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NAS CECIL FIELD, FL
5090.3a

"SAMPLING AND ANALYSIS PLAN ADDENDUM LETTER REPORT FOR UNDERGROUND
STORAGE TANK INVESTIGATIONS AT BUILDING 81 TANKS 81 A, B AND C NAS CECIL
FIELD FL"
8/17/2001
TETRA TECH NUS INC



TETRA TECH NUS, INC.

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Document Tracking No. 01JAX0128

August 17, 2001

Project Number N3996

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: Nick Ugolini
Remedial Project Manager
2155 Eagle Drive
North Charleston, South Carolina 29406

Reference: Clean Contract No. N62467-94-D-0888
Contract Task Order No. 0168

Subject: Sampling and Analysis Plan (SAP) Addendum
for Underground Storage Tank (UST) Investigations at
Building 81, Tanks 81 A, B, and C
Former Naval Air Station Cecil Field
Jacksonville, Florida

Dear Mr. Ugolini:

Tetra Tech NUS, Inc. (TtNUS) is pleased to provide a copy of the SAP Addendum for the above referenced site. This plan was prepared under the Comprehensive Long-term Environmental Action Navy Contract Number N62467-94-D-0888 with the U.S. Navy Southern Division, Naval Facilities Engineering Command.

INTRODUCTION

This work plan is an addendum to the approved SAP (TtNUS, 2001). This site-specific investigation work plan is designed to guide field personnel in the execution of the investigation to be conducted near Building 81 at Cecil Field. If an item is not specifically addressed in this addendum or the SAP, the reader is referred to the guidance documents listed in Section 1.3 of the SAP.

The general location of the site is shown by Figure 1-1. Specifically, the investigation will delineate the extent of groundwater contamination identified in the area near the former location of Tanks 81 A, B, and C.

SITE DESCRIPTION AND HISTORY

Former Tanks 81 A, B, and C consisted of three-aboveground storage tanks (AST) located northwest of Building 81. The ASTs were used to store diesel fuel and were contained in a concrete-lined pit. Figure 1-2 shows the location of the concrete-lined pit, which contained the former ASTs. Figure 1-3 is a groundwater flow map generated from the Installation Restoration (IR) investigation that shows Tanks 81 A, B, and C were situated on a groundwater high. Thus the flow direction shifts depending on where you are on site.

In June 2000, TtNUS began an investigation into the area surrounding the concrete-lined pit that formerly contained the three diesel ASTs, Tanks 81 A, B, and C. There was an organic vapor analyzer and flame ionization detector (OVA-FID) measurement of soil vapor (about 200 ppm) that exceeded the Florida Department of Environmental Protection's (FDEP) definition of excessively contaminated soil (50 ppm). A sample of the soil from the same location was collected and analyzed by a laboratory for Kerosene Analytical Group (KAG) constituents. Since the soil KAG data indicated there was no adverse impact to soil, it was assumed that the groundwater had also not been impacted.

A previous investigation was conducted in the area under the Installation Restoration (IR) program to investigate the Former Transformer Storage Area (Potential Source of Contamination 25). Attachment A is a figure that illustrates the IR area (shown by cross-hatching). IR investigations (from April 1999 to June 2000) identified that groundwater was contaminated with pesticides; and, subsequent groundwater sampling showed that the pesticide concentrations, which exceeded the groundwater cleanup target levels (GCTLs), were confined to the area immediately around monitoring well CEF-P25-01S. It should be noted that the direction of groundwater flow direction between the IR and AST sites is generally eastward and toward the IR site. Also, soil contamination was identified in the area that showed levels of polynuclear aromatic hydrocarbons (PAHs), pesticides, and polychlorinated biphenyls (PCBs) in excess of the Florida Department of Environmental Protection (FDEP) soil cleanup target levels (SCTLs). As a result of the IR investigation, the Remedial Action Contractor (RAC) was tasked to do the soil source removal at the site described by the crosshatched area shown on Attachment A.

During their source removal, the RAC determined that the area of the proposed dig overlapped with the area where the ASTs resided. At the Navy's direction, the RAC expanded their work to include removal of any excessively contaminated soil they might encounter in the former AST area. The AST area encompassed the area shown on Figure 1-2 and the rectangular boxes within 60 feet north and south of the concrete-lined pit. The RAC did report encountering excessively contaminated soils in the area of former Tanks 81 A, B, and C, and they encountered some free product associated with the oil water separator 20 feet to the east of Tanks 81 A, B, and C, which they removed. A large portion of the concrete-lined pit was also excavated. Following that source removal, a monitoring well, CEF-81-9S, was installed in the area where elevated OVA-FID readings were obtained. Figure 1-3 shows the location of that well. The groundwater analytical results from the sample from that well indicated the levels of naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, and total recoverable petroleum hydrocarbons (TRPH) exceeded respective GCTLs. This work plan is designed to specifically address the petroleum contamination determined to be associated with the monitoring well CEF-81-9S.

CONCLUSIONS AND PROPOSED INVESTIGATION

TtNUS considers the site an atypical UST site requiring investigation in two main phases. The site's size is typical; however, a soil source removal has been performed and it is assumed that no excessively contaminated soil remains on site.

