

Comprehensive Long-Term Environmental Action Navy (CLEAN) II

Contract No. N62742-94-D-0048 Contract Task Order No. 0004

Design Documents

Thermal Desorption Treatment of PCB-Contaminated Soil

Former Naval Air Station Barbers Point Oahu, Hawaii

Department of the Navy Pacific Division Naval Facilities Engineering Command 258 Makalapa Drive, Suite 100 Pearl Harbor, Hawaii 96860-3134

Comprehensive Long-Term Environmental Action Navy (CLEAN) II

Contract No. N62742-94-D-0048 Contract Task Order No. 0004

Design Documents

Thermal Desorption Treatment of PCB-Contaminated Soil

Former Naval Air Station Barbers Point Oahu, Hawaii

Prepared for

Department of the Navy Pacific Division Naval Facilities Engineering Command 258 Makalapa Drive, Suite 100 Pearl Harbor, Hawaii 96860-3134

Prepared by

Earth Tech, Inc. 841 Bishop Street, Suite 500 Honolulu, Hawaii 96813-3920

and

Tetra Tech EM Inc. 2828 Paa Street, Suite 3080 Honolulu, Hawaii 96819-4448

January 2003

CONTENTS

DESIGN SPECIFICATIONS

DESIGN DRAWINGS

ERRATA SHEET

BASIS OF DESIGN

RESPONSE TO COMMENTS



DEPARTMENT OF THE NAVY CO PACIFIC DIVISION NAVAL FACILITIES ENGINEERING COMMAND PEARL HARBOR, HAWAII

CONTRACT NUMBER: N62742-02-R-1800 CTO: 0001 AND APPROPRIATION: OMN

THERMAL DESORPTION TREATMENT OF PCB-CONTAMINATED SOIL at the

FORMER NAS BARBERS POINT

OAHU, HAWAII

DESIGN BY:

EARTH TECH, INC. 841BISHOP STREET, SUITE 500 HONOLULU, HAWAII 96813

AND

TETRA TECH EM INC. 2828 PAA STREET, SUITE 3080 HONOLULU, HAWAII 96817



SPECIFICATION SUBMITTED BY:	Sarah P. Babcock, P.E.
SPECIFICATION APPROVED BY:	DATE:

PROJECT TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

01110	GENERAL PARAGRAPHS	
01330	SUBMITTAL PROCEDURES	

- 01501 TEMPORARY FACILITIES AND TRAFFIC CONTROL
- 01575 TEMPORARY ENVIRONMENTAL CONTROLS

DIVISION 02 - SITE WORK

- 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL
- 02181 REMEDIATION OF CONTAMINATED SOILS BY THERMAL DESORPTION
- 02231 CLEARING AND GRUBBING
- 02731 AGGREGATE SURFACE COURSE
- 02742 ASPHALT PAVING
- 02770 CONCRETE SIDEWALKS AND CURBS AND GUTTERS
- 02821 CHAIN LINK FENCES AND GATES
- 02920 SITE RESTORATION

DIVISION 03 - CONCRETE

03300 CAST-IN-PLACE CONCRETE

-- End of Project Table of Contents --

SECTION 01110

GENERAL PARAGRAPHS

PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

1.1.1 General Project Description

This work is being completed under Title 40 of the Code of Federal Regulations (40 CFR) Chapter I ,part 300 as part of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or Superfund program.

The work includes furnishing all labor, materials, and equipment necessary for the low-temperature thermal desorption treatment of a minimum of 27,106 cubic yards (CY) not to exceed 35,660 CY of soil from two sources referred to as Group A and Group B, and from additional sites referred to as Group C soils that will be added to the work via a future design modification, as shown in the Table I. The treatment shall be conducted at a treatment site at former Naval Air Station (NAS) Barbers Point as shown on the drawings.

TABLE I Anticipated Quantities by Soil Group

SOILS	MINIMUM CY	MAXIMUM CY
Group A	6,415	6,415
Group B	7,166	8,957
Future Group C ^a	13,525	20,288

^aActual volume to be excavated and treated as part of future Group C sites is not known at this time. The quantities given in Table I have been estimated by the Navy. Group C soil will be a combination of previously excavated soil in stockpiles requiring transport before treatment and in-situ soil requiring excavation and transport prior to treatment.

1.1.2 Preparation of Treatment Site

The treatment site shall be prepared as needed by the contractor for setup and completion of the thermal desorption system. The contractor shall submit a treatment site layout and design details for approval before construction of the treatment site. The design shall include layout dimensions, a grading and drainage plan, access roads, and construction details. The contractor shall utilize the 9-acre area that is available for the treatment site as shown in the design drawings in the most efficient manner. The contractor is not required to utilize the entire area available. The treatment site shall contain but not be limited to the following elements: fencing,, a truck decontamination facility, temporary access roads, a concrete pad for desorption equipment, a lined pre-treatment soil preparation area, water storage facilities, a lined post-treatment staging area, temporary work facilities, drainage control, and other elements deemed necessary by the contractor.

1.1.3 Contaminated Soil Requiring Treatment

Group A soil is stockpiled in three locations as shown on the design drawings: 1) Soil from previous

removal activities at former NAS Barbers Point is stockpiled immediately north of the treatment site. 2) Soil from removal activities at Pearl Harbor Naval Complex (PHNC) is stockpiled at former NAS Barbers Point at two locations: approximately 1,200 feet southeast of the treatment site; and immediately north of the treatment site. 3) Soil from removal activities at Naval Computer and Telecommunications Area Master Station Pacific (NCTAMS PAC) is stockpiled at Lualualei, approximately 15 miles northwest of the treatment site.

Group B soils are mainly in-situ at sites at Ford Island, PHNC; Iroquois Point; Building 81, Naval Radio Transmitting Facility (NRTF) Lualualei; and former Drum Crushing Area, former NAS Barbers Point as shown on the design drawings. In-situ soils will require excavation and transport to the treatment area as part of this contract. A portion of the Group B soil will already have been excavated and stockpiled for treatment north of the treatment area at NAS Barbers point as shown on the drawings. Some of the Group B that have been excavated will require site restoration as shown on the drawings.

Future Group C soils are mainly in-situ at sites at NCTAMS PAC, which includes NRTF Lualualei and NCTAMS PAC Wahiawa; and PHNC, which includes Shipyard, Halawa-Main Gate, Naval Housing, West Loch, Waipio Peninsula. In-situ Group C soils will require excavation and transportation to the treatment site at former NAS Barbers Point. Some of the Group C soils are located in stockpiles at former NAS Barbers Point and will require transport to the treatment area. A design amendment will detail the work to be conducted for the Group C sites.

1.1.4 Contaminants of Concern

There are approximately 6,415 CY of Group A soils. These soils are contaminated with polychlorinated biphenyls (PCBs), polynuclear aromatic hydrocarbon (PAHs), and chlordane. Portions of the Group A soils also contain total petroleum hydrocarbons (TPH) as diesel and motor oil.

There is a minimum of 7,166 CY of soil from Group B sites and stockpiles contaminated with PCBs associated with transformers. Some of the Group B soils also contain PAHs. Approximately 251 CY of the Group B soil is located at the Drum Crushing Area and contains 1,1-dichloro-2,2-bis(p-chlorophenyl)ethane (4,4'-DDD), dichlorodiphenyldichloroethylene (4,4'-DDE), 1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane (4,4'-DDT), alpha-chlordane, gamma-chlordane, heptachlor epoxide, and arsenic. Delineation sampling has been conducted to define area and depth of contamination at the Group B sites as shown on the drawings.

A minimum of 13,525 CY of soil are expected from approximately 50 Group C sites and two stockpiles contaminated with PCBs. The Navy is currently sampling these sites to delineate contaminated soil for excavation. A design amendment will detail the contaminants, delineation, and excavation at the future Group C sites.

1.1.5 Treatment System

Contractor shall provide a low-temperature thermal desorption treatment system that shall be used to reduce contaminant concentrations in the soil to meet the cleanup criteria specified in SECTION 02181 REMEDIATION OF CONTAMINATED SOIL BY THERMAL DESORPTION. Soils could contain concrete and asphalt rubble and may be blended prior to treatment to provide relatively uniform contaminant concentrations. Treated soil may be used for backfill in the Group B and future Group C excavation areas. Treated soil that is not used for backfill shall be placed in the adjacent coral pit area as shown on the drawings. Soil from the Group B Drum Crushing Area shall not be treated and shall be handled separately and sent off-island for disposal.

1.1.6 Stockpile Maintenance

Stockpile covers shall be maintained for the duration of the project. This includes the currently existing

stockpiles and all stockpiles created during the excavation and treatment work of this contract.

1.2 LOCATION OF UNDERGROUND FACILITIES

Underground utilities have not been located as part of the design. Consult Navy utility drawings, scan the treatment site and excavation areas with electromagnetic or sonic equipment, and mark the surface of the ground where existing underground utilities are discovered. Verify the elevations of existing utilities and underground obstructions discovered during scanning in locations to be excavated. Protect all utilities and other features not shown to be removed.

1.2.1 Available Utilities

Water is available at the former NAS Barbers Point treatment site through existing valves at two pipe risers as shown on the drawings. Electricity is not available at the treatment site. Telephone service is available at the PWC building located east of the Drum Crushing Area at former NAS Barbers Point.

1.2.2 Notification Prior to Excavation

Notify the NTR at least 48 hours prior to starting excavation work at each site.

1.3 REQUIRED COORDINATION

Excavation, backfill, site restoration, and transportation activities in the vicinity of the Family Housing Project on Ford Island will require coordination with Navy Family Housing. Group B sites affected by this requirement are TG-03, TG-06, and TG-01. The point of contract for Family Housing is John Compos at telephone number 808-474-1874.

1.4 SUBMITTALS

Submit the following in accordance with SECTION 01330 SUBMITTAL PROCEDURES, the basic contract, and the following.

SD-01 Preconstruction Submittals

Site Work Plan; G Including:

Treatment Site Layout and Design Details;

Construction Schedule;

Erosion Control Plan;

Waste Management Plan;

Mobilization/Demobilization Plan;

Startup/Shakedown Plan;

Definitive Demonstration Plan;

Treatment Plan:

Air Impact Analysis Protocol;

Sampling and Analysis Plan;

Environmental Protection Plan; G

Environmental Conditions Report; G

Site Health and Safety Plan; G

Quality Control (QC) Plan; G

SD-06 Test Reports

Kick-off Meeting Minutes;

QC Meeting Minutes;

Daily Contractor QC Report/Contractor Production Reports;

QC Testing Plan and Log;

QC Test Results Summary Report;

SD-07 Certificates

Contractor 29 CFR employee hazardous waste training records

SD-11 Closeout Submittals

Remediation Verification Report; G Including:

Summary of Removal Action Activities

Waste Disposal Documentation

Laboratory Reports;

1.5 PRECONSTRUCTION SUBMITTALS

Contractor shall submit to the NTR the preconstruction submittals identified in the basic contract or defined herein. Commencement of site work shall not occur until all preconstruction submittals have been approved by the NTR.

1.5.1 Site Work Plan

The Contractor shall prepare a Site Work Plan (SWP) for all field activities to be conducted under this project. The SWP shall be submitted prior to beginning site activities and include the following elements:

- a. Treatment Site Layout and Design Details: At a minimum, the design shall include all site elements listed in 1.1.2.
- b. Construction Schedule: The schedule shall be a time-scaled logic diagram displaying project activities. Schedule shall include approximate dates and durations for system mobilization, startup, shakedown, definitive demonstration, treatment, and demobilization.

- c. Erosion Control Plan in accordance with the basic contract and as discussed in SECTION 01575 TEMPORARY ENVIRONMENTAL CONTROLS.
- d. Waste Management Plan in accordance with the basic contract.
- e. Mobilization/Demobilization Plan: Specific procedures and requirements for shipment, on-site placement, and demobilization of the thermal desorption system and its subsystems. Include specific procedures to be used for decontamination of system components, test methods for verification of decontamination, the schedule for equipment decontamination and removal from the site, and demolition of the treatment site.
- f. Startup/Shakedown Plan: Plan identifying instruments requiring calibration and describing the required calibration procedure and tolerances in accordance with paragraph 3.9 of SECTION 02181 REMEDIATION OF CONTAMINATED SOILS BY THERMAL DESORPTION.
- g. Definitive Demonstration Plan: List of the proposed operating conditions for process parameters to be continuously monitored. Detailed descriptions of the definitive demonstration schedule, operating conditions and parameters, material sources, and required sampling and analysis shall be included in accordance with paragraph 3.10 of SECTION 02181 REMEDIATION OF CONTAMINATED SOILS BY THERMAL DESORPTION.
- h. Treatment Plan: Specific detailed procedures for continued operation of the system, based on the definitive demonstration results and adjustments for variation in the contaminated material feed shall be included. Schedule of inspection and maintenance procedures and activities shall be included.
- i. Air Impact Analysis Protocol: Obtain Prevention of Significant Deterioration permit and prepare a detailed plan discussing modeling, data used for modeling, and anticipated stack sampling using Hawaii Department of Health (DOH) guidance document included as Attachment I of this section.
- j. Sampling and Analysis Plan: Prepare a detailed plan discussing anticipated sampling procedures including but not limited to sampling equipment, number of samples anticipated, analyses, packing, and shipping for sampling discussed in paragraphs 3.4 and 3.5 of SECTION 02181 REMEDIATION OF CONTAMINATED SOIL BY THERMAL DESORPTION.

1.5.2 Environmental Protection Plan

Submit as an attachment to the SWP in accordance with the basic contract and as specified in SECTION 01575 TEMPORARY ENVIRONMENTAL CONTROLS.

1.5.3 Environmental Conditions Report

Submit as an attachment to the SWP in accordance with the basic contract.

1.5.4 Site Health and Safety Plan

The Contractor shall prepare a Site Health and Safety Plan (HSP) that provides health and safety information for all aspects of construction associated with the project. The HSP shall be prepared in accordance with the requirements specified in the basic contract.

1.5.5 Quality Control (QC) Plan

Submit QC Plan in accordance with the basic contract.

1.6 REPORTS

Prepare and submit to the NTR: QC Meeting Minutes, Daily Contractor QC Report/Contractor Production Reports, Kick-off Meeting Minutes, QC Testing Plan and Log, and QC Test Results Summary Report.

1.7 CERTIFICATES AND ON-SITE RECORDS

The following shall be maintained on-site and made available to the NTR: Contractor 29 CFR employee hazardous waste training records, any required permits, pre- and post-treatment stockpile sampling documentation and results, air monitoring documentation, waste disposal report and permit, waste characterization documentation, disposal documentation for hazardous and regulated waste, and regulatory notifications.

1.8 CLOSEOUT SUBMITTALS

Remediation Verification Report: At the conclusion of field activities, the Contractor shall prepare a Remediation Verification Report (RVR) that shall summarize all field activities conducted at the treatment site and all excavation sites except D-02, E-09, and TC-01. The RVR for D-02, E-09, and TC-01 will be prepared by others and contractor shall provide appropriate information to the Navy for purposes of completing the RVR for these sites.

The Contractor shall submit 10 hard copies and 1 electronic copy of a draft report to the NTR within 75 calendar days of the completion of field activities. The final report shall address any comments on the draft report and be submitted within 30 calendar days after receipt of the draft comments. At a minimum, the report shall include the following:

- (1) A narrative of excavation, transportation, backfill, and treatment activities describing the procedures implemented;
- (2) Documentation of post-treatment soil testing verifying that the cleanup criteria for the removal action have been met. Documentation shall include a summary of all sampling, analyses, and results (i.e., QC Test Results Summary Report);
- (3) Waste Disposal documentation including a summary of all sampling and analyses conducted at the site (i.e., the QC Test Results Summary Report required by the basic contract) and copies of all manifests generated during waste disposal activities; and
- (4) Copies of all laboratory data reports generated during the soil treatment;
- (5) As-built drawings: Annotate the contract drawings to indicate actual excavation limits and depths documented by a licensed surveyor using state plane coordinates.

1.9 GENERAL INTENTION

The primary objective of this project is to use a thermal desorption system to treat contaminated soil

(Group A, Group B, and future Group C soils) to acceptable contaminant concentrations, which will provide for long-term protection of the human health and the environment. The specific objective of the thermal treatment is to treat contaminated soil and reduce the levels of PCB, TPH, PAHs, chlordane, and pesticides to specified cleanup criteria.

1.10 GENERAL DESCRIPTION

The work includes furnishing all labor, materials, and equipment to perform the following:

1.10.1 Treatment Site:

- a. Clear and grub brush and debris at the treatment site and the coral pit located south of the treatment area:
- b. Verify the location and status of subsurface utilities that may be affected by construction within the treatment area;
- c. Backfill an existing abandoned concrete utility trench at the treatment area;
- d. Provide a detailed treatment site design including layout and access design, a grading and drainage plan, and site details;
- e. Grade the site and establish drainage control measures that will remain in place throughout the duration of construction and treatment;
- f. Install a temporary fence;
- g. Construct areas for interim staging, preparation, and treatment of soil;
- h. Construct access roadways and entrances;
- i. Construct temporary stockpile laydown areas (segregated into daily batches) for treated soil that is pending confirmational analysis;
- j. Mobilize treatment equipment to the site;
- k. Set up the treatment system;
- 1. Connect the treatment unit to utilities;
- m. Start up, shakedown, and test the treatment system;
- n. Conduct a definitive demonstration test of the system;
- o. Treat contaminated soil from Group A and Group B sites as shown in the design drawings. Soil from the Drum Crushing Area will not be treated;
- p. Stage treated soil in temporary stockpiles;
- q. After analytical results confirm that the treated soil meets the cleanup criteria, place soil back in Group B and Group C excavations or in the adjacent coral pit located south of the treatment area:
- r. If treated soil does not meet the cleanup criteria for any of the known contaminants, retreat

the soil batch using thermal desorption;

- s. Maintain all new stockpiles created during the treatment project;
- t. After all contaminated soils have been treated, sample and analyze underlying soil at all former stockpile locations at the treatment site including underlying sand and base course at the soil preparation area; treat contaminated soils, if any are detected, by thermal desorption;
- u. If any treated soil failed confirmation sample tests, analyze underlying soil at the interim staging area for treated soil; treat contaminated soils by thermal desorption if contaminants are detected;
- v. Sample, decontaminate (if required) the treatment system pad and demolish the pad; decontaminate all equipment;
- w. Dispose of all treatment waste products at appropriate disposal facilities;
- x. Demobilize equipment and conduct final site cleanup;
- y. Remove temporary fencing;
- z. Perform incidental related work.

1.10.2 Group A Sites (existing stockpiles):

- a. Haul contaminated soil from existing stockpiles to the treatment site;
- b. Provide dust control for soil stockpiles. Specifically provide dust control at the NRTF Lualualei stockpiles that are subject to strong winds. Extreme care must be taken to minimize the production of dust during soil transportation activities.
- c. Maintain the existing stockpiles at NRTF Lualualei and former NAS Barbers Point until all contaminated soil from these stockpiles has been hauled for treatment;
- d. After all contaminated soils have been hauled for treatment, sample and analyze underlying soil at all former stockpile locations; excavate and haul contaminated soils, if any are detected, to the thermal desorption treatment site.

1.10.3 Group B Sites (in-situ soil and some stockpiled soil):

- a. Verify the location and status of subsurface utilities that may be affected by construction within the areas to be excavated and coordinate any necessary utility outages;
- b. Clear and grub brush and debris at the designated areas to be excavated;
- c. Excavate and haul in-situ contaminated soils to the treatment site. Excavate soil from the Drum Crushing Area and send off-island for disposal;
- d. Haul contaminated soil from existing stockpiles to the treatment site;
- e. After confirmation sampling and analysis by others shows that all contaminated soil requiring treatment has been removed, backfill (using successfully treated soil) and restore the excavated sites;

1.10.4 Group C Sites (future work, in-situ soil and some stockpiled soil):

A design amendment will be prepared before work begins at the Group C sites, however the following steps will likely be necessary to complete work for these soils.

- a. Verify the location and status of subsurface utilities that may be affected by construction within the areas to be excavated and coordinate any necessary utility outages;
- b. Clear and grub brush and debris at the designated areas to be excavated;
- c. Excavate and haul in-situ contaminated soils to the treatment site;
- d. Haul contaminated soil from existing stockpiles to the treatment site;
- e. After confirmation sampling and analysis by others shows that all contaminated soil requiring treatment has been removed, backfill (using successfully treated soil) and restore the excavated sites:

1.11 DESCRIPTION OF LIKELY CONTAMINANT SOURCES

Soil from Group A Sites were contaminated with PCBs from former operation and maintenance activities at various transformer facilities. These activities may have included fluid testing and disposal at PCB-containing transformers, leakage or spillage of transformer fluid during maintenance, and land application of PCB-containing oil to ground surfaces for weed and dust control. Soil excavated from Building 81 at NRTF Lualualei was also contaminated with PAHs, which may have resulted from previous activities associated with aboveground and underground storage tanks. Soil excavated from Building 261 at NCTAMS Wahiawa was also contaminated with chlordane, which may have resulted from the spreading of pesticides around the building.

Contamination related to former operations at the Group B and C sites consists primarily of PCBs associated with former transformers, but also PAHs at the former NAS Barbers Point Drum Crushing Area and NRTF Lualualei Building 81 sites. Group B soils at the former Drum Crushing Area contain pesticides and arsenic concentrations greater than the regulatory criteria.

1.12 CONTRACT DRAWINGS

The following drawings have been provided for the project pursuant to contract clause "DFARS 252.236-7001, Contract Drawings, Maps and Specifications."

DRAWIN	G NAVF	AC
NO.	DWG NO.	TITLE
T1	7952139	Vicinity Map and Sheet Index
T2	7952140	Site Location Map, Former NAS Barbers Point
Т3	7952141	Site Location Map, Ford Island, PHNC
T4	7952142	Site Location Map, PHNC
T5	7952143	Site Location Map, Iroquois Point, PHNC

DRAWIN NO.	IG NAVF DWG NO.	AC TITLE
T6	7952144	Site Location Map, NRTF Lualualei
C1	7952145	General Location Map, Treatment Site and Related Locations
C2	7952146	Treatment Site Existing Conditions
C3	7952147	Coral Pit Filling Plan
C4	7952148	Former Drum Crushing Area, Former NAS Barbers Point
C5	7952149	Stockpile Area Existing Conditions, Former NAS Barbers Point
C6	7952150	Transformer Sites TA-01 and TC-04, Ford Island, PHNC
C7	7952151	Transformer Sites TC-06D and TC-07D, Ford Island, PHNC
C8	7952152	Transformer Sites TD-01 and TD-02, Ford Island, PHNC
C9	7952153	Transformer Sites TD-03 and TD-05, Ford Island, PHNC
C10	7952154	Transformer Sites TD-07, TF-01, and TF-01D, Ford Island, PHNC
C11	7952155	Transformer Sites TF-04 and TF-05, Ford Island, PHNC
C12	7952156	Transformer Sites TF-07 and TF-08, Ford Island, PHNC
C13	7952157	Transformer Sites TF-09 and TF-17, Ford Island, PHNC
C14	7952158	Transformer Sites TF-18 and TG-01, Ford Island, PHNC
C15	7952159	Transformer Sites TG-03 and TG-06, Ford Island, PHNC
C16	7952160	Transformer Sites TI-03 and TI-04D, Ford Island, PHNC
C17	7952161	Transformer Sites TD-10 and TF-06, Ford Island, PHNC

DRAWING NAVFAC			
NO.	DWG NO.	TITLE	
C18	7952162	Transformer Site TC-01, Ford Island, PHNC	
C19	7952163	Transformer Site TF-10, Ford Island, PHNC	
C20	7952164	Transformer Sites D-02 and E-09, PHNC	
C21	7952165	Transformer Site I-4, Iroquois Point, PHNC and Building 81, NRTF, Lualualei	
C22	7952166	Transformer Site Analytical Data	
C23	7952167	Transformer Site Analytical Data	
C24	7952168	Transformer Site Analytical Data	
C25	7952169	Transformer Site Analytical Data	

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

ATTACHMENT I Hawaii Department of Health Guidance on Developing Air Impact Analysis Protocols

STATE AIR MODELING GUIDELINES

FOR

PREVENTION OF SIGNIFICANT DETERIORATION AND COVERED SOURCE PERMIT APPLICATIONS

SECOND REVISION

December 30, 1996

Department of Health Clean Air Branch

INTRODUCTION

In accordance with Hawaii Administrative Rules, Chapter 11-60.1, Air Pollution Control, an air quality impact assessment is required to be submitted with a covered source permit and/or Prevention of Significant Deterioration (PSD) application. Specifically, Section 11-60.1-83 states that a covered source permit application requires the following to be submitted:

"For new covered sources, and significant modifications which increase the emissions of any air pollutant or result in the emission of any air pollutant not previously emitted, an assessment of the ambient air quality impact of the covered source or significant modification, with the inclusion of any available background air quality data. The assessment shall include all supporting data, calculations and assumptions, and a comparison with the NAAQS and state ambient air quality standards"

"For new covered sources or significant modifications subject to the requirements of subchapter 7, all analyses, assessments, monitoring, and other application requirements of subchapter 7"

The modeling procedures identified herein are for guidance purposes only. Other modeling procedures or approaches may be acceptable.

Although not required, it is recommended that an ambient air quality impact assessment protocol document be prepared and submitted to the State of Hawai'i Department of Health (**Department**) for review and comment. The document should explicitly discuss the assumptions, methodology and air models that will be used in the assessment. More specifically, the document should includes: (1) a project summary, (2) a process description, (3) location maps and facility layout plans, (4) a tabular list of emission sources, emission rates and exhaust stack parameters, (5) a list of fuels, (6) details of alternative operating scenarios, (7) a good engineering practice (GEP) stack height analysis which encompasses nearby structures and terrain influences, (8) source of onsite or representative meteorology, (9) source of recent and representative background air quality data, (10) receptor networks to be used, (11) list of all nearby sources, (12) identification of area classification, (13) a list of air models to be used, and (14) any requests for alternative procedures or analysis outside of guidance. The objective of having the protocol document reviewed by the Department prior to the project applicant performing the assessment is to ensure consistency with State and Federal guidance and procedures

APPLICATION		GUIDELINES ON MODELING PROCEDURES FOR A PREVENTION OF SIGNIFICANT DETERIORATION AND COVERED SOURCE PERMIT APPLICATION
Prevention of Significant		Consistent with PSD regulations, 40 CFR Part 51 Appendix W and State guidelines.
Deterioration (New and Major	2.0	Submission of an air modeling protocol.
	. 4	Screen Modeling:
	;	A) SCREENS or CTSCREEN.
		C) Except for CTSCREEN, a receptor grid should start at the nearest distance to ambient air and receptors spaced every ten
		D) For screening analysis , use State annual scaling factor.
	5	efine Mo
	1	A) Meteorological data preference.
		(1) The available or minimum one year of most recent onsite stack top wind data, 10-meter stability data, and 2-meter
		temperature data.
		(2) Minimum five years of most recent representative data from SCRAM BBS, National Climatic Data Center, NWS or
		FAA with Department approval.
		(3) For complex terrain, stack top winds are required.
		(4) Use Meteorological Processor for Regulatory Models program to process data.
		B) Receptors
		(1) The number of receptors used in the coarse grid should provide sufficient coverage to identify the general location of
		-
		(2) The receptor spacing used in the refine grid should be equal to or less than 100 meters. Should a predicted impact at
		a receptor location be greater 75% of the applicable air standard of increment, additional air modeling using a spacing of 5 to 60 maters currential these maximing is required. A refine receptor and of 35 maters currential in the contraction of 35 maters currential in the contraction of 35 maters currently and 35 maters currently an
		on o to oo meters surrounding tress maximums is required. A femilie receptor grid of 29 meters is required in complex terrain.
		C) Refine modeling should address simple terrain, complex terrain, intermediate terrain and downwash.
	9.	Both screening and refine modeling should be based on potential to emit or allowable emissions for point sources. The Department may
	1	request the inclusion of any fugitive emission sources, area sources and volume sources at the facility on a case-by-case basis.
	:	background all quairty data should be representative, infect OperA fire solutioning requirements, and confected Within a tiffee year period proceeding application culturisation. The Department chould be contacted for available data
	œ.	processing approximation such that the properties of the emissions inventory and modeled with proposed emission units to
		determine total emissions impact.
	ი	
		All meteorological data, building downwash, and model input and output files should be provided to the Department on 3.5" floppy diskettes.

tion)	GUIDELINES ON MODELING PROCEDURES FOR A PREVENTION OF SIGNIFICANT DETERIORATION AND COVERED SOURCE PERMIT APPLICATION	reen M	E) For CTSCREEN, use State scaling factors. 2. Refine Modeling: A) Meteorological data preference. (1) Minimum one vear of most recent onsite stack top wind data. 10-meter stability data, and 2-meter temperature data	ceptors	 The number of receptors used in the coarse grid should provide sufficient coverage to identify the general location of the maximum impact(s). The receptor spacing used in the refine grid should be equal to or less than 100 meters. Should a predicted impact at a receptor location be greater 75% of the applicable air standard or increment, additional air modeling using a spacing of 5 to 50 meters surrounding these maximums is required. A refine receptor grid of 25 meters is required in complex terrain. 	 C) Refine modeling should address simple terrain, complex terrain, intermediate terrain and downwash. 3. Both screening and refine modeling should be based on potential to emit or allowable emissions for <u>point sources</u>. The Department may request the inclusion of any fugitive emission sources, area sources and volume sources at the facility on a case-by-case basis. 4. Background air quality data should be representative and meet USEPA monitoring requirements. The Department should be contacted for available data. 	 5. The Department may request nearby sources be added to the emissions inventory and modeled with proposed emission units to determine total emissions impact. 6. The Department may request other types of analyses or modeling to ensure the protection of ambient air quality. 7. All meteorological data, building downwash, and model input and output files should be provided to the Department on 3.5" floppy diskettes
APPLICATION Source Permit inficant Modific.	LION	Covered Source Permit (New and Significant Modification)					

NOTES:

- Screen modeling procedures are recommended as a first level approach (see 40 CFR PART 51, Appendix W).
 Procedures are not intended to be utilized for any risk assessments of hazardous air pollutants.
 The above air quality impact assessment procedures are intended for guidance purposes only. Other procedures or approaches may be acceptable on a case-by-case basis.

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 DEFINITIONS

1.1.1 Submittal

Shop drawings, product data, samples, and administrative submittals presented for review and approval. Contract Clauses "FAR 52.236-5, Material and Workmanship," paragraph (b) and "FAR 52.236-21, Specifications and Drawings for Construction," paragraphs (d), (e), and (f) apply to all "submittals."

1.1.2 Types of Submittals

All submittals are classified as indicated in paragraph "Submittal Descriptions (SD)". Submittals also are grouped as follows:

- a. Shop drawings: As used in this section, drawings, schedules, diagrams, and other data prepared specifically for this contract, by contractor or through contractor by way of subcontractor, manufacturer, supplier, distributor, or other lower tier contractor, to illustrate portion of work.
- b. Product data: Preprinted material such as illustrations, standard schedules, performance charts, instructions, brochures, diagrams, manufacturer's descriptive literature, catalog data, and other data to illustrate portion of work, but not prepared exclusively for this contract.
- c. Administrative submittals: Data presented for reviews and approval to ensure that administrative requirements of project are adequately met but not to ensure directly that work is in accordance with design concept and in compliance with contract documents.

1.1.3 Submittal Descriptions (SD)

The following provides examples of the various types of submittals possible under this contract and describes some of those submittals. This is not a submittal list and shall not be required unless included in the submittal register located at the end of this section.

SD-01 Preconstruction Submittals

List of proposed subcontractors
List of proposed products
Construction progress schedule
Submittal schedule
Schedule of values
Health and safety plan
Work plan
Quality control plan
Environmental protection plan

SD-02 Shop Drawings

Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work.

Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the contractor for integrating the product or system into the project.

Drawings prepared by or for the contractor to show how multiple systems and interdisciplinary work shall be coordinated

SD-03 Product Data

Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions, and brochures illustrating size, physical appearance, and other characteristics of materials or equipment for some portion of the work.

Samples of warranty language when the contract requires extended product warranties.

SD-05 Design Data

Calculations, mix designs, analyses or other data pertaining to a part of work.

SD-06 Test Reports

Report signed by authorized official of testing laboratory that a material, product, or system identical to the material, product, or system to be provided has been tested in accord with specified requirements. (Testing must have been within 3 years of date of contract award for the project.)

Report that includes findings of a test required to be performed by the contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.

Report that includes findings of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

Investigation reports

Daily checklists

Final acceptance test and operational test procedure

SD-07 Certificates

Statements signed by responsible officials of manufacturer of product, system, or material attesting that product, system, or material meets specification requirements. Must be dated after award of project contract and clearly name the project.

Document required of Contractor, or of a supplier, installer, or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods, or personnel qualifications.

Confined space entry permits.

SD-11 Closeout Submittals

Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

1.2 SUBMITTALS

Submit the following in accordance with the requirements of this section.

SD-11 Closeout Submittals

Submittal register; G

1.3 USE OF SUBMITTAL REGISTER

Maintain submittal register provided as the work progresses.

1.3.1 Submittal Register

Submit submittal register. Submit with quality control plan and project schedule. Verify that all submittals required for project are listed. Complete the following on the register:

Activity number from the project schedule, scheduled date for approving authority to receive submittals, contractor-assigned transmittal number, action code, date of submittal transmission, and date approval received.

1.3.2 Contractor Action Code and Action Code

Entries used shall be as follows (others may be prescribed by Transmittal Form):

NR - Not Received

AN - Approved as noted

A - Approved

RR - Disapproved, Revise, and Resubmit

1.3.3 Copies Delivered to the Government

Deliver one copy of submittal register updated by contractor to Government with each invoice request.

1.4 PROCEDURES FOR SUBMITTALS

1.4.1 Reviewing, Certifying, Approving

QC Manager shall be responsible for reviewing and certifying that submittals are in compliance with contract requirements. Approving authority on submittals is QC Manager unless otherwise specified for specific submittal. At each "Submittal" paragraph in individual specification sections, a notation "G," following a submittal item, indicates NTR is approving authority for that submittal item. All submittals are sent to QC Manager regardless of approving authority.

1.4.2 Constraints

a. Submittals listed or specified in this contract shall conform to provisions of this section, unless explicitly stated otherwise.

- b. Submittals shall be complete for each definable feature of work; components of definable feature interrelated as a system shall be submitted at same time.
- c. When acceptability of a submittal is dependent on conditions, items, or materials included in separate subsequent submittals, submittal shall be returned without review.
- d. Approval of a separate material, product, or component does not imply approval of assembly in which item functions.

1.4.3 Scheduling

- a. Coordinate scheduling, sequencing, preparing and processing of submittals with performance of work so that work shall not be delayed by submittal processing. Allow for potential requirement to resubmit.
- b. Except as specified otherwise, allow review period, beginning with receipt by approving authority, that includes at least 15 working days for submittals for QC manager approval and 20 working days for submittals for NTR approval. Period of review for submittals with NTR approval begins when Government receives submittal from QC organization. Period of review for each resubmittal is the same as for initial submittal.

1.4.4 Variations

Variations from contract requirements require Government approval pursuant to contract clause entitled "FAR 52.236-21, Specifications and Drawings for Construction" and shall be considered where advantageous to Government.

1.4.4.1 Considering Variations

Discuss variation with NTR prior to submission to help ensure that functional and quality requirements are met and to minimize rejections and resubmittals.

1.4.4.2 Proposing Variations

When proposing variation, deliver written request to the NTR, with documentation of the nature and features of the variation and why the variation is desirable and beneficial to Government. If lower cost is a benefit, also include an estimate of the cost saving. In addition to documentation required for variation, include the submittals required for the item. Clearly mark the proposed variation in all documentation.

1.4.4.3 Warranting That Variation Are Compatible

When delivering a variation for approval, contractor warrants that this contract has been reviewed to establish that the variation, if incorporated, shall be compatible with other elements of work.

1.4.4.4 Review Schedule Is Modified

In addition to normal submittal review period, a period of 10 working days shall be allowed for consideration by the Government of submittals with variations.

1.4.5 Contractor's Responsibilities

- a. Determine and verify field measurements, materials, field construction criteria; review each submittal; and check and coordinate each submittal with requirements of the work and contract documents.
- b. Transmit submittals to QC organization in accordance with schedule on approved Submittal Register, and to prevent delays in the work.
- c. Advise NTR of variation, as required by paragraph entitled "Variations."
- d. Correct and resubmit submittal as directed by approving authority. When resubmitting disapproved transmittals or transmittals noted for resubmittal, the contractor shall provide copy of the previously submitted transmittal including all reviewer comments for use by approving authority. Direct specific attention in writing or on resubmitted submittal to revisions not requested by approving authority on previous submissions.
- e. Furnish additional copies of submittal when requested by NTR, to a limit of 20 copies per submittal.
- f. Complete work that must be accomplished as basis of a submittal in time to allow submittal to occur as scheduled.
- g. Ensure no work has begun until submittals for that work have been returned as "approved" or "approved as noted" or "approved except as noted; resubmission not required," except to the extent that a portion of work must be accomplished as basis of submittal.

1.4.6 QC Manager Responsibilities

- a. Note date on which submittal was received from contractor on each submittal.
- b. Review each submittal; and check and coordinate each submittal with requirements of work and contract documents.
- c. Review submittals for conformance with project design concepts and compliance with contract documents.
- d. Act on submittals, determining appropriate action based on QC organization's review of submittal.
 - (1) When QC manager is approving authority, take appropriate action on submittal from the possible actions defined in paragraph entitled, "Actions Possible."
 - (2) When NTR is approving authority or when variation has been proposed, forward submittal to Government with certifying statement or return submittal marked "not reviewed" or "revise and resubmit" as appropriate. The QC organization's review of submittal determines appropriate action.
- e. Ensure that material is clearly legible.
- f. Stamp each sheet of each submittal with QC certifying statement or approving statement, except that data submitted in bound volume or on one sheet printed on two sides may be stamped on the front of the first sheet only.
 - (1) When approving authority is NTR, QC organization shall certify submittals forwarded to NTR with the following certifying statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated into project work is in compliance with the contract drawings and specification, can be installed in the allocated spaces, and is submitted for Government approval.

Certified by Submittal Reviewer, (Signature when applicable)	Date
Certified by QC manager(Signature)	, Date"
(2) When approving authority is QC manager, QC manapproval statement when returning submittals to contra Noted."	
"I hereby certify that the (material) (equipment) (articl submittal and proposed to be incorporated into project contract drawings and specification, can be installed in (approved) (not approved) for use.	work, is in compliance with the
Certified by Submittal Reviewer(Signature when applicable)	_, Date
Approved by QC manager(Signature)	, Date"

- g. Sign certifying statement or approval statement. The person signing certifying statements shall be QC organization member designated in the approved QC plan. The signatures shall be in original ink. Stamped signatures are not acceptable.
- h. Update submittal register as submittal actions occur and maintain the submittal register at project site until final acceptance of all work by NTR.
- i. Retain a copy of approved submittals at project site, including contractor's copy of approved samples.

1.4.7 Government's Responsibilities

When approving authority is NTR, the Government shall:

- a. Note date on which submittal was received from QC manager, on each submittal for which the NTR is approving authority.
- b. Review submittals for approval within scheduling period specified and only for conformance with project design concepts and compliance with contract documents.
- c. Identify returned submittals with one of the actions defined in paragraph entitled "Actions Possible" and with markings appropriate for action indicated.

1.4.8 Actions Possible

Submittals shall be returned with one of the following notations:

- a. Submittals marked "not reviewed" shall indicate submittal has been previously reviewed and approved, is not required, does not have evidence of being reviewed and approved by contractor, or is not complete. A submittal marked "not reviewed" shall be returned with an explanation of the reason it is not reviewed. Resubmit submittals returned for lack of review by contractor or for being incomplete, with appropriate action, coordination, or change.
- b. Submittals marked "approved" or "approved as submitted" authorize contractor to proceed with work covered.
- c. Submittals marked "approved as noted" or "approved except as noted; resubmission not required" authorize contractor to proceed with work as noted provided contractor takes no exception to the notations.
- d. Submittals marked "revise and resubmit" or "disapproved" indicate submittal is incomplete or does not comply with design concept or requirements of the contract documents and shall be resubmitted with appropriate changes. No work shall proceed for this item until resubmittal is approved.

