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LETTER AND U S NAVY RESPONSE TO U S EPA COMMENTS TO RCRA FACILITY
INVESTIGATION AREA OF CONCERN C NS MAYPORT FL
2/2/2004
TETRA TECH

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Document Number 04JAX0056

February 2, 2004

Project Number N0199

Mr. James Cason
Remedial Project Manager
Florida Department of Environmental Protection
Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Reference: CLEAN III Contract Number N62467-94-D0888
Contract Task Order Number 0094

Subject: Response to Comments, RCRA Facility Investigation (RFI), Area of Concern (AOC) C,
Naval Station (NAVSTA) Mayport, Mayport Florida

Dear Mr. Cason:

Tetra Tech NUS, Inc. has prepared the following response to your letter dated December 30, 2003, regarding the RFI for AOC C at NAVSTA Mayport. The RFI has been revised to include these changes and the revised pages will be issued if you concur with these responses. These comments will also be included as an appendix.

Comment 1) Please furnish a proper professional certification page for the document.

Response 1) Certification page is enclosed.

Comment 2) Please provide a summary table for all analytes that exceeded residential scenario SCTLs. Please furnish a figure depicting the location and analytical value of those exceedances; (how do we know where the "less than Residential" scenario begins?). This, and the subsequent questions, may be accomplished as a supplemental Technical Memorandum in place of reissuing the document.

Response 2) Table 5-1 has been revised to provide the information requested. A new figure has been developed (Figure 5-1) which provides the information requested. Please see the attached revised text.

Comment 3) Please clarify the discussion in the Executive Summary regarding cyanide. Why is the analytical value for cyanide in your sample(s) different from what the SWCTL is?

Response 3) The SWCTL is based on free cyanide which is "bioavailable." Bioavailable cyanide is of concern from a health risk standpoint because it can be metabolized by organisms resulting in a toxic effect that may cause increased health concerns. Other forms of cyanide that are not metabolized by organisms do not present the same health risk concern.

The CN result reported is "total" cyanide which includes both bioavailable and non-bioavailable forms of CN. As a result, it cannot be determined from the result if free cyanide is present at levels above the SWCTL. As a result, the document will be modified to include a recommendation that additional testing of surface water be performed to determine if free CN is present.

Comment 4) Section 5.3.1.1.3 discusses PCB concentrations in one sample above the Residential Scenario SCTL, yet that value does not appear in Table 5-1 or in the Conclusions and Recommendations. Please justify this.

Response 4) Table 5-1 has been modified to include PCB results. The recommendations have been modified to include recommendations for additional sampling due to both PAH and PCB results above SCTL values.

Comment 5) In the Conclusions and Recommendations section, there is a discussion of reporting limits, "less than" values, and other possible reasons for analytical values being in excess of the regulatory values; however, the discussion is "open-ended" and no conclusions are made or postulated. Please try and do this.

Response 5) The recommendation will be modified as follows:

In some instances, the laboratory provided reporting limits (RLs) that exceed regulatory criteria. The reporting limit represents the lowest value at which the laboratory could verify an exact concentration based on analytical equipment calibration. However, the analytical equipment used is capable of detecting the presence of constituents at lower levels as defined by the method detection limit (MDL), but at levels that are non-quantifiable. Values above the MDL but below the RL were identified as "estimated" values and assigned a "J" qualifier on the analytical data sheets. As a result, it is reasonable to conclude that constituents reported as less than the RL, which are not qualified with a "J" value, are not present above regulatory criteria since the MDL values are below regulatory criteria.

Should you require further information, please do not hesitate to contact me by phone at (904) 636-6125 or by e-mail at petersonm@ttnus.com.