Phase I will involve the installation of approximately 15 groundwater locations using direct push technology (DPT) drilling combined with mobile laboratory screening. Figure 1-4 shows ten proposed DPT sample locations, and the other five locations will be field located as needed by the field operations leader (FOL). The results from the Phase I sampling will be reviewed and evaluated to propose necessary fieldwork before proceeding with Phase II. Phase II will involve the installation of additional monitoring wells as needed and the sampling of existing and newly installed monitoring wells. The Phase I field and laboratory results and the resulting recommendations for each site will determine the scope of the Phase II work. For the purposes of this work plan, it is assumed that the soil will be delineated in the first phase and approximately five-shallow and one-deep well may be needed to confirm and delineate groundwater contamination. There are no surface water features on site requiring surface water or sediment sampling activities. TtNUS anticipates that a Site Assessment Report (SAR) will be prepared and

submitted at the completion of Phase II activities, which will incorporate the soil source removal report from the RAC.

Sampling methods, quality assurance (QA), quality control (QC), and investigative derived waste (IDW) management will be conducted in accordance with the BWGWP, unless otherwise indicated in the SAP.

ANALYTICAL RATIONALE

Mobile laboratory screening analyses for this site is very similar to that of the oil/water (O/W) sites; therefore, the samples collected during Phase I will be analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, and Diesel Range Organics (DRO). Since the site is closely associated with an IR site, TtNUS considers it prudent to use the FDEP's used oil group analyses in Chapter 62-770, Florida Administrative Code (FAC) of the Phase II investigation at this site and any other fixed-based laboratory samples that may be collected at the site. The groundwater used oil group methods are as follows:

- SW846 8260B for Priority Pollutant Volatile Organics with gas chromatograph/mass spectrometry of peaks greater than 10 micrograms per liter (TICs),
- SW846 8270C for Priority Pollutant Extractable Organics with TICs,
- Florida-Petroleum Range Organics (FL-PRO) for total recoverable petroleum hydrocarbons (TRPH), and
- SW846 6010B for total arsenic, total cadmium, total chromium, and total lead.

PHASE I

This section outlines the proposed Phase I activities at Tanks 81 A, B, and C. The details of each activity listed below are provided in Section 4.0 of the SAP (TtNUS, 2001). The proposed activities are:

- Locate utilities, research the Navy map vault for utility information and update site maps with utility data (see Section 4.2 of SAP).
- Mark and clear the proposed subsurface locations for DPT activities. Location identification will follow the method described in Section 5.3.2 of the SAP.
- Gauge and record water levels in the existing wells on the applicable form in Table 1 and confirm groundwater flow for the site.
- Use DPT to collect shallow groundwater samples for mobile laboratory screening at each of the locations shown by Figure 4. Sample identification will follow the method described in Section 5.3.2 of the SAP. Each sample will be collected for BTEX, naphthalene, and DRO using bottlenecks to be provided by the mobile laboratory. The mobile laboratory will also provide chain of custody (COC), which will be maintained by them. The field operations leader will collect a final copy of the COCs for the project file.
- Add additional DPT sample locations as necessary to estimate the extent of shallow groundwater contamination.
- Use DPT to collect one discrete deep groundwater sample from 26 to 30 feet below land surface (bls) for mobile laboratory screening. The location is shown on Figure 4.
- If the groundwater sample from 26 to 30 feet exceeds GCTLs, the DPT rig will return to the same location to collect a groundwater sample from 46 to 50 feet bls.

- If the sample from 46 to 50 feet bls exceeds GCTLs, then the field operations leader and/or the task order manager will be contacted.
- The field operations leader (FOL) will coordinate with ARC Surveyors to have the DPT locations surveyed for horizontal coordinates.

DATA EVALUATION

The DPT data and recommendations for the well locations will be submitted to the Navy and the FDEP. It is assumed that the Navy and the FDEP will review and comment on the data and recommendations within two weeks. Following approval of the well locations, TtNUS personnel will re-mobilize to the site for the well installation.

PHASE II

This section outlines the proposed Phase II activities at Tanks 81 A, B, and C, and the details of each activity are provided in Section 4.0 of the SAP. The proposed activities are:

- Mark and clear utilities at the proposed monitoring well locations.
- Installation of approved shallow groundwater wells and/or one deep monitoring well. For estimating purposes, TtNUS considered five possible new shallow wells and one deep monitoring well.
- Gauge and record water levels in the existing monitoring wells and any newly installed monitoring wells.
- Collect groundwater samples from the newly installed monitoring wells and existing source well CEF-81-9S for used oil group analyses by a fixed-based laboratory. The used oil group analyses were listed previously. Table 2 provides the proposed monitoring well identifications and associated sampling identifications along with QA/QC requirements.
- Perform aquifer testing (slug tests) on three shallow monitoring wells (to be determined) concurrent with a survey of DPT sample locations and monitoring wells by a registered surveyor.
- The FOL will coordinate with ARC Surveyors to have the monitoring wells surveyed for vertical and horizontal coordinates.
- Collect one soil investigative derived waste (IDW) sample for characterization prior to disposal. A single sample, CEF-81ABC-IDW-002, will be collected for each of the four methods listed on Table 4-1. The volatile organic sample will be collected as a grab sample from the soil drum closest to the source area, and the other samples will be collected as a composite of the soil drums generated during this phase.
- Evaluate data from Phase I and II and prepare the SAR.