1.5 FORMAT OF SUBMITTALS

1.5.1 Transmittal Form

Transmit each submittal to office of approving authority. Transmit submittals with transmittal form prescribed by NTR created by Contractor and standard for project. The transmittal form shall identify contractor, indicate date of submittal, and include information prescribed by transmittal form and required in paragraph entitled "Identifying Submittals." Process transmittal forms to record actions regarding sample panels and sample installations.

1.5.2 Identifying Submittals

Identify submittals, except sample panel and sample installation, with the following information permanently adhered to or noted on each separate component of each submittal and noted on transmittal form. Mark each copy of each submittal identically, with the following:

- a. Project title and location.
- b. Construction contract number.
- c. Section number of the specification section by which submittal is required.
- d. Submittal description (SD) number of each component of submittal.
- e. When a resubmission, alphabetic suffix on submittal description, for example, SD-10A, to indicate resubmission.
- f. Name, address, and telephone number of subcontractor, supplier, manufacturer and any other second tier contractor associated with submittal.
- g. Product identification and location in project.

1.5.3 Format for Product Data

a. Present product data submittals for each section as a complete, bound volume. Include table

of contents, listing page and catalog item numbers for product data.

- b. Indicate, by prominent notation, each product that is being submitted; indicate specification section number and paragraph number to which it pertains.
- c. Supplement product data with material prepared for project to satisfy submittal requirements for which product data do not exist. Identify this material as developed specifically for project.

1.5.4 Format for Shop Drawings

- a. Shop drawings shall not be less than 8 1/2 by 11 inches nor more than 30 by 42 inches.
- b. Present 8 1/2 by 11 inches sized shop drawings as part of the bound volume for submittals required by section. Present larger drawings in sets.
- c. Include on each drawing the drawing title, number, date, and revision numbers and dates, in addition to information required in paragraph entitled "Identifying Submittals."
- d. Dimension drawings, except diagrams and schematic drawings; prepare drawings demonstrating interface with other trades to scale. Shop drawing dimensions shall be the same unit of measure as indicated on the contract drawings. Identify materials and products for work shown.

1.5.5 Format of Administrative Submittals

When submittal includes a document that is to be used in project or become part of project record, other than as a submittal, do not apply contractor's approval stamp to document, but to a separate sheet accompanying document.

1.6 QUANTITY OF SUBMITTALS

1.6.1 Number of Copies of Product Data

a. Submit two hard copies and electronic distribution of electronic format copy (PDF or Microsoft Office) of submittals of product data requiring review and approval only by QC organization and seven copies of product data requiring review and approval by NTR. Electronic distribution email addresses will be provided after contract award.

1.6.2 Number of Copies of Shop Drawings

Submit shop drawings in compliance with quantity requirements specified for product data.

1.6.3 Number of Copies of Administrative Submittals

a. Unless otherwise specified, submit administrative submittals compliance with quantity requirements specified for product data.

1.6.4 Number of Copies of Plans and Reports

For the following Plans and Reports, provide ten hard copies and electronic distribution of an electronic format copy (PDF or Microsoft Office):

Site Work Plan

Startup/Shakedown Plan Definitive Demonstration Plan Treatment Plan Remediation Verification Report

For other Plans and Reports, provide six hard copies and electronic distribution of an electronic format copy (PDF or Microsoft Office). Electronic distribution email address will be provided after contract award.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

TITLE AND LOCATION

CONTRACTOR

CONTRACT NO.

N62742-02-R-1800

The	rmal	Desorpt	ion of PCB-Contaminated Soil														
					G		ONTRACTO			ITRACTOR ACTION		APF	PROVING AU	THOR	ITY		
A C T I V I T Y NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	P A R A G R A P H	OVT OR A/E REVWR	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACH-OZ CODE	DATE OF ACTION	FROM	TO OTHER	DATE RCD FROM OTH REVIEWER	ACT-OZ CODE	DATE OF ACTION	MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(I)	(m)	(n)	(o)	(p)	(q)	(r)
		01110	SD-01 Preconstruction Submittals														
				1.5.1	G												
			Treatment Site Layout and Design	1.5.1													
			Details														
			Construction Schedule	1.5.1													
			Erosion Control Plan	1.5.1													
			Waste Management Plan	1.5.1													
			Mobilization/Demobilization Plan	1.5.1													
			Startup/Shakedown Plan	1.5.1													
			Definitive Demonstration Plan	1.5.1													
			Treatment Plan	1.5.1													
			Air Impact Analysis Protocol	1.5.1													
			Sampling and Analysis Plan	1.5.1													
			Environmental Protection Plan	1.5.2	G												
			Environmental Conditions Report	1.5.3	G												
			Site Health and Safety Plan	1.5.4	G												
			Quality Control (QC) Plan	1.5.5	G												
			SD-06 Test Reports														
			Kick-off Meeting Minutes	1.6													
			QC Meeting Minutes	1.6													
			Daily Contractor QC	1.6													
			Report/Contractor Production														
			Reports														
				1.6													
			QC Test Results Summary Report	1.6													
			SD-07 Certificates														
								· · · · · · · · · · · · · · · · · · ·					· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·		

CONTRACT NO.

N62742-02-R-1800 CONTRACTOR TITLE AND LOCATION

		CATION				CONTRAC	IUK										
Therm	nal D	esorpt	on of PCB-Contaminated Soil														
				-	G		ONTRACTO HEDULE DA			ITRACTOR ACTION		APF	PROVING AU	THOR	RITY		
A	, I	S P E C S E C T	DESCRIPTION ITEM SUBMITTED	P A R A G R A P H	OVT OR A/E REVWR	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACT-OZ CODE	DATE OF ACTION	FROM	TO OTHER	DATE RCD FROM OTH REVIEWER	Ď	DATE OF ACTION	MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
(a) (I	0)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(I)	(m)	(n)	(o)	(p)	(q)	(r)
	0	1110		1.7													
			hazardous waste training records														
			SD-11 Closeout Submittals														
			Remediation Verification Report;	1.8	G												
	0	1330	SD-11 Closeout Submittals														
				1.3.1	G												
	0	1501	SD-01 Preconstruction Submittals														
				1.5	G												
				2.2.4	G												
	0	1575	SD-01 Preconstruction Submittals														
			Dirt and dust control plan;	1.4	G												
			Environmental Protection Plan	1.9	G												
			SD-06 Test Reports														
			Laboratory analysis	1.5													
	\bot		Laboratory analysis	1.6.2													
	\bot		SD-11 Closeout Submittals														
	\bot			1.6.1													
			Waste determination	1.6.2													
			documentation														
			Waste determination	3.5.1													
			documentation														
			Disposal documentation for	1.6.3													
			hazardous and regulated waste														
			Solid waste disposal report	1.6.4													
			Contractor Hazardous Material	1.11													
			Inventory Log														

CONTRACTOR

CONTRACT NO.

N62742-02-R-1800

The	rmal	Desorpt	ion of PCB-Contaminated Soil	_													
					G	C SC	ONTRACTO	R: res		ITRACTOR ACTION		APF	PROVING AU	THOR	RITY		
A C T I V I T Y N O	TRANSM-TTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	P A R A G R A P H	OVT OR A/E REVWR	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACH-OZ CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACT-OZ CODE	DATE OF ACTION	MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(1)	(m)	(n)	(o)	(p)	(q)	(r)
		02111	SD-02 Shop Drawings														
			Surveys	1.3	G												
			SD-06 Test Reports														
			Backfill	2.1	G												
			Surveys	1.3	G												
			Compaction Tests	3.12	G												
			Topsoil composition tests	2.1.2													
			Moisture-density Relation	3.12													
		02181	SD-01 Preconstruction Submittals														
			Definitive Demonstration Plan	3.9.1													
			Definitive Demonstration Plan	3.10													
			Definitive Demonstration Plan	3.10.1													
			Layout	3.3	G												
			SD-03 Product Data														
			Equipment	2.1	G												
			Equipment	2.1.1	G												
			Equipment	3.2	G												
			Flow Diagram	2.1.1													
			Piping and Instrumentation	2.1.1													
			Diagram														
			SD-06 Test Reports														
			Daily Production	3.8													
			Startup and Shakedown	3.9													
			Definitive Demonstration	3.9.3.1													
			Treatment Data	3.8													
		02731	SD-06 Test Reports														

TITLE AND LOCATION

2.1.2

2.1.3

2.1.3

2.2

2.1

Framing Posts

Braces

Seed Mix

SD-07 Certificates

02920

Temporary chain-link fencing

CONTRACT NO.

N62742-02-R-1800 TITLE AND LOCATION CONTRACTOR Thermal Desorption of PCB-Contaminated Soil CONTRACTOR: SCHEDULE DATES CONTRACTOR APPROVING AUTHORITY ACTION G 0 V T R С Т A N 0 A S A C T V R S M S C T C T T T A R F DATE FWD TO APPR MAILED 0 0 Ε Ε Α TO С AUTH/ CONTR/ T Y Α G # R Α Ř Ε S Т DATE RCD DATE FWD DATE RCD FROM TO OTHER FROM OTH CONTR REVIEWER REVIEWER DESCRIPTION APPROVAL MATERIAL DATE DATE DATE RCD Е A P ٧ 0 NEEDED NEEDED FRM APPR OF N O Ν С 0 W D E D ACTION ITEM SUBMITTED SUBMIT BY ACTION AUTH REMARKS BY (a) (b) (c) (d) (e) (f) (i) (g) (h) (j) (k) (l) (m) (o) (p) (q) (r) 02731 Sampling and Testing 1.4 SD-05 Design Data 02742 Job-mix formula 1.3.1 SD-06 Test Reports Coarse Aggregate Tests 2.6.1 Fine Aggregate Tests 2.6.1 **Density Testing** 3.4.1 **Bituminous Mixture Tests** 2.6.1 SD-03 Product Data 02770 Concrete 2.1 SD-06 Test Reports Field Quality Control 3.8 SD-02 Shop Drawings 02821 Post spacing 3.2.1 Location of gate, corner, end, and 3.2.1 pull posts SD-03 Product Data Chain-link Fencing 2.1 2.1.1 Fabric 2.1.2 Gates

CONTRACTOR

CONTRACT NO.

N62742-02-R-1800

Thermal Desorption of PCB-Contaminated Soil CONTRACTOR: SCHEDULE DATES CONTRACTOR ACTION APPROVING AUTHORITY G 0 V T R С Τ A N 0 A S A C T I V I R C T C T S M I T T S A R F DATE FWD TO APPR MAILED Е 0 0 Ε Α TO С AUTH/ CONTR/ T Y A L G # Α Ř Ε S Т DATE RCD DATE FWD DATE RCD FROM TO OTHER FROM OTH CONTR REVIEWER REVIEWER DESCRIPTION APPROVAL MATERIAL DATE DATE DATE RCD Ε A P ٧ 0 NEEDED NEEDED FRM APPR Ď E OF N O Ν С 0 W D E SUBMIT ACTION ACTION AUTH ITEM SUBMITTED BY BY REMARKS O Ν (a) (b) (c) (d) (e) (f) (i) (g) (h) (j) (k) (l) (m) (o) (p) (q) (r) 02920 fertilizer content 2.2 2.4 Replacement trees 03300 SD-03 Product Data 2.2.6 Wire Fabric SD-05 Design Data Mix Design 2.1.1 SD-06 Test Reports Slump 2.1.1 Compressive Strength 2.1.1 3.8.2.1 Field Slump Tests Field Compressive Strength Tests 3.8.2.2 SD-07 Certificates **Batch Tickets** 3.5

TITLE AND LOCATION

SECTION 01501

TEMPORARY FACILITIES AND TRAFFIC CONTROL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

CODE OF FEDERAL REGULATIONS

40 CFR 761 (2002) Polychlorinated Biphenyls (PCBs) Manufacturing,

Processing, Distribution in Commerce, and Use

Prohibitions

FEDERAL HIGHWAY ADMINISTRATION (FHWA)

FHWA MUTCD (1988) Manual on Uniform Traffic Control Devices

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (1999) National Electrical Code

NFPA 241 (1996) Safeguarding Construction, Alteration, and

Demolition Operations

1.2 SUBMITTALS

Submit the following in accordance with SECTION 01330 SUBMITTAL PROCEDURES.

SD-01 Preconstruction Submittals

Traffic control plan; G (only for sites where traffic patterns are altered)

1.3 TEMPORARY UTILITIES

Reasonable amounts of the potable water will be available at the treatment site to the contractor at the prevailing rates; the contractor will be billed for water use by Public Works Center (PWC).

The contractor shall make connections to the existing valves at the former NAS Barbers Point treatment site shown on the design drawings. Connection shall include a backflow preventer approved by PWC. Contractor shall coordinate with PWC to have the backflow preventer tested and certified. PWC will provide and install a calibrated meter and bill the contractor for this work. Contractor shall disconnect when water is no longer needed.

There is no electricity available at the former NAS Barbers Point treatment site. Contractor shall provide a power source for treatment site facilities.

Telephone utilities are available at a PWC building located across the road from the treatment area just southeast of the former Drum Crushing area at former NAS Barbers Point. Contractor shall

coordinate with PWC and provide connection for telephone service.

1.4 SITE STORM PROTECTION

When a warning of gale force winds is issued, take precautions to minimize danger to persons, and protect the work and nearby Government property. Precautions shall include, but are not limited to, removing loose materials, tools, and equipment from exposed locations; covering stockpiles; and removing or securing scaffolding and other temporary work.

1.5 PROTECTION AND MAINTENANCE OF TRAFFIC

During construction the Contractor shall provide access and temporary relocated roads as necessary to maintain traffic. The Contractor shall maintain and protect traffic on all affected roads during the construction period. Specifically, provide access to existing underground storage tanks at Building 81 during excavation activities as shown on the drawings.

If during the performance of work, it becomes necessary to modify vehicular traffic patterns at any locations, notify the NTR at least 15 calendar days prior to the proposed modification date, and provide a Traffic Control Plan detailing the proposed controls to traffic movement for approval. The plan shall be in accordance with State and local regulations and the FHWA MUTCD, Part VI. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, shall be as required by the State and local authorities having jurisdiction.

The traveling public shall be protected from damage to person and property. The Contractor's traffic on roads selected for hauling material to and from the site shall interfere as little as possible with public traffic. The Contractor shall investigate the adequacy of existing roads and the allowable load limit on these roads. The Contractor shall be responsible for the repair of any damage to roads caused by construction operations.

1.5.1 Haul Roads

The Contractor shall construct access and haul roads necessary for completion of the work under this contract. Haul roads shall be constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided. The Contractor shall provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control shall be adequate to ensure safe operation at all times. Location, grade, width, and alignment of construction and hauling roads shall be subject to approval by NTR. Lighting shall be adequate to assure full and clear visibility for full width of haul road and work areas during any night work operations. Upon completion of the work, haul roads designated by NTR shall be removed.

1.5.2 Barricades

The Contractor shall erect and maintain temporary barricades to limit public access to hazardous areas. Such barricades shall be required whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic. Barricades shall be securely placed, clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

1.6 STORAGE AREAS

Contractor shall be responsible for security of his property. The Contract Clause entitled "FAR

52.236-10, Operations and Storage Areas" and the following apply.

1.6.1 Storage Size and Location

The location and size of the site available for storage shall be confirmed with the NTR.

1.7 TEMPORARY SANITARY FACILITIES

Provide temporary sanitation facilities that are self-contained units with both urinals and stool capabilities. Ventilate the units to control odors and fumes and empty and clean them at least once a week or more often if required by the NTR. The doors shall be self-closing. Locate the facility out of public view.

1.8 TEMPORARY BUILDINGS

Temporary facilities (including trailers) shall be in good condition. Locate facilities within the indicated operations area. Storage of material/debris under such facilities is prohibited. Contractor shall be responsible for the security of stored property.

PART 2 PRODUCTS

2.1 TEMPORARY HAUL ROADS

2.1.1 Aggregate Surface Course

Provide aggregate surface course in accordance with SECTION 02731 AGGREGATE SURFACE COURSE.

2.2 TEMPORARY PHYSICAL CONTROLS

2.2.1 Fencing

Enclose the treatment area at former NAS Barbers Point with a temporary 8-foot high chain link fence and gates in accordance with SECTION 02821 CHAIN LINK FENCES AND GATES. The barrier shall be provided with any and all braces, supports, anchors, pedestals, rails, tension wires, fasteners, or other such items needed to be self supporting for perpendicular wind loads up to 90 MPH. Remove the fence upon completion of the contract and acceptance of the work. Intent is to limit access to the site.

Contractor shall assume the responsibility for a rented fence that is currently enclosing the PHNC stockpiles south of the proposed treatment area.

2.2.2 Temporary Barriers

Provide temporary barriers around open excavations to prevent public access. Temporary barriers for excavation areas may include, but are not limited to, traffic barricades, orange plastic fencing, cones, and caution tape. Temporary 8-foot high chain link fence will be required around excavations at any active transformer.

2.2.3 Signs

Place warning signs at the treatment area perimeter, at all gates, and around open excavations designating the presence of construction hazards and requiring unauthorized persons to keep out. All points of entry shall have signs directing visitors to the contractor's construction office and designating

the construction site as a hard hat area.

2.2.4 Traffic Work

All work around/involving roadways shall be conducted in accordance with Manual of Traffic Control Devices FHWA MUTCD. Contractor shall provide a Traffic Control Plan that discusses appropriate road closure and detour signs and traffic control devices as necessary for motor traffic management if traffic patterns are altered. All road closures shall be coordinated with the NTR in advance. Lighted barricades shall be provided during hours of darkness. Brightly-colored safety vests are required for all personnel working in roadways. Road closures shall require a road closure plan showing sign locations and designations.

2.2.5 Temporary Electrical Service and Wiring

Provide generators and temporary electrical wiring in accordance with NFPA 241 and NFPA 70, Article 305-6(b), Assured Equipment Grounding Conductor Program. Program shall include frequent inspection of all equipment and apparatus.

PART 3 EXECUTION

3.1 SITE ACCESS AND HAULING ROUTE

Trucks hauling contaminated soil shall utilize the hauling route shown on the design drawing. Use of the PWC access on the road to the east of the treatment site shall be limited to delivery of equipment, materials, supplies, and fuel.

The temporary haul road and ramps to access the Coral Pit shall be constructed in accordance with SECTION 02731 AGGREGATE SURFACE COURSE.

3.2 CONSTRUCTION OF STOCKPILES

Stockpiles shall be constructed to isolate stored material from the environment in accordance with 40 CFR 761 as part of the Toxic Substances Control Act (TSCA). Stockpiles shall be constructed to include but not be limited to:

- a. A chemically resistant geomembrane liner. Non reinforced geomembrane liners shall have a minimum thickness of 20 mil. Two layers of 10 mil liner may be used. The ground surface on which the geomembrane is to be placed shall be free of rocks and debris that could damage membrane.
- b. Geomembrane cover to prevent precipitation from entering the stockpile. Non-reinforced geomembrane covers shall have a minimum thickness of 10 mils. The cover material shall be adequately secured to prevent it from being removed by wind.
- c. Berms surrounding the stockpile for containment, a minimum of 12 inches in height.

3.3 SOIL STOCKPILE MAINTENANCE

Maintenance of the soil stockpiles shall include inspecting covers regularly through the duration of the contract. Stockpiles include the existing contaminated stockpiles as well as all stockpiles generated during the course of the treatment project. Any temporary stockpile areas shall be covered to the maximum extent practicable with a liner. The stockpiles of treated soils awaiting laboratory analysis shall be covered with a new liner for each new stockpile. Repair or replace covers as necessary.

3.4 DEMOBILIZATION

3.4.1 Stockpile Liners and Covers

The HDPE liners and covers associated with the stockpiles shall be separated and removed as solid waste. Decontaminate liner and cover material as needed. Characterize and dispose of liner and cover material in accordance with 40 CFR 300. Do not dispose of liners until characterization and disposal location have been evaluated by the Navy.

3.4.2 Sampling of Underlying Soils

After all contaminated soils have been treated, sample and analyze underlying soil at all stockpile locations as discussed in SECTION 02181 REMEDIATION OF CONTAMINATED SOILS BY THERMAL DESORPTION; excavate and treat contaminated soils by thermal desorption if contaminants are detected above the cleanup criteria.

3.4.3 Removal of Equipment

After all thermal desorption treatment has been completed, decontaminate and remove all equipment used during the course of the removal action. Remove temporary facilities and environmental controls.

3.4.4 Demolition of Treatment Site Facilities

Demolish and remove all facilities in the treatment area constructed for use with the treatment project as discussed in SECTION 02920 SITE RESTORATION. Uncontaminated debris shall be transported and disposed at an approved off-site landfill.

3.5 CONNECTION TO EXISTING WATER

Install a PWC-approved pressure backflow prevention assembly at location where the system connects to the Government potable water supply. Connect to the existing water supply in accordance with PWC standard notes for water utilities included in this section as Attachment I.

-- End of Section --

ATTACHMENT I Public Works Center Standard Notes For Water Utilities

- 1) Requirements for Disinfection of Exterior Water Lines
- 2) Requirements for Tapping PWC Pearl's Water Distribution System

REQUIREMENTS FOR DISINFECTION OF EXTERIOR WATER LINES

- 1. All new or repaired potable water lines, fire protection lines that are connected to the potable water system, irrigation lines that are upstream of the backflow prevention devices and affected portions of existing potable water lines shall be flushed and disinfected. All work shall be done at the contractor's expense.
- 2. Include in the project specifications or in notes on the drawings the following:
- (1) Disinfection of water lines, including flushing and bacteriological testing, shall be in accordance with AWWA C651 (latest edition) except as otherwise indicated below.
 - a. All connections to existing water lines shall be done in the "dry". When the existing water line has to be dewatered, the contractor shall accomplish the dewatering of the line in a manner such that the connection to the existing system can be done in the "dry". The Contractor shall submit a dewatering plan for approval.
 - b. For new pipe sections, chlorine shall be applied by the continuous feed method unless prior approval has been obtained to use a different method.
 - 1) Calcium hypochlorite granules shall be placed in new pipe sections (except solvent-welded plastic and screwed joint steel pipe) during construction as specified in AWWA C651.
 - 2) When the line is clorinated, water entering the line shall receive a dose of chlorine fed at a constant rate such that the water will have not less than 50 mg/1 of free chlorine.
 - 3) At the end of a 24-hour period the treated water shall have a residual of not less than 25 mg/1 free chlorine.
 - 4) During the chlorination period all valves and hydrants in the section being treated shall be operated a sufficient number of times to thoroughly disinfect the appurtenances.
 - 5) All meters shall be disinfected with the water line except when otherwise approved by the Contracting Officer.
 - c. Disinfection procedures for repairs/connection work shall be as indicated in AWWA C651 under the paragraph titled "Disinfection Procedures When Cutting Into Or Repairing

Existing Mains" except that a 5% hypochlorite solution shall be used.

- d. All tapping sleeves shall be disinfected as following:
 - 1) Thoroughly clean the exterior surface of the main to be tapped, the surfaces of the tapping sleeve and the surfaces of the tapping equipment that will come into contact with the water.
 - 2) Thoroughly swab the main, the tapping sleeve and the tapping equipment with a 5% sodium hypochlorite solution.
 - 3) Any surfaces that become contaminated after being disinfected, shall be re-cleaned and re-swabbed as indicated above.
- e. After final flushing and prior to placing new lines in service, bacteriological tests shall be performed as indicated in AWWA C651 and as follows:
 - 1) Standard Conditions: At least one sample shall be collected from the end of each new main and one from the end of each new branch line. In addition, one additional sample shall be collected for each 4,000 feet of main or branch line. For example: for a 9,000 foot main, 3 samples are required i.e. 2 additional samples and one sample at the end. The location of the additional samples shall be determined by the contractor and approved by the Contracting Officer.
 - 2) Special Conditions: If during construction, trench water has entered the line or if in the opinion of the Contracting Officer excessive quantities of dirt or debris have entered the line, samples shall be taken at intervals of approximately 200 feet and shall be identified by location.
- f. Disinfection of mains and branch lines shall be repeated until samples show the absence of coliform organisms.
- g. Final bacteriological test results, that show the absence of coliform organisms, shall be provided to the PWC Utilities Department representative at the final inspection of the project or prior to placing the line in service whichever occurs first. The location where the bacteriological samples were taken shall be identified.
- (2) The contractor shall notify PWC Utilities Dept Code 652 at Telephone number 473-2557 three (3) working days prior to connecting to an existing Navy water line or disinfecting a new or existing line

REQUIREMENTS FOR TAPPING PWC PEARL'S WATER DISTRIBUTION SYSTEM

1. WET TAPPING MAINS 12"AND SMALLER

A. CONTRACTOR'S RESPONSIBILITY:

- 1) Material, Labor and Equipment Except as otherwise indicated, the contractor shall provide all material, labor and equipment to connect new exterior water lines to the existing PWC PEARL water distribution systems by use of tapping sleeves and tapping valves or corporation stops.
- 2) Timing The contractor shall perform the disinfection work at the connection just prior to installation of the tapping machine by the Government. The disinfection work shall be performed in the presence of PWC PEARL Utilities Department personnel.
- B. GOVERNMENT'S RESPONSIBILITY: The Government will provide, install and operate the tapping machine. The equipment necessary for the installation and operation of the tapping machine as well as the necessary cutting blades will also be provided by the Government. Disinfection of the tapping machine will be done by the Government. All other work not specifically indicated as being performed by the government shall be done by the contractor.
- C. MATERIAL: All tapping sleeves and tapping valves shall be a matched set and conform to AWWA specifications. (The project designer shall indicate the appropriate AWWA specifications.) The tapping valve shall be flanged by mechanical joint for connecting to the tapping machine.
- D. **COORDINATION & NOTIFICATION:** The contractor shall coordinate this work with PWC PEARL. The Contractor shall provide PWC PEARL a minimum of 14 days advance notice prior to the date of the tap. Point of contact on this matter is the Mechanical Distribution Support Branch (Code 652), Utilities Department, PWC PEARL at telephone number 473-2557.
- E. **PAYMENT:** Work by PWC PEARL on non-PWC PEARL Utilities Department projects shall be done on a cost reimbursable basis. All contracts for tapping existing PWC PEARL's exterior water lines shall reflect this reimbursement requirement.
- 2. OTHER CONNECTIONS INCLUDING WET TAPPING MAINS FOR LARGER THAN 12"LINES AND INSTALLING NEW PIPING FITTINGS IN EXISTING MAINS The contractor shall perform all connection work. The connection work shall be performed in the presence of PWC PEARL Utilities Department personnel. The contractor shall provide PWC PEARL a minimum of 7 days advanced notice for the above purpose. Other requirements for projects requiring installation of fittings will be provided by PWC PEARL on a case by case basis. All work and services provided by the PWC PEARL are on a cost reimbursable basis.

SECTION 01575

TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910.1200	Hazard Communication
40 CFR 112	Oil Pollution Prevention
40 CFR 205.52	Vehicle Noise Emission Standards
40 CFR 241	Guidelines for Disposal of Solid Waste
40 CFR 243	Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste
40 CFR 258	Subtitle D Landfill Requirements
40 CFR 261	(2002) Identification and Listing of Hazardous Waste
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste
40 CFR 264	(2002) Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standard for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 266	Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 279	Used Oil Regulations
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan
40 CFR 355	Emergency Planning and Notification

40 CFR 372-SUBPART D EPA Toxic Chemical Release Reporting Regulations

49 CFR 173 Shipments and Packaging

49 CFR 178 Specifications for Packaging

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPCRA Sections 312 and 313 (1986) The Emergency Planning and Community

Right-to-Know Act

HAWAII ADMINSTRATIVE RULES (HAR)

HAR 11-46-4 Community Noise Control

HAR 11-59.4 Ambient Air Quality Standards

HAR 11-60.1-179 Hazardous Air Pollutants

1.2 DEFINITIONS

1.2.1 Solid Waste

Garbage, refuse, debris, sludge, or other discharged material (except hazardous waste as defined in paragraph entitled "Hazardous Waste" or hazardous debris as defined in paragraph entitled "Hazardous Debris"), including solid, liquid, semisolid, or contained gaseous materials resulting from industrial or commercial operations. Material not regulated as solid waste are regulated air emissions.

- a. Green waste: The vegetative matter from land clearing and grubbing, including, but not limited to, grass, bushes, scrubs, small trees, tree stumps, and plant roots.
- b. Inert construction and demolition debris: Broken or removed concrete, masonry, and rock asphalt paving. Inert materials may be reinforced with or contain ferrous wire, rods, accessories, and weldments.

1.2.2 Debris

Nonhazardous solid material generated during the demolition of a structure that exceeds 2.5 inch particle size.

1.2.3 Hazardous Materials

Any material that is regulated as a hazardous material in accordance with 49 CFR 173, requires a Material Safety Data Sheet (MSDS) in accordance with 29 CFR 1910.1200, or which during end use, treatment, handling, storage, transportation, or disposal meets or has components that meet or have the potential to meet the definition of a Hazardous Waste in accordance with 40 CFR 261. Throughout this specification, hazardous material includes hazardous chemicals.

1.3 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures."

SD-01 Preconstruction Submittals

Dirt and dust control plan; G

Environmental Protection Plan; G

SD-06 Test Reports

Laboratory analysis of treated solid waste, debris, and waste streams

SD-11 Closeout Submittals

Some of the records listed below are also required as part of other submittals. For the "Records" submittal, maintain on-site a separate three-ring Environmental Records binder and submit at the completion of the project. Make separate parts to the binder corresponding to each of the applicable subitems listed below.

Solid waste disposal permit

Waste determination documentation

Disposal documentation for hazardous and regulated waste

Solid waste disposal report

Contractor Hazardous Material Inventory Log;

1.4 DIRT AND DUST CONTROL PLAN

Submit a plan for controlling dirt, debris, and dust on roadways and haul routes. As a minimum, identify in the plan the equipment for cleaning along the haul route. Include management of soil during transport of contaminated soil, at excavation sites, and at treatment site to minimize dust.

1.4.1 Dust Control at NRTF Lualualei

The dust control plan shall include special provisions for dust control at stockpiles located at NRTF Lualualei because this area is subject to high winds. Provide dust control management practices for the stockpiles that may include but are not limited to the installation of wind breaks, tarps, or other covers and watering. Soil transfer and transportation activities should not be conducted at these stockpiles when dust control measures cannot control dust in accordance with HAR 11-59.4(e)(1) that limits particulates in ambient air to a mean of 50 micrograms per cubic meter per 12-month period.

1.5 LABORATORY ANALYSIS

Submit a copy of a laboratory analysis of solid waste, debris, and waste streams with the potential of becoming classified as a hazardous waste. Waste stream determinations are required at the point of generation and must sufficiently document whether the waste shall be a solid waste, hazardous waste, or Resource Conservation and Recovery Act (RCRA) exempt waste. Determinations must use EPA-approved methods and provide written rational for whether the waste is classified as hazardous or nonhazardous. The NTR reserves the right to request waste stream determinations on questionable waste streams.

1.6 REPORTS

1.6.1 Solid Waste Disposal Permit

Submit one copy of a state and local permit or license showing approval of the disposal plan before transporting solid wastes off Government property.

1.6.2 Waste Determination Documentation

The Contractor shall complete a Waste Determination form for all contractor derived wastes to be generated. The waste determination must be based upon either a constituent listing from the manufacturer used in conjunction with consideration of the process by which the waste was generated, EPA approved analytical data, or laboratory analysis (Material Safety Data Sheets (MSDS) by themselves are not adequate). All support documentation must be attached to the Waste Determination form. As a minimum, a Waste Determination form must be provided for all waste streams produced by the treatment system.

1.6.3 Disposal Documentation for Hazardous and Regulated Waste

Submit a copy of the applicable EPA and state permit(s), manifest(s), or license(s) for transportation, treatment, storage, and disposal of hazardous and regulated waste by permitted facilities.

1.6.4 Solid Waste Disposal Report

Monthly the Contractor shall submit a solid waste disposal report (see Attachment I to this section) to the NTR. For each waste, the report shall state the classification (using the definitions provided in this section), amount, location, and name of the business receiving the solid waste.

1.7 CLASS I ODS PROHIBITION

Class I ozone-depleting substances (ODS) shall not be used in the performance of this contract, nor be provided as part of the equipment. This prohibition shall be considered to prevail over any other provision, specification, drawing, or referenced documents.

1.8 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain, during the life of the contract, environmental protection as defined. Plan for and provide environmental protective measures to control pollution that develops during normal construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of temporary environmental features associated with the project. Comply with Federal, State, and local regulations pertaining to the environment, including water, air, solid waste, hazardous waste and substances, oily substances, and noise pollution.

Environmental Brief: Attend an environmental brief to be included in the preconstruction meeting. Provide the following information: types, quantities, and use of hazardous materials that shall be brought onto the activity; types and quantities of wastes/wastewater that may be generated during the contract.

1.8.1 Contractor Liabilities for Environmental Protection

The Contractor is advised that this project is subject to federal, state, and local regulatory agency inspections to review compliance with environmental laws and regulations. The Contractor shall fully cooperate with any representative from any federal, state, or local regulatory agency who may visit the job site and shall provide immediate notification to the NTR who shall accompany them on any subsequent site inspections. The Contractor shall complete, maintain, and make available to the NTR, station, or regulatory agency personnel all documentation relating to environmental compliance under applicable federal, state, and local laws and regulations. The Contractor shall immediately notify the NTR if a Notice of Violation (NOV) is issued to the Contractor.

The Contractor shall be responsible for all damages to persons or property resulting from Contractor fault or negligence as well as for the payment of any civil fines or penalties which may be assessed by any federal, state, or local regulatory agency as a result of the Contractor's or any subcontractor's violation of any applicable federal, state, or local environmental law or regulation. Should a NOV, Notice of Noncompliance (NON), Notice of Deficiency (NOD), or similar regulatory agency notice be issued to the Government as facility owner/operator on account of the actions or inactions of the Contractor or one of its subcontractors in the performance of work under this contract, the Contractor shall fully cooperate with the Government in defending against regulatory assessment of any civil fines or penalties arising out of such actions or inactions.

1.9 ENVIRONMENTAL PROTECTION PLAN

The Contractor shall meet with the NTR to discuss the proposed Environmental Protection Plan and develop a mutual understanding relative to the details of environmental protection, including measures for protecting natural resources, required reports, and other measures to be taken. The Environmental Protection Plan shall be submitted in the following format and shall, at a minimum, address the following elements (also refer to paragraph entitled "Protection of Natural Resources" in this section):

- a. Description of the Environmental Protection Plan
 - (1) General overview and purpose
 - (2) General site information
- b. Protection of Natural Resources
 - (1) Land resources
 - (2) Temporary construction
 - (3) Fish and wildlife resources
- c. Protection of Historical and Archaeological Resources
 - (1) Objectives
 - (2) Methods
- d. Storm Water Management and Control
 - (1) Ground cover
 - (2) Erodible soils
 - (3) Temporary measures
 - (a) Mechanical retardation and control of runoff
- e. Prevention of Releases to the Environment
 - (1) Procedures to prevent releases to the environment
 - (2) Notifications in the event of a release to the environment

- f. Protection of the Environment from Waste Derived from Contractor Operations
 - (1) Control and disposal of solid and sanitary waste
 - (2) Control and disposal of hazardous waste (Hazardous Waste Management Section)

This item shall consist of the management procedures for all hazardous waste to be generated. The elements of those procedures shall coincide with the Activity Hazardous Waste Management Plan. A copy of the Activity Hazardous Waste Management Plan shall be provided by the NTR. As a minimum, include the following:

- (a) Procedures to be employed to ensure a written waste determination is made for appropriate wastes which are to be generated;
- (b) Sampling/analysis plan;
- (c) Methods of hazardous waste accumulation/storage (i.e., in tanks or containers);
- (d) Management procedures for storage, labeling, transportation, and disposal of waste (treatment of waste is not allowed unless specifically noted);
- (e) Management procedures and regulatory documentation ensuring disposal of hazardous waste complies with Land Disposal Restrictions (40 CFR 268);
- (f) Pollution prevention/hazardous waste minimization procedures;
- (g) Plans for the disposal of hazardous waste by permitted facilities;
- (h) Procedures to be employed to ensure all required employee training records are maintained.

1.10 UNFORESEEN HAZARDOUS OR REGULATED MATERIAL

All known hazardous or regulated materials are indicated in the contract documents. If material that is not indicated in the contract documents is encountered that may be dangerous to human health upon disturbance during construction operations, stop that portion of work and notify the NTR immediately. Intent is to identify materials such as PCB, lead paint, mercury, petroleum products, and friable and nonfriable asbestos. Within 14 calendar days the Government shall determine if the material is hazardous. If the material is not hazardous or poses no danger, the Government shall direct the Contractor to proceed without change. If the material is hazardous and handling of the material is necessary to accomplish the work, the Government shall issue a modification pursuant to "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

1.11 CONTRACTOR HAZARDOUS MATERIAL INVENTORY LOG

Submit a Contractor Hazardous Material Inventory Log, which provides information required by EPCRA Sections 312 and 313, along with corresponding Material Safety Data Sheets (MSDS) to the NTR at the start and at the end of construction (30 days from final acceptance). Documentation for any spills/releases, environmental reports or off-site transfers may be requested by the NTR.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PROTECTION OF NATURAL RESOURCES

Preserve the natural resources within the project boundaries and outside the limits of permanent work. Confine construction activities to within the limits of the work indicated or specified. Conform to the national permitting requirements of the Clean Water Act.

3.1.1 Land Resources

Except in areas to be cleared, do not remove or destroy trees or shrubs without the NTR's permission.

3.1.2 Water Resources

3.1.2.1 Oily and Hazardous Substances

Prevent oil or hazardous substances from entering the ground, drainage areas, or navigable waters. In accordance with 40 CFR 112, surround all temporary fuel oil or petroleum storage tanks with a temporary berm or containment of sufficient size and strength to contain the contents of the tanks, plus 10 percent freeboard for precipitation. The berm shall be impervious to oil for 72 hours and be constructed so that any discharge shall not permeate, drain, infiltrate, or otherwise escape before cleanup occurs.

3.2 HISTORICAL AND ARCHAEOLOGICAL RESOURCES

Carefully protect in place and report immediately to the NTR historical and archaeological items or human skeletal remains discovered in the course of work. Stop work in the immediate area of the discovery until directed by the NTR to resume work. The Government retains ownership and control over historical and archaeological resources.

3.3 EROSION AND SEDIMENT CONTROL MEASURES

3.3.1 Temporary Protection of Erodible Soils

Use the following methods to prevent erosion and control sedimentation:

3.3.1.1 Mechanical Retardation and Control of Runoff

Mechanically retard and control the rate of runoff from the construction site. This includes construction of diversion ditches, benches, berms, and use of silt fences and straw bales to retard and divert runoff to protected drainage courses.

3.3.1.2 Sediment Basins

Trap sediment in temporary sediment basins. Select a basin size to accommodate the runoff of a local 25-year storm. Pump dry and remove the accumulated sediment after each storm. Remove collected sediment from the site.

3.4 CONTROL AND DISPOSAL OF SOLID WASTES

Remove all solid waste and non-hazardous debris (except treated soil) from Government property and dispose off-site at an approved landfill. Solid waste disposal off-site must comply with most stringent local, state, and federal requirements including the CERCLA off-site rule (included as Attachment II to

this section), 40 CFR 241, 40 CFR 243, and 40 CFR 258.

3.5 CONTROL AND DISPOSAL OF HAZARDOUS WASTES

3.5.1 Hazardous Waste/Debris Management

The Contractor shall identify all construction activities which shall generate hazardous waste/debris. The Contractor must provide a documented waste determination for all resultant waste streams. Hazardous waste/debris shall be identified, labeled, handled, stored, and disposed of in accordance with all Federal, State, and local regulations including 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265, 40 CFR 266, and 40 CFR 268. Hazardous waste shall also be managed in accordance with the approved Hazardous Waste Management Section of the Environmental Protection Plan. Store hazardous wastes in approved containers in accordance with 49 CFR 173 and 49 CFR 178. Hazardous waste generated within the confines of Government facilities shall be identified as being generated by the Government. Prior to removal of any hazardous waste from Government property, all hazardous waste manifests must be signed by activity personnel from the Station Environmental Office. No hazardous waste shall be brought onto Government property. Provide to the NTR a copy of waste determination documentation for any solid waste streams that have any potential to be hazardous waste or contain any chemical constituents listed in 40 CFR 372-SUBPART D. For hazardous wastes spills, verbally notify the NTR immediately.