Sincerely,



Mark A. Peterson
Project Geologist

MAP/lc

Enclosures (4)

pc: T. Hansen (TtNUS)
M. Perry (TtNUS)
Project File

PROFESSIONAL CERTIFICATION

Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI)
Area of Concern (AOC) C
U.S. Naval Station, Mayport, Florida

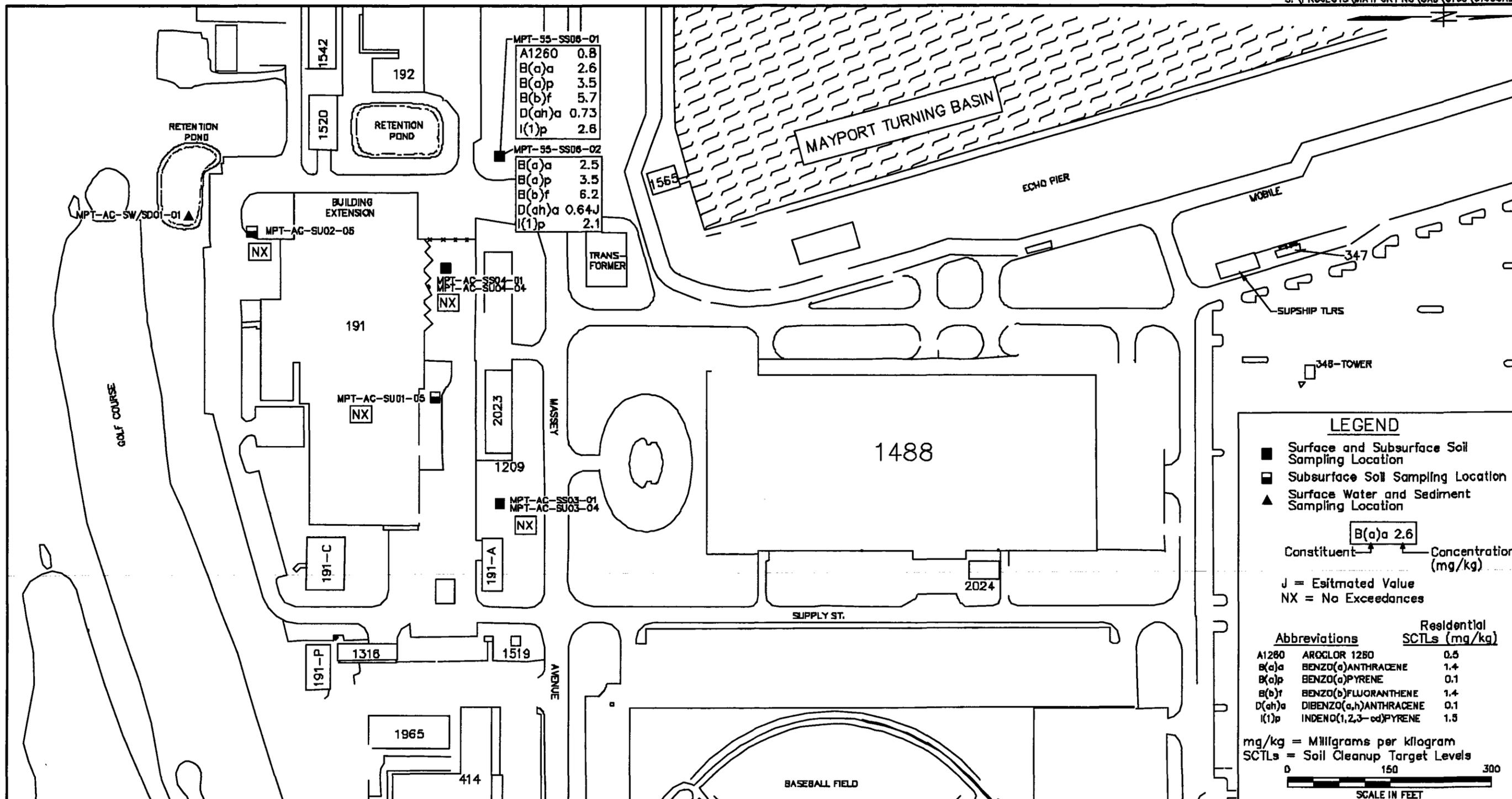
This document, Resource Conservation and Recovery Act (RCRA) Facility Investigation, Area of Concern C, U.S. Naval Station, Mayport, Florida has been prepared under the direction of a Florida Registered Professional Geologist. The work and professional opinions rendered in the report were conducted or developed in accordance with commonly accepted procedures consistent with applicable standards of practice. If conditions are determined to exist that differ from those described, the undersigned geologist should be notified to evaluate the effects of additional information on the assessment and recommendations in this report. This document was prepared specifically for the referenced site and should not be construed to apply to any other site.

