	Conductivity S/m		Comments
0.39	68.7454	8.340	8.435	0.003084		TURBIDITY @ SURFACE:
1.19	68.7726	8.335	8.240	0.021410		13.07 NTU
2.454	68.7467	8.346	8.296	0.028936		
3.186	68.3856	8.237	8.429	0.029088		
4.184	68.3173	8.223	8.191	0.029085		
4.850	68.2873	8.218	8.055	0.029085		
6.048	68.5779	8.355	9.053	0.028765		
7.046	68.1000	8.204	7.628	0.029406		
7.578	67.9713	8.200	7.492	0.029075		
8.311	68.3597	8.336	9.241	0.029577		
9.043	67.8960	8.200	7.200	0.029072		
10.174	67.8233	8.200	7.142	0.029070		
10.973	67.9714	8.314	9.216	0.028910		
11.838	67.8426	8.285	9.112	0.028742		
13.103	67.7548	8.248	8.848	0.028740		

Donohue

WATER QUALITY PROFILE FORM

Site: CTO 63 Date: 8/18/92

By: SCHAEFER Project No.: 20612.020

Sample Location Number: SW-IN-05

Loran-C Coor: _____ Lat. _____ Long.

Engineers & Architects & Scientists

Initial Loran-C Coor: _____ Lat. _____ Long.

Final Loran-C Coor: _____ Lat. _____ Long.

Start Time: 12:06:00

End Time: 12:09:29

Water Depth: 11.239

Lake Conditions: _____

Reading Depth	°F Temperature	pH	mg/L Dissolved Oxygen	S/M Conductivity		Comments
1.190	68.1025	M	M	0.029567		TURBIDITY @ SURFACE
2.321	68.4140	7.730	13.488	0.029413		5.02 NTU
3.053	68.3278	8.227	7.992	0.028914		
3.652	68.0954	8.190	8.688	0.029399		
4.251	68.2445	8.232	7.996	0.028912		
5.183	68.1611	8.237	8.060	0.028909		
6.447	68.1187	8.868	9.120	0.029235		
7.246	68.0954	8.446	8.658	0.029561		
8.710	68.0845	8.233	8.563	0.030870		
10.174	68.0694	8.204	8.540	0.031688		
10.973	68.0722	8.190	8.499	0.031688		
11.239	68.0667	8.190	8.438	0.031360		

Donohue

WATER QUALITY PROFILE FORM

Site: CTO 63 Date: 8/18/92

By: SCHAEFER Project No.: 20612.020

Sample Location Number: SW-IN-07

Loran-C Coor: _____ Lat. _____ Long.

Engineers & Architects & Scientists

Initial Loran-C Coor: _____ Lat. _____ Long.

Final Loran-C Coor: _____ Lat. _____ Long.

Start Time: 15:28:40

End Time: 15:33:58

Water Depth: 13.036'

Lake Conditions: _____

Reading Depth	°F Temperature	pH	mg/L Dissolved Oxygen	S/m Conductivity		Comments
0.391	67.3687	8.068	8.304	0.001732		TURBIDITY @ SURFACE
1.190	68.7726	8.335	8.240	0.021410		5.09 NTU
2.454	68.7467	8.335	8.311	0.028936		
3.519	68.8189	8.349	8.863	0.028773		
4.384	68.7849	8.354	8.897	0.028772		
5.316	68.6706	8.350	8.962	0.028768		
6.580	68.5275	8.360	9.129	0.028764		
7.578	68.4047	8.350	9.217	0.029578		
8.444	67.9302	8.195	7.346	0.029073		
9.642	68.1780	8.327	9.260	0.029080		
10.973	67.9714	8.314	9.216	0.028910		
11.838	67.8426	8.285	9.112	0.028742		
13.036	67.8151	8.219	7.919	0.028741		

Donohue

WATER QUALITY PROFILE FORM

Sample Location Number: SW-OH-11

Site: CTO 63 Date: 8/19/92

By: SCHAEFER Project No.: 20612.020

Loran-C Coor: ____ Lat. ____ Long.