This addendum is submitted for your approval. If you have any questions, please call me.

Sincerely,

A handwritten signature in black ink, appearing to read "Paul E. Calligan". The signature is fluid and cursive, with a long horizontal flourish extending to the right.

Paul E. Calligan, P.G.
Task Order Manager

PC/jmj

Attachments (7)

cc: Mr. Mark Perry, TiNUS (unbound)
Ms. Debbie Wroblewski, TiNUS (cover letter only)
Project File

TABLES

TABLE 1

GROUNDWATER LEVEL MEASUREMENT SHEET
 NAS CECIL FIELD
 JACKSONVILLE, FLORIDA



Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NAS Cecil Field **Project No.:** N3996.JG0050210
Location: B. 81, Tanks 81 A, B, & C **Personnel:** _____
Weather Conditions: _____ **Measuring Device:** Oil/Water Indicator
Tidally Influenced: Yes ___ No **X** **Remarks:** _____

| Well or Piezometer Number | Date | Time | Elevation of Reference Point (feet)* | Total Well Depth (feet)* | Water Level Indicator Reading (feet)* | Thickness of Free Product (feet)* | Groundwater Elevation (feet)* | Comments |
|---------------------------|------|------|--------------------------------------|--------------------------|---------------------------------------|-----------------------------------|-------------------------------|----------|
| 87G00101 | | | 77.66 | 15 | | | | |
| CEF-80-12S | | | 78.54 | 12 | | | | |
| CEF-80-13S | | | 78.17 | 15 | | | | |
| CEF-80-14S | | | 78.57 | 15 | | | | |
| CEF-80-2S | | | 78.57 | 15 | | | | |
| CEF-80-3S | | | 77.68 | 15 | | | | |
| CEF-80-5S | | | 78.18 | 15 | | | | |
| CEF-80-7S | | | 77.27 | 10 | | | | |
| CEF-81-2S | | | 78.41 | 15 | | | | |
| CEF-81-3S | | | 78.18 | 15 | | | | |
| CEF-81-4S | | | 77.84 | 15 | | | | |
| CEF-81-5SR | | | 78.26 | 14 | | | | |
| CEF-81-6S | | | 77.63 | 15 | | | | |
| CEF-81-7S | | | 77.56 | 13 | | | | |
| CEF-81-8S | | | 77.61 | 14 | | | | |
| CEF-81-9S | | | 77.72 | 13 | | | | |
| CEF-P25-1S | | | 77.57 | 12 | | | | |
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* All measurements to the nearest 0.01 foot

TABLE 2
GROUNDWATER SAMPLING LOCATIONS AND ANALYSIS
BUILDING 81, TANKS 81 A, B, AND C
NAS CECIL FIELD
JACKSONVILLE, FLORIDA

| Sample ID | Location | Analysis | | | |
|------------------|-------------------------------|---------------|---------------|------|-----------------|
| | | PPVO w/TIC | PPEO w/TIC | TRPH | Total Metals |
| CEF-81-GW-10S-01 | From new well CEF-81-10S | X | X | X | X |
| CEF-81-GW-11S-01 | From new well CEF-81-11S | X | X | X | X |
| CEF-81-GW-12S-01 | From new well CEF-81-12S | X | X | X | X |
| CEF-81-GW-13S-01 | From new well CEF-81-13S | X | X | X | X |
| CEF-81-GW-14S-01 | From new well CEF-81-14S | X | X | X | X |
| CEF-81-GW-15I-01 | From new well CEF-81-15I | X | X | X | X |
| CEF-81-GW-09S-02 | From existing well CEF-81-09S | X | X | X | X |
| CEF-81-DU-N-01 | Location to be determined | X | X | X | X |
| CEF-81-MD-N-01 | Location to be determined | X | X | X | X |

Notes:

PPVO = Priority Pollutant Volatile Organics

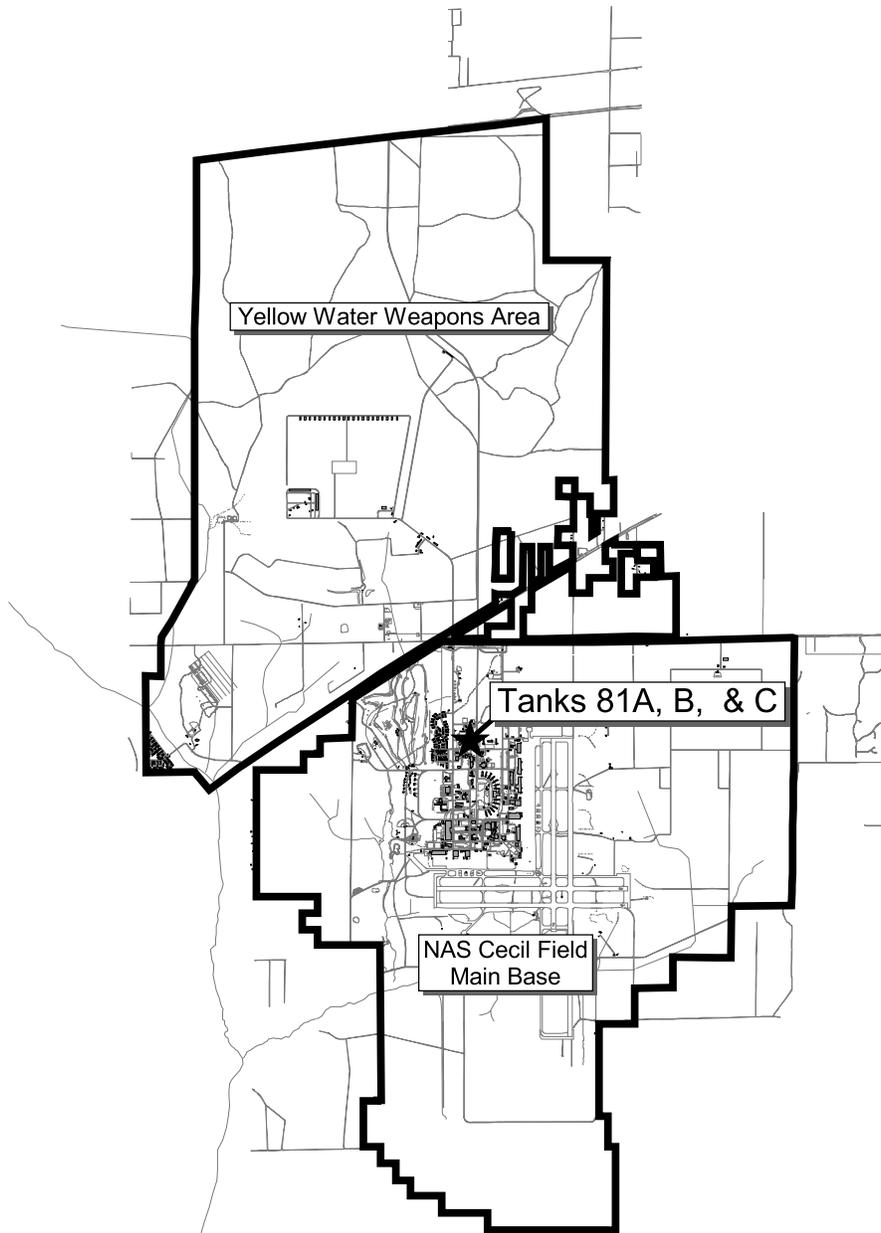
PPEO = Priority Pollutant Extractable Organics

TIC = Peaks greater than 10 micrograms per liter as identified by gas chromatograph/mass spectrometry.

TRPH = Total Recoverable Petroleum Hydrocarbons

Total Metals for arsenic, cadmium, chromium, and lead.