Terry Hansen
Professional Geologist
State of Florida License Number 234

Date

Table 5-1									
Summary of Analytes Detected in Surface Soil, Building 191									
RCRA Facility Investigation, Area of Concern C									
Naval Station Mayport									
Mayport, Florida									
Analyte	FDEP	FDEP	FDEP	USEPA	USEPA	MPT-AC-		MPT-55-	
	SCTL	SCTL	SCTL	Region IX	Region IX	SS03-01	SS04-01	SS06-01	SS06-02
	Res ¹	Ind ¹	Leaching ¹	PRG Res ²	PRG Ind ²	Aug-00	Aug-00	Aug-00	Jan-02
Semivolatiles (mg/kg) (USEPA Method SW-846 8270C)									
Anthracene	18,000	260,000	2,500	3,700	38,000	< 0.36	< 0.35	0.16 J	0.13 J
Benzo(a)anthracene	1.4	5	3.2	0.62	2.9	< 0.36	< 0.35	2.6	2.5
Benzo(a)pyrene	0.1	0.5	8	0.62	0.29	< 0.36	< 0.35	3.5	3.5
Benzo(b)fluoranthene	1.4	4.8	10	0.62	2.9	< 0.36	< 0.35	5.7	6.2
Benzo(g,h,i)perylene	2,300	41,000	32,000	--	--	< 0.36	< 0.35	2.7	2.2
Benzo(k)fluoranthene	15	52	25	6.2	29	< 0.36	< 0.35	2.2	2.2
Carbazole	53	190	0.6	--	--	< 0.36	< 0.35	0.29 J	0.26 J
Chrysene	140	450	77	62	290	< 0.36	< 0.35	3.9	4.3
Dibenzo(a,h)anthracene	0.1	0.5	30	0.062	0.29	< 0.36	< 0.35	0.73	0.64 J
Fluoranthene	2,900	48,000	1,200	2,900	30,000	< 0.36	< 0.35	5.6	< 0.76
Indeno(1,2,3-cd)pyrene	1.5	5	28	0.62	2.9	< 0.36	< 0.35	2.6	2.1
Phenanthrene	2,000	30,000	250	--	--	< 0.36	< 0.35	1.4	1.0
Pyrene	2,200	3,700	880	2,300	54,000	< 0.36	< 0.35	4.0	5.3
PCBs (mg/kg) (USEPA Method SW-846 8080)									
Aroclor-1016	0.5	2.1	17	0.22	1.0	< 0.036	< 0.35	0.072	< 0.076
Aroclor-1221	0.5	2.1	17	0.22	1.0	< 0.036	< 0.35	0.072	< 0.076
Aroclor-1232	0.5	2.1	17	0.22	1.0	< 0.036	< 0.35	0.072	< 0.076
Aroclor-1242	0.5	2.1	17	0.22	1.0	< 0.036	< 0.35	0.072	< 0.076
Aroclor-1248	0.5	2.1	17	0.22	1.0	< 0.036	< 0.35	0.072	< 0.076
Aroclor-1254	0.5	2.1	17	0.22	1.0	< 0.036	< 0.35	0.072	< 0.076
Aroclor-1260	0.5	2.1	17	0.22	1.0	< 0.036	< 0.35	0.8	0.4 J
Pesticides (µg/kg) (USEPA Method SW-846 8080)									
4,4-DDD	4.6	18	4	2.4	170	< 1.9	< 1.8	< 18	30 J
Endrin Ketone	2.1	340	1	180	2600	< 1.9	< 1.8	< 18	72
See notes at end of table.									