3.5.2 Pollution Prevention/Hazardous Waste Minimization

The Contractor shall actively pursue minimizing the use of hazardous materials and the generation of hazardous waste while on site and during contaminated soil transport. The Hazardous Waste Management Section of the Environmental Protection Plan shall include the Contractor's procedures for pollution prevention/ hazardous waste minimization.

3.5.3 Hazardous Material Control

The Contractor shall include hazardous material control procedures in the Safety Plan. The procedures shall address and ensure the proper handling of hazardous materials, including the appropriate transportation requirements. The Contractor shall certify that all hazardous materials removed from the site are hazardous materials and do not meet the definition of hazardous waste per 40 CFR 261.

3.5.4 Petroleum Products

Conduct the fueling and lubricating of equipment and motor vehicles in a manner that protects against spills and evaporation. All used oil generated on site shall be managed in accordance with 40 CFR 279. The Contractor shall determine if any used oil generated while on-site exhibits a characteristic of hazardous waste. All hazardous waste shall be managed in accordance with the paragraph entitled Hazardous Waste/Debris Management of this section and shall be managed in accordance with the approved Environmental Protection Plan.

3.5.5 Releases/Spills of Oil and Hazardous Substances

Take precautions to prevent releases/spills of oil and hazardous substances. In the event of any releases of oil and hazardous substances, chemicals, or gases; immediately notify the Base or Activity Fire Department, the activity's Command Duty Officer, and the NTR. The Contractor is responsible for verbal and written notifications as required by the federal 40 CFR 355, state, local regulations and Navy Instructions. Spill response shall be in accordance with 40 CFR 300 and applicable State and local regulations. Contain and clean up these spills without cost to the Government. If Government assistance is requested or required, the Contractor shall reimburse the Government for such assistance. Provide copies of the written notification and documentation that a verbal notification was made

within 20 days.

3.6 DUST CONTROL

Control dust at all times, including during non-work periods. Use appropriate dust control measures, such as, but not limited to, sprinkling or treating with dust suppressants, for the soil at all the sites, treatment area, stockpiles, haul roads and other areas disturbed by operations in accordance with HAR 11-60.1-179. In addition, conduct all excavation, treatment, and transport operations in accordance with HAR 11-59.4(e)(1) that limits particulates in ambient air to a mean of 50 micrograms per cubic meter per 12-month period.

3.7 NOISE

Maximize the use of low-noise emission products, as certified by the EPA to ensure that maximum permissible sound levels are not exceeded. Sound levels should be measured at the most sensitive receptors near the treatment area (Naval Housing on Former NAS Barbers Point). HAR 11-46-4 addresses allowable noise levels for residential areas on Oahu. Noise levels at the site boundaries of the closest residential area should not exceed 55 dBA between the hours of 7 am to 10 pm, and 45 dBA between the hours of 10 pm to 7 am. In addition, vehicles used to transport soil and equipment to the treatment area should be manufactured in accordance with 40 CFR 205.52 to minimize the noise emissions.

-- End of Section --

ATTACHMENT I Solid Waste Disposal Report

CONTRACTOR'S CONSTRUCTION & DEMOLITION WASTE SUMMARY

Contractor's Name:	Project Title:	POC/Phone:
Contract Number:	Delivery Order:	Proj. Location:
Date of Project:		

Type of Waste	Landfilled		Recycled		Demolished		Incinerated	
	Tons	Cost	Tons	Cost	Tons	Cost	Tons	Cost
Green Waste								
Construction Debris								
General Refuse								
Metals								
Concrete								
Asphalt								
Asbestos								
Lead Contaminated Debris								
Used Lubricating Oil (includes hydraulic and motor oils-nonsynthetic)								
Antifreeze								
Lead Acid Batteries								
Other								

ATTACHMENT II EPA Regulatory Guidance Bulletin CERLCA Off-site Rule



ENVIRONMENTAL GUIDANCE REGULATORY BULLETIN

Office of Environmental Guidance RCRAICERCLA Division (EH-231)

December 1994

Transporting CERCLA Wastes Off-site; Final Off-Site Rule

Introduction

On September 22, 1993, the Environmental Protection Agency (EPA) published [58 Federal Register (FR) 49200] the final Off-Site Rule, which defines criteria for approving facilities for receiving waste from response actions taken under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The off-site requirements apply to the off-site management of hazardous substances, pollutants, and contaminants, as defined under CERCLA, that are generated from remedial and removal actions funded or authorized, at least in part, by CERCLA. CERCLA-authorized cleanups include those taken under lead-agency authority, Section 106 Consent Orders, Consent Agreements, Consent Decrees, and Records of Decision (RODs). EPA requires that remedial actions at Federal facilities taken under Sections 104, 106, or 120 of CERCLA comply with the Off-Site Rule for all cleanups enacted through DOE's leadagency authority.

The primary purpose of the Off-Site Rule is to clarify and codify CERCLA's requirement to prevent wastes generated from remediation activities conducted under CERCLA from contributing to present or future environmental problems at offsite waste management facilities. Only facilities that meet EPA's acceptability criteria can be used for off-site management of CERCLA waste. Even transfer facilities are required to be acceptable under the final rule before they can accept CERCLA waste. Because the decisions regarding the choice of the remedy for cleanup of a CERCLA site may depend on the acceptability of the receiving facility, the Off-Site Rule could affect both the schedule for cleanup as well as the array of feasible remedies from which to choose.

Regulatory History

Section 104(c)(3) of CERCLA, which was enacted in 1980, mandated that CERCLA remediation waste be managed and disposed of in an environmentally sound manner. The States were required to ensure that waste facilities, which were in compliance with Subtitle C of the Resource Conservation and Recovery Act (RCRA), were acceptable for receiving CERCLA wastes. Below is a chronology of the Off-Site Rule:

- □ January 1983 EPA issued Guidance on the Requirements for Selecting an Off-Site Option in a Superfund Response Action. The guidance encouraged facility inspections and correction of all major violations before CERCLA waste was received.
- □ November 1985 [40 *Code of Federal Regulations (CFR)* 300]: *The* National Contingency Plan (NCP) was revised to include the requirements for off-

- site receipt of CERCLA wastes. The NCP revisions mandated that facilities chosen to receive CERCLA wastes have permits or the appropriate approval to operate [40 CFR 300.68(a)(3)].
- □ November 5,1985 [50 FR 45933]: EPA issued the Off-Site Policy, entitled *Pro*cedures for Planning and Implementing Off-Site Response Actions. Under this early policy, a facility was required to operate under a RCRA permit or interim status, have received a compliance inspection within 6 months before receiving waste, address significant violations through appropriate enforcement actions, comply with minimum technology requirements of RCRA, and be in compliance with RCRA manifest disposal requirements. For more information refer to DOE's Policy on Off-site Treatment. Storage, and Disposal of Non-radioactive Hazardous Waste Memorandum, June 24.1986.
- ☐ October 1986: The Superfund Amendments and Reauthorization Act (SARA) was enacted and included an off-site" clause [Section 121(d)(3)]. SARA required that facilities chosen to receive CERCLA wastes be in compliance with RCRA, as amended by the Hazardous and Solid Waste Amendments (HSWA), and/or the Toxic Substances Control Act (TSCA), and other applicable federal and state laws and regulations. In addition, a facility's land disposal units could not be releasing hazardous wastes or hazardous constituents. Facilities with releases that were controlled under RCRA corrective actions were also considered acceptable for managing CERCLA waste.
- □ November 13,1987 EPA revised the Off-Site Policy and issued it as OSWER Directive No. 9834.11 entitled *Procedures for Implementing Off-site Response Actions*.

- □ November 29, 1988 [53 FR 48218]: EPA proposed the Off-Site Rule. The notice commented on the acceptability criteria for facilities and ways to address remediation wastes that were generated prior to the enactment of SARA.
- □ September 22, 1993 [58 FR 49200]: EPA promulgated the final rule on the off-site transfer of CERCLA waste.
- came effective. Refer-to DOE Office of Environmental Guidance,

tion Brief, The Off-Site Rule (EH-231-020/0194).

Impact on DOE Activities

This rule affects both persons conducting CERCLA remedial and removal actions and off-site facilities that might receive waste from those actions. As EPA states in the preamble to the rule, use of well managed facilities is a good business practice. Therefore, the Off-Site Rule is not likely to greatly affect DOE facilities that have already implemented appropriate requirements for selecting off-site facilities and have incorporated these same requirements into the waste management aspects of their remedial programs. A long-term benefit for DOE's remediation projects is a possible increase in the number of acceptable facilities, thus giving rise to greater competition to handle waste generated from CERCLA activities.

DOE will also have to be concerned about the designation of waste management facilities for CERCLA wastes. DOE waste management facilities that might receive waste from CERCLA activities at other DOE sites or from CERCLA activities at other locations of their own site, would

Final Off-Site Rule

be required to qualify as acceptable under the Off-Site Rule. This process would bean administrative burden and might trigger the need or accelerate the schedule for facility-wide investigations. The Off-site Rule effectively establishes the need for DOE to assess the likelihood of receiving CERCLA waste from off-site, evaluate whether onsite hazardous waste management facilities would be deemed acceptable, and determine actions required to increase their likelihood of acceptance.

Relevant Definitions

Facility

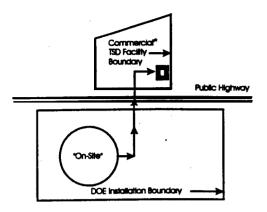
Any structure where hazardous substances are placed, stored, or disposed of, which includes but is not limited to pipes or pipelines, equipment, lagoons, ditches, landfills, motor vehicles, and aircraft (40 CFR 300.5).

Off-site

EPA defines *off-site* based on the CER-CLA definition of *on-site*. On-site is the areal extent of contamination and all suitable areas in very close proximity necessary for the implementation of the response action [40 CFR 300.400(e)(l)]. This definition allows for space to construct treatment systems and other remediation-related facilities to support the CERCLA project. Thus *off-site* is anything that is not on-site under CERCLA.

The decision of whether a waste management facility is off-site is pivotal in determining compliance with the Off-Site Rule. The following graphic scenarios, which are typical on DOE installations, help depict when the requirements of the Off-Site Rule apply to remedial actions.

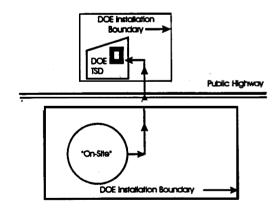
Scenario 1



Off-Site Rule Would Apply

When wastes are shipped out of the DOE property boundaries to a commercial hazardous waste treatment, storage, and disposal (TSD) facility, the Off-Site Rule applies. The EPA Regional Office would have to deem the commercial TSD facility acceptable before CERCLA wastes could be shipped to the facility.

Scenario 2

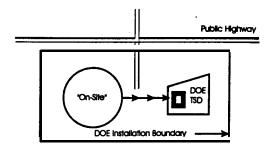


Off-Site Rule Would Apply

If wastes generated during a CERCLA project on a DOE site are shipped to another DOE site, the Off-Site Rule would ap-

ply. The hazardous waste management facility that is on the other DOE installation would have to have be determined acceptable.

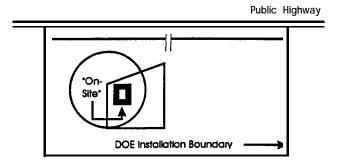
Scenario 3



Off-Site Rule Would Apply

If remediation wastes from a CERCLA site are taken to a hazardous waste management facility that is within the DOE property boundaries but not within the CERCLA site the Off-Site Rule would apply.

Scenario 4



Off-Site Rule Would Not Apply

The only case that the Off-Site Rule *does not apply* is the situation where the CER-CLA wastes are moved to a hazardous waste management facility that is on the CERCLA site itself.

Receiving Unit

The unit at a hazardous waste disposal facility that directly receives the CERCLA wastes is defined as the *receiving unit*. Thus a landfill, a tank system, or a warehouse can be defined as the receiving unit if that particular unit is targeted for the placement of CERCLA wastes. For the purpose of implementing the off-site requirements, EPA has determined that acceptability criteria primarily apply to the receiving unit.

Release

A *release* is spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment" (40 CFR 300.5). The definition includes the abandonment or discarding of barrels, containers, and other closed receptacles. A *release* under the Off-Site Rule *does not include*:

- □ De minimis, or substantially minor releases that pose little threat to human health or the environmental. An example of a de minimis release, as defined by EPA, is one into the air from the temporary opening and closing of a drum's bung.
- ☐ Federally permitted releases that do not pose a threat to human health of the environment. However, the definition ensures that facilities that have not addressed the impact of their releases on human health and the environment, which can be caused by a valid, older permit, are not allowed to receive CERCLA waste.

4 Final Off-Site Rule

☐ Releases to the air from hazardous waste management units that do not exceed the standards that will be promulgated under RCRA Section 3004(n).

Relevant Violations

The definition of *relevant violation in the* proposed rule was retained in the final rule without change. Relevant violations are significant deviations from regulations, compliance order provisions, or permit conditions designed to ensure..." that wastes are only delivered to authorized facilities, to prevent environmental releases, and to ensure early detection should a release occur. Criminal violations resulting in indictment are also relevant violations. EPA applies the relevant violation criteria to the receiving unit only, unless there is a case where the violation affects the entire facility.

An example of a receiving unit violation would be the failure to operate within the unit's design and operation requirements. In contrast, facility violations that the Off-Site Rule addresses are the failure to comply with the site's contingency plan and closure plan requirements for example.

Off-site Rule and Subtitle D Regulations.

The final rule does not exempt CERCLA waste from meeting the land disposal restrictions (LDR) standards when they are transferred off-site for management. It is important to remember that CERCLA remediation waste may also be a solid or hazardous waste under RCRA. The rule specifies that if a waste is generated during the remediation of a CERCLA site and it is not hazardous under RCRA and is not otherwise regulated (i.e., by TSCA, the Atomic Energy Act, or other applicable federal and state laws), the waste can only be disposed

of in a facility that meets the requirements of the rule (e.g., a permitted Subtitle D municipal solid waste landfill) and is deemed acceptable.

Facility Acceptability Criteria

All facilities that are considered for use in off-site management of CERCLA waste must be in compliance with RCRA and/or other applicable federal and state laws. The Off-Site Rule divides the potentially hazardous waste management facilities into three categories:

- ☐ RCRA Subtitle C facilities that have a land disposal unit,
- ☐ RCRA Subtitle C facilities that do not have a land disposal unit, and
- □ all other facilities that manage CER-CLA-derived waste, such as units authorized under TSCA.

Specific requirements must be met for each category of facilities. RCRA-permitted Subtitle C facilities that have land disposal units are acceptable if:

- the receiving unit has no releases of an hazardous waste, constituent, or substance:
- ☐ the receiving unit meets minimum technology requirements under RCRA Section 3004(o); and
- any releases from non-receiving units are addressed and in compliance with a legally binding agreement (e.g., a corrective action agreement) before CERCLA waste is placed in the receiving unit.

RCRA Subtitle C facilities that have a valid permit and do not have a land disposal unit are acceptable if the receiving unit has had no releases. At the non-receiv-

ing units, only the environmentally significant releases, which are those releases that pose a threat to public health or the environment must be addressed in a corrective action.

Finally non-RCRA facilities must control environmentally significant releases from the receiving and non-receiving units.

The EPA Regional Office will use the above criteria to determine acceptability. The Regional Off-Site Contacts (ROCs) are the source of information on the acceptability of facilities within each region (see table below). If a facility is determined to be unacceptable, it will not be able to accept CERCLA waste until EPA has enough evidence to change the original determination. The facility must have an acceptable determination at the time the CERCLA waste are transferred off-site to the facility.

Regional Off-Site Contacts (ROCs)				
Region	Primary Contact	Backup Contact		
I	Lynn Hanifan (617) 573-5755	Austine Frawley (617) 573-5758		
п	Greg Zaccardi (212) 264-9504	Joel Golumbek (212) 264-2638		
ш	Naomi Henry (215) 597-8338	Mary Lepkus (215) 597-9189		
IV	Edmund Burks (404) 347-7603	John Dickinson (404) 347-7603		
V .	Gertrud Matuschkovitz (312) 353-7921	Uylaine McMahon (312) 886-4454		
VI	Ron Shannon (214) 655-2282	Joe Dougherty (214) 655-2281		
VII	Gerald McKinney (913) 551-7816	David Doyle (913) 551-7667		
VIII	Terry Brown (303) 293-1823	George Dancik (303) 293-1506		
IX	Diane Bodine (415) 744-2130	Gloria Brownley (415) 744-2114		
х	Ron Lillich (206) 553-6646	Kevin Schanilec (206) 553-1061		

Guidance for Fulfilling the Off-Site Rule Requirements

To prevent delays in the remedial action process, the decisions associated with selection of an off-site facility for managing CERCLA waste must be evaluated at the remedial investigation (RI)/feasibility study (FS) stage of the remedial action process. By doing so the impact of the Off-Site Rule will be identified early in the remedial action process. DOE and contractor staff responsible for RI/FS preparation should address the potential implications of the off-site requirements when deciding on a remedy.

The following items should be considered to ensure that compliance with the offsite rule can be achieved without negatively affecting the remedial action schedule

- ☐ Consider the requirements of the Off-Site Rule early in the remedial action process, when the array of remedial action alternatives is first identified for evaluation. Determine the kinds of waste to be managed and the subset of those waste that will likely be managed in units that must comply with the off-site requirements. Those off-site units could be (1) within the DOE property boundaries, (2) at another DOE site, or (3) at commercial waste management facilities.
- ☐ Contact the ROC to determine if commercial vendors under consideration are acceptable and to initiate the evaluation of units on the DOE site for their acceptability for receiving CERCLA waste. The evaluation would include reviewing information on relevant violations, which the EPA Region or the DOE facility itself might provide. In addition, EPA would determine if releases or signifi-

6 Final Off-Site Rule

- cant environmental threats occur at the facility.
- ☐ Contracts/agreements with the receiving units should include a requirement that the units receiving the CERCLA waste be acceptable under the Off-Site Rule at the time the CERCLA waste are transferred.
- ☐ Consider the need for both permitting, and/or obtaining an acceptability determination for, off-site units that are planned to manage the waste on the DOE site. To minimize the potential impact of the off-site requirements on remedial action schedules, DOE staff and contractors should attempt to manage waste on-site, when possible.

For More Information

For a copy of the *Federal Register Notice* (*FR* 49200, Vol. 529, No. 182, Wednesday, September 22, 1993), call the RCRA Hotline Monday through Friday, 8:30 am to 730 pm EST. The national toil-free number is (800) 4249346 or in the Washington, D.C. area the number is (703) 920-9810 or TDD (703) 486-3323. Additional copies can be obtained from OSTI at (615)576-8401 or the Center for Environmental Management Information at (800)736-3282.

Please direct questions about the Off-Site Rule to Beverly Whitehead, DOE Office of Environmental Guidance, RCRA/CERCLA Division, EH-231, 1000 Independence Ave., S.W., Washington, D.C., 20585, at (202) 586-6073.

SECTION 02111

EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

CODE OF FEDERAL REGULATIONS

49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials, Tables, and Hazardous Materials Communications Regulations
49 CFR 173	Shipments and Packaging
49 CFR 176	Carriage by Vessel
49 CFR 178	Specifications for Packaging
40 CFR 761	(2002) Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
40 CFR 302	Designation, Reportable Quantities, and Notification
29 CFR 1910.120	Hazardous Waste Operations and Emergency Response
29 CFR 1926	Safety and Health Regulations for Construction
UNITED STATES CODE (U.S	S.C.)
33 U.S.C. 2701 (et seq.)	Oil Pollution Act (OPA)
AMERICAN SOCIETY FOR	TESTING AND MATERIALS (ASTM)
ASTM D 1556	(2000) Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(2000) Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu. m.))
ASTM D 2922	(1996el) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 5434	(1997) Standard Guide for Field Logging of Subsurface

Explorations of Soil and Rock

ASTM D 3017 (2001) Standard Test Method for Water Content of Soil

and Rock in Place by Nuclear Methods (Shallow Depth)

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION

OFFICIALS (AASHTO)

AASHTO M 92 (1991) Wire-Cloth Sieves for Testing Purposes

DEPARTMENT OF AGRICULTURE (DOA)

DOA SSIR (April 1984) Soil Survey Investigation Report No. 1, Soil

Survey Laboratory Methods and Procedures for Collecting

Soil Samples, Soil Conservation Service

HAWAII DEPARTMENT OF TRANSPORTATION (HDOT)

HDOT Highway Specification (1994) Section 703

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA Region IX PRGs (2000) Region IX Preliminary Remediation Goals

EPA SW-846 (2001) Test Methods for Evaluating Solid Waste.

SW-846, third edition.

1.2 SUBMITTALS

Submit the following in accordance with SECTION01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Surveys; G

Separate cross-sections of each area before and after excavation and after backfilling.

SD-06 Test Reports

Backfill; G

Surveys; G

Compaction Tests; G

Topsoil composition tests

Moisture-density Relation of Backfill Material and Base Course

1.3 SURVEYS

Surveys shall be performed prior to and after excavation of contaminated material to determine the volume of contaminated material removed. Surveys shall also be performed immediately after backfill

of each excavation. The Contractor shall provide cross-sections on 25 foot intervals and at break points for all excavated areas. Locations of confirmation samples, to be collected by others, shall also be surveyed and shown on the drawings. Surveys shall be performed by a surveyor licensed in the State of Hawaii. All northing and easting coordinates shall by reported in Hawaii State Plane Coordinate System, Zone 3 based on the North American Datum of 1983 (NAD 1983). Vertical control will be based on NAD 83, Geodetic Reference System of 1980 (GRS 1980) mean sea level (msl). Surveys shall be conducted using Third-Order, Class I accuracy.

1.4 REGULATORY REQUIREMENTS

1.4.1 Permits and Licenses

The Contractor shall obtain required federal, state, and local permits for excavation and storage of contaminated material. Permits shall be obtained at no additional cost to the NTR.

1.4.2 Air Emissions

Air emissions shall be monitored and controlled in accordance with SECTION 01575 TEMPORARY ENVIRONMENTAL CONTROLS.

1.5 DESCRIPTION OF WORK

The work shall consist of excavation, temporary storage, and treatment of contaminated soil and material. Perform work in accordance with 40 CFR 761, 29 CFR 1910.120, and the requirements specified herein. Excavate to the horizontal and vertical limits of the identified locations of contaminated soil and material as shown on the drawings. Characterization data on the nature and extent of the contaminated material is also provided on the drawings. Subsurface conditions, if known, are shown on the drawings. The NTR shall be notified within 24 hours, and before excavation, if contaminated material is discovered that has not been previously identified or if other discrepancies between data provided and actual field conditions.

PART 2 PRODUCTS

2.1 BACKFILL

2.1.1 Common Fill

Treated soil, satisfying the treatment criteria discussed in SECTION 02181 REMEDIATION OF CONTAMINATED SOILS BY THERMAL DESTRUCTION, shall be used as common fill (backfill) in excavation areas. The contractor may request approval from the NTR for use of imported soil for common fill. Fill imported from a source other than a "clean quarry" shall require chemical testing to confirm it is not contaminated. Contractor shall sample and analyze proposed material using the following EPA SW-846 Methods: 8081A for pesticides, 8082 for PCBs, 6010C for metals, 8270D for SVOCs and 8261 for VOCs. All contaminants shall be below EPA Region IX PRGs. Samples shall be collected at a frequency of one sample per change in source. Contractor shall provide documentation of clean fill to NTR (see Navy Guidance dated April 13, 2000 attached to this section). Imported fill shall not be used until borrow source chemical test results have been submitted and approved.

2.1.2 Topsoil

Topsoil previously removed from the treatment site at former NAS Barbers Point may be stockpiled and reused. Topsoil shall otherwise be imported from a commercial source and shall be free from subsoil, litter, and other objectionable material.

Topsoil shall be fertile, friable, natural surface soil obtained from well-drained areas and possessing characteristics of representative soils in the project vicinity that support vegetation. Topsoil shall be free of material that might be harmful to plant growth or hindrances to planting or maintenance operations.

Chemical and physical properties of topsoil proposed for use in the work shall be as follows as determined by topsoil composition tests of the Organic Carbon, 6A, Chemical Analysis Method described in DOA SSIR:

Organic matter shall be at least 6 percent

The pH range shall be from 5.0 to 7.0.

The physical analysis of the topsoil shall be within the following limits: (AASHTO M 92)

SIEVE SIZE	PERCENT PASSING
1 inch	99 to 100
1/4 inch	97 to 99
No. 100	40 to 60
No. 200	20 to 40

2.1.3 Base Course

Base course material or its equivalent as specified in HDOT Highway Specification 94, Section 703 shall be used to construct the access roads and provide a foundation layer when asphalt or concrete surfacing is required. Base course shall be composed of a 3/4-inch minus mix.

2.2 SPILL RESPONSE MATERIALS

The Contractor shall provide appropriate spill response materials including, but not limited to the following: containers, adsorbents, shovels, and personal protective equipment. Spill response materials shall be available at all times when contaminated materials/wastes are being handled or transported. Spill response materials shall be compatible with the type of materials and contaminants being handled.

PART 3 EXECUTION

3.1 EXISTING STRUCTURES AND UTILITIES

No excavation shall be performed until site utilities have been field located. The Contractor shall physically verify the location and elevation of all existing utilities prior to starting construction. Underground utilities were not investigated during design. The location of the existing utilities, where shown on the drawings, is approximate. The Contractor shall take the necessary precautions to ensure no damage occurs to existing structures and utilities. Damage to existing structures and utilities resulting from the Contractor's operations shall be repaired at no additional cost to the NTR. Utilities encountered that were not previously shown or otherwise located shall not be disturbed without approval from the NTR.

3.1.1 SURFACE PREPARATION

3.1.1.1 Clearing, Grubbing, and Debris Removal

Clear, grub, and remove vegetation and debris as required in accordance with SECTION 02231 CLEARING AND GRUBBING.

3.1.1.2 Cutting Pavement, Sidewalks, Curbs, and Gutters

Saw cut with neat, parallel, straight lines 1 foot beyond excavation limits within paved areas.

3.2 PROTECTION

3.2.1 Drainage and Dewatering

Provide for the drainage of surface runoff water away from excavations at Group B and C sites and dewater excavations as necessary. Water removed from excavations shall be stored properly, characterized according to 40 CFR 262.11, and disposed of properly.

3.2.1.1 Drainage at the Treatment Site

The Contractor shall construct storm drainage features at the treatment site at former NAS Barbers Point, including drainage swales and culverts at the earliest stages of site development, and shall grade the construction area to provide positive surface water runoff including temporary ditches, swales, and other drainage features as required to prevent erosion and cross-contamination.

3.2.2 Underground Utilities

Underground utilities were not investigated during design. In general, where shown on the drawings, the location of the existing utilities is approximate. The Contractor shall physically verify the location and elevation of all existing utilities prior to starting construction at each site.

3.2.3 Adjacent Structures

Where existing structures such as buildings, transformer pads, pavements, and other structures are adjacent to excavation areas, protect these structures by shoring, bracing, or other appropriately means.

3.3 CONTAMINATED MATERIAL REMOVAL

3.3.1 Excavation

Notify the NTR at least 48 hours prior to the start of excavation of contaminated soils. Use methods and equipment that result in minimal disturbance to remaining soil beyond the excavation limits. Areas of contamination shall be excavated to the depth and extent shown on the drawings. Excavation shall be conducted to an accuracy of not less than 0.0 feet and not more than 0.2 feet beyond the depth and extent shown on the drawings. Excavation, hauling, treatment, and backfill of soil excavated beyond the depths and extents shown on the drawings, and not approved by the NTR, shall be done at no additional cost to the Navy. As directed by the NTR, additional excavation may be required based on confirmation soil sampling results. Excavation shall be performed in a manner that will limit spills and the potential for contaminated material to be mixed with uncontaminated material. Remove and dispose of any material that becomes contaminated as a result of the Contractor's operation at no additional cost to NTR. Stage operations to minimize the time the contaminated soil is exposed to the weather. An excavation log describing visible signs of contamination encountered shall be maintained for each area of excavation. Excavation logs shall be prepared in accordance with ASTM D 5434.

Excavated soil shall be placed directly into HDPE lined trucks for transport to the treatment area for stockpiling and treatment as described in SECTION 02181 REMEDIATION OF CONTAMINATED SOIL BY THERMAL DESORPTION. Truck beds shall be lined with 10 mil polyethylene or other approved liner and covered properly to prevent release of the contaminated soil during transport. The burrito-type wrapping of the contaminated soil during transport is recommended. The soil shall be securely contained and covered during transportation to ensure that there is no fugitive dust or spillage.

Contaminated soil shall not be stockpiled or temporarily placed adjacent to the excavation. Excavated soil from the drum crushing area at former NAS Barbers Point shall be handled separately and sent off-site for disposal.

3.3.2 Transportation

49 CFR 171, 49 CFR 172, 49 CFR 173,, 49 CFR 176, and 49 CFR 178. Transport PCB contaminated soils in vehicles designed to carry PCB contaminated soils in accordance with Federal and State requirements. In addition to those requirements:

- a. Inspect and document vehicles for proper operation and covering. Repair or replace damaged transport equipment.
- b. Inspect vehicles for proper markings, tracking documents, and other requirements for waste transport.
- c. Perform and document decontamination procedures prior to leaving the worksite and again before leaving the treatment area.

3.3.3 Shoring

If workers must enter the excavation, it shall be evaluated, shored, sloped or braced as required by 29 CFR 1926 section 650.

3.3.4 Dust Control

Maintain strict dust control at all times to prevent dust particles with PCB attached from becoming airborne. Sprinkle or treat the soil at the site and other areas disturbed by operations with dust suppressants or water as discussed in SECTION 01575 TEMPORARY ENVIRONMENTAL CONTROLS.

3.4 PROTECTION OF EXCAVATION AREAS

Open excavations shall be appropriately protected to prevent public access as discussed in SECTION 01501 TEMPORARY FACILITIES AND TRAFFIC CONTROL. A traffic control plan is required whenever traffic patterns will be altered in accordance with SECTION 01501 TEMPORARY FACILITIES AND TRAFFIC CONTROL.

3.5 FIELD SCREENING

After each site has been excavated to the limits shown on the drawings, soil sample collection and field screening will be conducted by others. If soil field screening concentrations are greater than the project action levels, the Contractor may be directed to conduct additional excavation.

3.6 CONFIRMATION SAMPLING AND ANALYSIS

When field screening results show PCB concentrations below the project action level, confirmation soil sampling and analyses will be conducted by others. Confirmation soil samples will be collected from the excavation bottom and sidewalls. Locations of confirmation soil samples shall be marked in the field, surveyed, and documented on the as-built drawings by the Contractor. If soil confirmation sample concentrations are greater than the project action levels, the Contractor may be directed to conduct additional excavation.

3.7 SPILLS

In the event of a spill or release of a hazardous substance (as designated in 40 CFR 302), pollutant, contaminant, or oil (as governed by the Oil Pollution Act (OPA), 33 U.S.C. 2701 (et seq.), the Contractor shall notify the Contracting Officer immediately. If the spill exceeds the reporting threshold, the Contractor shall follow the pre-established reporting and containment procedures in the Environmental Protection Plan as described in SECTION 01501 TEMPORARY ENVIRONMENTAL CONTROLS. Immediate containment actions shall be taken to minimize the effect of any spill or leak. Cleanup shall be in accordance with applicable federal, state, and local regulations. As directed by the NTR, additional sampling and testing shall be performed to verify spills have been cleaned up. Spill cleanup and testing shall be done at no additional cost to the NTR.

3.8 BACKFILLING

3.8.1 Confirmation Test Results

After all contaminated materials have been removed and confirmation test results have been approved, excavations shall be backfilled immediately, and no later than 30 days. Backfill shall be placed and compacted to match preconstruction elevations. Provide topsoil, minimum 4 inch thickness, in areas to be reseeded. Provide base course in areas to be repaved or for concrete pad replacement.

3.9 Common Fill Placement

Place common fill in 8 inch maximum lifts. In areas to be reseeded, compact backfill to 90% of ASTM D 1557 maximum dry density. In areas to be repaved, compact backfill to 95% of ASTM D 1557 maximum dry density. In the coral pit, compact backfill to 90% of ASTM D 1557 maximum dry density. Finish to a smooth surface.

3.10 Placing Topsoil

Before topsoil is placed, the backfill surface shall be cleared of all materials that might hinder subsequent maintenance operations. Immediately prior to placing the topsoil, the backfill, wherever excessively compacted by traffic or other cause, shall be loosened to a depth of at least 3 inches.

Suitable topsoil shall be placed in the top 4 inches of all areas to be reseeded as indicated in the drawings. Prior to placement of the topsoil, the subgrade shall be scarified to a depth of 3 inches. Spreading shall be performed in such a manner that planting can proceed with little additional soil preparation, and the area shall be left smooth and suitable for lawns. Irregularities in the surface from topsoiling or other operations shall be corrected so as to prevent the formation of depressions where water will stand. Topsoil shall not be hauled and placed when wet or when the subgrade is excessively wet, extremely dry, or in a condition otherwise detrimental to the proposed planting or to proper grading. Topsoil shall be spread uniformly but not compacted. Where any portion of the surface becomes gullied or otherwise damaged, the affected area shall be repaired.

3.11 Base Course Placement

Place a minimum thickness of 6 inches of base course below all replacement paving. Compact base course to 95% of the ASTM D 1557 maximum dry density.

3.12 FIELD QUALITY CONTROL

Field quality control activities shall be conducted in accordance with the Construction Quality Control Plan discussed in SECTION 01110 GENERAL PARAGRAPHS.

Test soil and base course materials for moisture-density relationin accordance with ASTM D 1557. Perform one test for each material. Provide additional tests for each change of source.

Perform compaction tests in randomly selected locations and in accordance with ASTM D 1556 or ASTM D 2922 as follows:

- a. Soil backfill at vegetation areas: One test per excavation site per lift.
- b. Base course underneath concrete or asphalt: One test at each site minimum and one test per 1,000 square feet at sites where asphalt or concrete exceed 1,000 square feet.

Where ASTM D 2922 and ASTM D 3017 are used to test compaction and moisture content of backfill or aggregate base course, verify test results by performing at least one test every two weeks using ASTM D 1556 at a location already tested in accordance with ASTM D 2922.

3.13 FINISH OPERATIONS

3.13.1 Revegetation

Replace vegetation in all excavation areas to be reseeded and the coral pit area as discussed in SECTION 02920 SITE RESTORATION.

3.13.2 Replace Asphalt and Concrete Pavements and Sidewalks

Asphalt and concrete shall be replaced in accordance with SECTION 02742 ASPHALT PAVING, SECTION 02770 CONCRETE SIDEWALKS AND CURBS AND GUTTERS, and SECTION 03300 CAST-IN-PLACE CONCRETE. Asphalt and concrete pavements, sidewalks, and pads shall be replaced to match their original thickness and steel reinforcement or to the following minimum thickness requirements:

-- End of Section --

ATTACHMENT I Navy Guidance on Chemical Analysis of Imported Fill



DEPARTMENT OF THE NAVY

PACIFIC DIVISION NAVAL FACILITIES ENGINEERING COMMAND 258 MAKALAPA DR., STE. 100 PEARL HARBOR, HI 96860-3134

> 5090.GG Ser ENV1823/ 944 1 3 APR 2000

To: Distribution

Subj: CHEMICAL TESTING OF IMPORT FILL MATERIAL

Chemical testing of import fill material from a "clean quarry" is no longer required for CLEAN and RAC projects in Hawaii. The Navy has determined that a "clean quarry" is one that supplies fill material for construction projects throughout the state, including residential developments, can be assumed to provide clean material. Region IX of the U. S. Environmental Protection Agency and the State of Hawaii Department of Health concur that import fill material from a "clean quarry" does not require testing. Fill material from other sources, such as dredge spoils, must be tested for the chemical contaminants suspected to be present.

If the "clean quarry" has performed chemical testing on their material, we request that you obtain copies of this data for inclusion in the final project documentation.

If you have any questions, please contact Ms. Kay O'Keefe, of our Environmental Restoration Division, at (808) 471-9605.

Sincerely,

MELVIN Z. WAKI, P.E.

Melin J. Dalu

Head

Environmental Engineering Department

Distribution:
Mr. Ken Vinson
Earth Technology
700 Bishop Street, Suite 900
Honolulu, HI 96813

Mr. Jon Herwig Ogden PMO 680 Iwilei Road, Suite 660 Honolulu, HI 96817

Mr. Paul Chinen IT PMO P. O. Box 30526 Honolulu, HI 96820-0526

SECTION 02181

REMEDIATION OF CONTAMINATED SOILS BY THERMAL DESORPTION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

CODE OF FEDERAL REGULATIONS

40 CFR 50 Appendix B (2002) Reference Method for the Determination of

Suspended Particulate Matter in the Atmosphere

(High-Volume Method)

40 CFR 761.289 (Subpart O) (2002) Compositing Samples

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA SW-846 (2001) Test Methods for Evaluating Solid Waste.

SW-846, third edition.

HAWAII ADMINSTRATIVE RULES (HAR)

HAR 11-59.4 Ambient Air Quality Standards

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 30 (1996; Errata; TIA 96-2) Flammable and Combustible

Liquids Code

NFPA 31 (1997) Installation of Oil Burning Equipment

NFPA 70 (1999) National Electrical Code

1.2 SYSTEM DESCRIPTION

The low-temperature thermal desorption system shall be provided and operated by the contractor to transfer organic compounds from contaminated materials to a vapor stream drawn through the system. The system shall remove organic contaminants from the contaminated materials by heating the soil matrix, such as with a heated rotary kiln. The low-temperature thermal desorption unit shall not involve oxidation, thermal destruction or chemical altering of the PCB contamination. Treated soil

shall meet the specified treatment criteria. Removal/treatment of organic vapors shall be conducted, such as through use of a granular activated carbon (GAC) adsorption system. Stack controls shall not involve oxidation, thermal destruction or chemical altering of PCB. Emissions shall meet specified emission criteria.

1.3 SUBMITTALS

SD-01 Preconstruction Submittals

Definitive Demonstration Plan

The Definitive Demonstration Plan shall be submitted as an attachment to the workplan. This plan shall summarize the operation of the thermal desorption unit during startup and definitive demonstration. As part of this plan, the contractor shall determine if Form 7460 is required by FFA to have an exhaust stack in the vicinity of the operating runway. Stack testing requirements shall also be included as part of this plan.

Treatment Site Layout and Design; G

Provide drawings and appropriate details that show dimensions and orientation of treatment site elements including but not limited to:the thermal desorption system and subsystems, soil preparation area, stockpile areas, water storage and connection to existing valves, and site drainage.

SD-03 Product Data

Equipment; G

Information on function, design capacity, and expected operational capacity for the following equipment in the thermal desorption system: feed preparation equipment, feed/treated materials conveying equipment, thermal treatment equipment (primary chamber, blowers, air pollution control equipment). Equipment specifications identifying manufacturer and model number, materials of construction, interior and exterior dimensions, design limitations, and normal operating conditions. Operating capacity and operating conditions for subsystem equipment; pumps, valves and other in-line devices; sizes of conveying and/or feeding devices; size and number of parallel components or lines.

Detailed Process Flow Diagram;

Piping and Instrumentation Diagram;

Detailed manufacturer's data and piping and instrumentation diagrams on the overall controls, sequence of control, description of components, logic diagrams, control panel layouts, legends and standard symbols, sensors, process controllers, control operators, valves, alarms, interlocks and contaminated material feed cut-off systems. Data describing in detail the equipment used to monitor stack emissions, including the stack sampling probe, filters, gas transport tubing, sampling pump, moisture removal system, analyzer's calibration system, and data recorder.

SD-06 Test Reports

Daily Production;

Reports of volume of soil treated and where soil is staged. Include chain of custody (COC), inspection checklist, and maintenance conducted.

Startup and Shakedown;

Report stating that the system is ready for operation and documenting any action taken to prepare the system for standard operation.

Definitive Demonstration:

Reports containing the results of the definitive demonstration.

Treatment Data:

Reports containing all data on daily operations and soil analysis. Reports of inspections or tests, including analysis and interpretation of test results. Each report shall be properly identified. Test methods used shall be identified and test results shall be recorded.