Engineers & Architects & Scientists

Initial Loran-C Coor: ____ Lat. ____ Long.

Final Loran-C Coor: ____ Lat. ____ Long.

Start Time: 14:37:46

End Time: 14:43:02

Water Depth: 13.103'

Lake Conditions: ____

Reading Depth	°F Temperature	pH	mg/L Dissolved Oxygen	S/m Conductivity		Comments
0.790	65.1207	8.140	10.347	0.001658		TURBIDITY @ SURFACE
1.190	68.9138	8.709	10.216	0.003412		3.51 NTU
1.855	68.9681	8.723	10.167	0.004231		
3.120	69.7990	8.574	16.463	0.028153		
3.452	69.7973	8.413	9.234	0.028150		
4.251	69.7311	8.408	9.265	0.027984		
5.382	69.6555	8.399	9.270	0.027981		
6.780	69.5987	8.399	9.306	0.027980		
7.512	68.7343	8.359	8.564	0.027787		
8.510	69.4702	8.400	9.424	0.027976		
9.375	69.3348	8.405	9.484	0.027808		
10.108	68.9848	8.406	9.542	0.027960		
10.773	68.3324	8.403	9.651	0.027613		
11.439	67.7905	8.399	9.716	0.027269		
12.504	67.4967	8.381	9.709	0.027260		
13.103	67.3963	8.348	9.313	0.027420		

Donohue

WATER QUALITY PROFILE FORM

Site: CTO 63 Date: 8/20/92

By: SCHAEFER Project No.: 20612.020

Sample Location Number: SW-OH-13

Loran-C Coor: _____ Lat. _____ Long.

Engineers & Architects & Scientists

Initial Loran-C Coor: _____ Lat. _____ Long.

Final Loran-C Coor: _____ Lat. _____ Long.

Start Time: 09:01:17

End Time: 09:05:11

Water Depth: 8.311'

Lake Conditions: _____

Reading Depth	°F Temperature	pH	mg/L Dissolved Oxygen	S/m Conductivity		Comments
0.790	65.1207	8.140	10.347	0.001658		TURBIDITY @ SURFACE
1.190	68.9138	8.709	10.216	0.003412		2.74 NTU
1.855	68.9681	8.723	10.167	0.004231		
2.853	68.5006	8.549	11.966	0.027289		
3.319	68.4000	8.578	8.477	0.027270		
4.384	68.3932	8.573	8.269	0.027270		
5.316	68.4576	8.568	7.778	0.027276		
6.114	68.3290	8.559	7.963	0.027268		
7.046	68.4057	8.573	8.089	0.027274		
7.379	68.2511	8.550	7.934	0.027266		
8.311	68.1404	8.550	8.041	0.027426		

Donohue

WATER QUALITY PROFILE FORM

Site: CTO 63 Date: 8/21/92

By: SCHAEFER Project No.: 20612.020

Sample Location Number: SW-LM-16

Loran-C Coor: _____ Lat. _____ Long.

Engineers & Architects & Scientists

Initial Loran-C Coor: _____ Lat. _____ Long.

Final Loran-C Coor: _____ Lat. _____ Long.

Start Time: 09:14:17

End Time: 09:20:17

Water Depth: 11.372

Lake Conditions: _____

Reading Depth(ft)	°F Temperature	pH	mg/L Dissolved Oxygen	S/m Conductivity		Comments
0.790	66.5262	8.331	9.339	0.002023		TURBIDITY @
1.190	67.9971	8.712	10.405	0.003371		SURFACE = 0.96NTU
2.454	68.0052	8.707	10.046	0.026115		
3.253	68.0499	8.716	12.416	0.025960		
3.386	68.0544	8.716	9.916	0.026117		
4.650	68.0395	8.711	9.984	0.026120		
5.449	68.0381	8.716	9.966	0.026120		
6.314	68.0367	8.721	9.939	0.026120		
7.179	68.0395	8.721	9.914	0.026120		
7.512	68.0449	8.721	9.890	0.026121		
8.244	68.0463	8.726	9.850	0.026121		
9.242	68.0408	8.721	9.789	0.026120		
10.241	68.0422	8.721	9.752	0.026120		
11.372	68.0339	8.721	10.245	0.026118		