FIGURES



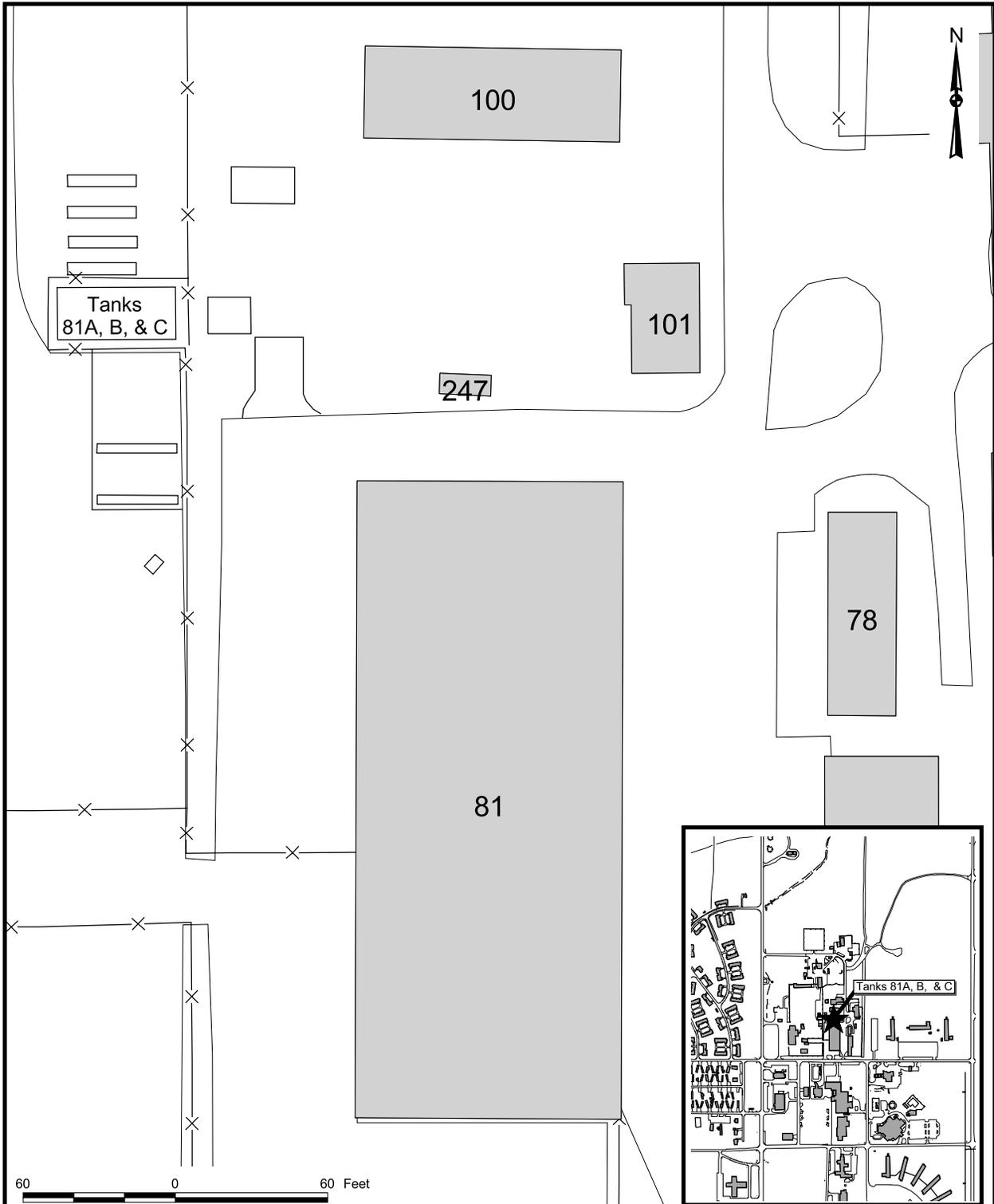
8000 0 8000 Feet

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| DRAWN BY MJJ | DATE 08May00 |
| CHECKED BY | DATE |
| COST/SCHEDULE-AREA | |
| SCALE AS NOTED | |



GENERAL LOCATION MAP
TANKS 81A, B, & C
UST INVESTIGATION WORK PLAN
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

| | |
|---------------------------|----------|
| CONTRACT NUMBER 3996 | |
| APPROVED BY | DATE |
| APPROVED BY | DATE |
| DRAWING NO. FIGURE 1-1 | REV 1 |