1.4 REGULATORY REQUIREMENTS

1.4.1 Ambient Air Emissions

The thermal desorption system shall conform to applicable state, regional, and local regulations regarding ambient air emissions. Specific criteria is provided in Attachment I of this section.

1.4.2 Hazardous Materials

If any process residuals are found to contain hazardous materials, they shall be retreated if possible or transported and disposed of as specified in SECTION 01575 TEMPORARY ENVIRONMENTAL CONTROLS.

1.5 EXISTING CONDITIONS

Group A soil contaminated with PCBs, PAHs, and chlordane has been excavated from various Naval sites and stockpiled at two locations at the former NAS Barbers Point and at one location at NRTF Lualualei adjacent to Building 81 as shown on the drawings. Some Group A soil is also contaminated with TPH.

Group B and C soils are mainly in-situ soils contaminated with PCBs and PAHs that will require excavation and transport to the treatment area. There will be some Group B and C soil in stockpiles north of the treatment area at former NAS Barbers Point. Group B soil from the Drum Crushing Area is contaminated with 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, alpha-chlordane, gamma-chlordane, heptachlor epoxide, and arsenic and will not be treated, but taken off-island for disposal.

PART 2 PRODUCTS

2.1 THERMAL DESORPTION EQUIPMENT

2.1.1 Design Requirements

Contractor shall provide all necessary thermal desorption equipment to treat all Group A, B, and C soils until they contain contamination below the cleanup criteria discussed in paragraph 2.1.2.1 of this section. The system shall be capable of treating a minimum of 26,804 CY of soil and maximum of

35,283 CY to the treatment criteria at a rate of approximately 100 CY per day. Contractor shall provide a detailed process flow diagram for process equipment associated with the thermal desorption system and data.

Contractor shall provide a piping and instrumentation diagram indicating: process equipment; instrumentation; piping and valves; stacks, vents and dampers; control equipment (including sensors, process controllers, control operators, valves, interlocks, alarms, and contaminated material feed cut-off systems); labels and other necessary information to correlate to the process flow diagram.

2.1.1.1 Primary Desorption Chamber

The primary desorption chamber volatilizes the compounds of concern.

2.1.1.2 Air Pollution Control System Requirements

The air pollution control system shall consist of a quench followed by a system to remove/treat organic vapors such as a GAC adsorption treatment system. If a GAC adsorption treatment system is used, it shall include gas phase and liquid phase carbon units. The air pollution control system shall meet requirements of Section 1.4.1.

2.1.2 Performance Requirements

2.1.2.1 Treatment Criteria

The thermal desorption system shall be capable of treating the contaminated soils to meet the following treatment criteria:

ORGANIC CONTAMINANT	TREATMENT CRITERIA (mg/kg)		
PCBs	1.0		
TPH as diesel and motor oil	60		
Benzo(a)pyrene	0.062		
Benzo(b)fluoranthene	0.62		
Chlordane	1.6		
Alpha-chlordane	1.6		
Gamma-chlordane	1.6		

2.1.2.2 Air Emission Criteria

The system shall meet the substantive state (HAR 11-59.4 and HAR 11-60) and federal requirements for ambient air emissions as shown in Attachment I to this Section. The annual average maximum concentrations can be related to different averaging times as shown in Attachment II to this Section. Compliance with these requirements shall be confirmed through stack testing and air modeling. A more detailed description of stack testing and air modeling shall be provided in the contractor's SWP.

2.2 INSTRUMENTATION AND CONTROLS

2.2.1 Redundancies

Fully redundant backup capability within each subsystem to safely terminate system operations at the thermal desorption system shall be provided. Duplexing or redundancies within the instrumentation and control systems shall be adequate to provide uninterrupted continuous monitoring of the emissions and to demonstrate operation in accordance with the approved operating conditions.

2.2.2 Displays and Data

Monitored parameters and excursion alarms shall be displayed in the Motor Central Center and information communicated via radio. Process and emissions data shall be recorded on magnetic media. Flow information shall include rate monitoring, integration and totalizing. Hard copies of recorded data and summaries of recorded data shall be maintained. The copies shall be available upon request.

2.2.3 Instrumentation, Sensors, Recorders, and Sampling

2.2.3.1 Instrumentation

Instrumentation and equipment including sensors, connecting devices, recorders, analyzers and components necessary to monitor and control the safe and efficient operation of the system shall be provided.

2.2.4 Sampling

Stack sampling port and equipment for collecting discrete and composite samples shall be provided with adequate access for personnel and equipment.

2.2.5 Electrical Work

All electrical work, wiring, and controls shall conform to the applicable requirements of NFPA 70. No electrical utilities are available at the former NAS Barbers Point treatment area. Contractor shall provide generated power as needed for site facilities.

2.3 CONTAMINATED MATERIAL FEED SYSTEM

2.3.1 Soil Preparation

Soils will likely include foreign material such as HDPE liner, concrete and asphalt chunks, and vegetation. Pre-treatment of concrete and asphalt shall include crushing or grinding and screening as necessary to produce material that is compatible with the thermal desorption treatment system. Pre-treatment of vegetation, including stumps and roots, shall include chipping or grinding as necessary to produce material that is compatible with the thermal desorption treatment unit. Blend soils as desired to maintain a consistent incoming contaminant concentration.

2.3.2 Capacity

Capacity of the contaminated material feed system shall be consistent with the capacity of the thermal desorption system.

2.4 TREATED MATERIAL AND RESIDUES

Equipment and storage facilities shall be provided for removing, handling and storing residues resulting from thermal treatment, including treated material and wastes captured by the pollution control system.

2.4.1 Capacity

Capacity for treated material and solids captured by the pollution control system removal, handling, and storage systems shall be consistent with the capacity of the thermal desorption system.

2.4.2 Rehydration

Treated material handling systems shall include provisions for rehydration, prior to storage, of treated soil.

2.5 AIR SUPPLY AND POLLUTION CONTROL SYSTEMS

2.5.1 Fugitive Emissions Control

Means that have been demonstrated to provide fugitive emissions control shall be implemented.

2.5.2 Quench

Off-gases from the primary soil treatment zone shall be cooled to temperatures protective of downstream units and equipment.

2.6 FUEL SYSTEM

2.6.1 Feed Capability

The fuel system shall have direct feed capability to the thermal desorption system. Meters, pressure gages, and controls shall be provided to maintain proper operating conditions. Design shall be in conformance with the applicable requirements of NFPA 30 and NFPA 31.

2.6.2 Secondary Containment

Fuel storage tanks or trailers shall be double walled to provide secondary containment as required by paragraph 2-3.4 Control of Spillage from Aboveground Tanks of NFPA 30.

PART 3 EXECUTION

3.1 EXCAVATION AND TRANSPORT

Excavate or load from stockpiles the contaminated soil to be treated as discussed in SECTION 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL. Transport soil to treatment area at former NAS Barbers Point in roadworthy trucks. Truck beds shall be lined with 10 mil polyethylene or other approved liner and covered properly to prevent release of the contaminated soil during transport. The burrito-type wrapping of the contaminated soil during transport is recommended. The soil shall be securely contained and covered during transportation to ensure that there is no fugitive dust or spillage. Decontaminate tires and truck exterior as required to keep roadways and haul route free of contaminated soil and dust.

3.2 LOW TEMPERATURE THERMAL DESORPTION TREATMENT

Contractor shall provide all necessary thermal desorption equipment to treat all Group A, B and C soils until they contain contamination below the cleanup criteria discussed in paragraph 2.1.2.1 of this section. Soil from the Drum Crushing Area (Group B soils, former NAS Barbers Point) will not be treated and shall be disposed of off-island. All treated soil shall be sampled in accordance with paragraph 3.4.1. When all contaminated soil has been treated, soil underlying all stockpile locations shall be tested and treated as necessary in accordance with paragraph 3.4.2. Finally, all potentially contaminated base course and sand shall be treated and tested in accordance with paragraph 3.4.3.

3.3 LAYOUT

Proposed storage layout for treated material shall be adequate for segregating on a daily basis for a maximum of 10 days to allow for results from sampling and analyses prior to additional treatment or placement in semi-permanent locations.

3.4 SAMPLING, MONITORING AND INSPECTIONS

Contaminated material feed, treated material, and waste streams shall be sampled and analyzed as specified. Contractor shall validate all data.

3.4.1 Treated Soil Sampling and Analysis

When less than 100 cubic yards of soil is treated during the 24-hour period, a minimum of 1 composite sample (mixture of equal grab samples every 4 hours) shall be collected from treated soil for laboratory analysis. When more than 100 cubic yards of soil is treated during the 24-hour period, a minimum of 1 composite sample (mixture of equal grab samples for every 25 cubic yards of soil treated) shall be collected per each 100 cubic yards of soil or portion thereof. The selected laboratory shall be Naval Facilities Engineering Service Center (NFESC) approved. Samples shall be collected of sufficient weight for the chemical analyst to measure the concentration of known contaminants in the pre-treatment soil batch. The following EPA SW-846 analytical methods shall be used: 8082 (full list) for PCBs, 8081A for pesticides, 8015B for TPH as diesel and motor oil, and 8270C for PAHs. At a minimum, report the parameters listed in the treatment criteria in paragraph 2.1.2.1 of this section.

Each day's treated soil shall be placed in a separate cell in the interim storage area for treated soil. Ten cells shall be constructed to provide adequate storage for sample shipment and analysis and reporting (5-day turnaround time).

The entire daily stockpile of materials that do not meet all of the treatment criteria shall be retreated until treatment criteria are met. Treated soil meeting treatment criteria may be used for backfill at excavation sites. Surplus soil not used for backfill shall be placed in the coral pit south of the treatment site.

3.4.2 Confirmation Sampling and Analysis Beneath Stockpiles

Underlying soil at all stockpile locations shall be sampled using a square-based grid system to overlay the stockpile footprint and 5 feet beyond the stockpile footprint in all directions. Orient the grid axes on a magnetic north-south line centered in the area and an east-west axis perpendicular to the magnetic north-south axis also centered in the area. Mark out a series of sampling points 20 feet apart parallel to the grid axes in both directions to completely overlay the sampling area. Collect a sample at each grid node. At each selected sampling location, collect at least 20 ml of soil, or samples of sufficient weight for the chemical analyst to measure the concentration of each contaminant of concern. Use a core sampler having a diameter >0.78 inch and <1.9 inch. Collect soil to a maximum depth of 3 inches.

The following procedures from 40 CFR 761.289 (Subpart O) shall be followed for the compositing scheme. Prepare composite samples using equal volumes of each component sample. Mix composite samples thoroughly. From each well-mixed composite sample, take samples of sufficient weight for the chemical analyst to measure the concentration of each contaminant of concern. Composite a maximum of nine samples for each composite sample. The maximum dimensions of the area enclosing a nine-grid point composite is two grid intervals bounded by three collinear grid points. Take all samples in the composite at the same depth. The initial compositing area is located at the origin of the grid. Subsequent compositing areas surround the initial compositing area.

If contaminated soils are detected, the top 6 inches of that area shall be scraped and treated. The

sampling location shall be retested. This process shall be repeated as necessary until test results confirm that the soil is below the treatment criteria provided in paragraph 2.1.2.1 of this section.

3.4.3 Base Course and Sand Sampling and Analysis

Base course and sand in the soil preparation area shall be sampled and treated if necessary after the underlying soil at all stockpile locations has been sampled, tested, and treated as necessary. Excavate and treat all contaminated base course and sand in the preparation area (a minimum of 6 inches). Include underlying soils (under the liner) if necessary.

If analytical results show that every batch of treated soil meets all cleanup criteria (no batch of soil requires retreatment), the base course and sand of the interim staging area for treated soils shall not require treatment. If one or more batches of treated soil in the interim staging area fails to meet cleanup criteria, the underlying sand and base course shall be sampled then excavated (a minimum of 6-inches) and treated if required.

3.4.4 Confirmation Sampling at Excavation Sites

Delineation and bottom confirmation sampling at Group B and C excavation sites will be completed by others and will not be required of the contractor.

3.5 AIR MONITORING

Emissions for the contaminants of concern shall be monitored in accordance with state and federal regulations. Compliance with applicable criteria shall be confirmed through stack testing and air modeling. A more detailed discussion of stack testing and air modeling shall be provided in the contractor's site work plan.

3.5.1 Breakthrough Monitoring for Air Pollution Control System

The air pollution control system, such as the GAC adsorption system, shall be monitored for breakthrough and changed as needed to comply with state and federal regulations for emissions for the contaminants of concern.

3.5.2 Monitoring for Particulate Emissions

Air monitoring and fugitive dust emissions testing shall be conducted using 40 CFR 50 Appendix B or equivalent method.

3.5.3 Ambient Air Monitoring

Water shall be used to control dust while clearing land, and blending, loading, and hauling soil. Water shall may be used to control dust on haul roads, stockpiles, and other surfaces that may result in fugitive dust.

Three stationary air monitors shall be set up, one upwind and two downwind from the site at the perimeter fence. The air monitors shall be sampled daily. Real-time air monitoring shall be conducted hourly within the work areas. If dust concentrations exceed 45 μ g/m3, dust suppression measures, such as watering, shall be implemented. In addition, portable air monitors will be utilized at the soil stockpiles during soil transportation activities. Air sampling shall be conducted daily at each stockpile location. A minimum of 2 samples will be collected, one upwind and one downwind, each day.

3.5.4 Monitoring for PCBs in Air

Air monitoring for PCBs shall be conducted in accordance with state and federal regulations. Compliance with applicable air criteria shall be confirmed through stack testing and air modeling as discussed in the Air Impact Analysis Protocol included as part of the contractor's SWP.

Include provisions to ensure that airborne PCB concentrations of air do not exceed the permissible exposure limit (PEL). Provide air monitoring and sampling to ensure worker safety. Air monitoring shall be conducted at the stack during operation of the thermal desorption unit. Measure using a direct reading total particulate meter correlated to a worst-case amount of PCBs attached to particulates. When airborne concentrations exceed the PEL at the breathing zone of workers, provide respirators and additional worker protection as required in the Site Health and Safety Plan. If airborne concentration exceeds PEL at boundary of the treatment site, immediately stop work and notify the NTR.

3.6 MONITORING FOR THE FORMATION OF DIOXINS/FURANS

3.6.1 Testing for Dioxins in Soil

During the definitive demonstration test, soil shall be tested after treatment to determine if Dioxins are being created by the thermal desorption process. The EPA maximum allowable concentration of dioxin in soil is 1 part per billion (reported as a summation of all congeners converted to a 2,3,7,8-TCDD equivalent).

3.6.2 Stack Testing for Dioxin Emissions

Emissions shall be tested in the off-gas exiting the air pollution control system, such as the GAC adsorption system, during the definitive demonstration to determine if dioxins are present in the gas streams.

3.7 PROCESS RESIDUALS

All waste systems generated by the thermal desorption and, if applicable, GAC adsorption processes, will be characterized according to 40 CFR 262.11 and shipped to the U.S. mainland for incineration or proper disposal at a chemical waste landfill certified to accept CERCLA waste. If GAC is utilized for air pollution control, all GAC will be properly disposed of on the U.S. mainland.

3.8 LOGS

Treatment data from sampling, inspections and tests shall be recorded and the records placed in the operating log. The log shall describe calibration procedures conducted, daily production, and results obtained. Logs shall be submitted in accordance with paragraph 1.3. Logs shall be maintained throughout the duration of operations and shall be made available for inspection upon request by the NTR.

3.9 STARTUP AND SHAKEDOWN

Startup shall include material handling systems demonstration, instrumentation calibration, and an 8-hour test period with at least 4 hours of continuous operation. There shall be no more than 30 minutes of down time during the 8-hour test period. Startup operations shall demonstrate that the system is capable of processing material at the proposed feed rate and that the air pollution control system is capable of attaining the required throughput rates. Startup activities shall be performed using uncontaminated material.

3.9.1 Startup Plan

The Contractor shall submit a startup plan as part of the Definitive Demonstration Plan. The plan shall describe control system functions and specific procedures proposed to demonstrate each function and for testing the system with uncontaminated materials; formats and procedures for reporting the material handling demonstration and hot check results; proposed operating procedures for the demonstration test with detailed descriptions of the sampling and analysis to be performed.

3.9.2 Systems Demonstration

The Contractor shall demonstrate the contaminated material preparation and feed systems and the treated material and solids captured by the pollution control system handling systems. The systems demonstration shall not commence until written approval is received from the NTR. The systems and the treated material and solids captured by the pollution control system handling systems shall operate continuously at the proposed maximum feed rate for 8 hours without a malfunction or shutdown related to the systems. The systems demonstration shall be conducted using uncontaminated material. There shall be no fugitive emissions, or "dusting."

3.9.3 Control Interlock Demonstration

Following instrumentation calibration, it shall be demonstrated that control system interlocks and alarms are programmed correctly and are fully functional. Each alarm point shall be tested for proper response. Alarms, interlocks, and emergency responses (activation of combustion gas by-pass system or an emergency system shut down) shall be demonstrated. Operating conditions which trigger system alarms may be artificially induced in the field, or the control set points may be altered to invoke the desired response alarm. Appropriate control system responses (including interlocks, alarms, by-pass activation and/or emergency shutdowns) to each of the specified stimuli shall be demonstrated.

3.9.3.1 Definitive Demonstration

The system shall be placed in operation under conditions proposed in the Definitive Demonstration Plan for three, 4-hour demonstration test periods without a malfunction or shutdown related to the contaminated material feed or the treated material and solids captured by the pollution control system handling systems with all continuous emissions monitoring systems functional throughout the three 4-hour test periods. Emissions data shall be recorded by a continuous data logger or in 1 minute intervals.

3.10 DEFINITIVE DEMONSTRATION PLAN

The Contractor shall submit a Definitive Demonstration Plan. The demonstration shall be conducted in accordance with the approved Definitive Demonstration Plan.

3.10.1 Schedule

Written notification of the anticipated date of the definitive demonstration shall be received at least 7 days prior to the projected start date. Definitive demonstration operations may begin upon approval of the Definitive Demonstration Plan and Contractor's certification that final shake down activities have been completed and that all systems are ready to conduct a demonstration.

3.10.2 Source of Material

Contaminated material used for the definitive demonstration shall be obtained from one of the Group A contaminated soil stockpiles. Prior to performing the demonstration, contaminated material to be used shall be tested by a laboratory to verify it contains at least 50 ppm PCBs.

3.10.3 Operating Conditions

All systems shall be operated at the conditions specified in the Definitive Demonstration Plan for the duration of the definitive demonstration.

3.10.4 Sampling Requirements

The sampling for the definitive demonstration shall include, as a minimum, the following:

Solid-waste feed, 1 composite every 4 hours of equal grab samples collected at 1-hour intervals curing test period.

Treated soil, 1 composite every 4 hours of equal grab samples collected at 1-hour intervals during test period.

Stack gas, including but not limited to the parameters outlined in Section 2.1.2.2.

Air pollution control system solids and liquid discharge streams, 1 composite of equal grab samples collected at 1-hour intervals during test period.

3.10.5 Field Test Data

At a minimum, collect the following data during the definitive demonstration:

3.10.5.1 Fugitive Dust Emissions

Identification of sources of fugitive dust emissions and means of control of the emissions.

3.10.5.2 Continuous Measurement and Recording

Continuous measurement and recording (one minute intervals) of operating parameters as required in the approved Definitive Demonstration Plan.

3.10.5.3 Other Requirements

Other monitoring, sampling, or analyses required by the approved Definitive Demonstration Plan.

3.11 DATA MANAGEMENT

All air monitoring, stack testing, and air modeling data shall be retained for 5 years after completion of the project and be made available to Navy personnel upon request.

3.12 LONG-TERM OPERATION

The thermal desorption unit shall be operated until all contaminated soil is treated. Down time for maintenance activities shall be in accordance with the contractor's Treatment Plan as discussed in SECTION 01110 GENERAL PARAGRAPHS.

3.13 DEMOBILIZATION

Demobilization shall be completed in accordance with the approved demobilization plan included in the SWP. Demobilization period shall begin after the contaminated materials have been treated to the requirements of this section, the underlying soil at all stockpile locations has been tested and treated if contaminated soils were detected, and potentially contaminated base course and sand has been treated and tested. Demobilization shall include disconnection of utilities, decontamination, disassembly, and

removal of thermal desorption system equipment, materials handling equipment, and structures related to the thermal desorption system. Demobilization shall be considered complete when the thermal desorption equipment and related equipment have left the site, the temporary fence has been removed, and all temporary structures constructed for the purpose of the treatment have been removed.

-- End of Section --

ATTACHMENT I Ambient Air Quality Criteria

Attachment I Ambient Air Quality Criteria

Component	Ambien	t Concentration (ng/m³)
	ındo ¹	(ng /111)
Hawaii Regulated Compou		(1-hr average)
		(8-hr average)
NO		
NO ₂		(12-month average)
SO ₂		(3-hr average)
		(24-hr average)
		(12-month average)
Particulates (PM 10)		(24-hr average)
		(12-month average)
Carcinogenic Compounds	2	
1,1,2,2,-Tetrachloroethane	0.33	(12-month average)
1,1,2-Trichloroethane		(12-month average)
1,4-Dichlorobenzene	3.1	(12-month average)
2,4,6-Trichlorophenol	3.7	(12-month average)
3,3-Dichlorobenzidine	0.15	(12-month average)
Benzene	2.3	(12-month average)
Benzo(a)anthracene		(12-month average)
Benzo(a)pyrene	0.0092	(12-month average)
Benzo(b)fluoranthene		(12-month average)
Benzo(k)fluoranthene	0.92	(12-month average)
Bromoform	17	(12-month average)
Carbon tetrachloride	1.3	(12-month average)
Chlordane	0.19	(12-month average)
Chloroform	310	(12-month average)
cis-1,3-Dichloropropene		(12-month average)
DDE	0.2	(12-month average)
Dibenz(a,h)anthracene	0.0092	(12-month average)
Dinitrotoluene (mixture)	0.099	(12-month average)
Dioxins/Furans	4.5 x 10 ⁻⁷	(12-month average)
Ethylbenzene	170	(12-month average)
Hexachlorobenzene	0.042	(12-month average)
Hexachlorobutadiene	0.86	(12-month average)
Hexachloroethane		(12-month average)
Isophorone	71	(12-month average)
Methylene Chloride		(12-month average)
MTBE	190	(12-month average)
N-Nitrosodimethylamine		(12-month average)
PCBs		(12-month average)
Pentachlorophenol		(12-month average)
Tetrachloroethene		(12-month average)
trans-1,3-Dichloropropene		(12-month average)
Vinyl chloride		(12-month average)

Attachment I Ambient Air Quality Criteria

	Ambient Concentration
Component	(mg /m ³)
Non- Carcinogenic Compor	nents ³
2-Butanone (MEK)	1,405 (12-month average)
1,2,4-Trichlorobenzene	95 (12-month average)
Carbon disulfide	7.1 (12-month average)
Chlorobenzene	833 (12-month average)
Dimethylphthalate	12 (12-month average)
di-n-Butylphthalate	12 (12-month average)
Hexachlorocyclopentadiene	0.24 (12-month average)
m-Xylene	1,036 (12-month average)
Naphthalene	119 (12-month average)
Nitobenzene	12 (12-month average)
o-Xylene	1,036 (12-month average)
Phenol	45 (12-month average)
p-Xylene	1,036 (12-month average)
Styrene	512 (12-month average)
Toluene	893 (12-month average)
Vinyl acetate	36 (12-month average)

¹Criteria from HAR 11-59.4

HAR = Hawaii Administrative Rule

 $\mu g/m^3 = micrograms per cubic meter$

NIOSH = National Institute for Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

PEL = permissible exposure limit

PRGs = Preliminary Remedial Goals

TWA = time-weighted average

²Criteria calculated from EPA Region IX PRGs (Oct 2002) to provide 10 in 1 million risk scenario required for carcinogenic compounds in accordance with HAR 11-60.1-179 (multipled the PRG by 10)

³Criteria calculated from NIOSH TWA to provide 1/420 of the TWA as required for non-carcinogenic compounds in accordance with HAR 11-60.1-179 (see Attachment 2).

ATTACHMENT II Calculation of Maximum Concentrations (from EPA Guidance Document 454/R-92-019)

Attachment II Non-Carcinogenic Ambient Concentration Calculations

			Average
	TWA ¹		Annual Concentration ²
Non-carcinogenic pollutant	mg/m ³	ng/m³	ng /m³
2-butanone (MEK)	590	590,000	1,405
1,2,4-trichlorobenzene ³	40	40,000	95
Carbon disulfide	3	3,000	7.1
Chlorobenzene ⁴	350	350,000	833
Dimethylphthalate	5	5,000	12
di-n-butylphthalate	5	5,000	12
Hexachlorocyclopentadiene	0.1	100	0.24
m-xylene	435	435,000	1,036
Naphthalene	50	50,000	119
Nitobenzene	5	5,000	12
o-xylene	435	435,000	1,036
Phenol	19	19,000	45
p-xylene	435	435,000	1,036
Styrene	215	215,000	512
Toluene	375	375,000	893
Vinyl acetate ³	15	15,000	36

¹TWA values from NIOSH Pocket Guide to Chemical Hazards, November 2001.

mg/m³ = milligrams per cubic meter

 $\mu g/m^3 = micrograms per cubic meter$

NIOSH = National Institute for Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

PEL = permissible exposure limit

TWA = time-weighted average

²Per HAR 60.1-179, "significant ambient air concentrations" of any non-carcinogenic hazardous air pollutant is defined as an annual average in excess of 1/420 of the TWA.

³TWA numbers for these components are ceiling limits from NIOSH

⁴No TWA was available from NIOSH for this component, so the OSHA PEL was used.

SECTION 02231

CLEARING AND GRUBBING

PART 1 GENERAL

1.1 SITE PREPARATION

Conduct clearing, grubbing, debris removal, and grading activities to prepare the treatment area site at former NAS Barbers Point and each excavation site. Also prepare the coral pit south of the treatment area to receive successfully treated soil materials.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PROTECTION

3.1.1 Roads

Keep existing roads free of dirt and debris at all times.

3.1.2 Utility Lines

Protect all existing utility lines. Notify the NTR immediately of damage to or an encounter with unknown existing utility lines. Repair all damage to existing utility lines.

3.2 CLEARING

Fell, trim, and cut trees into sections and dispose of trees and other vegetation that require removal, including downed timber, snags, brush, debris, and rubbish within areas to be cleared.

3.3 GRUBBING

Remove and dispose of roots larger than 3 inches in diameter, matted roots, and stumps from the indicated clearing and grubbing areas. Fill depressions made by grubbing with satisfactorily treated soil and compact in accordance with the requirements specified in SECTION 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL.

3.4 DISPOSAL OF CLEARED AND GRUBBED MATERIALS

Vegetation that is cut above grade, rubble, and surface debris should be collected and disposed of as uncontaminated material. Grubbed vegetation such as stumps and roots from excavation areas shall be combined with excavated material and handled treated as contaminated material.

-- End of Section --

SECTION 02731

AGGREGATE SURFACE COURSE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 117	(1995) Materials Finer Than 75-Micrometer (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C 136	(1996a) Sieve Analysis of Fine and Coarse Aggregates
ASTM D 75	(1997) Standard Practice for Sampling Aggregates
ASTM D 422	(1963; R 1998) Particle-Size Analysis of Soils
ASTM D 4318	(1998) Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM E 11	(1995) Wire-Cloth Sieves for Testing Purposes

1.2 GENERAL INTENT

The aggregate surface course is for the construction of temporary haul roads in the treatment area as shown on the drawings.

1.3 SUBMITTALS

The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-06 Test Reports

Sampling and Testing;

1.4 SAMPLING AND TESTING

Sampling and testing shall be the responsibility of the Contractor. Sampling and testing shall be performed by an approved commercial testing laboratory.

1.4.1 Sampling

Sampling for material gradation, liquid limit, and plastic limit tests shall be taken in conformance with ASTM D 75.

1.4.2 Testing

1.4.2.1 Gradation

Aggregate gradation shall be made in conformance with ASTM C 117, ASTM C 136, and ASTM D 422. Sieves shall conform to ASTM E 11.

1.4.2.2 Liquid Limit and Plasticity Index

Liquid limit and plasticity index shall be determined in accordance with ASTM D 4318.

1.4.3 Approval of Materials

The source of the material to be used for producing aggregates shall be selected 30 days prior to the time the material will be required in the work. Tentative approval of materials will be based on appropriate test results on the aggregate source. Final approval of the materials will be based on tests for gradation, liquid limit, and plasticity index performed on samples taken from the completed and compacted surface course.

PART 2 PRODUCTS

2.1 AGGREGATES

Aggregates shall consist of clean, sound, durable particles of natural gravel, crushed gravel, crushed stone, coral, sand, slag, soil, or other approved materials processed and blended or naturally combined. Aggregates shall be free from lumps and balls of clay, organic matter, objectionable coatings, and other foreign materials. The Contractor shall be responsible for obtaining materials that meet the specification and can be used to meet the grade and smoothness requirements specified herein after all compaction and proof rolling operations have been completed.

2.1.1 Coarse Aggregates

The material retained on the No. 4 sieve shall be known as coarse aggregate. Coarse aggregates shall be reasonably uniform in density and quality. When the coarse aggregate is supplied from more than one source, aggregate from each source shall meet the requirements set forth herein.

2.1.2 Fine Aggregates

The material passing the No. 4 sieve shall be known as fine aggregate. Fine aggregate shall consist of screenings, sand, soil, or other finely divided mineral matter that is processed or naturally combined with the coarse aggregate.

2.1.3 Gradation Requirements

Gradation requirements specified in TABLE I shall apply to the completed aggregate surface. It shall be the responsibility of the Contractor to obtain materials that will meet the gradation requirements after mixing, placing, compacting, and other operations. TABLE I shows permissible grading for granular material used in aggregate surface roads and airfields. Sieves shall conform to ASTM E 11.

TABLE I. GRADATION FOR AGGREGATE SURFACE COURSES

Sieve	Gradation
1 in.	100
3/8 in.	50-85

TABLE I. GRADATION FOR AGGREGATE SURFACE COURSES

Sieve	Gradation
No. 4	35-65
No. 10	25-50
No. 40	15-30
No. 200	8-15

Note: The percent by weight finer than 0.02 millimeters (mm) shall not exceed 3 percent.

2.2 LIQUID LIMIT AND PLASTICITY INDEX REQUIREMENTS

The portion of the completed aggregate surface course passing the No. 40 sieve shall have a maximum liquid limit of 35 and a plasticity index of 4 to 9.

PART 3 EXECUTION

3.1 PREPARATION OF UNDERLYING COURSE SUBGRADE

The subgrade shall be cleaned of all foreign substances. Ruts or soft yielding spots in the subgrade shall be corrected by loosening and removing soft or unsatisfactory material and by adding approved material. The completed subgrade shall not be disturbed by traffic or other operations a until the surface course is placed.

3.2 MIXING AND PLACING MATERIALS

The materials shall be mixed and placed to obtain uniformity of the material and a uniform optimum water content. The Contractor shall make adjustments in mixing, placing procedures, or in equipment to minimize segregation and degradation, to obtain the desired water content, and to ensure a satisfactory surface course.

3.3 LAYER THICKNESS

The aggregate material shall be placed on the subgrade in lifts of uniform thickness. No layer shall exceed 6 inches nor be less than 3 inches.

3.4 MAINTENANCE

The aggregate surface course shall be maintained in a condition that will meet all specification requirements during construction activities.

-- End of Section --

SECTION 02742

ASPHALT PAVING

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

ASPHALT INSTITUTE (AI)

AI MS-2	(1994) Mix Design Methods for Asphalt Concrete and
	Other Hot-Mix Types

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 88	(1990) Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM D 2950	(1991) Density of Bituminous Concrete in Place by Nuclear Methods
ASTM C 131	(1996) Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C 136	(1996a) Sieve Analysis of Fine and Coarse Aggregates
ASTM C 188	(1995) Density of Hydraulic Cement
ASTM D 242	(1995) Mineral Filler for Bituminous Paving Mixtures
ASTM D 692	(1994; Rev. A) Coarse Aggregate for Bituminous Paving Mixtures
ASTM D 854	(1992) Specific Gravity of Soils
ASTM D 977	(1991) Emulsified Asphalt
ASTM D 995	(1995; Rev. B) Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures
ASTM D 1073	(1994) Fine Aggregate for Bituminous Paving Mixtures
ASTM D 1188	(1996) Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Paraffin-Coated Specimens

ASTM D 1559

(1989) Resistance to Plastic Flow of Bituminous Mixtures
Using Marshall Apparatus

(1995) Theoretical Maximum Specific Gravity and
Density of Bituminous Paving Mixtures

(1996; Rev. A) Bulk Specific Gravity and Density of
Non-Absorptive Compacted Bituminous Mixtures

ASTM D 3381 (1992) Viscosity-Graded Asphalt Cement for Use in

Pavement Construction

1.2 SUBMITTALS

Submit the following in accordance with SECTION 01330 SUBMITTAL PROCEDURES.

SD-05 Design Data

Job-mix formula

Submit a job-mix formula, prepared within one year of submittal, for approval prior to preparing and placing the bituminous mixture. Design mix using procedures contained in Chapter III, Marshall Method of Mix Design, of AI MS-2. Formulas shall indicate physical properties of the mixes as shown by tests made by a commercial laboratory approved by the NTR, using materials identical to those to be provided on this project. Job-mix formula for each mixture shall be in effect until modified in writing by the Contractor and approved by the NTR. Provide a new job-mix formula for each source change.

SD-06 Test Reports

Coarse Aggregate Tests

Fine Aggregate Tests

Density Testing

Bituminous Mixture Tests

1.3 QUALITY ASSURANCE

1.3.1 Required Data

Job-mix formula shall show the following:

- a. Source and proportions, percent by weight, of each ingredient of the mixture;
- b. Correct gradation, the percentages passing each size sieve listed in the specifications for the mixture to be used, for the aggregate and mineral filler;
- c. Amount of material passing the No. 200 sieve determined by dry sieving;
- d. Number of blows of hammer compaction per side of molded specimen;

- e. Temperature viscosity relationship of the asphalt cement;
- f. Stability, flow, percent voids in mineral aggregate, percent air voids, unit weight;
- g. Effective asphalt content as percent by weight of total mix;
- h. Temperature of the mixture immediately upon completion of mixing;
- i. Asphalt viscosity grade; and

1.3.2 Selection of Optimum Asphalt Content

Base selection on percent of total mix and the average of values at the following points on the curves for each mix:

a. Stability: Peak

b. Unit Weight: Peak

c. Percent Air Voids: Median

1.4 ENVIRONMENTAL CONDITIONS

Place bituminous mixture only during dry weather and on dry surfaces. Place courses only when the surface temperature of the underlying course is greater than 45 degrees F for course thicknesses greater than 1 inch and 55 degrees F for course thicknesses 1 inch or less.

1.5 CONSTRUCTION EQUIPMENT

Design, coordinate, and operate the mixing plant to produce a mixture within the job-mix formula tolerances and to meet the requirements of ASTM D 995, including additional plant requirements specified herein.

1.5.1 Paving Equipment

1.5.1.1 Rolling Equipment

Self-propelled pneumatic-tired rollers supplemented by three-wheel and tandem type steel wheel rollers. The number, type and weight of rollers shall be sufficient to compact the mixture to the required density without detrimentally affecting the compacted material. Rollers shall be suitable for rolling hot-mix bituminous pavements and capable of reversing without backlash. Pneumatic-tired rollers shall be capable of being operated both forward and backward without turning on the mat, and without loosening the surface being rolled. Equip rollers with suitable devices and apparatus to keep the rolling surfaces wet and prevent adherence of bituminous mixture. Vibratory rollers especially designed for bituminous concrete compaction may be used provided rollers do not impair stability of pavement structure and underlying layers. Repair depressions in pavement surfaces resulting from use of vibratory rollers. Rollers shall be self-propelled, single or dual vibrating drums, and steel drive wheels, as applicable; equipped with variable amplitude and separate controls for energy and propulsion.

1.5.1.2 Mechanical Hand Tampers

Commercial type, operated by pneumatic pressure or by internal combustion.

PART 2 PRODUCTS

2.1 AGGREGATES

Grade and proportion aggregates and filler so that combined mineral aggregate conforms to specified grading.

2.1.1 Coarse Aggregates

ASTM D 692, except as modified herein. At least 75 percent by weight of aggregate retained on the No. 4 sieve shall have two or more fractured faces. Soundness test is required in accordance with ASTM C 88; after 5 cycles, loss shall not be more than 12 percent when tested with sodium sulfate or 18 percent when tested with magnesium sulfate.

2.1.2 Fine Aggregate

ASTM D 1073, except as modified herein. Fine aggregate shall be produced by crushing stone, slag or gravel that meets requirements for wear and soundness specified for coarse aggregate. Where necessary to obtain the gradation of aggregate blend or workability, natural sand may be used. Quantity of natural sand to be added shall be approved by the NTR and shall not exceed 15 percent of weight of coarse and fine aggregate and material passing the No. 200 sieve.

2.1.3 Mineral Filler

Nonplastic material meeting the requirements of ASTM D 242.

2.2 ASPHALT CEMENT

ASTM D 3381, viscosity Grade AC-20.

2.3 GRADATION OF AGGREGATES

ASTM C 136. Aggregate shall have a gradation within the limits designated in Table I and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve or vice versa, but grade uniformly from coarse to fine. Table I is based on aggregates of uniform specific gravity and the percentages passing the various sieves are subject to appropriate correction when aggregates of varying specific gravities are provided. When materials of different specific gravities are provided, make satisfactory arrangements for separate stock piles, controlled distribution, and other operations necessary to maintain the specific gravity of the mixture constant and uniform.

TABLE I

GRADATION OF AGGREGATES

TOTAL PERCENT PASSING (BY WEIGHT)

Wearing Course

SIEVE SIZE	Range
1 inch	100
3/4 inch	100
1/2 inch	100
3/8 inch	90-100
No. 4	40-54

TABLE I

GRADATION OF AGGREGATES

TOTAL PERCENT PASSING (BY WEIGHT)

Wearing Course

SIEVE SIZE	Range
No. 8	20-32
No. 30	6-18
No. 50	2-24
No. 200	0-5

2.4 QUANTITY OF BITUMINOUS MATERIAL

Mix asphalt cement with aggregates of corresponding mixes in the following proportions:

ASPHALT CEMENT PERCENT BY WEIGHT OF TOTAL MIX: 5%-8%

2.5 COMPOSITION OF MIXTURE

Gradation of mineral aggregate shall be as specified herein. The percentage of bituminous material provided in the bituminous mixtures shall be within the limits specified. Mixtures shall have the following physical properties:

<u>Test Property</u>	<u>Values</u>
Stability Flow (0.01 inch)	Not less than 1,000 pounds Not more than 20 nor less than 8
Percent Air Voids	Not less than 3 nor more than 5
Percent Voids in Mineral Aggregates	See Table II

TABLE II

MINIMUM PERCENT VOIDS IN MINERAL AGGREGATE (VMA)

U.S.A. Standard Sieve Designation	Nominal Maximum Particle Size, In.	Minimum VMA Percent
No. 4	0.187	18
3/8 inch	0.375	16
1/2 inch	0.500	15
3/4 inch	0.750	14
1 inch	1.000	13

2.5.1 Recycled Asphalt Material

The bituminous concrete mix may contain a maximum of 25 percent (by weight of the total aggregate

material) reclaimed asphalt pavement (RAP). The mix design shall meet the requirements for the type of bituminous concrete specified. Clearly state the viscosity of the reclaimed asphalt cement, the grade of new asphalt cement, the properties of the recycling agent (if used) and the percentage of each in the mix. Combine the asphalts and recycling agents to achieve a viscosity of 2000 ± 400 poises at 140 degrees F. Finish a new job mix formula for each change in the percentage of RAP material used.

2.6 SOURCE QUALITY CONTROL

Use materials for testing that are identical to materials to be provided in this project. Employ a commercial laboratory approved by the NTR to perform testing.