Donohue

WATER QUALITY PROFILE FORM

Sample Location Number SW-LM-17

Site: CTO 63 Date: 8/20/92

By: Zafar Ahmed Project No.: 20612.020 Loran-C Coor: _____ Lat. _____ Long.

Engineers & Architects & Scientists

Initial Loran-C Coor: _____ Lat. _____ Long.

Final Loran-C Coor: _____ Lat. _____ Long.

Start Time: 16:51:40

End Time: 16:55:05

Water Depth: 11.37'

Lake Conditions: _____

Reading Depth(ft)	Temperature(°F)	pH	Dissolved Oxygen(mg/L)	Conductivity (S/m)		Comments
0.79	66.5262	8.331	9.339	0.002023		Turbidity at
1.19	68.7216	8.671	10.081	0.003075		Surface 1.37 NTU
2.587	68.0641	8.711	9.530	0.026122		
3.452	68.7002	8.723	10.481	0.026470		
4.251	68.6618	8.728	10.504	0.026471		
5.316	68.6468	8.728	10.528	0.026470		
6.514	68.6575	8.728	10.556	0.026470		
7.445	68.5217	8.734	10.620	0.026466		
8.377	68.4330	8.743	10.619	0.026463		
9.242	68.0408	8.721	9.789	0.026120		
10.573	68.0504	8.721	9.700	0.026121		
11.372	68.2787	8.749	10.722	0.02787		

Donohue

Engineers & Architects & Scientists

WATER QUALITY PROFILE FORM

Site: CTO 63 Date: 08/20/92

By: Zafar Ahmed Project No.: 20612.020

Sample Location Number: SW-LM-18

Loran-C Coor: _____ Lat. _____ Long.

Initial Loran-C Coor: _____ Lat. _____ Long.

Final Loran-C Coor: _____ Lat. _____ Long.

Start Time: 16:08:37

End Time: 16:12:51

Water Depth: 13.102'

Lake Conditions: _____

Reading Depth (ft)	Temperature (°F)	pH	Dissolved Oxygen (mg/L)	Conductivity (S/m)		Comments
0.79	65.2742	8.306	10.336	0.001816		Turbidity at
1.19	68.7216	8.671	10.081	0.003075		Surface = 1.28 NTU
2.654	68.6319	8.691	10.154	0.026467		
3.253	68.6217	9.547	17.025	0.026473		
3.319	68.6419	8.695	10.946	0.026472		
4.384	68.6392	8.695	10.891	0.026472		
5.316	68.6324	8.691	10.913	0.026472		
6.647	68.6255	8.695	10.896	0.026472		
7.512	68.6316	8.691	10.894	0.026472		
8.244	68.6282	8.700	10.892	0.026472		
9.442	68.6316	8.700	10.882	0.026472		
10.707	68.6337	8.695	10.884	0.026472		
11.572	68.6296	8.700	10.846	0.026472		
12.304	68.6323	8.695	10.861	0.026472		
13.103	68.6295	8.695	10.607	0.026472		

Donohue

WATER QUALITY PROFILE FORM

Sample Location Number SW-LM-19

Site: CTO 63 Date: 8/20/92

By: Zafar Ahmed Project No.: 20612.020

Loran-C Coor: _____ Lat. _____ Long.

Engineers & Architects & Scientists

Initial Loran-C Coor: _____ Lat. _____ Long.

Final Loran-C Coor: _____ Lat. _____ Long.