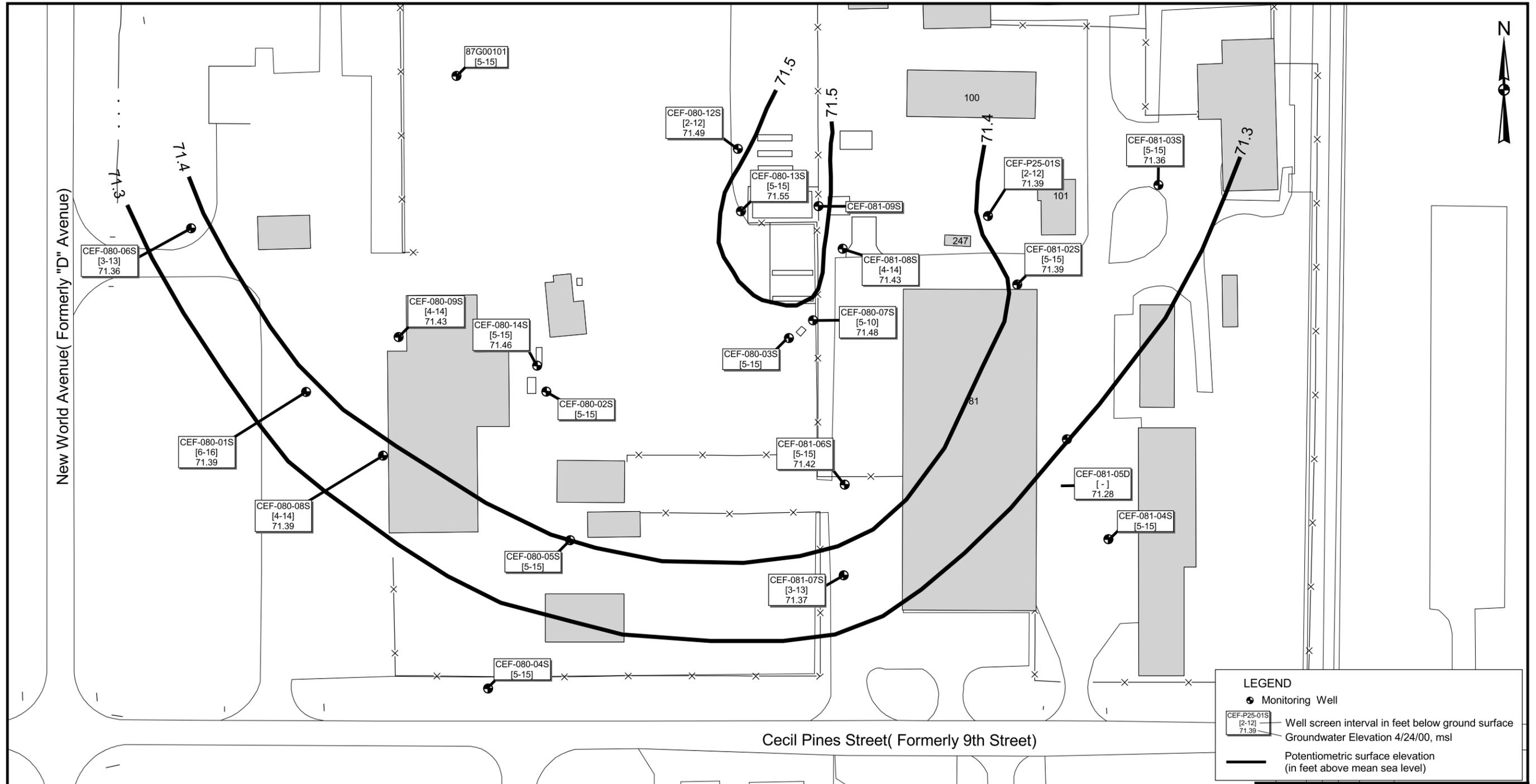


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| CHECKED BY | DATE |
| COST/SCHEDULE-AREA | |
| SCALE AS NOTED | |



SITE LAYOUT MAP
TANKS 81A, B, & C
UST INVESTIGATION WORK PLAN
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

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| CONTRACT NUMBER 3996 | |
| APPROVED BY | DATE |
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| DRAWING NO. FIGURE 1-2 | REV 0 |



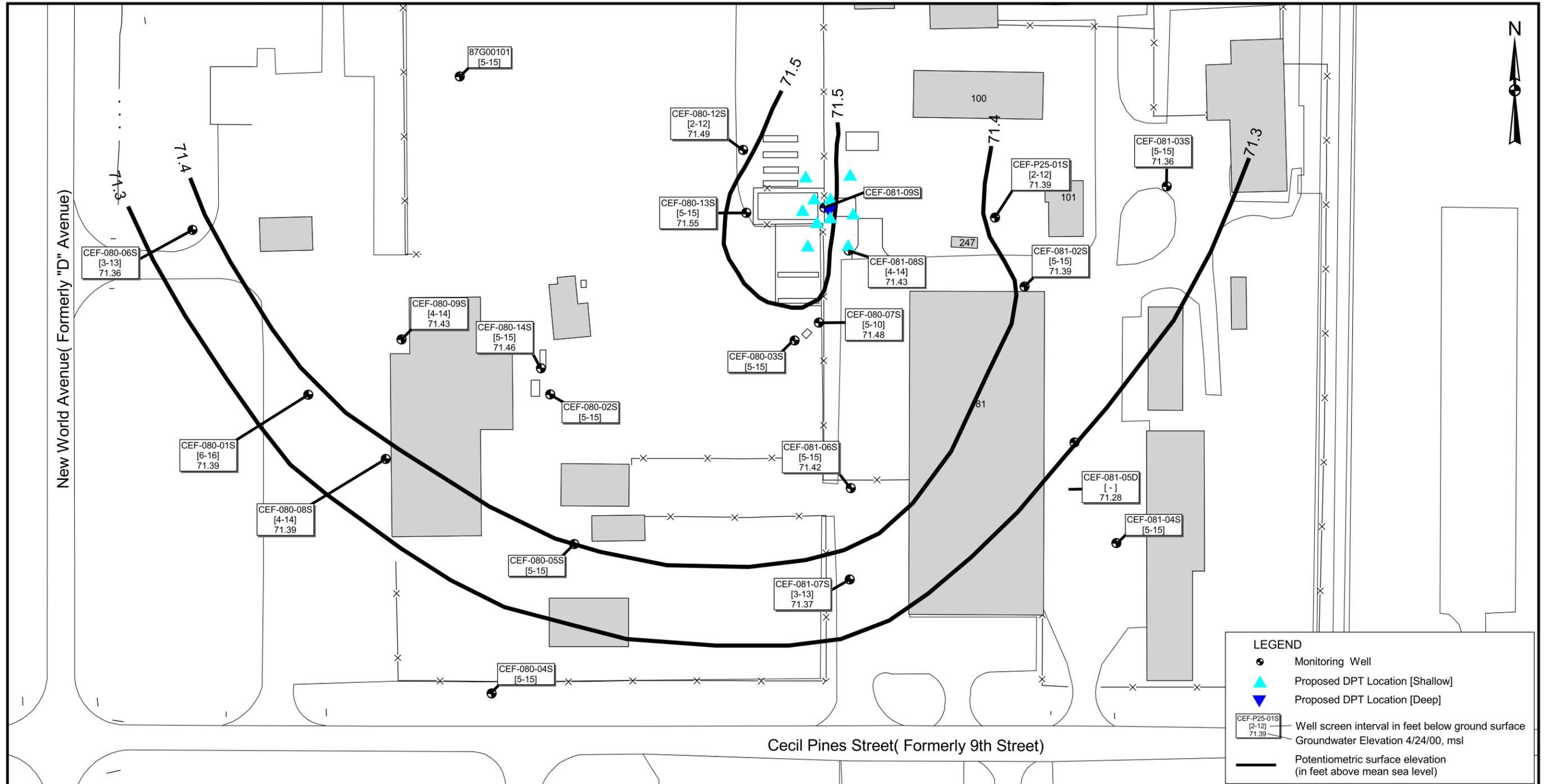
| NO. | DATE | REVISIONS | BY | CHKD | APPD | REFERENCES |
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| DRAWN BY MJJ | DATE 15Feb00 |
| CHECKED BY | DATE |
| COST/SCHED-AREA | |
| SCALE AS NOTED | |