Table 5-1 (continued) Summary of Analytes Detected in Surface Soil, Building 191 RCRA Facility Investigation, Area of Concern C Naval Station Mayport Mayport, Florida										
Analyte	BSV ³	FDEP SCTL Res ¹	FDEP SCTL Ind ²	FDEP SCTL Leaching ²	USEPA Region IX PRG Res ³	USEPA Region IX PRG Ind ³	MPT-AC-		MPT-55-	
							SS03-01	SS04-01	SS06-01	SS06-02
							Aug-00	Aug-00	Aug-00	Jan-02
Inorganics (mg/kg) (USEPA Method SW-846 6010B)										
Aluminum	--	72,000	--	--	76,000	100,000	436J	698J	978J	607 J
Antimony	--	26	245	5	31	820	< 0.34	< 0.33	2.7	0.63 J
Arsenic	0.9	0.8	3.7	29	0.39	2.7	0.49	0.56	1.1	0.85
Barium	7.2	110	87,000	1,600	5,400	100,000	4.7	6.5	10.1	11.4
Cadmium	2	75	1,300	8	37	810	< 0.05	< 0.07	0.58	0.65
Calcium	--	--	--	--	--	--	57,300	12,900	25,300	19,100
Chromium	3.4	210	420	38	30	64	2.2J	2.7	5.3	7.8
Cobalt	--	4,700	110,000	--	4,700	100,000	< 0.23	< 0.22	0.54	0.52
Copper	2.2	110	76,000	--	2,900	760,000	< 0.38		30.3J	19
Iron	--	23,000	480,000	--	23,000	100,000	668	1,020	4,510	1950
Lead	2.8	400	920	--	0.0061	0.088	0.62J	1.3	89.6	55
Magnesium	--	--	--	--	--	--	408	146	485	321
Manganese	--	1,600	22,000	--	18,000	32,000	18.2	8.5	25.7	17.7
Mercury	--	3.4	26	2.1	23	610	< 0.02	< 0.02	0.05	< 0.046
Potassium	--	--	--	--	--	--	< 67.7	< 55.5	36.3	30.9
Sodium	--	--	--	--	--	--	506	< 26.2	< 78.9	64.3
Vanadium	3.2	15	7,400	980	550	14,000	1.9J	1.5	9.6	7.9
Zinc	4.8	23,000	560,000	6,000	23,000	100,000	3.2J	4.9	139J	159 J
Notes:										
¹ FDEP SCTLs, Chapter 62-777, FAC										
² USEPA Region IX PRGs										
³ Recalculation of Background Screening Values (SBVs), NAVSTA Mayport, Florida, TiNUS, 2001 Res - Residen Ind - Industrial										
Bold results exceed FDEP SCTL for a residential scenario; bold and underlined exceed the FDEP SCTL for an industrial scenario.										
J indicates the presence of a chemical at a concentration less than the reporting limit and greater than the method detection limit .										
Res = Residential										
Ind = Industrial										



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY	DATE		SOIL ANALYTICAL RESULTS EXCEEDING RESIDENTIAL SCTLs AREA OF CONCERN "C" NAVAL STATION MAYPORT MAYPORT, FLORIDA		CONTRACT NO. 0199	
							LLK	1/15/04		APPROVED BY	DATE	APPROVED BY	DATE
											DRAWING NO. FIGURE 5-1	REV. 0	

EXECUTIVE SUMMARY

This Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report for Area of Concern (AOC) C, Naval Station (NAVSTA) Mayport has been prepared by Tetra Tech NUS, Inc. (TiNUS) for the United States Navy (Navy) Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) under the Comprehensive Long-term Environmental Action Navy (CLEAN) III Contract Number N62467-94-D-0888 Contract Task Order (CTO) 0094.