Start Time: 14:20:30

End Time: 14:30:57

Water Depth: 10.707

Lake Conditions: _____

Reading Depth (ft)	Temperature (°F)	pH	Dissolved Oxygen (mg/L)	Conductivity (S/m)		Comments
0.79	63.6052	7.976	10.523	0.001604		Turbidity at Surface = 1.32 m
1.256	69.1051	8.722	10.116	0.003410		
2.587	69.0924	8.741	17.138	0.026654		
3.452	69.0889	8.713	10.336	0.026646		
4.452	69.0862	8.713	10.342	0.026646		
5.582	69.0821	8.713	10.356	0.026646		
6.381	69.0808	8.718	10.365	0.026646		
7.445	69.0767	8.713	10.340	0.026647		
8.444	69.0713	8.713	10.312	0.026810		
9.709	69.0686	8.713	10.296	0.026646		
10.374	69.0686	8.713	10.309	0.026646		
10.707	69.0714	8.722	10.395	0.026649		

Donohue

WATER QUALITY PROFILE FORM

Sample Location Number SW-LM-20

Site: CTO 63 Date: 8/20/92

By: Zafar Ahmed Project No.: 20612.020

Loran-C Coor: _____ Lat. _____ Long.

Engineers & Architects & Scientists

Initial Loran-C Coor: _____ Lat. _____ Long.

Final Loran-C Coor: _____ Lat. _____ Long.

Start Time: 13:22:51

End Time: 13:26:35

Water Depth: 13.3021

Lake Conditions: _____

Reading Depth (ft)	Temperature (°F)	pH	Dissolved Oxygen (mg/L)	Conductivity (S/m)		Comments
0.79	65.1207	8.140	10.347	0.001658		Turbidity at Surface 1.27N
1.19	68.9138	8.709	10.216	0.003412		
2.521	68.9999	8.708	12.501	0.026652		
3.120	68.9600	8.727	10.196	0.026648		
3.452	68.8905	8.732	10.619	0.026642		
4.251	68.8905	8.732	10.619	0.026642		
5.249	68.8823	8.737	10.625	0.026642		
6.780	68.8619	8.737	10.634	0.026642		
7.578	68.8225	8.742	10.621	0.026640		
8.510	68.8353	8.718	10.841	0.026642		
9.442	68.9272	8.723	10.852	0.026642		
10.307	68.7204	8.761	10.548	0.026474		
11.239	68.8728	8.732	10.903	0.026477		
12.576	68.6278	8.752	10.976	0.026468		
13.103	68.6556	8.757	11.104	0.026469		
13.302	68.6086	8.776	10.819	0.026467		

APPENDIX D

DOCUMENTED SPILL EVENTS

DEPARTMENT OF THE NAVY

Memorandum

DATE: 20 OCT 1987

FROM: N5

TO: N54

SUBJ: SPILL OFF BASE

1. I received a call at 1720 from Edward Osowski of IL EPA Emergency Response Team informing me that EMCO Company of 2100 Commonwealth, N. Chicago had spilled approx. 400 gals. of "mineral spirits" into sewer system & there was a slight possibility that some will get into Pettibone Creek. He checked late 10/19 and I received no calls, so assume he found nothing at that time. His number is 345-9780. Alternate contact is Mark Kubert at 689-2200.

2. You need to follow-up finding out location(s) on base we should monitor over next few days and do the monitoring personally. Feedback please. Thanks.

RKM

☆ U.S. GPO 1984 - 705-012/8623

talked to ED. ILEPA RE: Spill - He mentioned that he believes that most of the spill was pumped & cleaned up however. he thought there is a possibility of some of the spill entering Pettibone Creek.

EMCO spills chemicals in N. Chicago

Between 200 and 400 gallons of mineral spirits discharged Monday at an industrial site in North Chicago and some of it may have drained into Lake Michigan. There were no injuries reported.

North Chicago Fire Department Lt. Gene Kalinoski said the mineral spirits were spilled during a "filling operation" at EMCO Chemical Distributors Inc., 2100 Commonwealth Ave., North Chicago. The fire department was called at about 3 p.m.