POTENTIOMETRIC SURFACE MAP
TANKS 81A, B, & C
UST INVESTIGATION WORK PLAN
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

| | |
|---------------------------|-----------|
| CONTRACT NO. 3996 | |
| APPROVED BY | DATE |
| APPROVED BY | DATE |
| DRAWING NO. FIGURE 1-3 | REV. 0 |



| NO. | DATE | REVISIONS | BY | CHKD | APPD | REFERENCES |
|-----|------|-----------|----|------|------|------------|
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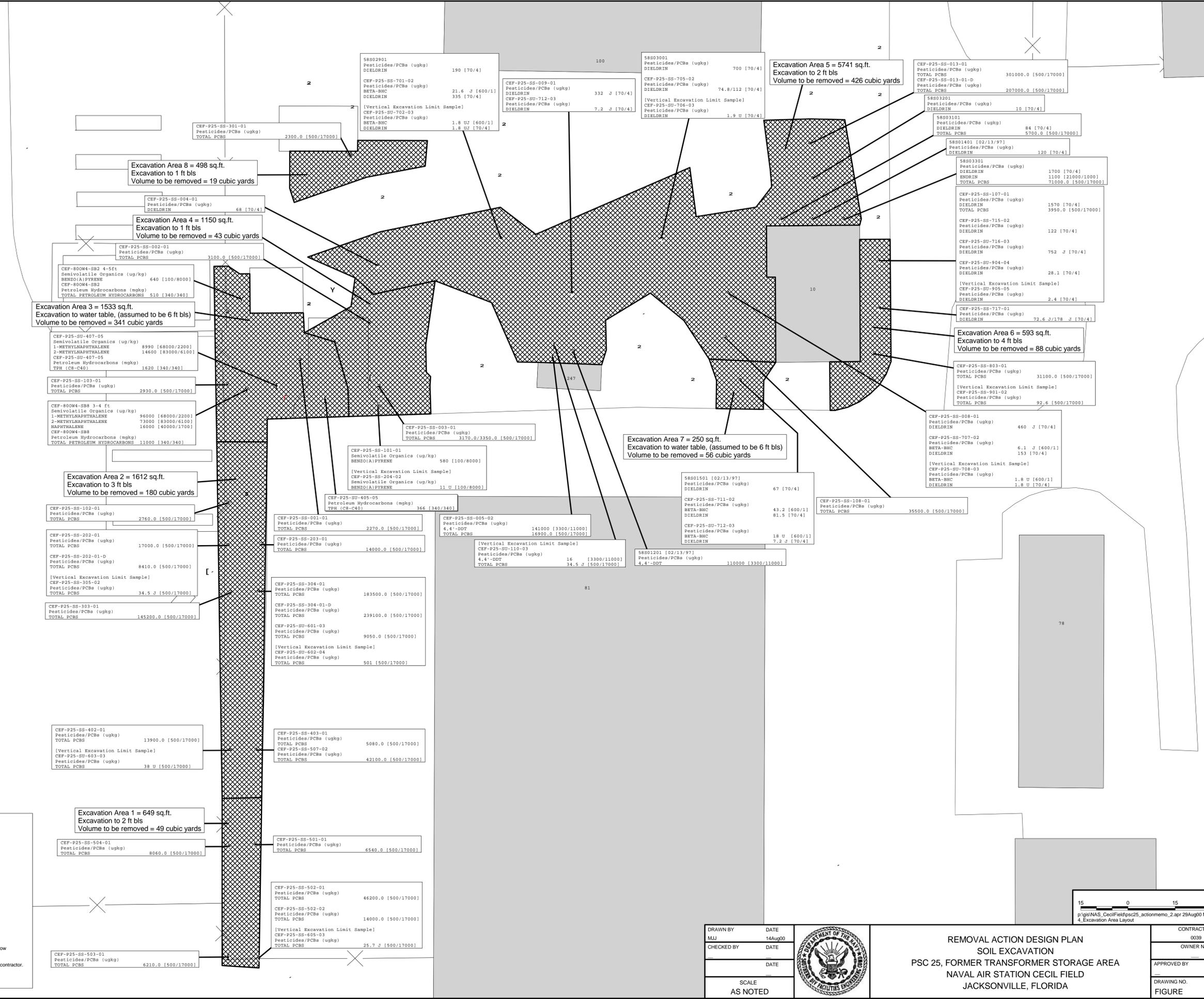
| | |
|-------------------|-----------------|
| DRAWN BY MJJ | DATE 15Feb00 |
| CHECKED BY | DATE |
| COST/SCHED-AREA | |
| SCALE AS NOTED | |