AOC C is located near the southeast portion of the Mayport Turning Basin and includes Building 191, the Shore Intermediate Maintenance Activity (SIMA), and the southern portion of Echo Pier. This report describes the field investigation and findings of the RFI at AOC C and the risk analyses and findings from the human health risk assessment (HHRA) and ecological risk assessment (ERA).

Lithologic sampling and borehole geophysical surveys performed at the site during a Navy Environmental Leadership Program (NELP) technology demonstration by ICON Environmental Services, Inc. (ICON) identified that the Surficial aquifer beneath Building 191 has three aquifer zones. The shallow or water table zone (Zone A) consists of the interval from the water table, which is approximately 3 feet (ft) below land surface (bls) to 33 ft bls; the intermediate zone (Zone B) occurs from approximately 36 to 39 ft bls; and the deep zone (Zone C) occurs from approximately 43 to 47 ft bls. The groundwater flow direction in each zone of the Surficial aquifer is generally northwest toward the Mayport Turning Basin. Some localized variations are present across AOC C.

The RFI identified the following items for AOC C:

- Two semivolatile organic compounds (SVOCs) [benzo(a)pyrene and dibenz(a,h)anthracene] were detected in a surface soil sample collected near Building 191 at concentrations that exceed their respective Florida Department of Environmental Protection (FDEP) Soil Cleanup Target Levels (SCTLs) for residential and for industrial exposure scenarios. Both constituents were detected in sample MPT-55-SS06-01.
- One inorganic (total cyanide) was detected in the surface water sample collected near Building 191 at a concentration that exceeds the FDEP Surface Water Cleanup Target Level (SWCTL) as provided in Chapter 62-302, Florida Administrative Code (FAC). However, the FDEP SWCTL is based on free cyanide, which is bioavailable. It is unknown if free cyanide is present at levels above regulatory criteria. Cyanide contamination has not previously been associated with any multimedia samples collected at Building 191.

- Five volatile organic compound (VOCs) (1,1-dichloroethene; 1,2-dichloroethene; tetrachloroethene; trichloroethene; and vinyl chloride) collected at Building 191, five SVOCs (2-methylnaphthalene, acenaphthene, carbazole, dibenz(a,h)anthracene, and naphthalene) collected at Echo Pier, and five inorganics (aluminum, iron, manganese, sodium, and thallium) collected at Building 191, SIMA, and Echo Pier were detected in the groundwater samples at concentrations that exceed FDEP Groundwater Cleanup Target Levels (GCTLs).

The HHRA identified the following items for AOC C:

- Non-cancer risk estimates [Hazard Indexs (HIs)] developed for the base worker, the construction worker, the adult trespasser, and the adolescent trespasser are equal to or less than 1.0, indicating that adverse noncarcinogenic effects are not anticipated under the conditions considered in the risk assessment. The HIs developed for the hypothetical future resident adult and child exceed 1.0. HIs developed for individual Chemicals of Potential Concern (COPCs) and target organs do not exceed 1.0.
- The Incremental Lifetime Cancer Risk (ILCR) estimate for the construction worker ($2.5E-07$) does not exceed the United States Environmental Protection Agency (USEPA) target risk range ($1E-04$ to $1E-06$) or the State of Florida cancer risk benchmark ($1E-06$).
- The ILCR estimates for the base worker ($8.6E-06$) and trespasser ($7.1E-06$) exceed the conservative end of the USEPA target risk range ($1E-06$). Risk from exposure to benzo(a)pyrene (equivalent) in surface soil exceeds $1E-06$ for both receptors.
- The ILCR estimate for the hypothetical future resident ($1.4E-04$) exceeds the USEPA target risk range ($1E-04$ to $1E-06$). Risk from exposure to benzo(a)pyrene (equivalent), Aroclor-1260, and arsenic in surface soil, and 1,1-dichloroethene; tetrachloroethene; vinyl chloride; carbazole; and aldrin in groundwater exceeds $1E-06$. The Exposure Point Concentration (EPCs) for both tetrachloroethene and vinyl chloride are below their respective Maximum Contaminant Level (MCLs).