He said the spilled mineral spirits went into the storm sewer which drains into Pettibone Creek across the street. The creek eventually empties into Lake Michigan, he said.

EMCO employees cleaned up the spill Monday afternoon by diking the creek and pumping out the mineral spirits. An absorbent material was also used in the cleanup, he said. The cleanup was supervised by Keith Humphres, the hazardous materials coordinator for the fire department.

Kalinoski said the fire department notified the required agencies regarding the spill. Among the agencies notified, he said, were the Environmental Protection Agency (EPA), the North Shore Sanitary District (NSSD) and the county Emergency Services and Disaster Agency (EDSA).

EMCO's in-house emergency response team had the discharge cleaned up by 5 p.m., with no major problems, according to EMCO President Edward Polen.

Mineral spirits, a common household product, is classified as a combustible material with a flashpoint of over 100 but not classified highly combustible, he noted, and the proper reporting procedure required by authorities was followed.

The mop-up operation came at a site which had been used earlier this year as a training location for for Lake County's HAZMAT (Hazardous Materials Response) team. Firemen from across the county were brought it and trained by experts in how to handle chemical spills.

News-Sun Photo by Joe Cyganowski

EMCO employees mop up a mineral spirits spill from Pettibone Creek in North Chicago along Commonwealth Avenue. Using a special chemical absorbing fiber material, the workers soaked up an estimated 200-400 gallons.

From: N54
To: N5/File

Subj: Complaint from Tim Davis regarding sample of white substance flowing into Creek on Shore Acres

Date: 7-27-87

INTRODUCTION

LCDR Miller received call regarding above subject 7-27-87 and passed info to Environmental Office for follow up.
I called NTC Safety for use of vehicle.
I called PWC Engineering, George Wasil for assistance in identifying the Storm/Sanitary Sewer Lines. Wasil brought his assitant Rebecca along with several steel Sewer probes for opening manhole covers. John Nudo (NTC Safety) was told to fo along to identify some Safety observations made on a previous inspection.

ACTION TAKEN

1. Observed a 36" drain section broken off laying on bottom of creek. Water coming from the drain in place looked clear. However, water in pond below looked white in color with traces of what looked like oil.