2.6.1 Tests

Perform testing in accordance with the following:

- a. Coarse Aggregate Tests:
 - (1) Abrasion Loss: ASTM C 131
 - (2) Soundness Loss: ASTM C 88
- b. Fine Aggregate Tests:
 - (1) Soundness Loss: ASTM C 88
- c. Specific Gravity of Mineral Filler: ASTM C 188 or ASTM D 854
- d. Bituminous Mixture Tests:
 - (1) Bulk Specific Gravity: ASTM D 1188 or ASTM D 2726
 - (2) Theoretical Maximum Specific Gravity: ASTM D 2041

2.6.2 Specimens

ASTM D 1559 for the making and testing of bituminous specimens with the following exceptions:

- a. Compaction: Apply 75 blows of the hammer to each flat face of the specimens.
- b. Curves: Plot curves for the wearing courses to show the effect on the test properties of at least four different percentages of asphalt on the unit weight, stability, flow, air voids, and voids in mineral aggregate; each point on the curves shall represent the average of at least four specimens.
- c. Cooling of Specimen: After compaction is completed, allow the specimen to cool in air to the same temperature approximately as that of the water, 77 degrees F, to be used in the specific gravity determination.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 Transportation of Bituminous Mixtures

Transport bituminous material from the mixing plant to the paving site in trucks having tight, clean, smooth beds that have been coated with a minimum amount of concentrated solution of hydrated lime and water or other approved coating to prevent adhesion of the mixture to the truck. Petroleum products will not be permitted for coating truck. If air temperature is less than 60 degrees F or if haul time is greater than 30 minutes, cover each load with canvas or other approved material of ample size to protect the mixture from the loss of heat. Make deliveries so that the spreading and rolling of all the mixture prepared for one day's run can be completed during daylight, unless adequate approved artificial lighting is provided. Deliver mixture to area to be paved so that the temperature at the time of dumping into the spreader is within the range specified herein. Reject loads that are below minimum temperature, that have crusts of cold unworkable material, or that have been wet excessively by rain. Hauling over freshly laid material is prohibited.

3.1.2 Surface Preparation of Underlying Course

Prior to the laying of the asphalt concrete, place and compact a minimum of 6 inches of aggregate base course as specified in SECTION 02315 EXCAVATION AND FILL. Place prime coat between the compacted aggregate and new asphalt. During the placement of multiple lifts of bituminous concrete, each succeeding lift of bituminous concrete shall have its underlying lift cleaned and provided with a bituminous tack coat. Remove grass and other vegetative growth from existing cracks and surfaces. Prime coat shall be in accordance with ASTM D 977.

3.1.3 Spraying of Contact Surfaces

Spray surfaces of existing pavement that will butt against new pavement with tack coat. Tack coat the previously placed primed coats on base courses when surface has become excessively dirty and cannot be cleaned or when primed surface has cured to the extent that it has lost all bonding effect. Tack coat shall be in accordance with ASTM D 977.

3.2 PLACEMENT

Place new asphalt to tie into existing pavement.

3.2.1 Machine Spreading

The range of temperatures of the mixtures at the time of spreading shall be between 250 degrees F and 300 degrees F. Bituminous concrete having temperatures less than minimum spreading temperature when dumped into the spreader will be rejected. Adjust spreader and regulate speed so that the surface of the course is smooth and continuous without tears and pulling, and of such depth that, when compacted, the surface conforms with the cross section, grade, and contour indicated. Unless otherwise directed, begin the placing along the centerline of areas to be paved on a crowned section or on the high side of areas with a one-way slope. Place mixture in consecutive adjacent strips having a minimum width of 10 feet, except where the edge lanes require strips less than 10 feet to complete the area. Construct longitudinal joints and edges to true line markings. Establish lines parallel to the centerline of the area to be paved, and place string lines coinciding with the established lines for the spreading machine to follow. Provide the number and location of the lines needed to accomplish proper grade control. When specified grade and smoothness requirements can be met for initial lane construction by use of an approved long ski-type device of not less than 30 feet in length and for subsequent lane construction by use of a short ski or shoe, in-place string lines for grade control may be omitted. Place mixture as nearly continuous as possible and adjust the speed of placing as needed to permit proper rolling.

3.2.2 Shoveling, Raking, and Tamping After Machine-Spreading

Shovelers and rakers shall follow the spreading machine. Add or remove hot mixture and rake the

mixture as required to obtain a course that when completed will conform to requirements specified herein. Broadcasting or fanning of mixture over areas being compacted is prohibited. When segregation occurs in the mixture during placing, suspend spreading operation until the cause is determined and corrected. Correct irregularities in alinement left by the spreader by trimming directly behind the machine. Immediately after trimming, compact edges of the course by tamping laterally with a metal lute or by other approved methods. Distortion of the course during tamping is prohibited.

3.2.3 Hand-Spreading in Lieu of Machine-Spreading

In areas where the use of machine spreading is impractical, spread mixture by hand. The range of temperatures of the mixtures when dumped onto the area to be paved shall be between 250 and 300 degrees F. Mixtures having temperatures less than minimum spreading temperature when dumped onto the area to be paved will be rejected. Spread hot mixture with rakes in a uniformly loose layer of a thickness that, when compacted, will conform to the required grade, thickness, and smoothness. During hand spreading, place each shovelful of mixture by turning the shovel over in a manner that will minimize segregation. Do not place mixture by throwing or broadcasting from a shovel. Do not dump loads any faster than can be properly handled by the shovelers and rakers.

3.3 COMPACTION OF MIXTURE

Compact mixture by rolling. Begin rolling as soon as placement of mixture will bear rollers. Delays in rolling freshly spread mixture shall not be permitted. Start rolling longitudinally at the extreme sides of the lanes and proceed toward center of pavement, or toward high side of pavement with a one-way slope. Operate rollers so that each trip overlaps the previous adjacent strip by at least one foot. Alternate trips of the roller shall be of slightly different lengths. Conduct tests for conformity with the specified crown, grade and smoothness immediately after initial rolling. Before continuing rolling, correct variations by removing or adding materials as necessary. If required, subject course to diagonal rolling with the steel wheeled roller crossing the lines of the previous rolling while mixture is hot and in a compactible condition. Speed of the rollers shall be slow enough to avoid displacement of hot mixture. Correct displacement of mixture immediately by use of rakes and fresh mixture, or remove and replace mixture as directed. Continue rolling until roller marks are eliminated and course has a density of at least 96 percent but not more than 100 percent of that attained in a laboratory specimen of the same mixture prepared in accordance with ASTM D 1559. During rolling, moisten wheels of the rollers enough to prevent adhesion of mixture to wheels, but excessive water is prohibited. Operation of rollers shall be by competent and experienced operators. Provide sufficient rollers for each spreading machine in operation on the job and to handle plant output. In places not accessible to the rollers, compact mixture thoroughly with hot hand tampers. Skin patching of an area after compaction is prohibited. Remove mixture that becomes mixed with foreign materials or is defective and replace with fresh mixture compacted to the density specified herein. Roller shall pass over unprotected edge of the course only when laying of course is to be discontinued for such length of time as to permit mixture to become cold.

3.4 FIELD QUALITY CONTROL

3.4.1 Density Testing

Use in-place testing method to determine pavement density using Nuclear Method in accordance with ASTM D 2950.

Conduct one density test for each 1,000 square feet of pavement and at least one density test per paved location.

3.5 PROTECTION

Do not permit vehicular traffic, including heavy equipment, on pavement until surface temperature has cooled to at least 120 degrees F. Measure surface temperature by approved surface thermometers or other satisfactory methods.

-- End of Section --

SECTION 02770

CONCRETE SIDEWALKS AND CURBS AND GUTTERS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 182 (1991) Burlap Cloth Made from Jute or Kenaf

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 185	(1997) Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
ASTM A 615/A 615M	(1996a) Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM A 616/A 616M	(1996a) Rail-Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM A 617/A 617M	(1996a) Axle-Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM C 31/C 31M	(1996) Making and Curing Concrete Test Specimens in the Field
ASTM C 143	(1990a) Slump of Hydraulic Cement Concrete
ASTM C 171	(1997) Sheet Materials for Curing Concrete
ASTM C 172	(1997) Sampling Freshly Mixed Concrete
ASTM C 173	(1996) Air Content of Freshly Mixed Concrete by the Volumetric Method
ASTM C 231	(1997) Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 309	(1997) Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C 920	(1995) Elastomeric Joint Sealants

ASTM D 1751 (1983; R 1991) Preformed Expansion Joint Filler for

Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

ASTM D 1752 (1984; R 1996) Preformed Sponge Rubber and Cork

Expansion Joint Fillers for Concrete Paving and Structural

Construction

ASTM D 3405 (1996) Joint Sealants, Hot-Applied, for Concrete and

Asphalt Pavements

1.2 SUBMITTALS

The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Concrete

Copies of certified delivery tickets for all concrete used in the construction.

SD-06 Test Reports

Field Quality Control

Copies of all test reports within 24 hours of completion of the test.

1.3 WEATHER LIMITATIONS

1.3.1 Placing During Warm Weather

The temperature of the concrete as placed shall not exceed 85 degrees F except where an approved retarder is used. The mixing water and/or aggregates shall be cooled, if necessary, to maintain a satisfactory placing temperature. The placing temperature shall not exceed 95 degrees F at any time.

PART 2 PRODUCTS

2.1 CONCRETE

Concrete shall conform to the applicable requirements of SECTION 03300 CAST-IN-PLACE STRUCTURAL CONCRETE except as otherwise specified. Concrete shall have a minimum compressive strength of 3,000 psi at 28 days. Maximum size of aggregate shall be 1-1/2 inches.

2.1.1 Air Content

Mixtures shall have air content by volume of concrete of 5 to 7 percent, based on measurements made immediately after discharge from the mixer.

2.1.2 Slump

The concrete slump shall be 2 inches plus or minus 1 inch where determined in accordance with ASTM C 143.

2.1.3 Reinforcement Steel

Reinforcement bars shall conform to ASTM A 615/A 615M, ASTM A 616/A 616M, or ASTM A 617/A 617M. Wire mesh reinforcement shall conform to ASTM A 185.

2.2 CONCRETE CURING MATERIALS

2.2.1 Impervious Sheet Materials

Impervious sheet materials shall conform to ASTM C 171, type optional, except that polyethylene film, if used, shall be white opaque.

2.2.2 Burlap

Burlap shall conform to AASHTO M 182.

2.2.3 White Pigmented Membrane-Forming Curing Compound

White pigmented membrane-forming curing compound shall conform to ASTM C 309, Type 2.

2.3 CONCRETE PROTECTION MATERIALS

Concrete protection materials shall be a linseed oil mixture of equal parts, by volume, of linseed oil and either mineral spirits, naphtha, or turpentine. At the option of the contractor, commercially prepared linseed oil mixtures, formulated specifically for application to concrete to provide protection against the action of deicing chemicals may be used, except that emulsified mixtures are not acceptable.

2.4 JOINT FILLER STRIPS

2.4.1 Contraction Joint Filler for Curb and Gutter

Contraction joint filler for curb and gutter shall consist of hard-pressed fiberboard.

2.4.2 Expansion Joint Filler, Premolded

Expansion joint filler, premolded, shall conform to ASTM D 1751 or ASTM D 1752, 3/8 inch thick, unless otherwise indicated.

2.5 JOINT SEALANTS

2.5.1 Joint Sealant, Cold-Applied

Joint sealant, cold-applied shall conform to ASTM C 920.

2.5.2 Joint Sealant, Hot-Poured

Joint sealant, hot-poured shall conform to ASTM D 3405.

2.6 FORM WORK

Form work shall be designed and constructed to ensure that the finished concrete will conform accurately to the indicated dimensions, lines, and elevations, and within the tolerances specified. Forms shall be of wood or steel, straight, of sufficient strength to resist springing during depositing and consolidating concrete. Wood forms shall be surfaced plank, 2 inches nominal thickness, straight and free from warp, twist, loose knots, splits or other defects. Wood forms shall have a nominal length of 10 feet. Radius bends may be formed with 3/4 inch boards, laminated to the required

thickness. Steel forms shall be channel-formed sections with a flat top surface and with welded braces at each end and at not less than two intermediate points. Ends of steel forms shall be interlocking and self-aligning. Steel forms shall include flexible forms for radius forming, corner forms, form spreaders, and fillers. Steel forms shall have a nominal length of 10 feet with a minimum of 3 welded stake pockets per form. Stake pins shall be solid steel rods with chamfered heads and pointed tips designed for use with steel forms.

2.6.1 Sidewalk Forms

Sidewalk forms shall be of a height equal to the full depth of the finished sidewalk.

2.6.2 Curb and Gutter Forms

Curb and gutter outside forms shall have a height equal to the full depth of the curb or gutter. The inside form of curb shall have batter as indicated and shall be securely fastened to and supported by the outside form. Rigid forms shall be provided for curb returns, except that benders or thin plank forms may be used for curb or curb returns with a radius of 10 feet or more, where grade changes occur in the return, or where the central angle is such that a rigid form with a central angle of 90 degrees cannot be used. Back forms for curb returns may be made of 1-1/2 inch benders, for the full height of the curb, cleated together. In lieu of inside forms for curbs, a curb "mule" may be used for forming and finishing this surface, provided the results are approved.

PART 3 EXECUTION

3.1 SUBGRADE PREPARATION

The subgrade shall be constructed to the specified grade and cross section prior to concrete placement. Subgrade shall be placed and compacted in conformance with SECTION 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL.

3.1.1 Sidewalk Subgrade

The subgrade shall be tested for grade and cross section with a template extending the full width of the sidewalk and supported between side forms.

3.1.2 Curb and Gutter Subgrade

The subgrade shall be tested for grade and cross section by means of a template extending the full width of the curb and gutter. The subgrade shall be of materials equal in bearing quality to the subgrade under the adjacent pavement.

3.1.3 Maintenance of Subgrade

The subgrade shall be maintained in a smooth, compacted condition in conformity with the required section and established grade until the concrete is placed. The subgrade shall be in a moist condition when concrete is placed. The subgrade shall be prepared and protected to produce a subgrade free from frost when the concrete is deposited.

3.2 FORM SETTING

Forms shall be set to the indicated alignment, grade and dimensions. Forms shall be held rigidly in place by a minimum of 3 stakes per form placed at intervals not to exceed 4 feet. Corners, deep sections, and radius bends shall have additional stakes and braces, as required. Clamps, spreaders, and braces shall be used where required to ensure rigidity in the forms. Forms shall be removed

without injuring the concrete. Bars or heavy tools shall not be used against the concrete in removing the forms. Any concrete found defective after form removal shall be promptly and satisfactorily repaired. Forms shall be cleaned and coated with form oil each time before concrete is placed. Wood forms may, instead, be thoroughly wetted with water before concrete is placed.

3.2.1 Sidewalks

Forms for sidewalks shall be set with the upper edge true to line and grade with an allowable tolerance of 1/8 inch in any 10 foot long section. After forms are set, grade and alignment shall be checked with a 10 foot straightedge. Forms shall have a transverse slope 1/4 inch per foot with the low side adjacent to the roadway. Side forms shall not be removed for 12 hours after finishing has been completed.

3.2.2 Curbs and Gutters

The forms of the front of the curb shall be removed not less than 2 hours nor more than 6 hours after the concrete has been placed. Forms back of curb shall remain in place until the face and top of the curb have been finished, as specified for concrete finishing. Gutter forms shall not be removed while the concrete is sufficiently plastic to slump in any direction.

3.3 SIDEWALK CONCRETE PLACEMENT AND FINISHING

Sidewalks shall be 4 inches thick. Minimum reinforcing shall be 6x6-w1.4 x w4 welded wire reinforcing. The reinforcing shall be laced on firm supports 1/3 the slab depth from the top of slab with a minimum cover of 1-1/2 inches. Fiber reinforcement in the concrete mix shall not be considered as replacing the above steel reinforcing.

3.3.1 Formed Sidewalks

Concrete shall be placed in the forms in one layer. When consolidated and finished, the sidewalks shall be of the thickness indicated. After concrete has been placed in the forms, a strike-off guided by side forms shall be used to bring the surface to proper section to be compacted. The concrete shall be consolidated with an approved vibrator, and the surface shall be finished to grade with a strike off.

3.3.2 Concrete Finishing

After straight edging, when most of the water sheen has disappeared, and just before the concrete hardens, the surface shall be finished with a wood float or darby to a smooth and uniformly fine granular or sandy texture free of waves, irregularities, or tool marks. A scored surface shall be produced by brooming with a fiber-bristle brush in a direction transverse to that of the traffic, followed by edging.

3.3.3 Edge and Joint Finishing

All slab edges, including those at formed joints, shall be finished with an edger having a radius of 1/8 inch. Transverse joint shall be edged before brooming, and the brooming shall eliminate the flat surface left by the surface face of the edger. Corners and edges which have crumbled and areas which lack sufficient mortar for proper finishing shall be cleaned and filled solidly with a properly proportioned mortar mixture and then finished.

3.3.4 Surface and Thickness Tolerances

Finished surfaces shall not vary more than 5/16 inch from the testing edge of a 10-foot straightedge. Permissible deficiency in section thickness will be up to 1/4 inch.

3.4 CURB AND GUTTER CONCRETE PLACEMENT AND FINISHING

Concrete pavement, sidewalks, and pads on ground shall have construction, control, or expansion joints to match surrounding conditions or at a maximum spacing of 25 feet in each direction. If special circumstances make such a spacing impractical, approval for deviations shall be obtained. Slab reinforcing shall continue through construction and control joints.

3.4.1 Formed Curb and Gutter

Concrete shall be placed to the section required in a single lift. Consolidation shall be achieved by using approved mechanical vibrators. Curve shaped gutters shall be finished with a standard curb "mule".

3.4.2 Curb and Gutter Finishing

Approved slipformed curb and gutter machines may be used in lieu of hand placement.

3.4.3 Concrete Finishing

Exposed surfaces shall be floated and finished with a smooth wood float until true to grade and section and uniform in texture. Floated surfaces shall then be brushed with a fine-hair brush with longitudinal strokes. The edges of the gutter and top of the curb shall be rounded with an edging tool to a radius of 1/2 inch. Immediately after removing the front curb form, the face of the curb shall be rubbed with a wood or concrete rubbing block and water until blemishes, form marks, and tool marks have been removed. The front curb surface, while still wet, shall be brushed in the same manner as the gutter and curb top. The top surface of gutter and entrance shall be finished to grade with a wood float.

3.4.4 Joint Finishing

Curb edges at formed joints shall be finished as indicated.

3.4.5 Surface and Thickness Tolerances

Finished surfaces shall not vary more than 1/4 inch from the testing edge of a 10-foot straightedge. Permissible deficiency in section thickness will be up to 1/4 inch.

3.5 SIDEWALK JOINTS

Sidewalk joints shall be constructed to divide the surface into rectangular areas. Transverse contraction joints shall be spaced at a distance equal to the sidewalk width or 5 feet on centers, whichever is less, and shall be continuous across the slab. Longitudinal contraction joints shall be constructed along the centerline of all sidewalks 10 feet or more in width. Transverse expansion joints shall be installed at sidewalk returns and opposite expansion joints in adjoining curbs. Where the sidewalk is not in contact with the curb, transverse expansion joints shall be installed as indicated. Expansion joints shall be formed about structures and features which project through or into the sidewalk pavement, using joint filler of the type, thickness, and width indicated.

3.5.1 Sidewalk Contraction Joints

The contraction joints shall be formed in the fresh concrete by cutting a groove in the top portion of the slab to a depth of at least one-fourth of the sidewalk slab thickness, using a jointer to cut the groove, or by sawing a groove in the hardened concrete with a power-driven saw, unless otherwise approved.

Sawed joints shall be constructed by sawing a groove in the concrete with a 1/8 inch blade to the depth indicated. An ample supply of saw blades shall be available on the job before concrete placement is started, and at least one standby sawing unit in good working order shall be available at the jobsite at all times during the sawing operations.

3.5.2 Sidewalk Expansion Joints

Expansion joints shall be formed with 3/8 inch joint filler strips. Joint filler shall be placed with top edge 1/4 inch below the surface and shall be held in place with steel pins or other devices to prevent warping of the filler during floating and finishing. Immediately after finishing operations are completed, joint edges shall be rounded with an edging tool having a radius of 1/8 inch, and concrete over the joint filler shall be removed. At the end of the curing period, expansion joints shall be cleaned and filled with joint sealant. The joint opening shall be thoroughly cleaned before the sealing material is placed. Sealing material shall not be spilled on exposed surfaces of the concrete. Concrete at the joint shall be surface dry and atmospheric and concrete temperatures shall be above 50 degrees F at the time of application of joint sealing material. Excess material on exposed surfaces of the concrete shall be removed immediately and concrete surfaces cleaned.

3.5.3 Reinforcement Steel Placement

Reinforcement steel shall be accurately and securely fastened in place with suitable supports and ties before the concrete is placed.

3.6 CURB AND GUTTER JOINTS

Curb and gutter joints shall be constructed at right angles to the line of curb and gutter.

3.6.1 Contraction Joints

Contraction joints shall be constructed directly opposite contraction joints in abutting portland cement concrete pavements and spaced so that monolithic sections between curb returns will not be less than 5 feet nor greater than 15 feet in length. Contraction joints shall be constructed by means of 1/8 inch thick separators and of a section conforming to the cross section of the curb and gutter. Separators shall be removed as soon as practicable after concrete has set sufficiently to preserve the width and shape of the joint and prior to finishing.

3.6.2 Expansion Joints

Expansion joints shall be formed by means of preformed expansion joint filler material cut and shaped to the cross section of curb and gutter. Expansion joints shall be provided in curb and gutter directly opposite expansion joints of abutting portland cement concrete pavement, and shall be of the same type and thickness as joints in the pavement. Where curb and gutter do not abut portland cement concrete pavement, expansion joints at least 3/8 inch in width shall be provided at intervals not exceeding 25 feet. Expansion joints shall be provided in nonreinforced concrete gutter at locations indicated. Expansion joints shall be sealed immediately following curing of the concrete or as soon thereafter as weather conditions permit. Expansion joints and the top 1 inch depth of curb and gutter contraction-joints shall be sealed with joint sealant. The joint opening shall be thoroughly cleaned before the sealing material is placed. Sealing material shall not be spilled on exposed surfaces of the concrete. Concrete at the joint shall be surface dry and atmospheric and concrete temperatures shall be above 50 degrees F at the time of application of joint sealing material. Excess material on exposed surfaces of the concrete shall be removed immediately and concrete surfaces cleaned.

3.7 CURING AND PROTECTION

3.7.1 General Requirements

Concrete shall be protected against loss of moisture and rapid temperature changes for at least 7 days from the beginning of the curing operation. Unhardened concrete shall be protected from rain and flowing water. All equipment needed for adequate curing and protection of the concrete shall be on hand and ready for use before actual concrete placement begins. Protection shall be provided as necessary to prevent cracking of the pavement due to temperature changes during the curing period.

3.7.1.1 Mat Method

The entire exposed surface shall be covered with 2 or more layers of burlap. Mats shall overlap each other at least 6 inches. The mat shall be thoroughly wetted with water prior to placing on concrete surface and shall be kept continuously in a saturated condition and in intimate contact with concrete for not less than 7 days.

3.7.1.2 Impervious Sheeting Method

The entire exposed surface shall be wetted with a fine spray of water and then covered with impervious sheeting material. Sheets shall be laid directly on the concrete surface with the light-colored side up and overlapped 12 inches when a continuous sheet is not used. The curing medium shall not be less than 18-inches wider than the concrete surface to be cured, and shall be securely weighted down by heavy wood planks, or a bank of moist earth placed along edges and laps in the sheets. Sheets shall be satisfactorily repaired or replaced if torn or otherwise damaged during curing. The curing medium shall remain on the concrete surface to be cured for not less than 7 days.

3.7.1.3 Membrane Curing Method

A uniform coating of white-pigmented membrane-curing compound shall be applied to the entire exposed surface of the concrete as soon after finishing as the free water has disappeared from the finished surface. Formed surfaces shall be coated immediately after the forms are removed and in no case longer than 1 hour after the removal of forms. Concrete shall not be allowed to dry before the application of the membrane. If any drying has occurred, the surface of the concrete shall be moistened with a fine spray of water and the curing compound applied as soon as the free water disappears. Curing compound shall be applied in two coats by hand-operated pressure sprayers at a coverage of approximately 200 square feet per gallon for the total of both coats. The second coat shall be applied in a direction approximately at right angles to the direction of application of the first coat. The compound shall form a uniform, continuous, coherent film that will not check, crack, or peel and shall be free from pinholes or other imperfections. If pinholes, abrasion, or other discontinuities exist, an additional coat shall be applied to the affected areas within 30 minutes. Concrete surfaces that are subjected to heavy rainfall within 3 hours after the curing compound has been applied shall be resprayed by the method and at the coverage specified above. Areas where the curing compound is damaged by subsequent construction operations within the curing period shall be resprayed. Necessary precautions shall be taken to insure that the concrete is properly cured at sawed joints, and that no curing compound enters the joints. The top of the joint opening and the joint groove at exposed edges shall be tightly sealed before the concrete in the region of the joint is resprayed with curing compound. The method used for sealing the joint groove shall prevent loss of moisture from the joint during the entire specified curing period. Approved standby facilities for curing concrete pavement shall be provided at a location accessible to the jobsite for use in the event of mechanical failure of the spraying equipment or other conditions that might prevent correct application of the membrane-curing compound at the proper time. Concrete surfaces to which membrane-curing compounds have been applied shall be adequately protected during the entire curing period from pedestrian and vehicular traffic, except as required for joint-sawing operations and surface tests, and from any other possible damage to the continuity of the membrane.

3.7.2 Backfilling

After curing, debris shall be removed and the area adjoining the concrete shall be backfilled, graded, and compacted to conform to the surrounding area in accordance with lines and grades indicated.

3.7.3 Protection

Completed concrete shall be protected from damage until accepted. The Contractor shall repair damaged concrete and clean concrete discolored during construction. Concrete that is damaged shall be removed and reconstructed for the entire length between regularly scheduled joints. Refinishing the damaged portion will not be acceptable. Removed damaged portions shall be disposed of as directed.

3.7.4 Protective Coating

Protective coating of linseed oil mixture shall be applied to the exposed-to-view concrete surface.

3.7.4.1 Application

Curing and backfilling operation shall be completed prior to applying two coats of protective coating. Concrete shall be surface dry and clean before each application. Coverage shall be by spray application at not more than 50 square yards per gallon for first application and not more than 70 square yards per gallon for second application, except that the number of applications and coverage for each application for commercially prepared mixture shall be in accordance with the manufacturer's instructions. Coated surfaces shall be protected from vehicular and pedestrian traffic until dry.

3.7.4.2 Precautions

Protective coating shall not be heated by direct application of flame or electrical heaters and shall be protected from exposure to open flame, sparks, and fire adjacent to open containers or applicators. Material shall not be applied at ambient or material temperatures lower than 50 degrees F.

3.8 FIELD QUALITY CONTROL

3.8.1 General Requirements

The Contractor shall perform the inspection and tests described and meet the specified requirements for inspection details and frequency of testing. Based upon the results of these inspections and tests, the Contractor shall take the action and submit reports as required below, and any additional tests to insure that the requirements of these specifications are met.

3.8.2 Concrete Testing

3.8.2.1 Strength Testing

The Contractor shall provide molded concrete specimens for strength tests. Samples of concrete placed each day shall be taken not less than once a day nor less than once for every 250 cubic yards of concrete. The samples for strength tests shall be taken in accordance with ASTM C 172. Cylinders for acceptance shall be molded in conformance with ASTM C 31/C 31M by an approved testing laboratory. Each strength test result shall be the average of 2 test cylinders from the same concrete sample tested at 28 days, unless otherwise specified or approved. Concrete specified on the basis of compressive strength will be considered satisfactory if the averages of all sets of three consecutive strength test results equal or exceed the specified strength, and no individual strength test result falls below the specified strength by more than 500 psi.

3.8.2.2 Air Content

Air content shall be determined in accordance with ASTM C 173 or ASTM C 231. ASTM C 231 shall be used with concretes and mortars made with relatively dense natural aggregates. Two tests for air content shall be made on randomly selected batches of each class of concrete placed during each shift. Additional tests shall be made when excessive variation in concrete workability is reported by the placing foreman or the Government inspector. If results are out of tolerance, the placing foreman shall be notified and he shall take appropriate action to have the air content corrected at the plant. Additional tests for air content will be performed on each truckload of material until such time as the air content is within the tolerance specified.

3.8.2.3 Slump Test

Two slump tests shall be made on randomly selected batches of each class of concrete for every 250 cubic yards, or fraction thereof, of concrete placed during each shift. Additional tests shall be performed when excessive variation in the workability of the concrete is noted or when excessive crumbling or slumping is noted along the edges of slip-formed concrete.

3.8.3 Surface Evaluation

The finished surface of each category of the completed work shall be uniform in color and free of blemishes and form or tool marks.

3.9 SURFACE DEFICIENCIES AND CORRECTIONS

3.9.1 Appearance

Exposed surfaces of the finished work will be inspected by the Government and any deficiencies in appearance will be identified. Areas which exhibit excessive cracking, discoloration, form marks, or tool marks or which are otherwise inconsistent with the overall appearances of the work shall be removed and replaced.

-- End of Section --

SECTION 02821

CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM F 883 (1997) Padlocks

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

tes,
l

Chain-Link Fence Fabric, and Accessories) (General

Specification)

FS RR-F-191/1 (Rev. D) Fencing, Wire and Post, Metal (Chain-Link

Fence Fabric) (Detail Specification)

FS RR-F-191/2 (Rev. D) Fencing, Wire and Post, Metal (Chain-Link

Fence Gates) (Detail Specification)

FS RR-F-191/3 (Rev. D) Fencing, Wire and Post, Metal (Chain-Link

Fence Posts, Top Rails and Braces) (Detail Specification)

FS RR-F-191/4 (Rev. D) Fencing, Wire and Post, Metal (Chain-Link

Fence Accessories) (Detail Specification)

1.2 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures."

SD-02 Shop Drawings

Post spacing

Location of gate, corner, end, and pull posts

SD-03 Product Data

Permanent Chain-link Fencing

Fabric

Gates

Framing

Posts

Braces

Temporary chain-link fencing components and accessories

1.3 GENERAL INTENT

This section provides guidance for permanent replacement fences and temporary fences. The general intent is to replace in-kind the permanent fences that required removal to complete excavation activities. Temporary fencing specified here will be used for security at the treatment site and at excavations around active transformers.

1.4 DELIVERY, STORAGE, AND HANDLING

Deliver materials to site in an undamaged condition. Store materials off the ground to provide protection against oxidation caused by ground contact.

PART 2 PRODUCTS

2.1 REPLACEMENT CHAIN-LINK FENCING AND ACCESSORIES

FS RR-F-191 and detailed specifications as referenced and other requirements as specified.

2.1.1 Fabric

FS RR-F-191/1; Type I, zinc-coated steel, 9-gage. Mesh size, 2 inches. Provide selvage knuckled at one selvage and twisted and barbed at the other. Height of fabric shall match the fencing that was removed..

2.1.2 Gates

FS RR-F-191/2; Type II, double swing. Shape and size of gate frame shall match the fencing that was removed. Framing and bracing members, round or square of steel. Steel member finish, zinc-coated. Gate frames and braces of minimum sizes listed in FS RR-F-191/3 for each Class and Grade except that steel pipe frames shall be 1.90 inches outside diameter, 0.120 inches minimum wall thickness and aluminum pipe frames and intermediate braces shall be 1.869 inches outside diameter, 0.940 lb/ft of length. Gate fabric, as specified for fencing fabric.

Provide barbed wire top on gate, if applicable, to match the fencing that was removed. Coating for steel latches, stops, hinges, keepers, and accessories, galvanized. Gate latches, fork type. Attach gate fabric to gate frame in accordance with manufacturer's standards. Arrange padlocking latches to be accessible from both sides of gate, regardless of latching arrangement.

2.1.3 Posts and Braces

FS RR-F-191/3 line posts; Class 1, steel pipe, Grade A or B. End, corner, and pull posts; Class 1, steel pipe, Grade A or B. Braces; Class 1, steel pipe, Grade A or B, in minimum sizes listed in FS RR-F-191/3 for each class and grade.

2.1.4 Fencing Accessories

FS RR-F-191/4. Provide wire ties constructed of the same material as the fencing fabric.

2.1.5 Concrete

ASTM C 94/94M-00e2, using 3/4 inch maximum-size aggregate, and having minimum compressive strength of 3000 psi at 28 days.

2.1.6 Padlocks

ASTM F 883, with chain.

2.2 TEMPORARY CHAIN-LINK FENCING AND ACCESSORIES

Specifications as referenced.

2.2.1 Fabric

Zinc-coated steel, 9 gage. Mesh size, 2 inches. Height of fabric shall be 8 feet.

2.2.2 Posts and Braces

Provide line posts and bracing as necessary to maintain a secure area and sustain a 90 mph wind.

2.2.3 Gates

Gate fabric, as specified for fencing fabric. Gate leaves more than 8 feet wide shall have intermediate members as necessary to provide rigid construction. Attach gate fabric to gate frame in accordance with manufacturer's standards. Arrange padlocking latches to be accessible from both sides of gate.

2.2.4 Padlocks

Provide with chain for security during construction activities.

PART 3 EXECUTION

3.1 SITE PREPARATION

3.1.1 Clearing and Grading

Clear fence lines of trees, brush, and other obstacles to install fencing. Establish a graded, compacted fence line prior to fencing installation. Compact fill used to establish fence line.

3.1.2 Excavation

Excavate to dimensions indicated for concrete-embedded items, except in bedrock.

3.2 FENCE INSTALLATION

Install fence on prepared surfaces. Install fence in accordance with fence manufacturer's written installation instructions.

3.2.1 Post Spacing

Provide line posts spaced equidistantly apart, not exceeding 10 feet on center. Provide gate posts as

necessary spaced for size of gate openings. Provide corner or pull posts as necessary, with bracing in both directions, for changes in direction of 15 degrees or more, or for abrupt changes in grade. Provide drawings showing location of gate, corner, end, and pull posts.

3.2.2 Post Setting

Set posts plumb. Provide concrete bases per manufacturer's recommendations, compact concrete to eliminate voids, and finish to a dome shape. Allow concrete to cure a minimum of 72 hours before performing other work on posts.

3.2.2.1 Concrete Slabs and Walls

Set posts into zinc-coated sleeves, set in concrete slab or wall, to a minimum depth of 12 inches. Fill sleeve joint with lead, nonshrink grout, or other approved material. Set posts for support of removable fence sections into sleeves that provide a tight sliding joint and hold posts aligned and plumb without use of lead or setting material.

3.2.3 Bracing

Brace gate, corner, end, and pull posts to nearest post with a horizontal brace used as a compression member, placed at least 12 inches below top of fence, and a diagonal truss rod and truss tightener used as a tension member.

3.2.4 Top and Bottom Rails

Install top and bottom rails as necessary before installing chain-link fabric. Pass top rail through intermediate post caps. Provide expansion coupling spaced as indicated.

3.2.5 Top and Bottom Tension Wires

Install top and bottom tension wires as necessary before installing chain-link fabric, and pull wires taut. Place top and bottom tension wires within 8 inches of respective fabric line.

3.2.6 Fabric

Pull fabric taut and secure fabric to top rail and bottom rail and top wire and bottom wire, close to both sides of each post and at maximum intervals of 24 inches on center. Secure fabric to posts using stretcher bars, ties or clips spaced 15 inches on center, or by integrally weaving to integral fastening loops of end, corner, pull, and gate posts for full length of each post. Install fabric on opposite side of posts from area being secured. Install fabric so that bottom of fabric is 2 inches above ground level.

3.3 ACCESSORIES INSTALLATION

3.3.1 Post Caps

Install post caps as recommended by the manufacturer.

3.3.2 Supporting Arms

Design supporting arms to accommodate top rail. Install supporting arms as recommended by manufacturer. In addition to manufacturer's standard connections, permanently secure supporting arms to posts. Studs driven by low-velocity powder-actuated tools may be used with steel, wrought iron, ductile iron, or malleable iron. Do not use studs driven by powder-actuated tools with gray iron or other material that will fracture.

3.3.3 Barbed Wire

Install barbed wire on supporting arms above fence posts. Extend each end member of gate frames sufficiently above top member to carry three strands of barbed wire in horizontal alignment with barbed wire strands on the fence. Pull each strand taut and securely fasten each strand to each supporting arm or extended member. Secure wires in accordance with fence manufacturer's recommendations.

3.3.4 Gates

Install swing gates to swing through 180 degrees from closed to open.

3.3.5 Padlocks

Provide padlocks for gate openings and provide chains that are securely attached to gate or gate posts. Provide padlocks keyed alike, and provide two keys for each padlock.

3.4 GROUNDING AND SIGNAGE

All temporary fences around excavations at active transformers shall be grounded and have a minimum of one sign reading "Danger High Voltage Keep Out". All grounding and signage on replacement fences shall match that which was removed.

3.5 CLEANUP

Remove waste fencing materials and other debris after installation of fences.

-- End of Section --

SECTION 02920

SITE RESTORATION

PART 1 GENERAL

1.1 SUBMITTALS

The following shall be submitted in accordance with SECTION 01330 SUBMITTAL PROCEDURES in sufficient detail to show full compliance with the specification:

SD-07 Certificates

Provide manufacturer's certification of Seed Mix for percent of each species, percent germination, and percent weed species

Provide manufacturer's certification of fertilizer content

Provide species of Replacement trees for approval

1.2 DELIVERY AND STORAGE

1.2.1 Seed and Fertilizer

Grass seed and fertilizer shall be delivered in sealed containers or bags, each labeled in accordance with the applicable federal and state regulations and bearing the name, trade name or trademark, and certification of the producer.

Packaged materials shall be stored off the ground, under watertight cover, and away from damp surfaces.

PART 2 PRODUCTS

2.1 SEED MIX

Grass seed or replacement vegetation shall be of the same species of grass or vegetation present prior to destruction or in adjacent areas.

Grass seed which has become wet, moldy, or otherwise damaged in transit or storage will not be acceptable.

2.2 FERTILIZER CONTENT

Fertilizer shall be commercial Grade 16-20-20 mixed fertilizer.

2.3 MULCH

Mulch shall be salt hay or bahia hay or threshed straw of wheat, rye, oats, or barley and shall be clean and free of seeds.

Mulch that is fresh and excessively brittle or that is in such an advanced stage of decomposition as to smother or retard the growth of grass will not be acceptable.

2.4 REPLACEMENT TREES

Provide trees to replace any trees that are damaged or destroyed as part of this work. Provide species that are similar to tree removed unless it is a weed species. Tree replacement species and size shall be approved by the NTR.

PART 3 EXECUTION

3.1 FERTILIZER

Fertilizer shall be uniformly distributed over the topsoil surface at a rate of 100 pounds per acre, and, if separately applied, incorporated into the topsoil to a depth of at least 1 inch by discing, harrowing, raking, or other approved means.

3.2 SEEDING

3.2.1 Method of Sowing

Seeding, making use of a mixture of seed, fertilizer, and water applied by special mobile equipment designed for the purpose (hydroseeding), may be employed subject to approval.

3.2.2 Preparation of Seedbed

Seedbed shall be loose and porous at the time of seeding. When necessary, the seedbed shall be loosened to a depth of at least 3 inch by harrowing or other suitable means and the surface smooth-graded and cleared of objectionable material as specified.

3.2.3 Planting Seed

Grass seed shall be uniformly distributed over the prepared seed bed.

For lawn areas, the rate of seeding shall be as recommended by the manufacturer.

Immediately after planting, if seed is separately applied, the area shall be lightly raked or lightly harrowed to cover the seed to an average depth of 1/4 inch.

3.3 PLANTING AND TRANSPLANTING

3.3.1 Advanced Preparation of Planting Areas

Upon written notice from NTR, the Contractor shall prepare the planting areas. The Contractor shall clear the area within a 5 foot radius of each tree, shrub or vine that the Contractor will plant of weeds, brush, rocks or other objectionable materials. Clearing of weeds and brush includes removing of the unwanted plant's roots systems. The Contractor shall grade the planting areas to plan elevation before the Contractor plants.

The Contractor shall add a 2 inch layer of soil amendment for shrubs, vines and ground cover planting areas. The Contractor shall till the soil amendment into the soil to a depth of not less than 6 inches until the soil is loose and fine textured. The soil shall be free from stones greater than a half inch in diameter.

3.3.2 Planting Conditions

The Contractor shall not plant if the weather or other conditions do not permit.

3.3.3 Plant and Tree Holes

The diameter of each hole shall be at least 4 feet larger than the trunk of the tree at ground level. The depth of the hole shall be large enough to contain the ball of the root system plus specified planting soil and manure.

If encountered, the Contractor shall break up coral, rock, or hard pan to a depth of not less than twelve (12) inches below the normal depth of the hole.