PROPOSED DPT LOCATIONS
TANKS 81A, B, & C
UST INVESTIGATION WORK PLAN
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

| | |
|---------------------------|-----------|
| CONTRACT NO. 3996 | |
| APPROVED BY | DATE |
| APPROVED BY | DATE |
| DRAWING NO. FIGURE 1-4 | REV. 0 |

ATTACHMENT A



Excavation Area 8 = 498 sq.ft.
Excavation to 1 ft bls
Volume to be removed = 19 cubic yards

| | | |
|-------------------|-------------------------|--------------------|
| CEP-P25-SS-301-01 | Pesticides/PCBs (ug/kg) | 2300.0 [500/17000] |
| TOTAL PCBs | | |

Excavation Area 4 = 1150 sq.ft.
Excavation to 1 ft bls
Volume to be removed = 43 cubic yards

| | | |
|-------------------|-------------------------|-----------|
| CEP-P25-SS-004-01 | Pesticides/PCBs (ug/kg) | 68 [70/4] |
| TOTAL PCBs | | |

Excavation Area 3 = 1533 sq.ft.
Excavation to water table, (assumed to be 6 ft bls)
Volume to be removed = 341 cubic yards

| | | |
|-------------------|-------------------------|--------------------|
| CEP-P25-SS-002-01 | Pesticides/PCBs (ug/kg) | 3100.0 [500/17000] |
| TOTAL PCBs | | |

Excavation Area 2 = 1612 sq.ft.
Excavation to 3 ft bls
Volume to be removed = 180 cubic yards

| | | |
|-------------------|-------------------------|--------------------|
| CEP-P25-SS-103-01 | Pesticides/PCBs (ug/kg) | 2930.0 [500/17000] |
| TOTAL PCBs | | |

Excavation Area 1 = 649 sq.ft.
Excavation to 2 ft bls
Volume to be removed = 49 cubic yards

| | | |
|-------------------|-------------------------|--------------------|
| CEP-P25-SS-504-01 | Pesticides/PCBs (ug/kg) | 8060.0 [500/17000] |
| TOTAL PCBs | | |

Excavation Area 5 = 5741 sq.ft.
Excavation to 2 ft bls
Volume to be removed = 426 cubic yards

| | | |
|------------|-------------------------|------------|
| 58803001 | Pesticides/PCBs (ug/kg) | 700 [70/4] |
| TOTAL PCBs | | |

Excavation Area 6 = 593 sq.ft.
Excavation to 4 ft bls
Volume to be removed = 88 cubic yards

| | | |
|-------------------|-------------------------|---------------------|
| CEP-P25-SS-803-01 | Pesticides/PCBs (ug/kg) | 31100.0 [500/17000] |
| TOTAL PCBs | | |

Excavation Area 7 = 250 sq.ft.
Excavation to water table, (assumed to be 6 ft bls)
Volume to be removed = 56 cubic yards

| | | |
|-------------------|-------------------------|---------------------------|
| CEP-P25-SS-003-01 | Pesticides/PCBs (ug/kg) | 3170.0/3350.0 [500/17000] |
| TOTAL PCBs | | |

Legend

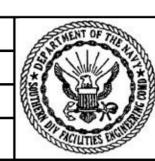
- Monitoring Well
- Surface Soil Sample
- Surface and Subsurface Soil Sample
- Subsurface Soil Sample
- Buildings
- Excavation Area

Sample ID
CEP-P21-SS-001
Fraction (ug/kg)
PARAMETER 500 [100/200]

FDEP Residential SCTL/
FDEP Leachability SCTL
Detected Concentration
Parameter

- Notes:**
- Warning: Obtain utility clearance before excavation.
 - Extent of excavation to be marked by Tetra Tech NUS, Inc.
 - Removal will be conducted to various depths ranging from 1' to the water table, which is assumed to be 6' below ground surface as noted on label.
 - Contaminants of concern are PCBs, Pesticides, Semivolatiles, and TRPH.
 - Waste characterization, transport, and disposal of excavated soil are the responsibility of the remedial action contractor.
 - Return site to pre-excavation conditions.
 - Provide proper support of excavation walls to protect adjacent building and paved areas.
 - Remediation based on FDEP Leachability and 3 times Residential criteria exceedances.

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| DRAWN BY | DATE |
| MJ | 14Aug00 |
| CHECKED BY | DATE |
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| SCALE | AS NOTED |



REMOVAL ACTION DESIGN PLAN
SOIL EXCAVATION
PSC 25, FORMER TRANSFORMER STORAGE AREA
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

| | |
|--------------|------|
| CONTRACT NO. | 0039 |
| OWNER | |
| APPROVED BY | DATE |
| DRAWING NO. | REV. |
| FIGURE | 0 |



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4_Excavation Area Layout