The ERA identified the following items for AOC C:

- The screening-level ERA concluded that no detected chemical had a Hazard Quotient (HQ) greater than 1.0 in surface water or sediment, which was the only media determined to be a potential risk to ecological receptors at AOC C.

- Some inorganics and VOCs were selected as COPCs because no Region IV screening levels were available. However, a Step 3A analysis suggested that these chemicals were not present in quantities that could result in unacceptable risks.
- The industrialized nature of AOC C does not facilitate widespread ecological habitation. No further ecological risk assessment or ecological risk management appears to be warranted for AOC C.

Based on the sampling results, a gap currently exists in the surface soil sampling data at AOC C. Benzo(a)pyrene and dibenz(a,h)anthracene were detected above industrial SCTLs and benzo(a)pyrene was identified in the HHRA with the ILCR above USEPA target levels in some scenarios. In addition, other PAH compounds and one PCB (Archlor 1260) were detected above residential SCTLs. Each of these exceedances were obtained from one sample location. Therefore, it is recommended that additional delineation be performed to identify the extent of contamination present in the surface soil surrounding MPT-55-SS06-01. Once completed, a letter report will be issued presenting the results and recommendations and will be incorporated into the RFI report as an appendix.

Due to the uncertainty in cyanide results from a water sample obtained from the surface water retention pond, additional sampling is recommended to determine if free cyanide is present above regulatory values. Furthermore, TtNUS recommends a Corrective Measures Study (CMS) to evaluate and recommend a remedial action to mitigate groundwater contamination at AOC C. At a minimum, the CMS should evaluate the implementation of natural attenuation of COPCs in groundwater and land use controls.

surface soil at Building 191 consisted of SVOCs, PCBs, pesticides, and inorganics. There were no VOCs or herbicides detected in the surface soil samples collected at Building 191. Figure 5-1 provides detected constituents above FDEP residential SCTLs.

5.3.1.1.1 Semivolatiles in the Surface Soil at Building 191

There were 13 SVOCs detected in the surface soil samples collected at Building 191. Five SVOCs were detected above FDEP SCTL residential criteria and two were detected above FDEP SCTL industrial criteria. None of the results exceeded the FDEP SCTL leaching values. All results exceeding regulatory criteria were detected in surface soil sample MPT-55-SS06-01.

Benzo(a)anthracene [2.6 milligrams per kilogram (mg/kg)]; benzo(a)pyrene (3.5 mg/kg); benzo(b)fluoranthene (5.7 mg/kg); dibenzo(a,h)anthracene (0.73 mg/kg); and indeno(1,2,3-cd)pyrene (2.6 mg/kg) were detected at concentrations exceeding FDEP SCTL residential criteria, USEPA Region IX Preliminary Remediation Goal (PRG) residential criteria, and USEPA Region IX PRG industrial criteria. Benzo(a)anthracene, benzo(a)pyrene, and dibenzo(a,h)anthracene were the only three analytes that exceeded their respective FDEP SCTL industrial criteria. Table 5-1 presents a summary of SVOC results in surface soil and provides comparisons to benchmark values. Figure 5-1 provides a tag map showing the locations of the SCTL exceedances.

5.3.1.1.2 Inorganics in the Surface Soil at Building 191

Twelve inorganics were detected in the surface soil samples collected at Building 191. Three inorganics (barium, chromium, and zinc) were detected at concentrations that exceed background-screening values.

Ten target analytes (aluminum, antimony, calcium, cobalt, iron, magnesium, manganese, mercury, potassium, and sodium) detected in the samples collected at Building 191 were not detected in the background surface soil samples (ABB-ES, 1995b). There were no inorganic analytes detected in the surface soil at concentrations exceeding regulatory benchmark values. Table 5-1 presents the inorganic analytical results for surface soil at Building 191.