3.3.4 Planting

The Contractor shall not order the materials until after the Contractor excavates and prepares the tree or plant holes. The actual planting operations shall proceed without delay to avoid evaporation and drying of roots while exposed to the air. The Contractor shall prune bruised or broken roots with a clean cut at the time of planting.

Trees shall stand about 3 to 4 inches deeper and shrubs and vines shall stand about 2 inches deeper than the plants stood in the nursery or collecting field after settlement of the backfill. The Contractor shall plant trees and shrubs plumb. Only experienced workers shall plant and transplant. Before backfilling, the Contractor shall render the planting soil loose and friable. Backfill mix for trees and shrubs includes one part soil amendment, one part manure and three parts soil by volume.

Planting shall be complete by the end of contract time. The Contractor shall form earth saucers or water basins at least 4 inches in depth below the existing ground and equal in diameter to the plant pit around individual plants. If the Contractor plants in prepared shrub beds, the Contractor shall form the earth saucers or water basins around the perimeter of each shrub bed.

3.3.4.1 Plants in Containers

Before removing trees, shrubs, and vine from containers and before the Contractor plants, the Contractor shall place the trees, shrubs, and vines in their proposed planting location. Upon acceptance by the NTR, the Contractor shall then plant the trees, shrubs, and vines in their permanent positions. The Contractor shall carefully remove the plants from the containers so as not to disturb the root systems.

3.3.4.2 Balled and Burlapped Plants

The Contractor shall handle and place balled and burlapped plants in the holes so that the Contractor shall not loosen the soil of the ball. After the Contractor partly backfills the hole and firms the soil thoroughly under and around the ball, the Contractor shall cut the burlap away from the upper half of the ball and roll back. The Contractor shall adjust the remaining burlap to prevent the formation of air pockets. The Contractor shall then complete backfilling and tamping to avoid loosening the soil in the root ball.

3.3.5 Pruning of Plants

Shade trees with heavy tops shall have about one-third to half of the growth removed by accepted methods. The Contractor shall prune to preserve the natural character of the plant. The Contractor shall remove broken or badly bruised branches with a clean cut. The Contractor shall paint cut surfaces over two inches in diameter with an accepted standard pruning compound.

An experienced pruner shall prune the material properly and systematically after the Contractor plants the stock. The Contractor shall prune by the process of thinning to maintain and preserve the characteristic shape or natural form of the material. The Contractor shall dispose of the material removed by pruning according to the contract.

3.3.6 Watering

The Contractor shall water the plants the same day of planting. The Contractor shall apply water in a moderate stream until the Contractor saturates the backfill soil around and below the roots or ball of earth around the roots of each plant thoroughly. After the first watering, the Contractor shall water the plants as often and in sufficient amount as conditions may require.

Watering equipment shall be of a type that will not cause damage to the planted area or its surroundings. The Contractor shall correct the water systems that cause erosion or runoff and deemed unacceptable. If the planted area or its surrounding erodes due to the watering method, the Contractor shall immediately remove the runoff material and restore the area to the original grade and condition.

3.3.7 Staking and Guying

The Contractor shall guy the trees over 6 feet high securely in 3 directions with zinc-coated steel wire of the gage specified. he Contractor shall prevent the guy wires from cutting into the trunk by placing lumber or other non-cutting material around the trunk before fastening the guy wires to the tree. he Contractor shall drive wood stakes 18 inches into firm ground. he Contractor shall drive iron pipe or reinforcing steel stakes 30 inches into firm ground. The Contractor shall keep guy wires and supports in place until the tree can support itself.

3.3.8 Cleaning After Planting

The Contractor shall remove empty containers and debris accumulating from planting from the project when the Contractor completes the planting.

3.3.9 Transplanting Existing Trees

The contract will designate existing trees that the Contractor will transplant. Trees removed during preparation of the treatment site and coral pit shall not be replaced. The Contractor shall remove and dispose of trees not designated for transplanting or not left in place according to SECTION 02231 CLEARING AND GRUBBING.

The applicable requirements for planting shall also apply to transplanting. The Contractor shall remove a tree with a ball of soil at the roots at least 2 feet larger than the trunk of the tree on each side at ground level. The trunk of the tree need not be greater than the dimensions of the root system plus one foot.

The Contractor shall transplant trees immediately into holes large enough to contain the root system of the tree plus specified planting soil and manure.

The Contractor shall coat the cut section of exposed roots with a moist paste of a standard, acceptable hormone for the stimulation of new root growth before the Contractor removes the tree. The Contractor shall place a mixture half manure to half topsoil in the bottom of each hole except coconut trees. The Contractor shall sprinkle the holes for coconut trees evenly with Chilean nitrate potash or an equal formula at the rate of 4 to 5 pounds per tree.

3.4 MULCHING

3.4.1 Placing Mulch

Not more than 48 hours after the completion of seeding operations, mulch, if separately applied, shall be spread uniformly over the entire area in a continuous blanket having a depth of not more than 1-1/2-inches loose measurement at a rate of 2000 pounds per acre.

Mulch, if separately applied, shall be spread by hand or approved equipment. Mulching shall be started at the windward side of relatively flat areas, at the upper part of steep slopes, and shall continue uniformly until the area is completely covered.

3.4.2 Anchoring Mulch with Machinery

Mulch shall be anchored in place by a Coulter disc mulch-anchoring machine or other suitable equipment that will secure the mulch firmly in the ground to form a soil-binding mulch and prevent loss or bunching of the mulch by the wind. The number of passes over the mulch needed to secure it firmly to the soil shall in no case exceed three.

On slopes and other areas where machinery cannot be satisfactorily used, the mulch shall be anchored in place by twine and softwood stakes, or by other approved means.

3.5 GRASS ESTABLISHMENT PERIOD

3.5.1 General

The period of grass establishment shall begin immediately after the completion of mulching in an area and shall continue for a period of 2-months after the completion of seeding on the entire project unless the desired grass cover is established in a shorter period of time and shortening of the grass-establishment period is authorized.

3.5.2 Watering

Contractor shall provide and maintain lawn-watering equipment required to convey water from the nearest available Navy water source to uniformly water the seeded areas.

Watering schedules shall be arranged and lawn-watering equipment laid out in a manner to avoid the necessity of walking over muddy and newly seeded areas.

Watering shall be done in a manner to prevent the displacement of seed and mulch and to prevent puddling and water erosion.

Immediately after the completion of mulching in an area, the area shall be moistened to a depth of 3 inches or more.

After the initial watering, the seeded areas shall be watered as required to maintain the soil in a moist condition for the entire grass-establishment period.

3.5.3 Mowing

When the average height of grass reaches 2-1/4 inches, seeded lawn areas shall be mowed with approved mowing equipment to a grass height of 1-1/2 inches. When the amount of cut grass is heavy, the cuttings shall be removed to prevent smothering the grass.

The coral pit area does not require mowing.

3.5.4 Weeding

Weeds or other undesirable vegetation that threaten to smother the grass shall be uprooted and removed from the area.

3.5.5 Refertilizing

After the first mowing and during a period when the grass is dry, fertilizer shall be uniformly distributed over the seeded area at a rate of 2 pounds of actual nitrogen per 1,000 square feet. Fertilizer shall be as specified.

3.5.6 Reseeding

After the first mowing, bare areas shall be reseeded.

Reseeding shall be with the grass seed specified for each seeded area and shall be sown at the rate specified and in a manner that will cause a minimum of disturbance to the existing stand of grass and mulch.

3.5.7 Remulching

In areas where mulch has been disturbed sufficiently to nullify its purpose, new mulch shall be added and anchored as specified.

3.6 GRASS ACCEPTANCE PROVISIONS

3.6.1 Acceptance Requirements

Completed grass areas shall have been recently mowed and be covered with a uniform stand of the specified grass, be free of rank growths of weeds or other undesirable vegetation, and be free of irregular surface changes and other depressions where water will accumulate.

Scattered bare spots not larger than 6 inches in any dimension will be allowed, up to a maximum of 3 percent of any grass area.

Condition of grass areas at the time of inspection will be noted and a determination, made whether the grass-establishment period shall be extended for any area.

3.6.2 Repairs

If, before completion and acceptance of the entire work, portions of the surface become gullied or otherwise damaged following seeding or the grass seedings have been destroyed, the affected area shall be repaired to re-establish the condition and grade of the soil prior to seeding and then re-seeded, remulched, and the grass established as specified.

3.7 TREE ESTABLISHMENT PERIOD

The Contractor shall take care of the tree planted area during a tree establishment period of 9 months from the accepted completion date of the planting period.

During the plant establishment period, the Contractor shall water, fertilize, cultivate, weed, prune, and apply pesticide, if required. If the Contractor injures, damages, destroys, or fails to develop healthy plants, the Contractor shall replace those plants. The Contractor shall the remove dead or unsatisfactory plants promptly from the project. The Contractor shall complete replacement within

two weeks after notice that the plant is not acceptable.

Besides the applications during the planting period, the Contractor shall apply fertilizer at least 3 times during the plant establishment period at intervals not closer than two and a half months at the rate of:

- (a) Trees one-third pound per inch diameter of trunk
- (b) Shrubs and vines one-third pound per plant.

The Contractor shall remove and dispose of surplus earth, papers, trash and debris that accumulates in the planted areas. The Contractor shall care for the planted areas so to present a neat and clean condition.

3.8 PROTECTION

Seeded and planted areas shall be protected against traffic or other use by erecting barricades around each area immediately after seeding or planting is completed and by placing warning signs at each seeded area.

-- End of Section --

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 301	(1996) Structural Concrete

ACI 304R (1989) Measuring, Mixing, Transporting, and Placing

Concrete

ACI 347R (1994) Formwork for Concrete

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 185 (1997) Steel Welded Wire Fabric, Plain, for Concrete

Reinforcement

ASTM C 31/C 31M (1996) Making and Curing Concrete Test Specimens in the

Field

ASTM C 33 (1997) Concrete Aggregates

ASTM C 39 (1996) Compressive Strength of Cylindrical Concrete

Specimens

ASTM C 143 (1990a) Slump of Hydraulic Cement Concrete

ASTM C 150 (1997) Portland Cement

ASTM C 171 (1997) Sheet Materials for Curing Concrete

ASTM C 172 (1997) Sampling Freshly Mixed Concrete

1.2 SUBMITTALS

Submit the following in accordance with SECTION 01330 SUBMITTAL PROCEDURES.

SD-03 Product Data

Welded Wire Fabric (if utilized)

SD-05 Design Data

Concrete Mix Design

SD-06 Test Reports

Mix Design Slump

Mix Design Compressive Strength

Field Slump Tests

Field Compressive Strength Tests

SD-07 Certificates

Concrete Batch Tickets

PART 2 PRODUCTS

2.1 CONCRETE

2.1.1 Contractor Mix Design

ACI 301 except as otherwise specified. Concrete shall have a minimum 28-day compressive strength of 3,000 pounds per square inch (psi). Slump shall be between 4 and 6 inches in accordance with ASTM C 143. Provide ASTM C 33 aggregate Size Numbers 57 or 67.

2.2 MATERIALS

2.2.1 Aggregate Base Course

Crushed aggregate base course shall be placed as specified in SECTION 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL.

2.2.2 Cement

ASTM C 150, Type II

2.2.3 Water

Water shall be free from oils, acids, alkalis, salts, organic materials, or other substances deleterious to concrete.

2.2.4 Aggregates

ASTM C 33, except as modified herein. Obtain aggregates for exposed concrete surfaces from one source. Aggregates shall not contain any substance which may be reactive with the alkalies in the cement.

2.2.5 Materials for Curing Concrete

Impervious sheeting shall meet ASTM C 171.

2.2.6 Welded Wire Fabric

ASTM A 185.

PART 3 EXECUTION

3.1 PREPARATION OF SUBGRADE

Compact underlying aggregate base course as specified in SECTION 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL.

3.2 CONCRETE PAVEMENT AND PADS

Pavement and pads shall be 6 inches thick. Minimum reinforcing shall be #3 reinforcing bars at 16" on center or 4x4-w2.9xw2.9 welded wire reinforcing. The reinforcing shall be laced on firm supports 1/3 the slab depth from the top of slab with a minimum cover of 1-1/2 inches. Fiber reinforcement in the concrete mix shall not be considered as replacing the above steel reinforcing.

All concrete pads shall have thickened edges and shall be reinforced with a minimum of 2, #4 continuous reinforcing bars (one on top and bottom). Minimum depth of thickened slab edges shall be 8 inches for conditions where no superimposed dead loads occur on the slab and 12 inches where superimposed dead loads are present.

3.3 FORMS

ACI 301. Set forms mortar-tight and true to line and grade.

3.3.1 Coating

Before concrete placement, coat the contact surfaces of forms with a nonstaining form coating compound.

3.3.2 Removal of Forms and Supports

After placing concrete, forms shall remain in place for the time periods specified in ACI 347R. Prevent concrete damage during form removal.

3.4 PLACING REINFORCEMENT

If required, provide wire fabric, wire ties, supports, and other devices necessary to install and secure reinforcement. Reinforcement shall not have rust, scale, oil, grease, clay, or foreign substances that would reduce the bond. Tack welding is prohibited.

3.4.1 Reinforcement Supports

Place reinforcement and secure with galvanized or noncorrodible chairs, spacers, or metal hangers. For supporting reinforcement on the ground, use concrete or other noncorrodible material, having a compressive strength equal to or greater than the concrete being placed.

3.5 MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE

ACI 304R, except as modified herein. Provide mandatory batch tickets for each load of concrete. Prior to placing concrete, remove dirt, construction debris, and water from within the forms.

3.6 SURFACE FINISHES

3.6.1 Defects

Exposed surfaces shall be uniform in appearance.

3.6.2 Broomed Finish

Place, consolidate, and immediately strike off concrete to obtain proper contour and elevation before bleed water appears. Permit concrete to attain a set sufficient for floating and supporting the weight of the finisher and equipment. If bleed water is present prior to floating the surface, drag the excess water off or remove by absorption with porous materials. After performing a floated finish, draw a broom or burlap belt across the surface to produce a coarse, scored texture. Permit surface to harden sufficiently to retain the scoring or ridges.

3.7 CURING AND PROTECTION

Protect concrete from sun, rain, flowing water, and mechanical damage using impervious sheeting. Do not allow concrete to dry out from time of placement until the expiration of the specified curing period.

3.7.1 Curing Periods

ACI 301. Do not apply loads to concrete until concrete has attained sufficient strength to support the imposed loads without damage.

3.8 FIELD QUALITY CONTROL

3.8.1 Sampling

ASTM C 172. Collect samples of fresh concrete to perform tests specified.

3.8.2 Testing

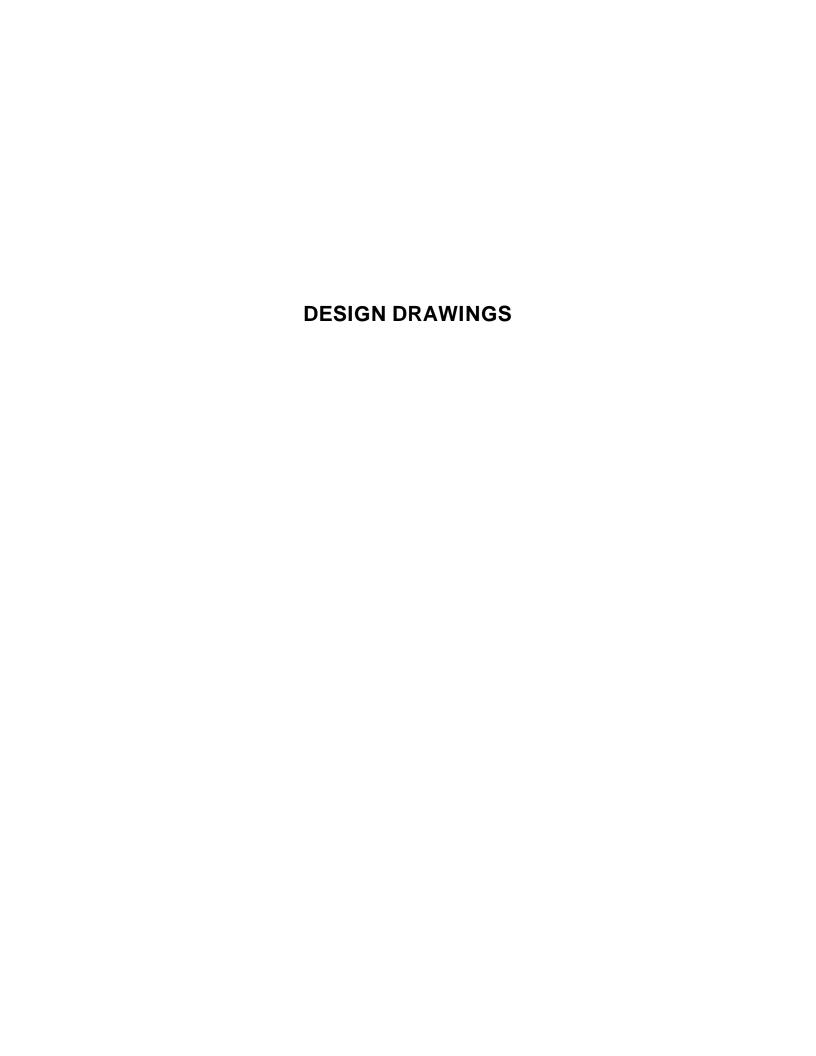
3.8.2.1 Field Slump Tests

ASTM C 143. Take concrete samples during concrete placement. Perform tests daily at commencement of concrete placement and for every truck load of concrete.

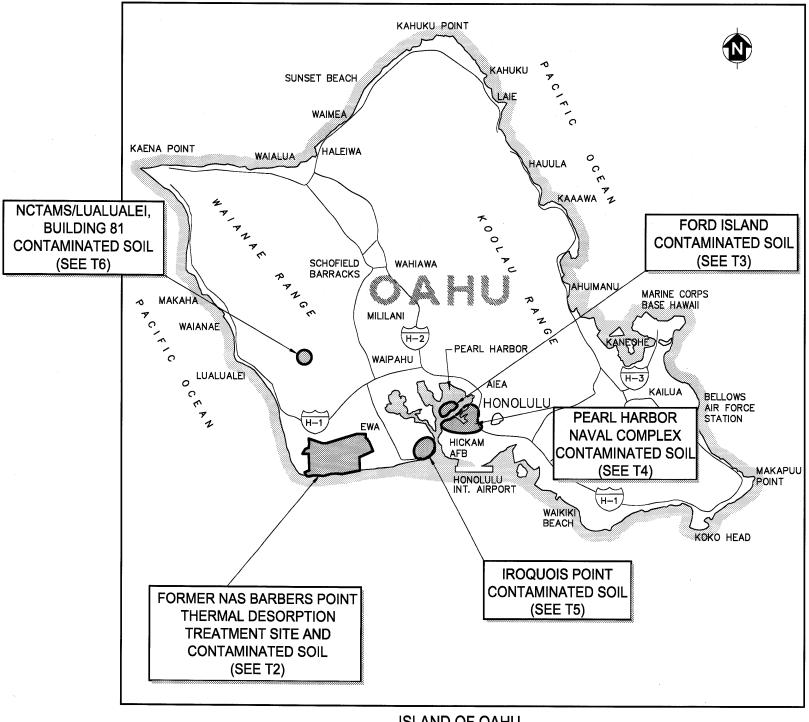
3.8.2.2 Field Compressive Strength Tests

ASTM C 39. Make three test cylinders for each set of tests in accordance with ASTM C 31/C 31M. Precautions shall be taken to prevent evaporation and loss of water from the specimen. Test one cylinder at 7 days, one cylinder at 28 days, and hold one cylinder in reserve. Samples shall be taken not less than once a day, nor less than once for each 100 cubic yards of concrete. Remove concrete not meeting strength criteria and provide new acceptable concrete.

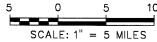
-- End of Section --



THERMAL DESORPTION TREATMENT OF PCB-CONTAMINATED SOIL AT THE FORMER NAVAL AIR STATION BARBERS POINT OAHU, HAWAII



ISLAND OF OAHU **VICINITY MAP**



GENERAL ABBREVIATIONS FEET INCHES A/C ASPHALT CONCRETE APPROXIMATELY ADDOV

SHEET INDEX DRAWING TITLE

BELOW GROUND SURFACE		
BELOW GROUND SURFACE		
CENTER LINE		
CHAIN LINK FENCE		
CUBIC YARDS		
DECONTAMINATION		
DIAMETER		
ELEVATION		
ELECTRIC MANHOLE		
EQUIPMENT		
EXISTING		
FEET		
HEIGHT		
LINEAR FEET		
MINIMUM		
MEAN SEA LEVEL		
MILLIGRAMS PER KILOGRAM		
NAVAL AIR STATION		
NAVAL COMPUTER AND TELECOMMUNICATIONS AREA MASTER STATION		
NAVAL FACILITIES ENGINEERING COMMAND		
PARTS PER MILLION		
PEARL HARBOR NAVAL COMPLEX		
POLYCHLORINATED BIPHENYL		
PUBLIC WORKS CENTER		
RADIUS		
SEWER MANHOLE		
SQUARE FEET		
ТОР		
TYPICAL		
UNDERGROUND STORAGE TANK		
WATER VALVE		

	DRAWING NUMBER	NAVFAC DRAWING NUMBER	DRAWING TITLE
	T1	7952139	VICINITY MAP AND SHEET INDEX
	T2	7952140	SITE LOCATION MAP - FORMER NAS BARBERS POINT
	Т3	7952141	SITE LOCATION MAP - FORD ISLAND, PHNC
	T4	7952142	SITE LOCATION MAP - PEARL HARBOR NAVAL COMPLEX
	Т5	7952143	SITE LOCATION MAP - IROQUOIS POINT, PHNC
	Т6	7952144	SITE LOCATION MAP - NRTF LUALUALEI
	C1	7952145	GENERAL LOCATION MAP TREATMENT SITE AND RELATED LOCATIONS
	C2	7952146	TREATMENT SITE EXISTING CONDITIONS
	С3	7952147	CORAL PIT FILLING PLAN
	C4	7952148	FORMER DRUM CRUSHING AREA, FORMER NAS BARBERS POINT
	C5	7952149	STOCKPILE AREA EXISTING CONDITIONS, FORMER NAS BARBERS POINT
	C6	7952150	TRANSFORMER SITES TA-01 AND TC-04, FORD ISLAND, PHNC
	C7	7952151	TRANSFORMER SITES TC-06D AND TC-07D, FORD ISLAND, PHNO
	C8	7952152	TRANSFORMER SITES TD-01 AND TD-02, FORD ISLAND, PHNC
	С9	7952153	TRANSFORMER SITES TD-03 AND TD-05, FORD ISLAND, PHNC
	C10	7952154	TRANSFORMER SITES TD-07, TF-01, AND TF-01D, FORD ISLAND, PHNC
	C11	7952155	TRANSFORMER SITES TF-04 AND TF-05, FORD ISLAND, PHNC
	C12	7952156	TRANSFORMER SITES TF-07 AND TF-08, FORD ISLAND, PHNC
	C13	7952157	TRANSFORMER SITES TF-09 AND TF-17, FORD ISLAND, PHNC
	C14	7952158	TRANSFORMER SITES TF-18 AND TG-01, FORD ISLAND, PHNC
	C15	7952159	TRANSFORMER SITES TG-03 AND TG-06, FORD ISLAND, PHNC
	C16	7952160	TRANSFORMER SITES TI-03 AND TI-04D, FORD ISLAND, PHNC
	C17	7952161	TRANSFORMER SITES TD-10 AND TF-06, FORD ISLAND, PHNC
	C18	7952162	TRANSFORMER SITE TC-01, FORD ISLAND, PHNC
	C19	7952163	TRANSFORMER SITE TF-10, FORD ISLAND, PHNC
	C20	7952164	TRANSFORMER SITES D-02 AND E-09, PHNC
	C21	7952165	TRANSFORMER SITE I-4, IROQUOIS POINT, PHNC AND BUILDING 81, NRTF LUALUALEI
-	C22	7952166	TRANSFORMER SITE ANALYTICAL DATA
	C23	7952167	TRANSFORMER SITE ANALYTICAL DATA
	C24	7952168	TRANSFORMER SITE ANALYTICAL DATA
	C25	7952169	TRANSFORMER SITE ANALYTICAL DATA



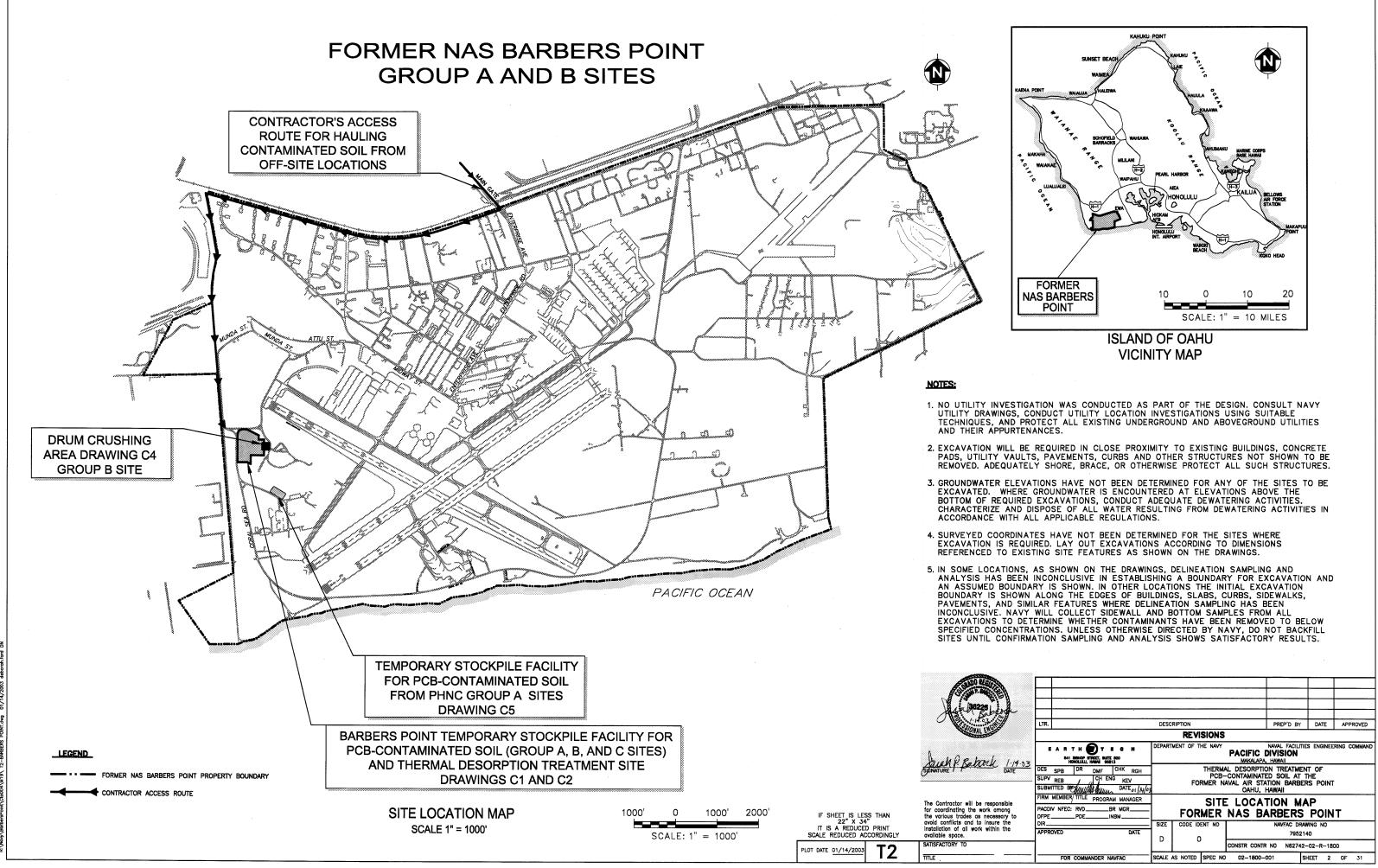
IF SHEET IS LESS THAN
22" X 34"
IT IS A REDUCED PRINT
SCALE REDUCED ACCORDINGLY PLOT DATE 01/14/2003

	The Contractor will be responsible for coordinating the work among the various trades as necessary avoid conflicts and to insure the installation of all work within the available space.
_	I SATISFACTORY TO

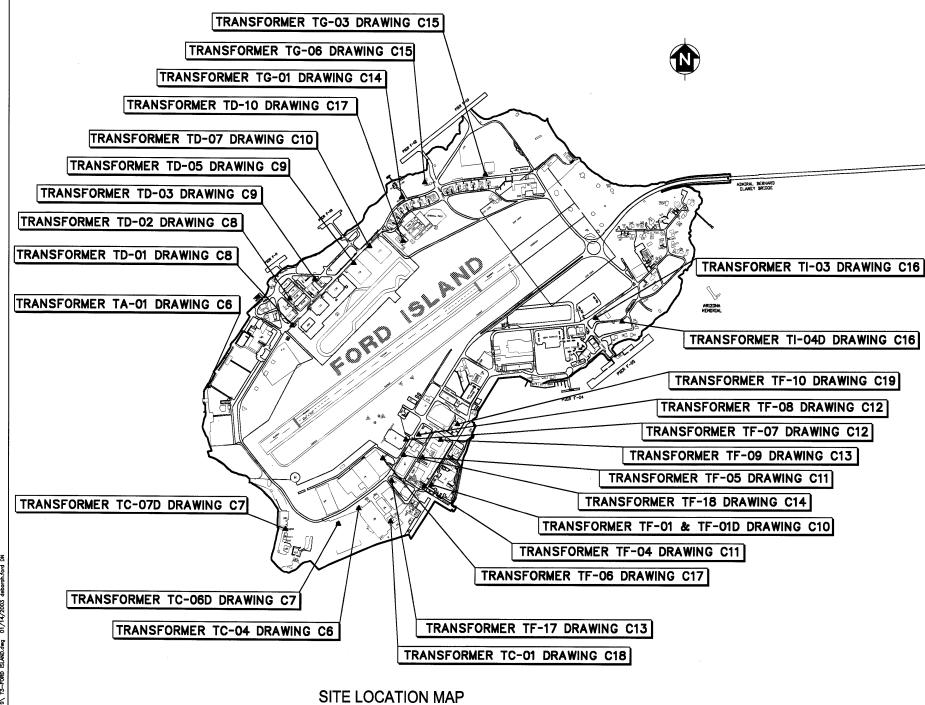
A R T H T T E C H 841 BISHOP STREET, SUITE 500 HONOLULU, HANNI 98813	PACIFIC DIVISION MAKALAPA, HAWAII		
SPB DR DMF CHK RGH REB / CH ENG KEV TED BY JUNE DATE 114/03	THERMAL DESORPTION TREATMENT OF PCB-CONTAMINATED SOIL AT THE FORMER NAVAL AIR STATION BARBERS POINT OAHU, HAWAII		
EMBER/ TITLE PROGRAM MANAGER NFEC: RVDBR MGR PDEINBM	VICINITY MAP AND SHEET INDEX		
/ED DATE	SIZE CODE IDENT NO NAVFAC DRAWING NO 7952139		
	CONSTR CONTR NO N82742-02-R-1800		
FOR COMMANDER NAVFAC	SCALE AS NOTED SPEC NO 02-1800-001 SHEET 1 OF 31		

REVISIONS

PREP'D BY DATE APPROVED



FORD ISLAND **GROUP B SITES**

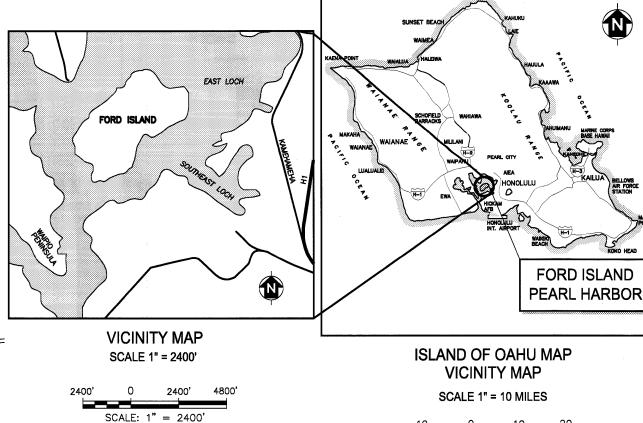


SCALE 1" = 600'

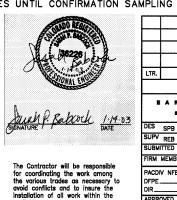
SCALE: 1" = 600

600'

1200



- 1. NO UTILITY INVESTIGATION WAS CONDUCTED AS PART OF THE DESIGN. CONSULT NAVY UTILITY DRAWINGS, CONDUCT UTILITY LOCATION INVESTIGATIONS USING SUITABLE TECHNIQUES, AND PROTECT ALL EXISTING UNDERGROUND AND ABOVEGROUND UTILITIES
- 2. EXCAVATION WILL BE REQUIRED IN CLOSE PROXIMITY TO EXISTING BUILDINGS, CONCRETE PADS, UTILITY VAULTS, PAVEMENTS, CURBS AND OTHER STRUCTURES NOT SHOWN TO BE
- 3. GROUNDWATER ELEVATIONS HAVE NOT BEEN DETERMINED FOR ANY OF THE SITES TO BE EXCAVATED. WHERE GROUNDWATER IS ENCOUNTERED AT ELEVATIONS ABOVE THE BOTTOM OF REQUIRED EXCAVATIONS, CONDUCT ADEQUATE DEWATERING ACTIVITIES. CHARACTERIZE AND DISPOSE OF ALL WATER RESULTING FROM DEWATERING ACTIVITIES IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
- 4. SURVEYED COORDINATES HAVE NOT BEEN DETERMINED FOR THE SITES WHERE EXCAVATION IS REQUIRED. LAY OUT EXCAVATIONS ACCORDING TO DIMENSIONS REFERENCED TO EXISTING SITE FEATURES AS SHOWN ON THE DRAWINGS.
- 5. IN SOME LOCATIONS, AS SHOWN ON THE DRAWINGS, DELINEATION SAMPLING AND ANALYSIS HAS BEEN INCONCLUSIVE IN ESTABLISHING A BOUNDARY FOR EXCAVATION AND AN ASSUMED BOUNDARY IS SHOWN. IN OTHER LOCATIONS THE INITIAL EXCAVATION BOUNDARY IS SHOWN ALONG THE EDGES OF BUILDINGS, SLABS, CURBS, SIDEWALKS, PAVEMENTS, AND SIMILAR FEATURES WHERE DELINEATION SAMPLING HAS BEEN INCONCLUSIVE. NAVY WILL COLLECT SIDEWALL AND BOTTOM SAMPLES FROM ALL EXCAVATIONS TO DETERMINE WHETHER CONTAMINANTS HAVE BEEN REMOVED TO BELOW SPECIFIED CONCENTRATIONS. UNLESS OTHERWISE DIRECTED BY NAVY, DO NOT BACKFILL SITES UNTIL CONFIRMATION SAMPLING AND ANALYSIS SHOWS SATISFACTORY RESULTS.



DESCRIPTION PREP'D BY DATE APPROVED REVISIONS NAVAL FACILITIES ENGINEERING COMMA
PACIFIC DIVISION EARTH TE CH 841 BISHOP STREET, SUITE 500 HONOLULU, HANNAI 96813 THERMAL DESORPTION TREATMENT OF PCB-CONTAMINATED SOIL AT THE FORMER NAVAL AIR STATION BARBERS POINT OAHU, HAWAII PROGRAM MANAGER SITE LOCATION MAP FORD ISLAND, PHNC 7952141 CONSTR CONTR NO N82742-02-R-1800 SCALE AS NOTED SPEC NO 02-1800-001 SHEET 3 OF 31 FOR COMMANDER NAVFAC

SCALE: 1" = 10 MILES

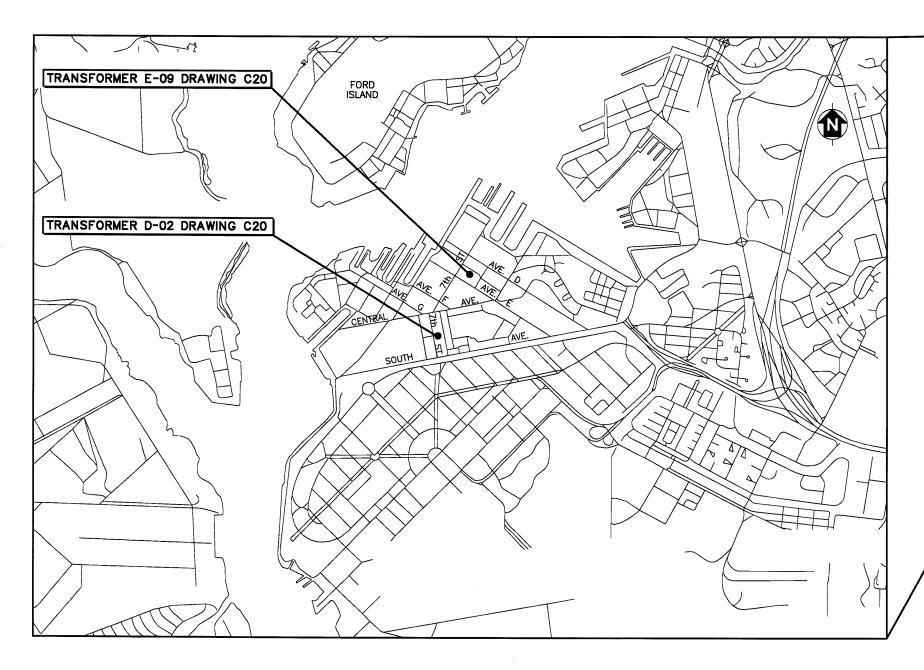
SCALE REDUCED ACCORDINGLY

PLOT DATE 01/14/2003

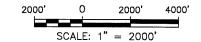
NOTES:

AND THEIR APPURTENANCES

PEARL HARBOR NAVAL COMPLEX **GROUP B SITES**



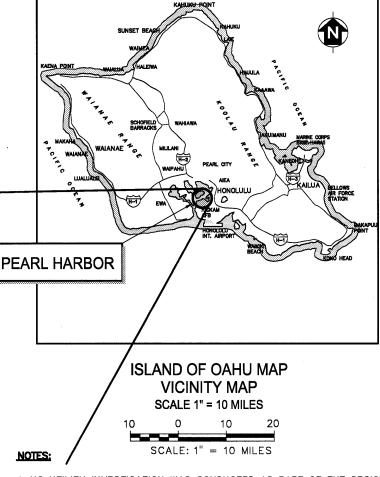
SITE LOCATION MAP SCALE 1" = 1000'



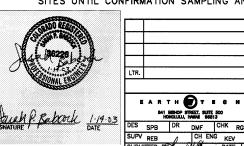
IT IS A REDUCED PRINT SCALE REDUCED ACCORDINGLY

PLOT DATE 01/14/2003

SATISFACTORY TO



- 1. NO UTILITY INVESTIGATION WAS CONDUCTED AS PART OF THE DESIGN. CONSULT NAVY UTILITY DRAWINGS, CONDUCT UTILITY LOCATION INVESTIGATIONS USING SUITABLE TECHNIQUES, AND PROTECT ALL EXISTING UNDERGROUND AND ABOVEGROUND UTILITIES
- 2. EXCAVATION WILL BE REQUIRED IN CLOSE PROXIMITY TO EXISTING BUILDINGS, CONCRETE PADS, UTILITY VAULTS, PAVEMENTS, CURBS AND OTHER STRUCTURES NOT SHOWN TO BE REMOVED. ADEQUATELY SHORE, BRACE, OR OTHERWISE PROTECT ALL SUCH STRUCTURES.
- 3. GROUNDWATER ELEVATIONS HAVE NOT BEEN DETERMINED FOR ANY OF THE SITES TO BE EXCAVATED. WHERE GROUNDWATER IS ENCOUNTERED AT ELEVATIONS ABOVE THE BOTTOM OF REQUIRED EXCAVATIONS, CONDUCT ADEQUATE DEWATERING ACTIVITIES.
 CHARACTERIZE AND DISPOSE OF ALL WATER RESULTING FROM DEWATERING ACTIVITIES IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
- 4. SURVEYED COORDINATES HAVE NOT BEEN DETERMINED FOR THE SITES WHERE EXCAVATION IS REQUIRED. LAY OUT EXCAVATIONS ACCORDING TO DIMENSIONS REFERENCED TO EXISTING SITE FEATURES AS SHOWN ON THE DRAWINGS.
- 5. IN SOME LOCATIONS, AS SHOWN ON THE DRAWINGS, DELINEATION SAMPLING AND ANALYSIS HAS BEEN INCONCLUSIVE IN ESTABLISHING A BOUNDARY FOR EXCAVATION AND AN ASSUMED BOUNDARY IS SHOWN. IN OTHER LOCATIONS THE INITIAL EXCAVATION BOUNDARY IS SHOWN ALONG THE EDGES OF BUILDINGS, SLABS, CURBS, SIDEWALKS, PAVEMENTS, AND SIMILAR FEATURES WHERE DELINEATION SAMPLING HAS BEEN INCONCLUSIVE, NAVY WILL COLLECT SIDEWALL AND BOTTOM SAMPLES FROM ALL EXCAVATIONS TO DETERMINE WHETHER CONTAMINANTS HAVE BEEN REMOVED TO BELOW SPECIFIED CONCENTRATIONS. UNLESS OTHERWISE DIRECTED BY NAVY, DO NOT BACKFILL SITES UNTIL CONFIRMATION SAMPLING AND ANALYSIS SHOWS SATISFACTORY RESULTS.