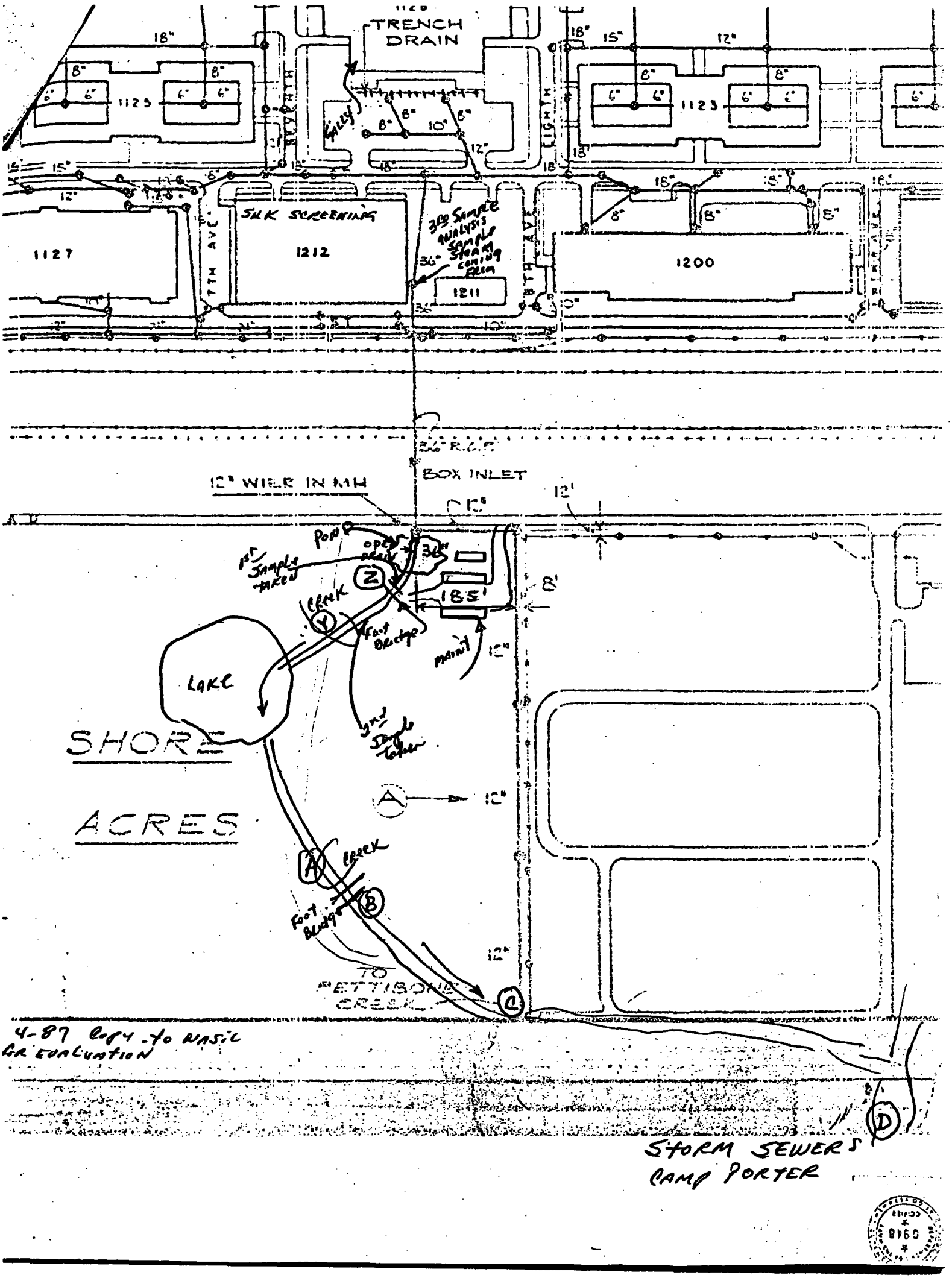
2. PWC looked for manhole cover in the storm line just before water enters pond. The search with probes was unsuccessfull. (PWC comment - "It must be buried.")

3. Opened manhole cover at Bldg. 1212 Silk Screen operation north side of building. Steam was coming up from sewer manhole impairing view to the bottom.

4. Picked up sample (sample taken at 1215PM 7-27-87, south of Maint. Shop) Took another sample at (Y) on map. PWC took both samples to see if their chemist can identify substance.

RECOMMENDATION

Hold report in abeyance till sample results are received from PWC chemist. At that time make determination what the next action should be to eliminate white substance from entering creek on Shore Acres.


TRENCH DRAIN
1125
1123
1127
1212
1211
1200
SILK SCREENING
3RD SAMPLE ANALYSIS SAMPLE STEAM COMING FROM
36" R.C.P.
BOX INLET
12" WIER IN MH
POND
OPEN DRAIN
1ST SAMPLE TAKEN
CREEK
FOOT BRIDGE
MAINT
185'
LAKE
SHORE ACRES
2ND SAMPLE TAKEN
CREEK
FOOT BRIDGE
TO PETTIBONE CREEK
4-87 COPY TO NASIC FOR EVALUATION
STORM SEWERS CAMP PORTER

NH-GL-6240/11 (Rev. 11-83)

Date/Time- 13 Sep85

CALLER/VISITOR	Title of Caller/Visitor	ACTIVITY
J. Finn	Safety Manager NTC	NTC Great Lakes

RANK/RATE	Phone No.	Address
	X2035	Bldg. 1

NATURE OF CONSULT/INVESTIGATION

Mr. Finn called our office 1330 on 12September 1985 and indicated that a North Chicago Industry had spilled 1000 gallons of hydrochloric acid into Pettibone Creek. He requested that I visit the area with the NTC Activity Civil Engineer, Mr. Ken Feldhausen.