5.3.1.1.3 PCBs in the Surface Soil at Building 191

Arochlor-1260, detected in sample MPT-55-SS06-01 at 0.8 mg/kg, was the only PCB detected in the surface soil samples collected at Building 191. The FDEP SCTL was developed for total PCBs and not for individual PCBs. The result for sample MPT-55-SU06-01 exceeds the FDEP SCTL residential criterion (0.5 mg/kg), but is below the FDEP SCTL industrial criterion (2.1 mg/kg). The result is also below the FDEP SCTL leaching criterion of 17 mg/kg. The result for sample MPT-55-SU06-01 exceeds

the USEPA Region IX PRG residential criterion (0.22 mg/kg), but is below the USEPA Region IX PRG industrial criterion (1.0 mg/kg).

5.3.1.1.4 Pesticides in the Surface Soil at Building 191

4,4-Dichlorodiphenyldichloroethylene (DDE), detected in sample MPT-SS-SU06-01 at 0.014 mg/kg, was the only pesticide detected in the surface soil samples collected from Building 191. 4,4-DDE was not detected above benchmark values.

5.3.1.1.5 Interpretation of Surface Soil Data for Building 191

Five SVOCs [benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; dibenzo(a,h)anthracene; and indeno(1,2,3-cd)pyrene] and one PCB (Arochlor-1260) were detected in the surface soil samples at concentrations that exceed FDEP SCTLs. All of the constituents detected above FDEP SCTLs originated from sample location MPT-55-SS06, which was collected in a storm sewer drainage ditch originating from Building 191.

Semivolatiles

Benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; dibenzo(a,h)anthracene; and indeno(1,2,3-cd)pyrene were detected at concentrations exceeding FDEP SCTL residential values. Of these constituents, benzo(a)anthracene, benzo(a)pyrene, and dibenzo(a,h)anthracene were the only three analytes that exceeded their respective FDEP SCTL industrial criteria. These constituents are a likely result of discharge or runoff from the paved areas at Building 191.

PCBs

Arochlor-1260 was detected in the surface soil samples collected from Building 191. Arochlor-1260 exceeded the residential FDEP SCTL; however, did not exceed the industrial FDEP SCTL for PCBs. PCBs have been used widely as coolants and lubricants in transformers, capacitors, and other electrical equipment. Products containing PCBs include old fluorescent lighting fixtures, electrical appliances containing PCB capacitors, old microscope oil, and hydraulic fluids. There is no record of PCB containing materials being stored at Building 191.

5.3.1.2 **Subsurface Soil Assessment**

Four subsurface soil samples (MPT-AC-SU01-05, MPT-AC-SU02-05, MPT-AC-SU03-05, and MPT-AC-SU04-05) shown in Figure 4-1, were collected at Building 191. Target analytes detected in the

8.0 CONCLUSIONS AND RECOMMENDATIONS

8.1 CONCLUSIONS

The RFI identified the following items for AOC C:

- Two SVOCs [benzo(a)pyrene and dibenz(a,h)anthracene] were detected in the surface soil samples collected near Building 191 at concentrations that exceed their respective FDEP SCTLs for a residential and industrial exposure scenario. Both constituents were detected in sample MPT-55-SS06-01, which was collected from a stormwater conveyance.
- One inorganic (total cyanide) was detected in the surface water sample collected near Building 191 at a concentration that exceeds the FDEP SWCTL for surface water as provided in FDEP Chapter 62-302, FAC. However, the FDEP SWCTL is based on free cyanide, which is bioavailable. It is unknown if free cyanide is present at levels above regulatory criteria. Cyanide contamination has not previously been associated with any multimedia samples collected at Building 191.
- Five VOCs (1,1-dichloroethene; 1,2-dichloroethene; tetrachloroethene; trichloroethene; and vinyl chloride) at Building 191, five SVOCs (2-methylnaphthalene; acenaphthene; carbazole; dibenz(a,h)anthracene; and naphthalene) at Echo Pier, and five inorganics (aluminum, iron, manganese, sodium, and thallium) at Building 191, SIMA, and Echo Pier were detected in the groundwater samples at concentrations that exceed FDEP GCTLs.