REVISIONS DES SPB DR DMF CHK RGH
SUPV REB CH ENG KEV
SUBMITTED BOUNDER DATE, 1916
FIRM MEMBER TITLE PROCEDAM MANAGER FOR COMMANDER NAVFAC SCALE AS NOTED SPEC NO 02-1800-001

THERMAL DESORPTION TREATMENT OF PCB-CONTAMINATED SOIL AT THE FORMER NAVAL AIR STATION BARBERS POINT SITE LOCATION MAP PEARL HARBOR

NAVAL FACILITIES ENGINEERING COI

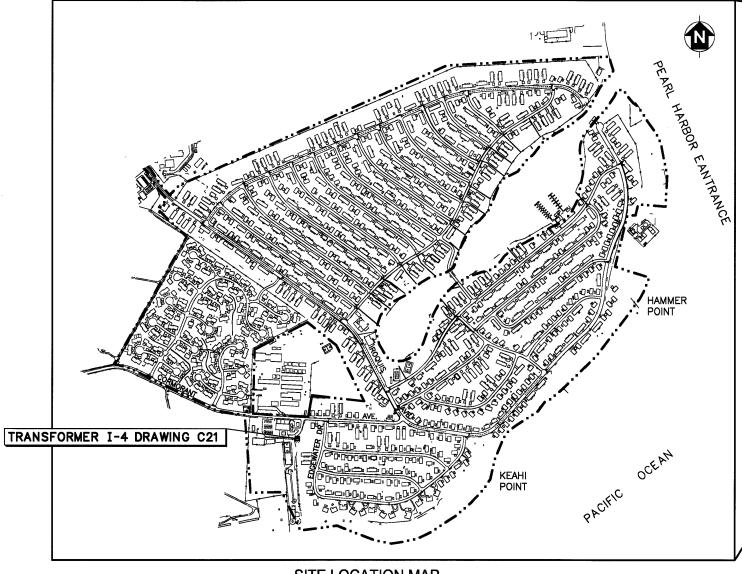
PREP'D BY DATE APPROVED

SHEET 4 OF 31

NAVAL COMPLEX

CONSTR CONTR NO N62742-02-R-1800

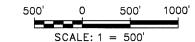
IROQUOIS POINT GROUP B SITE



SITE LOCATION MAP SCALE 1" = 500'

LEGEND

---- PROPERTY BOUNDARY



IT IS A REDUCED PRINT SCALE REDUCED ACCORDINGLY

IF SHEET IS LESS THAN 22" X 34"

for coordinating the work among the various trades as necessary avoid conflicts and to insure the installation of all work within the available space.

PREP'D BY DATE APPROVED REVISIONS PACIFIC DIVISION 841 BISHOP STREET, SUITE 500 HONOLULU, HAWAI 96813 THERMAL DESORPTION TREATMENT OF PCB—CONTAMINATED SOIL AT THE FORMER NAVAL AIR STATION BARBERS POINT OAHU, HAWAII CH ENG KEV SITE LOCATION MAP IROQUOIS POINT, PHNC 7952143 CONSTR CONTR NO N62742-02-R-1800 SCALE AS NOTED SPEC NO 02-1800-001

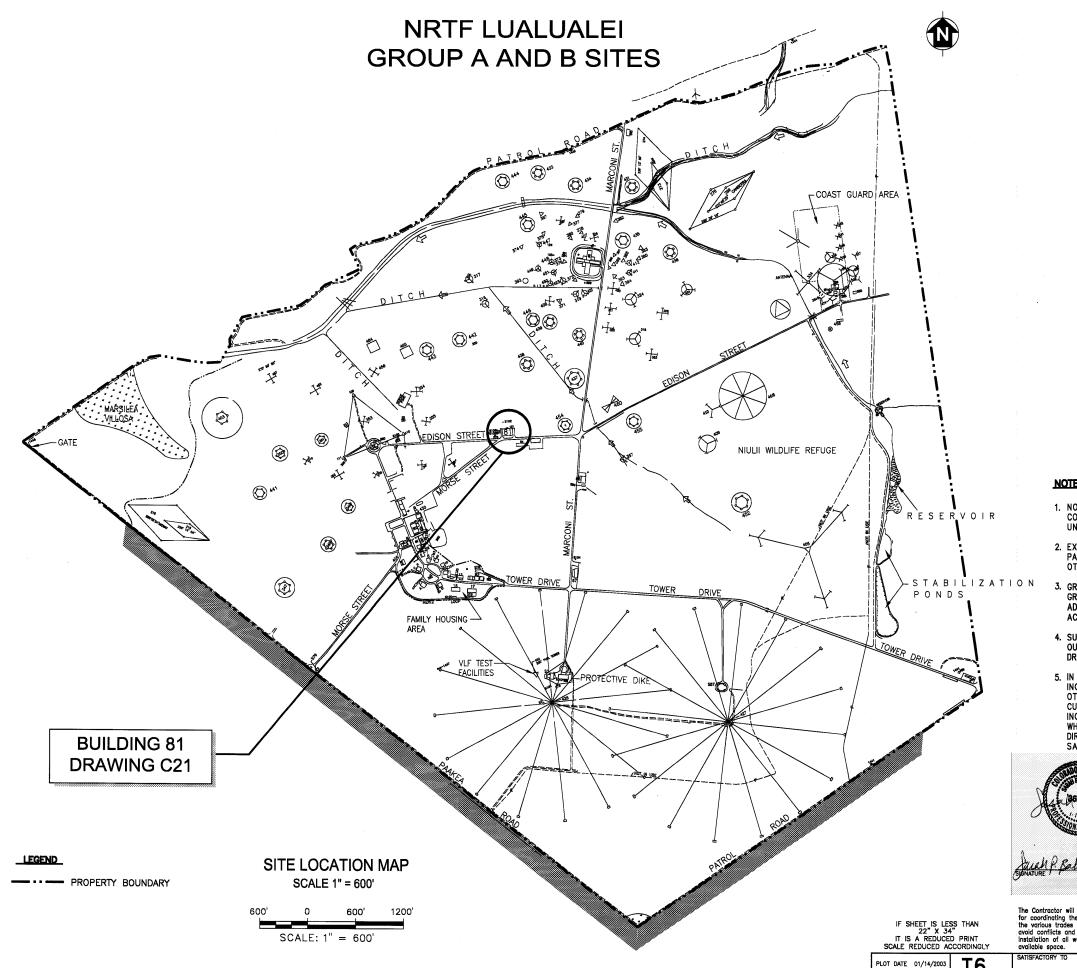
ISLAND OF OAHU MAP **VACINITY MAP** SCALE 1" = 10 MILES SCALE: 1" = 10 MILES

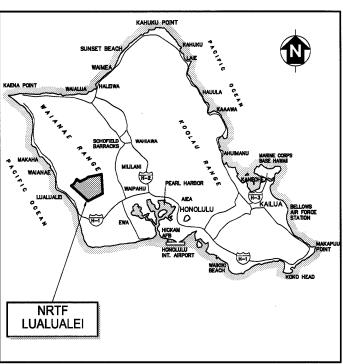
NOTES:

IROQUOIS POINT

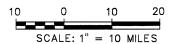
- 1. NO UTILITY INVESTIGATION WAS CONDUCTED AS PART OF THE DESIGN. CONSULT NAVY UTILITY DRAWINGS, CONDUCT UTILITY LOCATION INVESTIGATIONS USING SUITABLE TECHNIQUES, AND PROTECT ALL EXISTING UNDERGROUND AND ABOVEGROUND UTILITIES AND THEIR APPURTENANCES.
- 2. EXCAVATION WILL BE REQUIRED IN CLOSE PROXIMITY TO EXISTING BUILDINGS, CONCRETE PADS, UTILITY VAULTS, PAVEMENTS, CURBS AND OTHER STRUCTURES NOT SHOWN TO BE REMOVED. ADEQUATELY SHORE, BRACE, OR OTHERWISE PROTECT ALL SUCH STRUCTURES.
- 3. GROUNDWATER ELEVATIONS HAVE NOT BEEN DETERMINED FOR ANY OF THE SITES TO BE EXCAVATED. WHERE GROUNDWATER IS ENCOUNTERED AT ELEVATIONS ABOVE THE BOTTOM OF REQUIRED EXCAVATIONS, CONDUCT ADEQUATE DEWATERING ACTIVITIES. CHARACTERIZE AND DISPOSE OF ALL WATER RESULTING FROM DEWATERING ACTIVITIES IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
- 4. SURVEYED COORDINATES HAVE NOT BEEN DETERMINED FOR THE SITES WHERE EXCAVATION IS REQUIRED. LAY OUT EXCAVATIONS ACCORDING TO DIMENSIONS REFERENCED TO EXISTING SITE FEATURES AS SHOWN ON THE DRAWINGS.
- 5. IN SOME LOCATIONS, AS SHOWN ON THE DRAWINGS, DELINEATION SAMPLING AND ANALYSIS HAS BEEN INCONCLUSIVE IN ESTABLISHING A BOUNDARY FOR EXCAVATION AND AN ASSUMED BOUNDARY IS SHOWN. IN OTHER LOCATIONS THE INITIAL EXCAVATION BOUNDARY IS SHOWN ALONG THE EDGES OF BUILDINGS, SLABS, CURBS, SIDEWALKS, PAVEMENTS, AND SIMILAR FEATURES WHERE DELINEATION SAMPLING HAS BEEN INCONCLUSIVE. NAVY WILL COLLECT SIDEWALL AND BOTTOM SAMPLES FROM ALL EXCAVATIONS TO DETERMINE WHETHER CONTAMINANTS HAVE BEEN REMOVED TO BELOW SPECIFIED CONCENTRATIONS. UNLESS OTHERWISE DIRECTED BY NAVY, DO NOT BACKFILL SITES UNTIL CONFIRMATION SAMPLING AND ANALYSIS SHOWS SATISFACTORY RESULTS.

PLOT DATE 01/14/2003





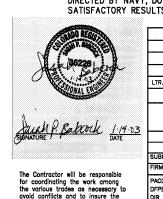
ISLAND OF OAHU **VICINITY MAP**



NOTES:

- NO UTILITY INVESTIGATION WAS CONDUCTED AS PART OF THE DESIGN. CONSULT NAVY UTILITY DRAWINGS, CONDUCT UTILITY LOCATION INVESTIGATIONS USING SUITABLE TECHNIQUES, AND PROTECT ALL EXISTING UNDERGROUND AND ABOVEGROUND UTILITIES AND THEIR APPURTENANCES.
- EXCAVATION WILL BE REQUIRED IN CLOSE PROXIMITY TO EXISTING BUILDINGS, CONCRETE PADS, UTILITY VAULTS, PAVEMENTS, CURBS AND OTHER STRUCTURES NOT SHOWN TO BE REMOVED. ADEQUATELY SHORE, BRACE, OR OTHERWISE PROTECT ALL SUCH STRUCTURES.
- 3. GROUNDWATER ELEVATIONS HAVE NOT BEEN DETERMINED FOR ANY OF THE SITES TO BE EXCAVATED. WHERE GROUNDWATER IS ENCOUNTERED AT ELEVATIONS ABOVE THE BOTTOM OF REQUIRED EXCAVATIONS, CONDUCT ADEQUATE DEWATERING ACTIVITIES. CHARACTERIZE AND DISPOSE OF ALL WATER RESULTING FROM DEWATERING ACTIVITIES IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
- 4. SURVEYED COORDINATES HAVE NOT BEEN DETERMINED FOR THE SITES WHERE EXCAVATION IS REQUIRED. LAY OUT EXCAVATIONS ACCORDING TO DIMENSIONS REFERENCED TO EXISTING SITE FEATURES AS SHOWN ON THE
- 5. IN SOME LOCATIONS, AS SHOWN ON THE DRAWINGS, DELINEATION SAMPLING AND ANALYSIS HAS BEEN INCONCLUSIVE IN ESTABLISHING A BOUNDARY FOR EXCAVATION AND AN ASSUMED BOUNDARY IS SHOWN. IN OTHER LOCATIONS THE INITIAL EXCAVATION BOUNDARY IS SHOWN ALONG THE EDGES OF BUILDINGS, SLABS, CURBS, SIDEWALKS, PAVEMENTS, AND SIMILAR FEATURES WHERE DELINEATION SAMPLING HAS BEEN INCONCLUSIVE. NAVY WILL COLLECT SIDEWALL AND BOTTOM SAMPLED THERE IN SAMPLING HAS BEEN INCONCLUSIVE. NAVY WILL COLLECT SIDEWALL AND BOTTOM SAMPLES FROM ALL EXCAVATIONS TO DETERMINE WHETHER CONTAMINANTS HAVE BEEN REMOVED TO BELOW SPECIFIED CONCENTRATIONS. UNLESS OTHERWISE DIRECTED BY NAVY, DO NOT BACKFILL SITES UNTIL CONFIRMATION SAMPLING AND ANALYSIS SHOWS SATISFACTORY RESULTS.

FOR COMMANDER NAVFAC



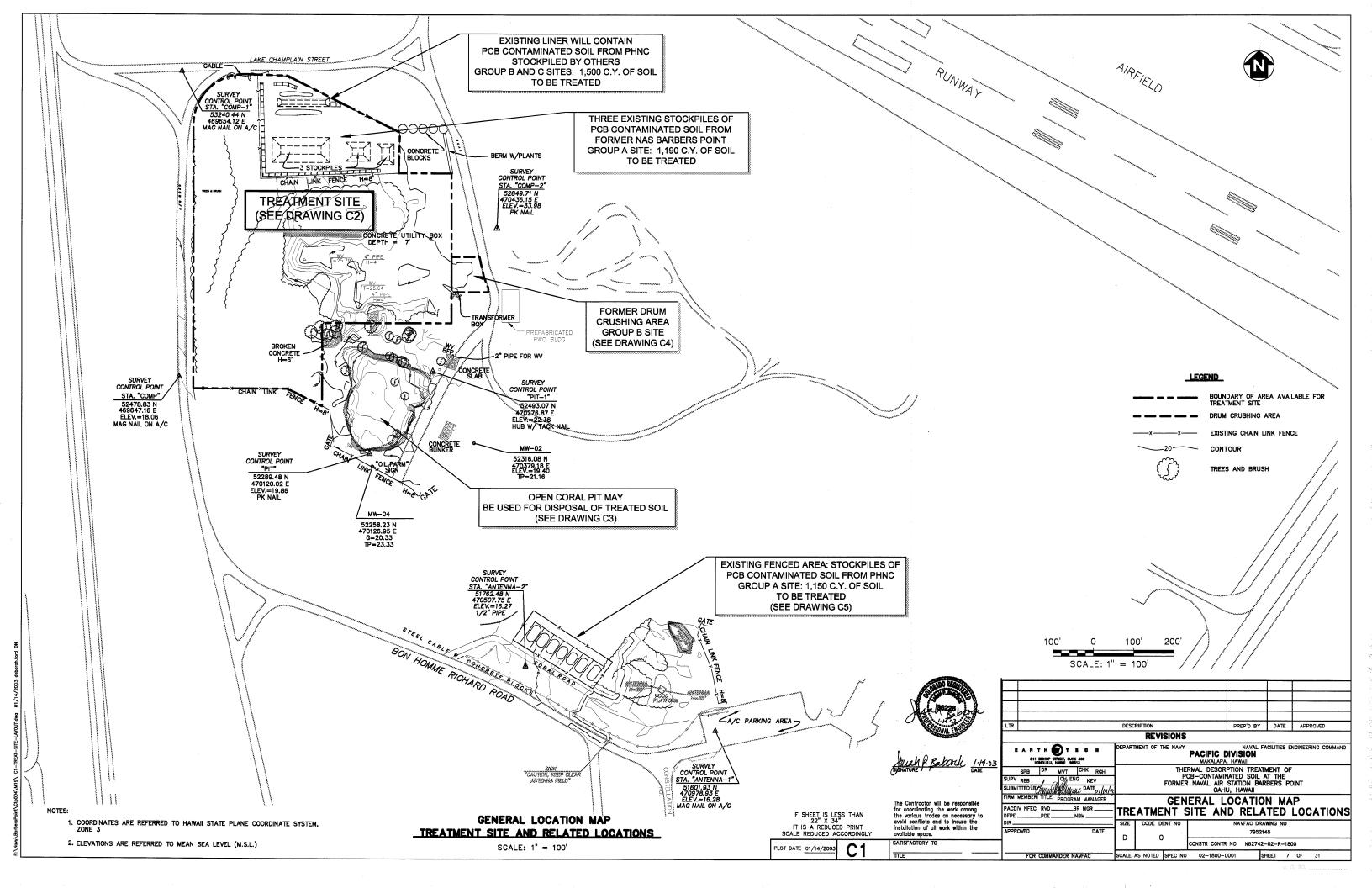
PREP'D BY DATE APPROVED REVISIONS PACIFIC DIVISION ARTH TE S 841 BISHOP STREET, SUITE 500 HONOLULU, HAMAS 96813 THERMAL DESORPTION TREATMENT OF PCB-CONTAMINATED SOIL AT THE FORMER NAVAL AIR STATION BARBERS POINT SPB DR DMF CHK RGH REB CH ENG KEV
SUBMITTED BY WILLIAM DATE OF JULY.