DISPOSITION:

12 September 1985

1515 - I arrived at Pettibone Creek with Mr. Joe McCloud, NTC Safety. We walked upstream where we confronted several people taking measurements from the creek. We introduced ourselves to the person taking pH measurements. He identified himself as Mark Kubert, Chemist with E-M Company in North Chicago. According to Mr. Kubert, an accident had occurred at the plant which caused the rupture of a storage tank holding about 1000 gallons of Muriatic Acid, stated to be 30 percent Hydrochloric Acid. He stated that the spill occurred at 0830 on 12 September 1985 and that the acid had entered a storm sewer which drains into Pettibone Creek. Mr. Kubert indicated that pH readings and neutralization did not begin until 1300, at which time the pH of the creek water was 1.7 upstream (nearest the spill) and 5.0 downstream. He stated that the boat basin area was found to have a pH of 7.3 when the first measurements were taken.

- Mr. Kubert indicated that E-M Company had notified the Illinois EPA, Federal EPA, Local Fire Department, and the Naval Training Center after the spill occurred. He stated that Mr. Ed Osowski and Mr. Don Klopke of the IEPA had visited the creek earlier and recommended either

Signature	Date Action Completed
Mark L. Lesko	13 Sep 85

20607

...ER/VISITOR	Title of Caller/Visitor	Date/Time- ACTIVITY

RANK/RATE Phone No. Address

NATURE OF CONSULT/INVESTIGATION

12 September 1985 (cont'd)

sucking out the water and neutralizing it elsewhere, or neutralizing the water at various places in the stream with sodium bicarbonate. The E-M Company chose the latter method and was doing this as Mr. McCloud and I arrived. Mr. Kubert was in the process of taking pH readings upstream and downstream of the neutralization area as we arrived.

1600 - Mr. Kubert's readings revealed a pH gradient of 2.25 to 6.5 as measured from upstream to downstream. The reading nearest the harbor indicated a pH of 6.5.

1630 - A truck from E-M Company arrived with more sodium bicarbonate. Mr. McCloud and I left the area at that time since it seemed the people there had the situation under control.

13 September 1985

0900 - The NTC Activity Civil Engineer, Mr. Feldhausen, Petty Officer Malamos of Environmental Health and I went to Pettibone Creek to take some pH measurements. The pH of the water at the walkway trestle was 7.0; The water under Farragut bridge was pH 7.2; The water at the neutralizing point was 7.2 and the creek mouth near the harbor was also pH 7

0920 - Mr. McCloud arrived and also took water samples to be measured for pH. He phoned me later and indicated that his measurements ranged from pH 6.5 to 7.1 with the boat basin being 6.0.

Signature Mark L. Lesko

Date Action Completed 13 September 1985

20607

Copy to: Mr. McCloud, NTC Safety (Code 010)
Mr. Feldhausen, NTC ACE, Bldg. 1, Rm 207

RUST ENVIRONMENT & INFRASTRUCTURE

Formerly SEC Donohue

RUST Environment & Infrastructure Inc.
111 North Canal Street, Suite 305
Chicago, IL 60606
Tel. (312) 902-7100 • FAX (312) 902-7099

May 25, 1993
DNCH/93-0009

Ms. Adrienne Wilson
Remedial Project Manager, SOUTHDIV
Naval Facilities Engineering Command
Code 185ND
2155 Eagle Drive
P.O. Box 10068
North Charleston, SC 29419-9010

RE: Contract No. N62472-90-D-1298 "CLEAN"
Site Inspection at Pettibone Creek, the Boat Basin, the Inner Harbor and the Outer Harbor
CTO 0063, Naval Training Center, Great Lakes, Illinois
RUST Project No. 20612.070

Dear Ms. Wilson:

Attached to this letter are the Halliburton NUS Team's responses to comments made by the Navy on the rough draft Site Inspection Report for the above referenced areas at the Naval Training Center in Great Lakes, Illinois.