In some instances, the laboratory provided reporting limits (RLs) that exceed regulatory criteria. The reporting limit represents the lowest value at which the laboratory could verify an exact concentration based on analytical equipment calibration. However, the analytical equipment used is capable of detecting the presence of constituents at lower levels as defined by the method detection limit (MDL), but at levels that are non-quantifiable. Values above the MDL but below the RL were identified as "estimated" values and assigned a "J" qualifier on the analytical data sheets. As a result, it is reasonable to conclude that constituents reported as less than the RL, which are not qualified with a "J" value, are not present above regulatory criteria since the MDL values are below regulatory criteria.

The HHRA identified the following items for AOC C:

- Non-cancer risk estimates (HIs) developed for the base worker, the construction worker, the adult trespasser, and the adolescent trespasser are equal to or less than one, indicating that adverse noncarcinogenic effects are not anticipated under the conditions considered in the risk assessment.

The HIs developed for the hypothetical future resident adult and child exceed 1.0. HIs developed for individual COPCs and target organs do not exceed 1.0.

- The ILCR estimate for the construction worker ($2.5E-07$) does not exceed the USEPA target risk range ($1E-04$ to $1E-06$) or the State of Florida cancer risk benchmark ($1E-06$).
- The ILCR estimates for the base worker ($8.6E-06$) and trespasser ($7.1E-06$) exceed the conservative end of the USEPA target risk range ($1E-06$). Risk from exposure to benzo(a)pyrene (equivalent) in surface soil exceeds $1E-06$ for both receptors.
- The ILCR estimate for the hypothetical future resident ($1.4E-04$) exceeds the USEPA target risk range ($1E-04$ to $1E-06$). Risk from exposure to benzo(a)pyrene (equivalent), Aroclor-1260, and arsenic in surface soil and 1-1-dichloroethene; tetrachloroethene; vinyl chloride; carbazole; and aldrin in groundwater exceeds $1E-06$. The EPCs for both tetrachloroethene and vinyl chloride are below their respective MCLs.

The ERA identified the following items for AOC C:

- The screening-level ERA concluded that no detected chemical had a HQ greater than 1.0 in surface water or sediment, which was the only media determined to be a potential risk to ecological receptors at AOC C.
- Some inorganics and VOCs were selected as COPCs because no Region IV screening levels were available. However, a Step 3A analysis suggested that these chemicals were not present in quantities that could result in unacceptable risks.
- The industrialized nature of AOC C does not facilitate widespread ecological habitation. No further ecological risk assessment or ecological risk management appears to be warranted for AOC C.

8.2 RECOMMENDATIONS

Based on the sampling results, a gap currently exists in the surface soil sampling data at AOC C. Benzo(a)pyrene and dibenz(a,h)anthracene were detected above industrial SCTLs, and benzo(a)pyrene was identified in the HHRA with the ILCR above USEPA target levels in some scenarios. In addition, other PAH compounds and one PCB constituent were detected above residential CSTLs. These results were obtained from a single soil sample location. Therefore, it is recommended that additional delineation be performed to identify the extent of contamination present in the surface soil surrounding

MPT-55-SS06-01. In addition, a surface water sample should be obtained from the stormwater retention pond and analyzed for free cyanide. Once completed, a letter report will be issued presenting the results and recommendations and incorporated into the RFI report as an appendix.

Furthermore, TtNUS recommends a CMS to evaluate and recommend a remedial action to mitigate groundwater contamination at AOC C. At a minimum, the CMS should evaluate the implementation of natural attenuation of COPCs in groundwater and land use controls.