Please do not hesitate to contact me if you have any questions or comments.

Sincerely,

RUST ENVIRONMENT & INFRASTRUCTURE INC.

Mansour Ghiasi

Mansour Ghiasi, P.E.
Project Manager

cc: Bob Ogrodowski, Activity Point of Contact
Nancy Kuntzelman, NORTHDIV
John Trepanowski, Halliburton NUS
Debra Wroblewski, Halliburton NUS
Lorrie Ransome, RUST
Bill Schaefer, RUST
Project File

T/L/HC0
20612.070

RESPONSE TO COMMENTS
ROUGH DRAFT SITE INSPECTION REPORT
FOR
PETTIBONE CREEK, THE BOAT BASIN,
THE INNER HARBOR, AND THE OUTER HARBOR

COMMENT

1. Page ES-1, bullet #3, where might the potential migration source be?

RESPONSE

Potential sources of contaminants which may have migrated into the Boat Basin and Harbor Areas include industries in the city of North Chicago, the NTC itself, and industries located along the shore of Lake Michigan both to the south and to the north of NTC.

COMMENT

2. Page 3-2, state time frame (Dec 92, Nov 92 whatever) in which sampling occurred.

RESPONSE

Comply. The first sentence on Page 3-2 will be changed to the following, "In August 1992, the Halliburton NUS Team and its subcontractor, Ocean Surveys, Inc. of Old Saybrook, Connecticut, collected sediment and surface water samples ... ."

COMMENT

3. Page 3-5 par 1, Why would you assume that SVOCs are from upgradient of NTC since the higher hits are in SD-PC-09 and SD-PC-10 which are downstream from SD-PC-11?

RESPONSE

The reason why we assumed that SVOCs are from upstream of NTC is that sample SD-PC-10 was collected upstream from NTC in the city of North Chicago. Note that the second bullet on Page 3-5 concludes that unidentified sources present on NTC property have also contributed to the SVOC contamination detected in Pettibone Creek sediment.

COMMENT

4. Page 3-9, 3.5.2.4, do not include any unlikely conclusions.

RESPONSE

Comply. Discussion of the second and unlikely scenario will be removed from the text.

COMMENT

5. Page 3-11, Sec. 3.5.3.3, explain why conclusion is reasonable and justified do not include unlikely conclusions.

RESPONSE

The discussion presented in Section 3.5.3.3 will be revised to focus upon only the likely scenario, which is the first bullet in this section.

T/L/HC0
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RUST ENVIRONMENT & INFRASTRUCTURE

Formerly SEC Donohue

RUST Environment & Infrastructure Inc.
1240 East Diehl Road
Naperville, IL 60563
Tel. (708) 955-6600 • FAX (708) 955-6601

June 8, 1993
DNCH/93-0012

Ms. Adrienne Wilson
Remedial Project Manager, SOUTHDIV
Naval Facilities Engineering Command
Code 185ND
2155 Eagle Drive
P.O. Box 10068
Charleston, SC 29411-0068

Re: Contract No. N62472-90-D-1298 "CLEAN"
Site Inspection at Pettibone Creek, the Boat Basin, the Inner Harbor and the Outer Harbor
CTO 0063, Naval Training Center, Great Lakes, Illinois
RUST Project No. 20612.070

Dear Ms. Wilson:

Attached are five copies of the draft Site Inspection Report for the above referenced areas at the Naval Training Center in Great Lakes, Illinois.

Please do not hesitate to contact me if you have any questions or comments.

Sincerely,

Mansour Ghiasi

Mansour Ghiasi, P.E.
Project Manager

cc: Nancy Kuntzelman, NORTHDIV (1 copy)
Bob Ogrodowski, Activity Point of Contact (1 copy)
Lorrie Ransome, RUST (1 copy)
John Trepanowski, Halliburton NUS (1 copy)
Debra Wroblewski, Halliburton NUS (1 copy)