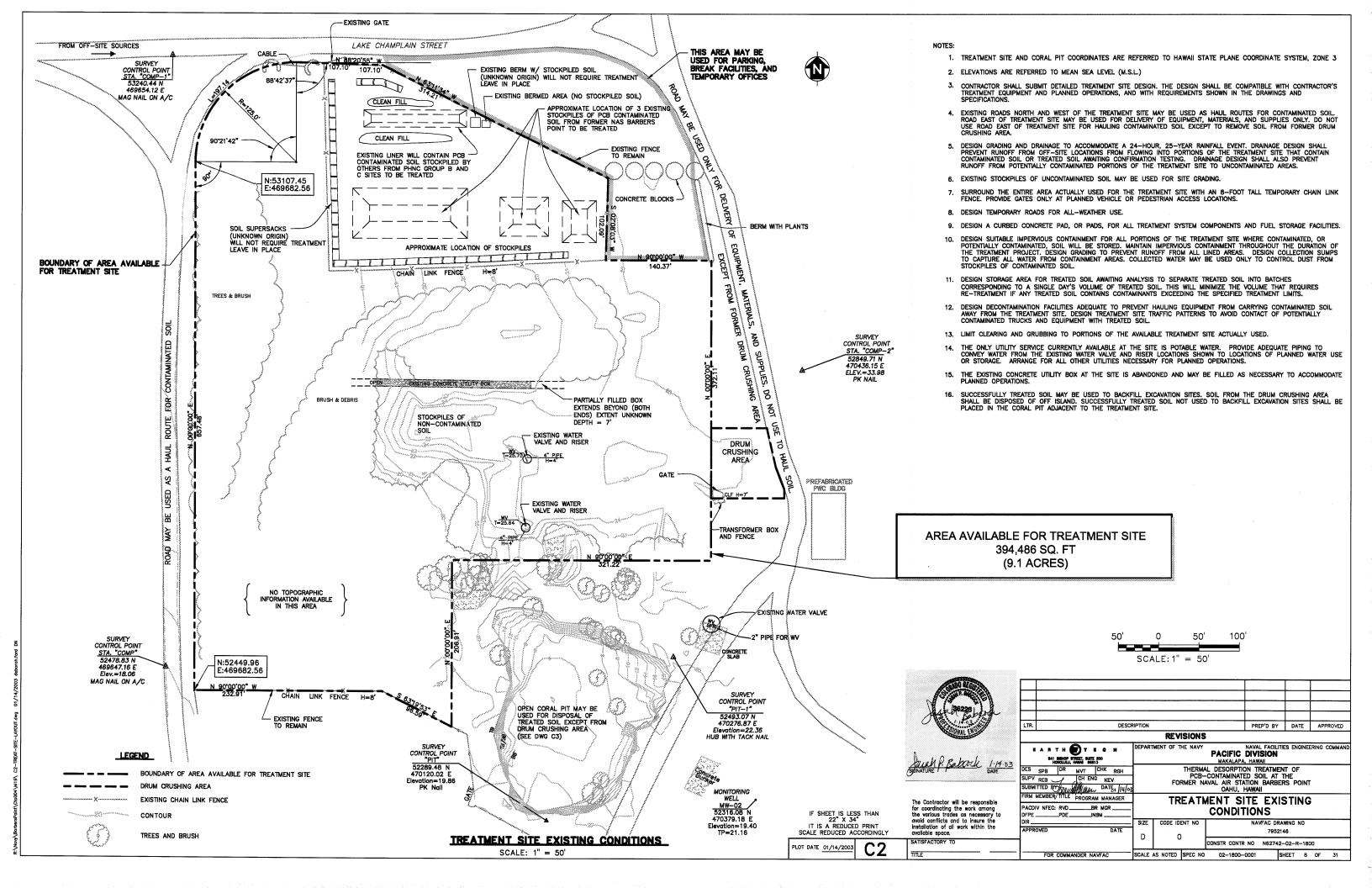
RINM MEMBER TITLE PROGRAM MANAGEP SITE LOCATION MAP NRTF LUALUALEI 7954144

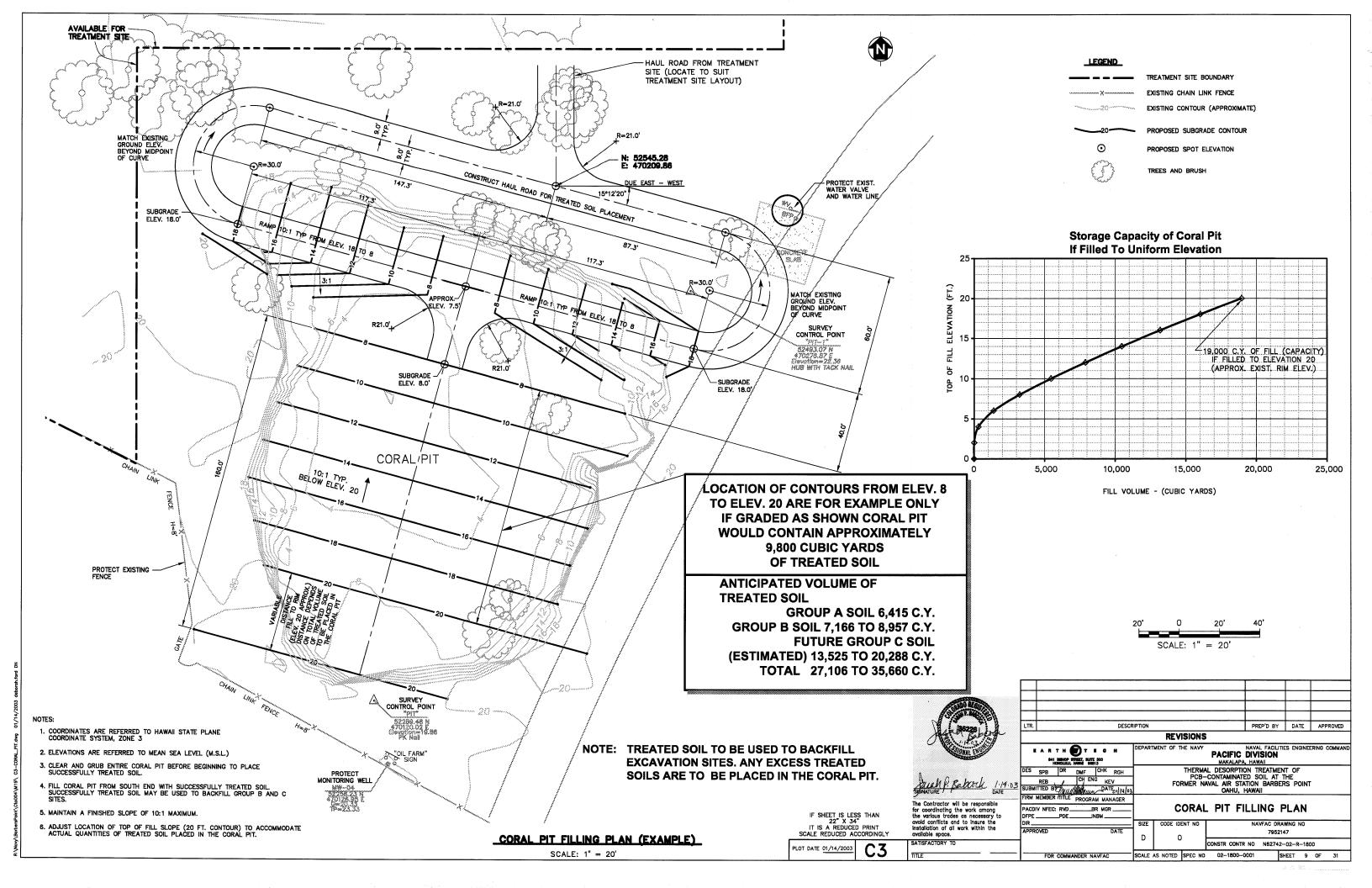
SCALE AS NOTED SPEC NO 02-1800-001

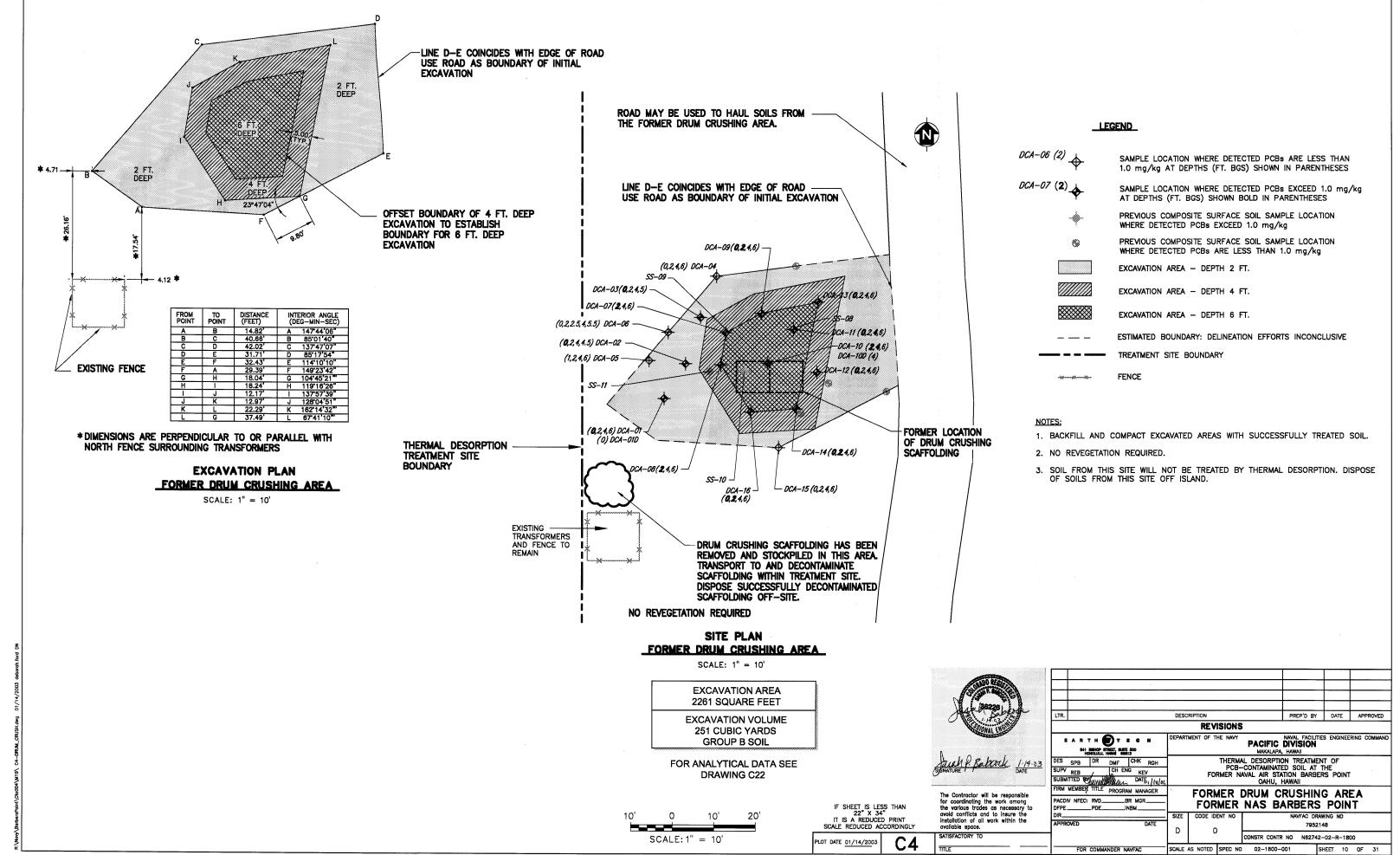
CONSTR CONTR NO N62742-02-R-1800

SHEET 6 OF 31

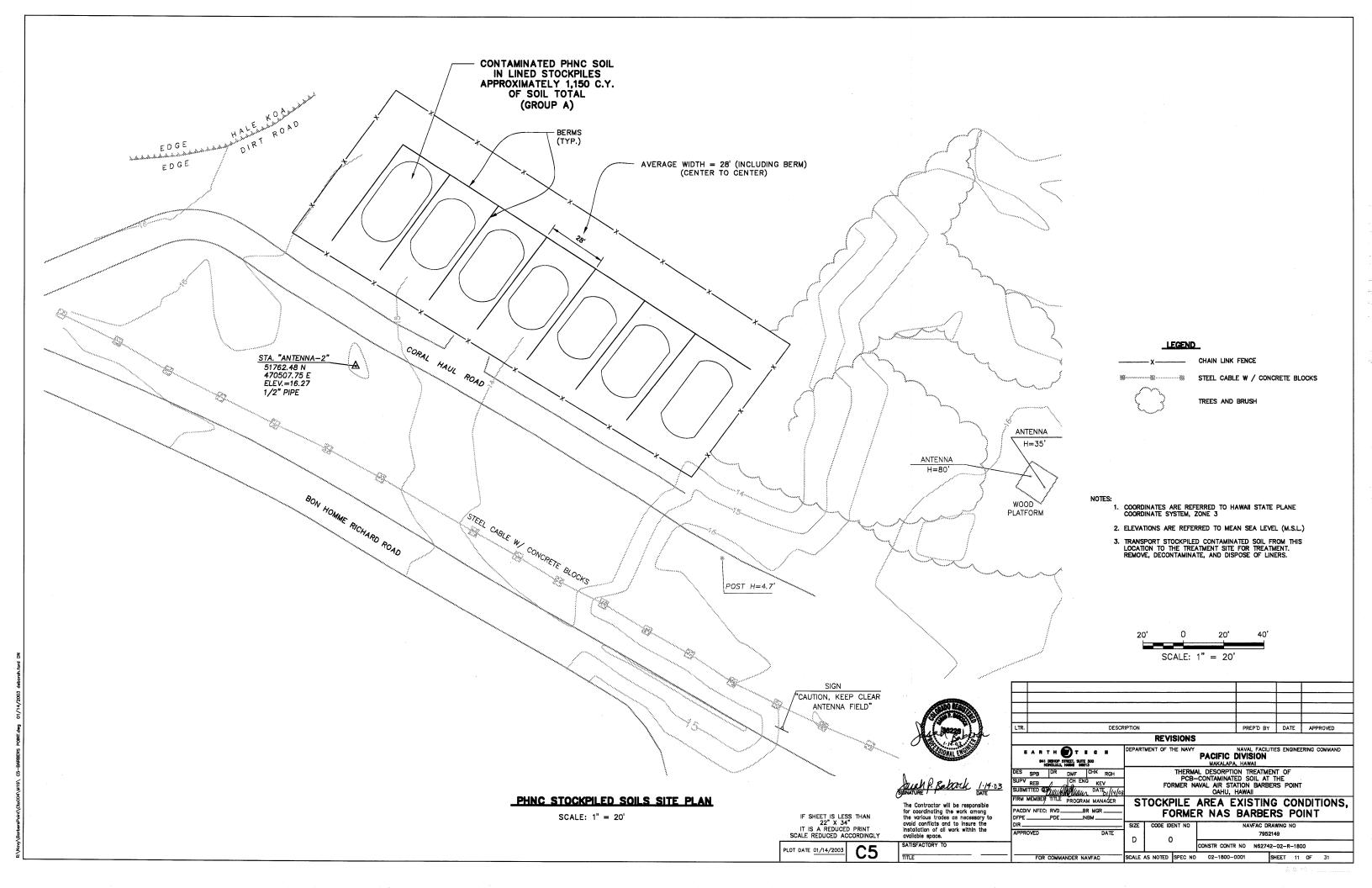


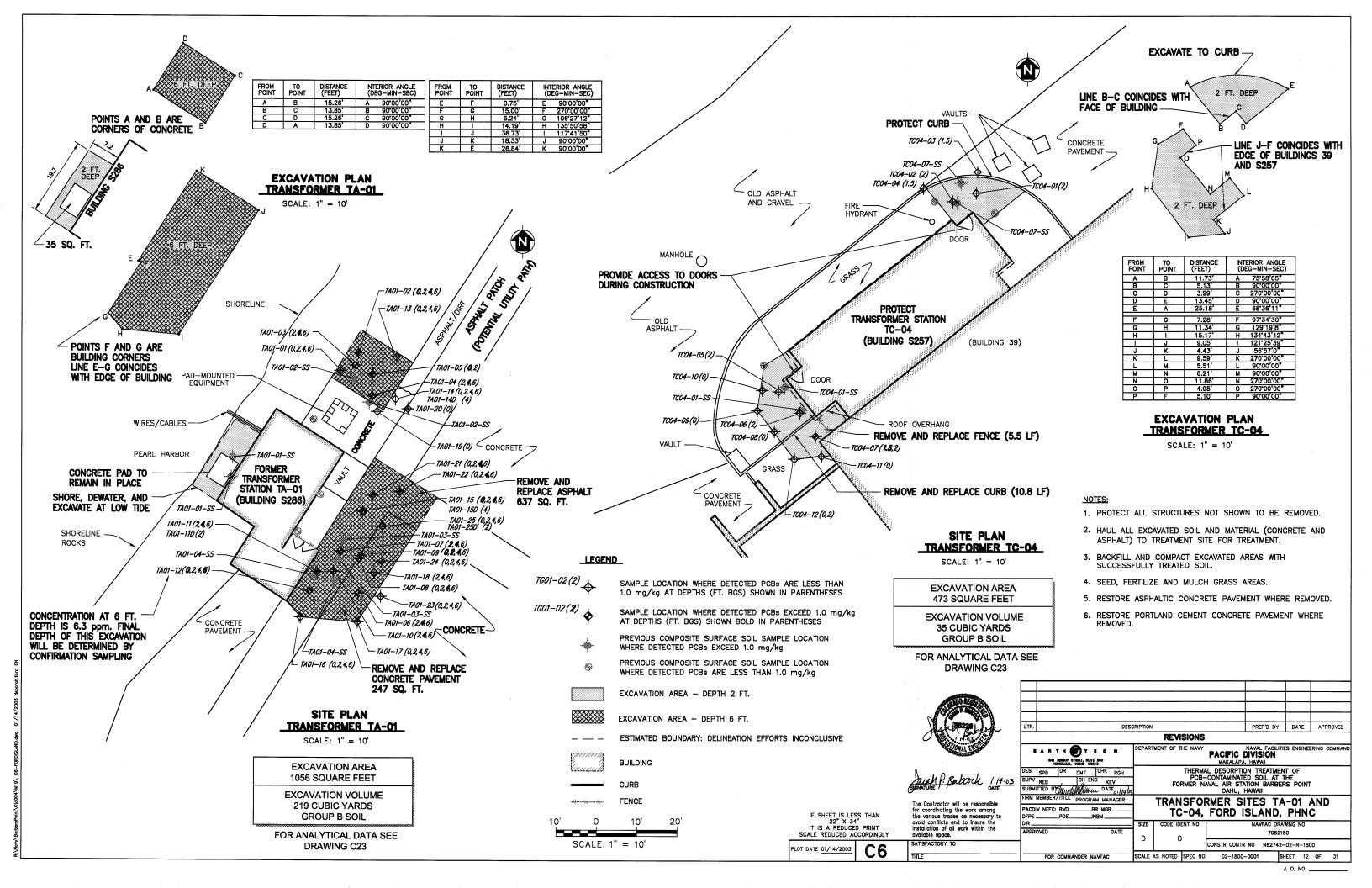


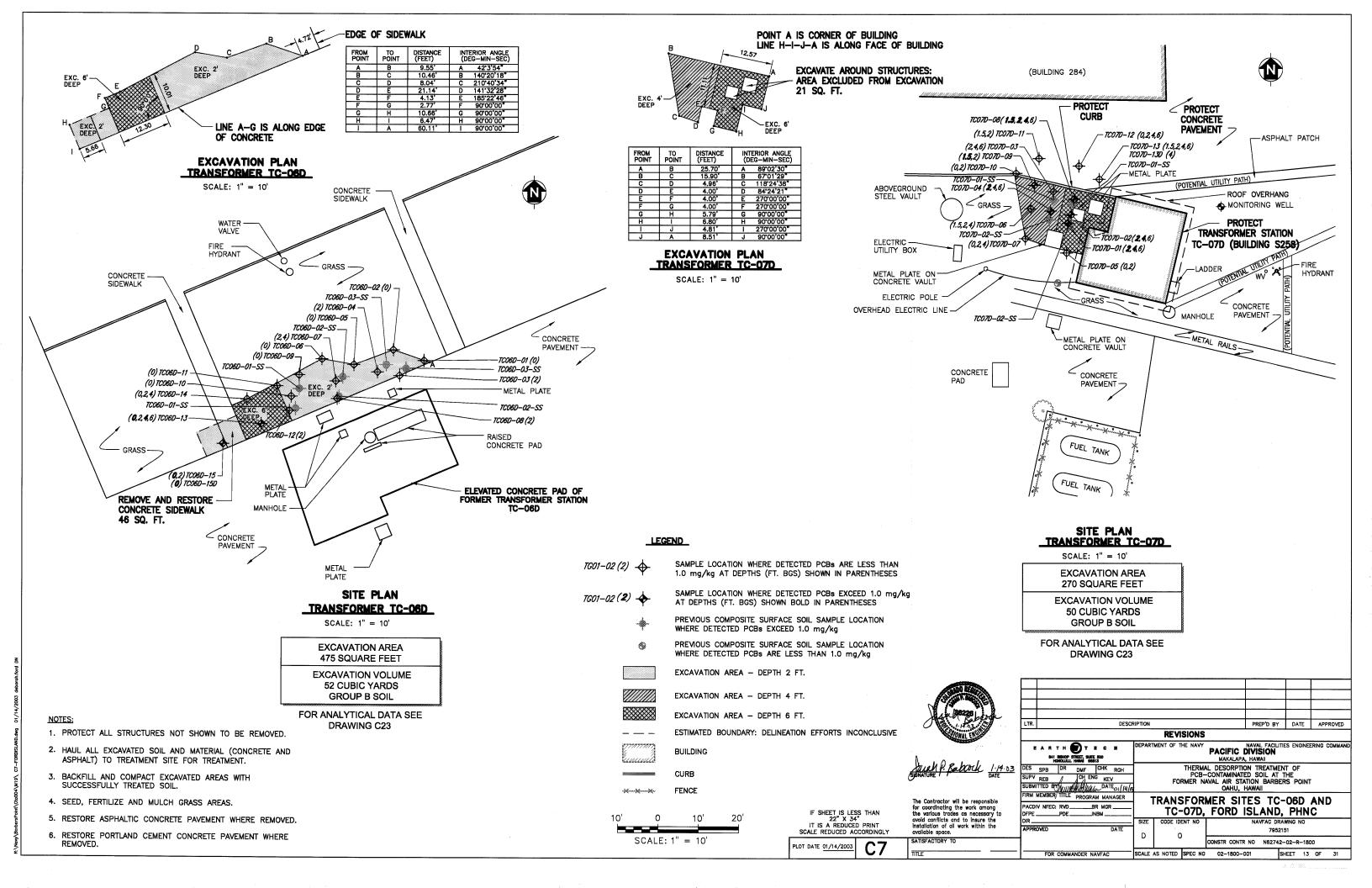


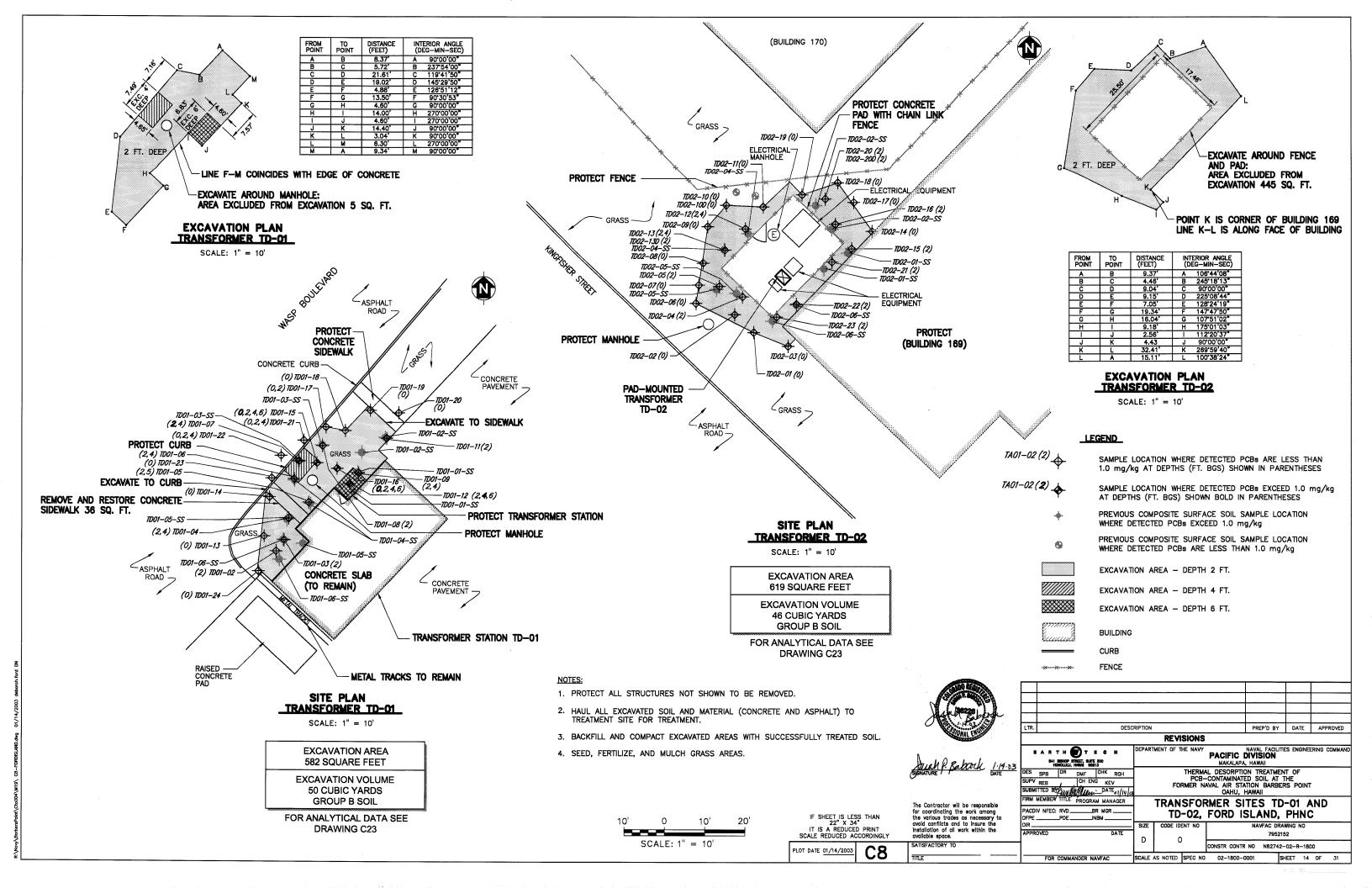


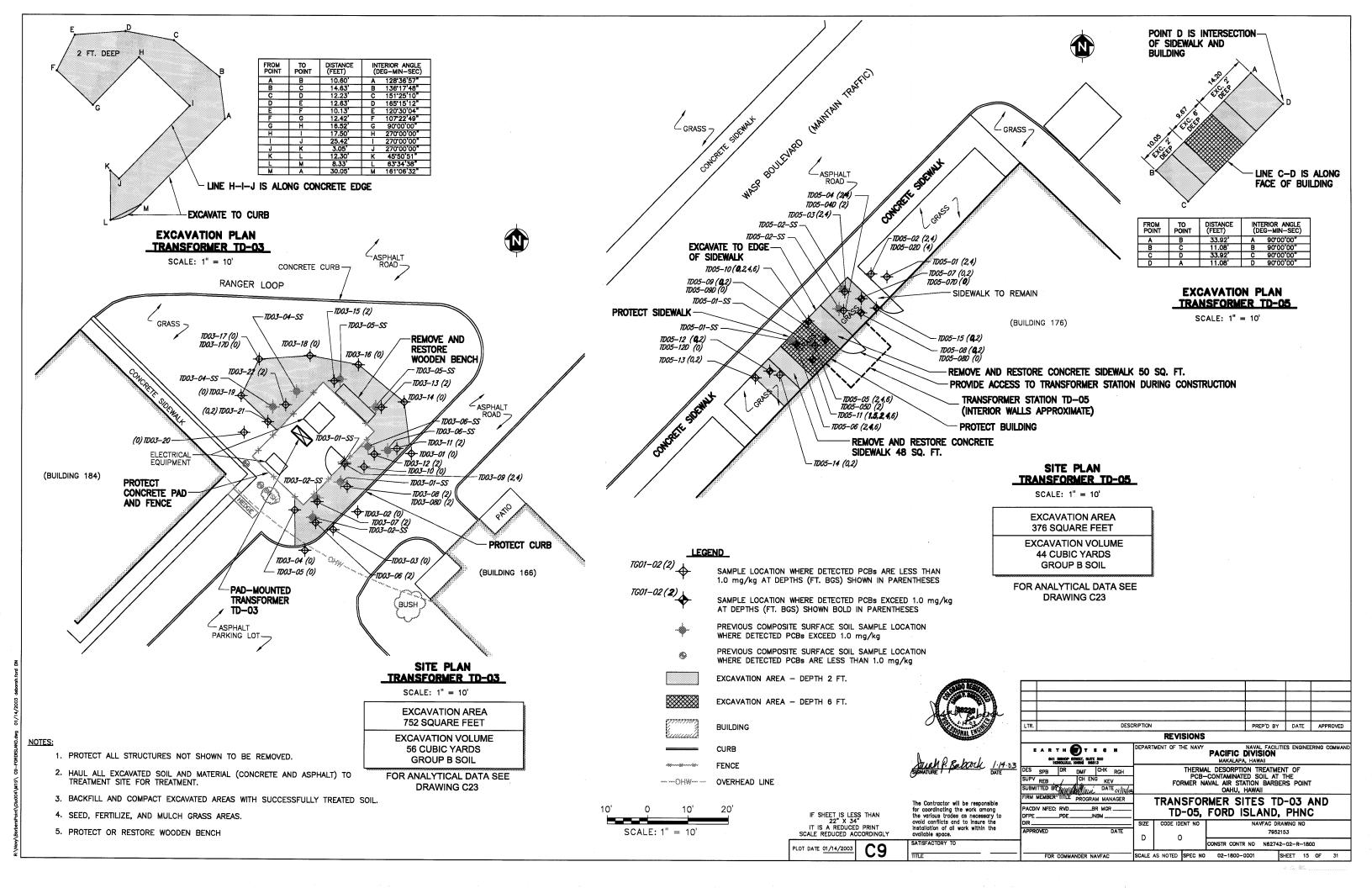
J. O. NO. ____

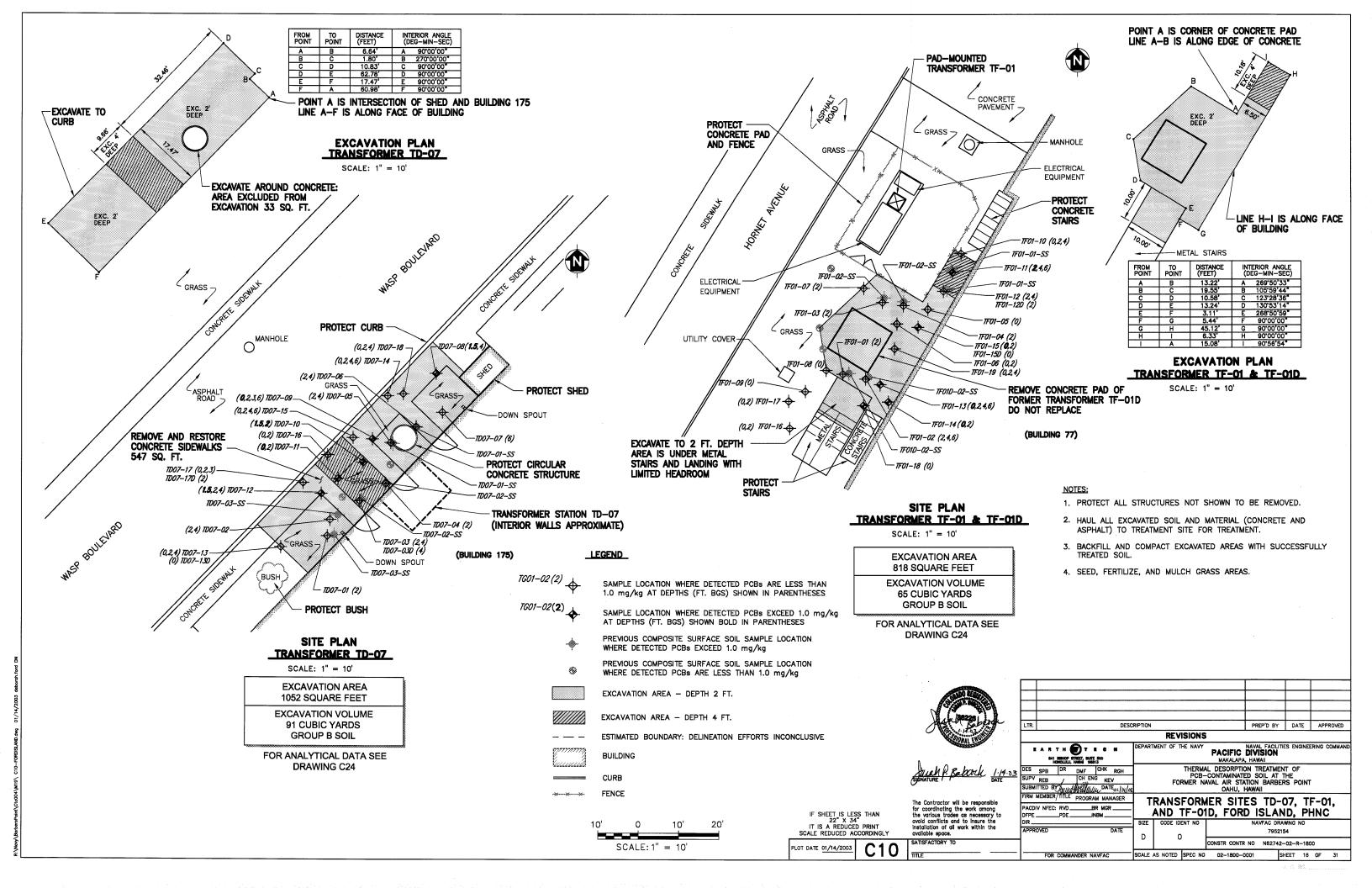


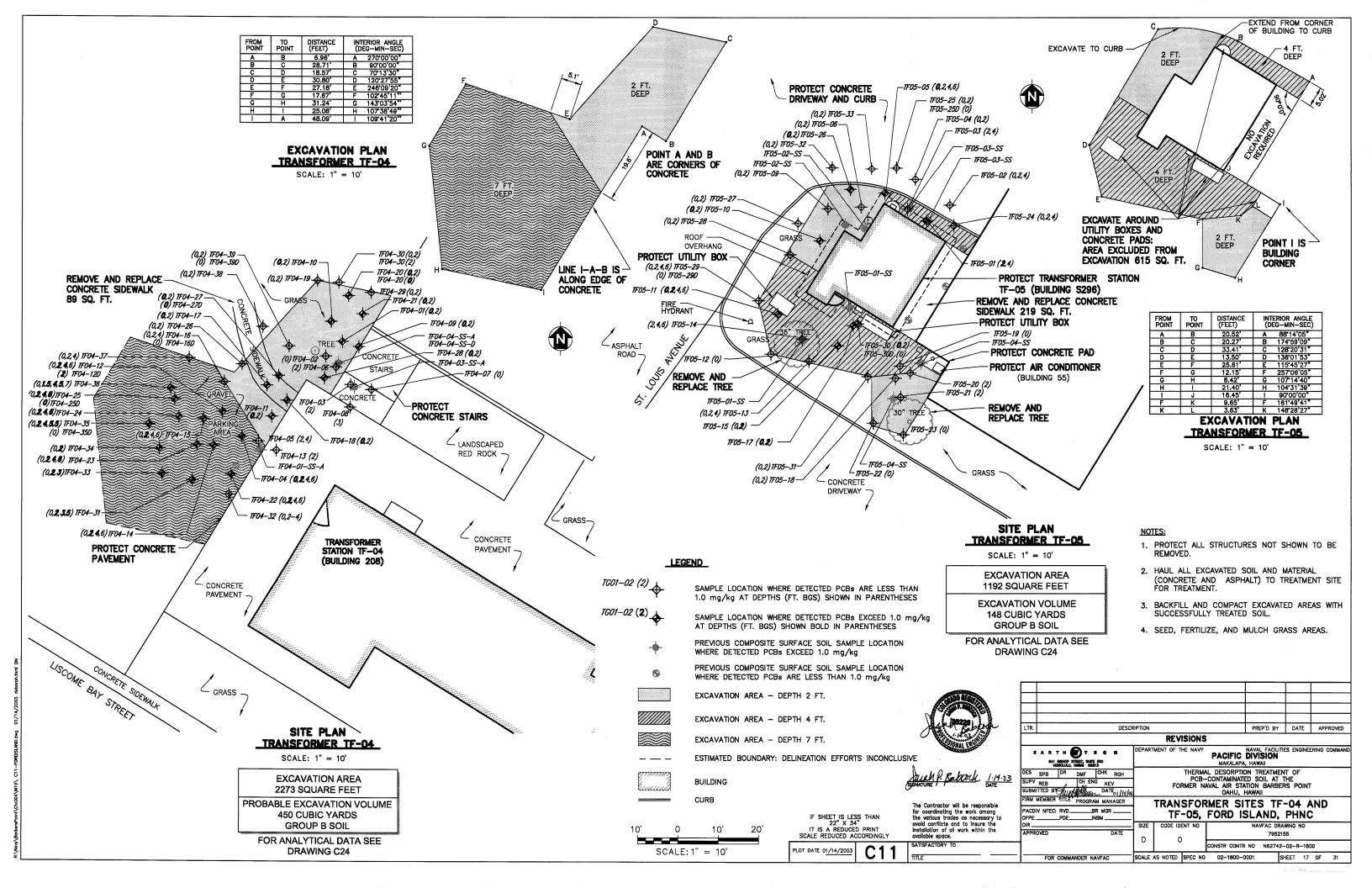


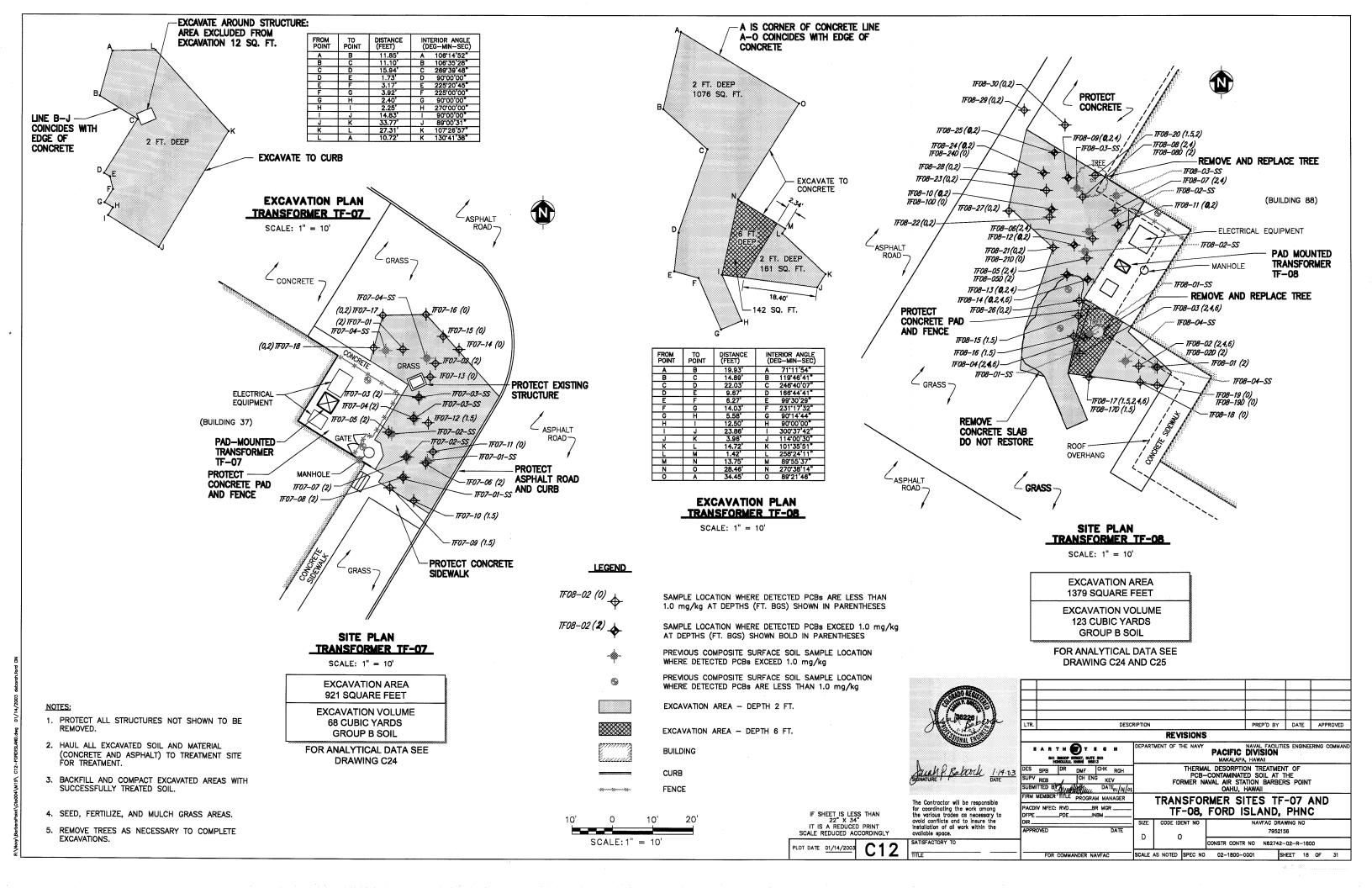


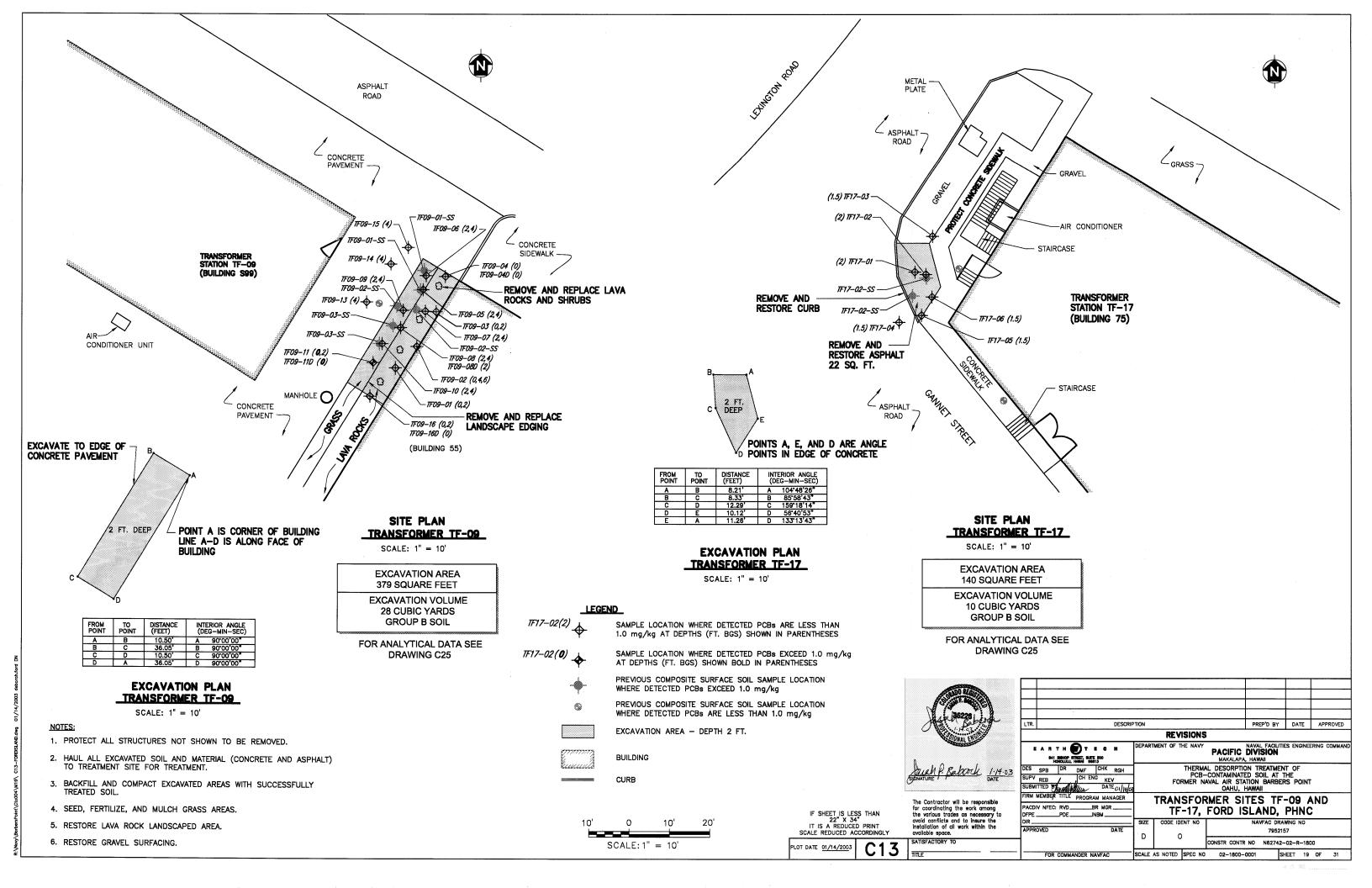


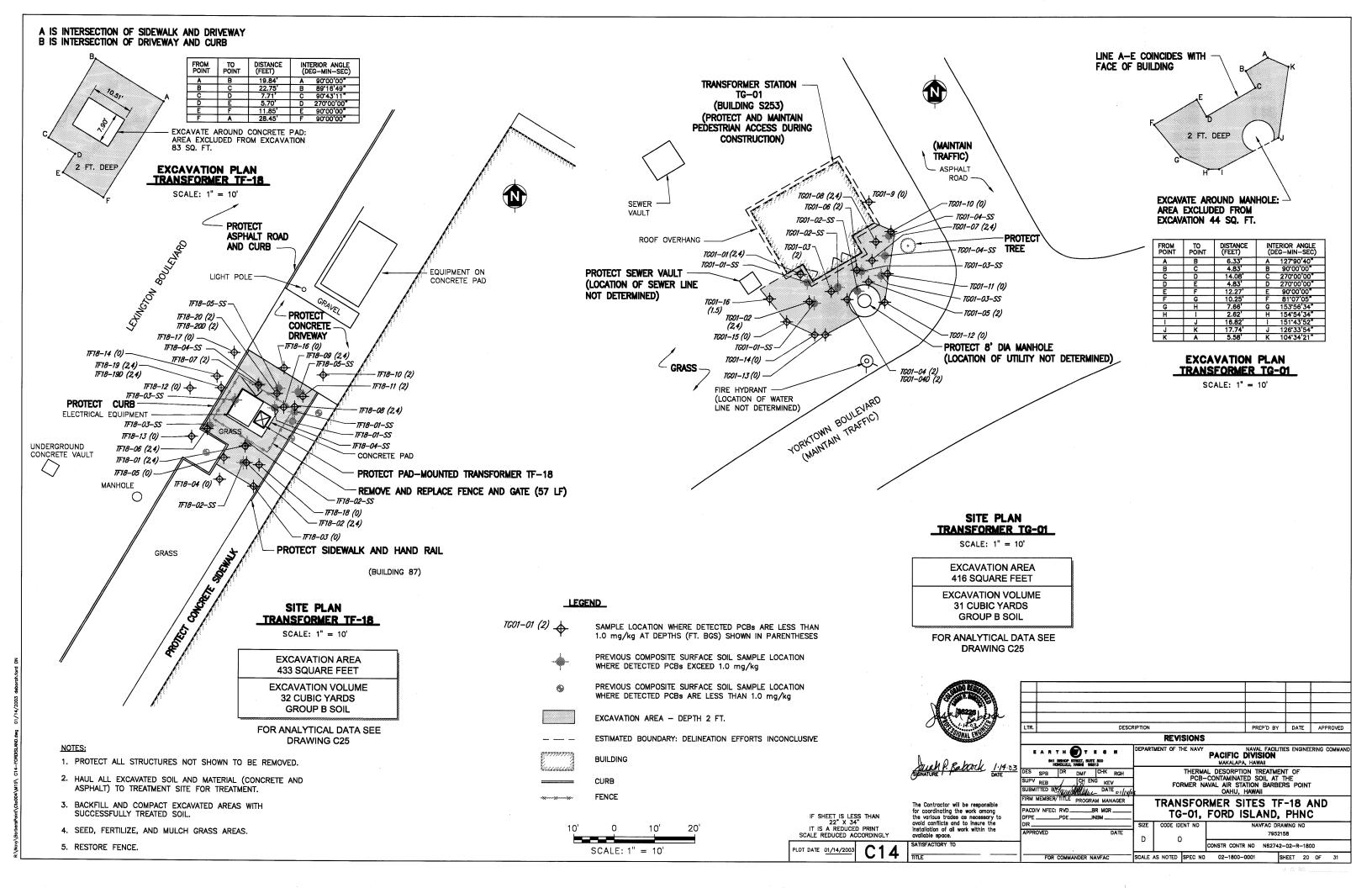


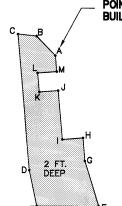










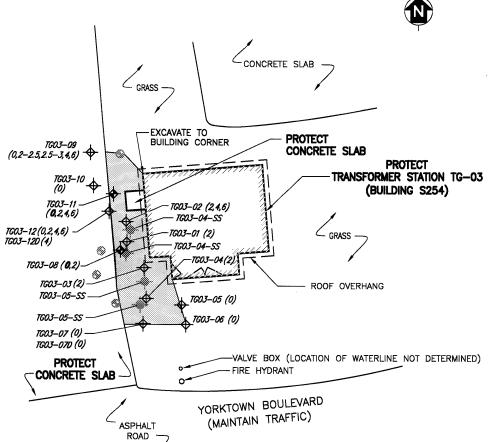


POINTS A, I, H, AND G ARE BUILDING CORNERS

FROM POINT	TO POINT	DISTANCE (FEET)	INTERIOR ANGLE (DEG-MIN-SEC)	
Α	В	5.66'	Α	141'4'23"
В	С	3.89'	В	139'28'53"
С	D	28.59'	С	79°30'30"
D	E	7.66'	D	173'8'17"
E	F	12.92'	E.	101'40'46"
F	G	10.00'	F	73'6'31"
G	H	4.83'	G	192'33'34"
Н	_	4.33'	Н	89'58'41"
1	J	10.12		269'28'25"
J	К	4.00'	J	90'30'0"
K	L	4.00'	К	269'30'0"
L	М	4.00'	L	270'30'0"
М	Α	3.42'	М	89'30'0"

EXCAVATION PLAN TRANSFORMER TG-03

SCALE: 1" = 10'



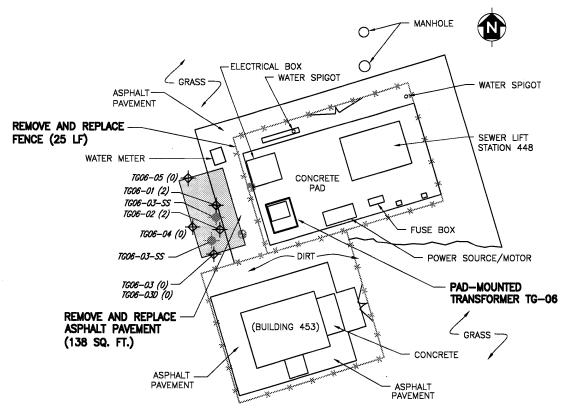
SITE PLAN TRANSFORMER TG-03

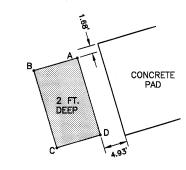
SCALE: 1" = 10'

EXCAVATION AREA 310 SQUARE FEET

EXCAVATION VOLUME 23 CUBIC YARDS **GROUP B SOIL**

FOR ANALYTICAL DATA SEE **DRAWING C25**





FROM POINT	TO POINT	DISTANCE (FEET)	INTERIOR ANGLE (DEG-MIN-SEC)
Α	В	9.49'	A 90°00'00"
В	С	16.75'	B 90°00'00"
С	D	9.49'	C 90°00'00"
D	A	16.75'	D 90.00,00,

EXCAVATION PLAN TRANSFORMER TG-06

SCALE: 1" = 10'

SITE PLAN TRANSFORMER TG-06

SCALE: 1" = 10'

EXCAVATION AREA 159 SQUARE FEET

EXCAVATION VOLUME 12 CUBIC YARDS **GROUP B SOIL**

FOR ANALYTICAL DATA SEE **DRAWING C25**

FOR COMMANDER NAVFAC

- 1. PROTECT ALL STRUCTURES NOT SHOWN TO BE REMOVED.
- 2. HAUL ALL EXCAVATED SOIL AND MATERIAL (CONCRETE AND ASPHALT) TO TREATMENT SITE FOR TREATMENT.
- 3. BACKFILL AND COMPACT EXCAVATED AREAS WITH SUCCESSFULLY
- 4. SEED, FERTILIZE, AND MULCH GRASS AREAS.

LEGEND

TG03-01 (2)

SAMPLE LOCATION WHERE DETECTED PCBs ARE LESS THAN 1.0 mg/kg AT DEPTHS (FT. BGS) SHOWN IN PARENTHESES

TG03-08 (**2**)

SAMPLE LOCATION WHERE DETECTED PCBs EXCEED 1.0 mg/kg AT DEPTHS (FT. BGS) SHOWN BOLD IN PARENTHESES

PREVIOUS COMPOSITE SURFACE SOIL SAMPLE LOCATION WHERE DETECTED PCBs EXCEED 1.0 mg/kg

PREVIOUS COMPOSITE SURFACE SOIL SAMPLE LOCATION WHERE DETECTED PCBs ARE LESS THAN 1.0 mg/kg

EXCAVATION AREA - DEPTH 2 FT.



FENCE

10' SCALE: 1'' = 10'

BUILDING

IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT SCALE REDUCED ACCORDINGLY

C15 PLOT DATE 01/14/2003

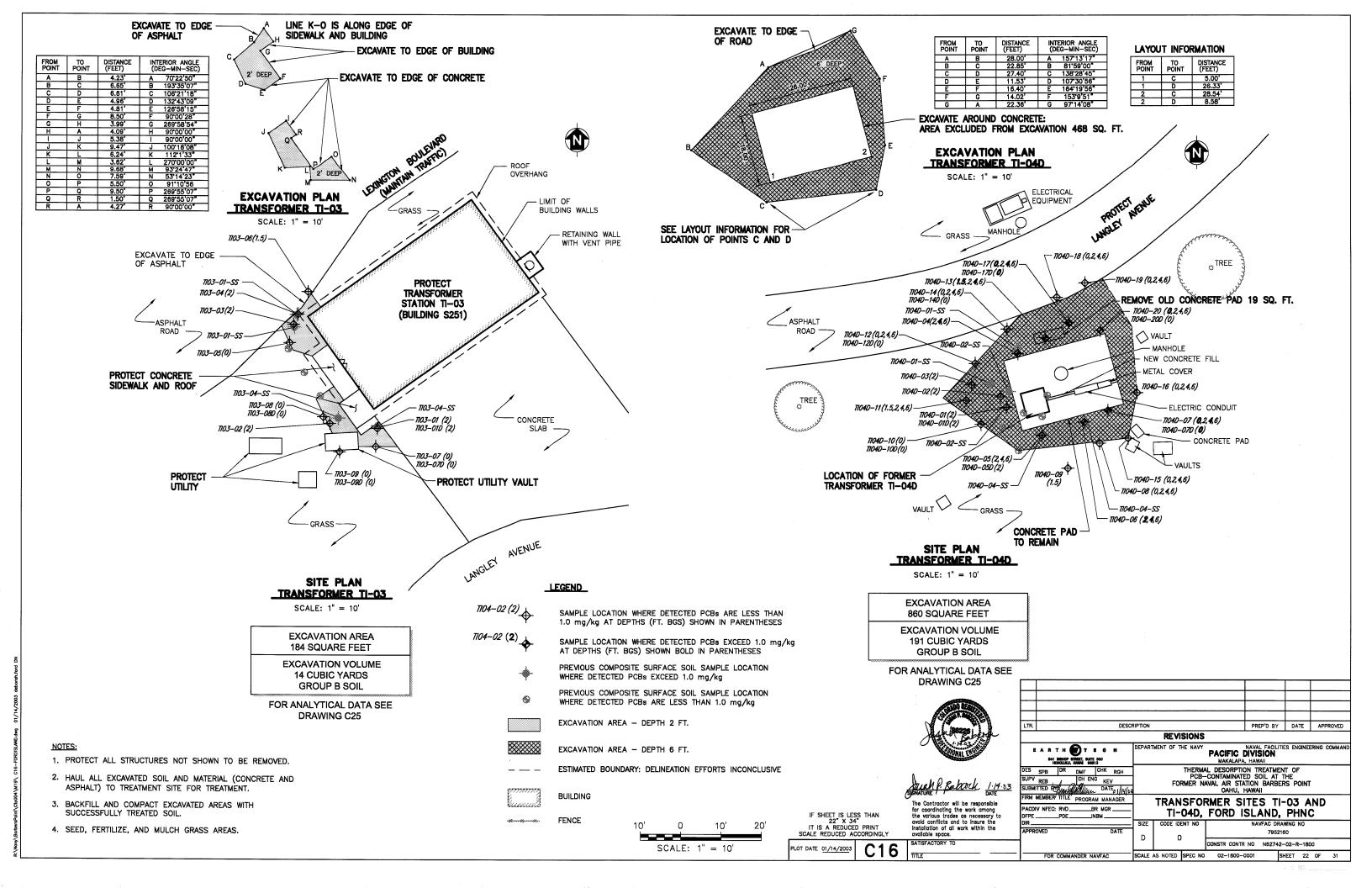
The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space. SATISFACTORY TO

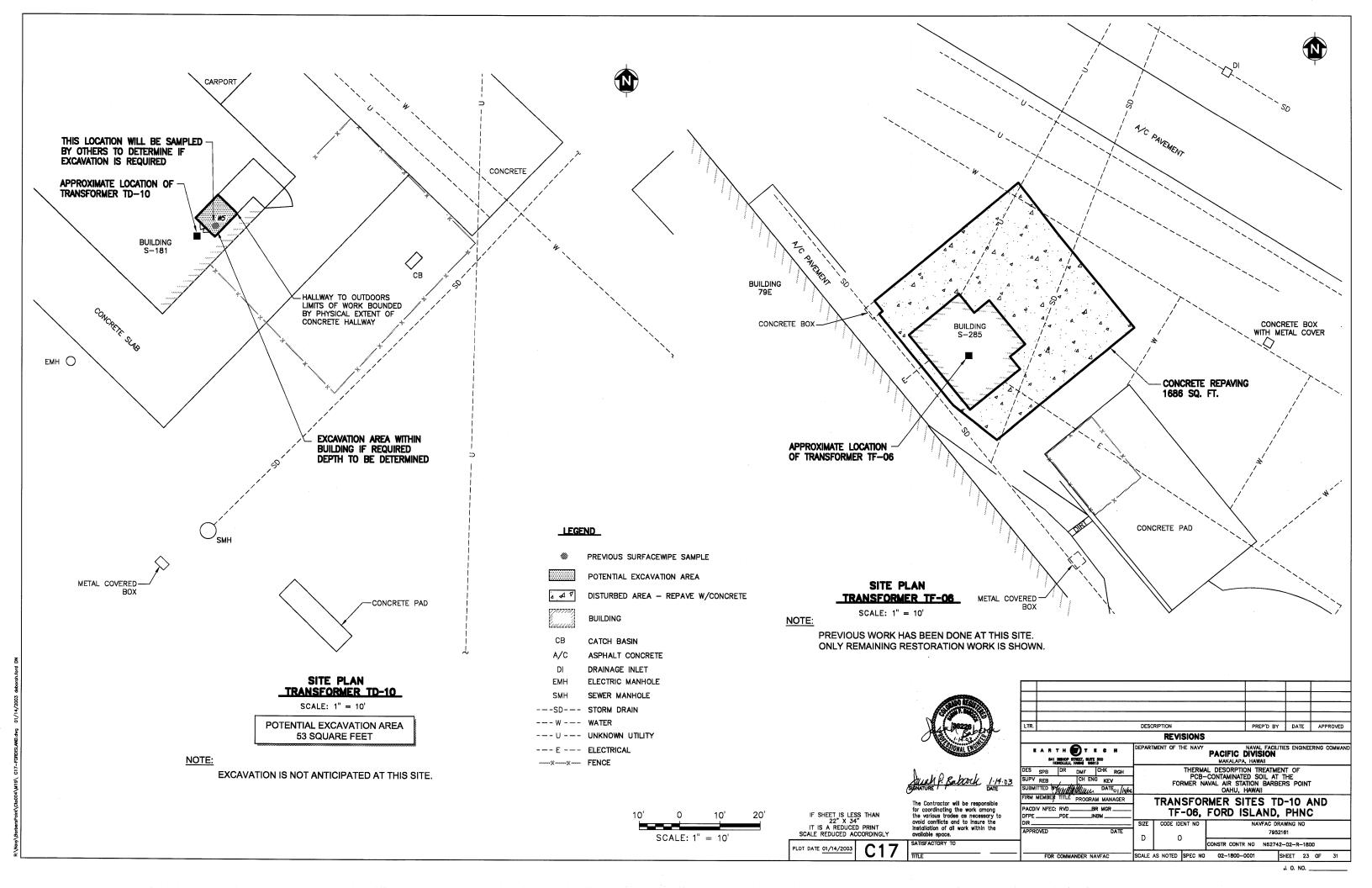
DESCRIPTION PREP'D BY DATE APPROVED REVISIONS PACIFIC DIVISION EARTH TE C H MAKALAPA, HAWAII

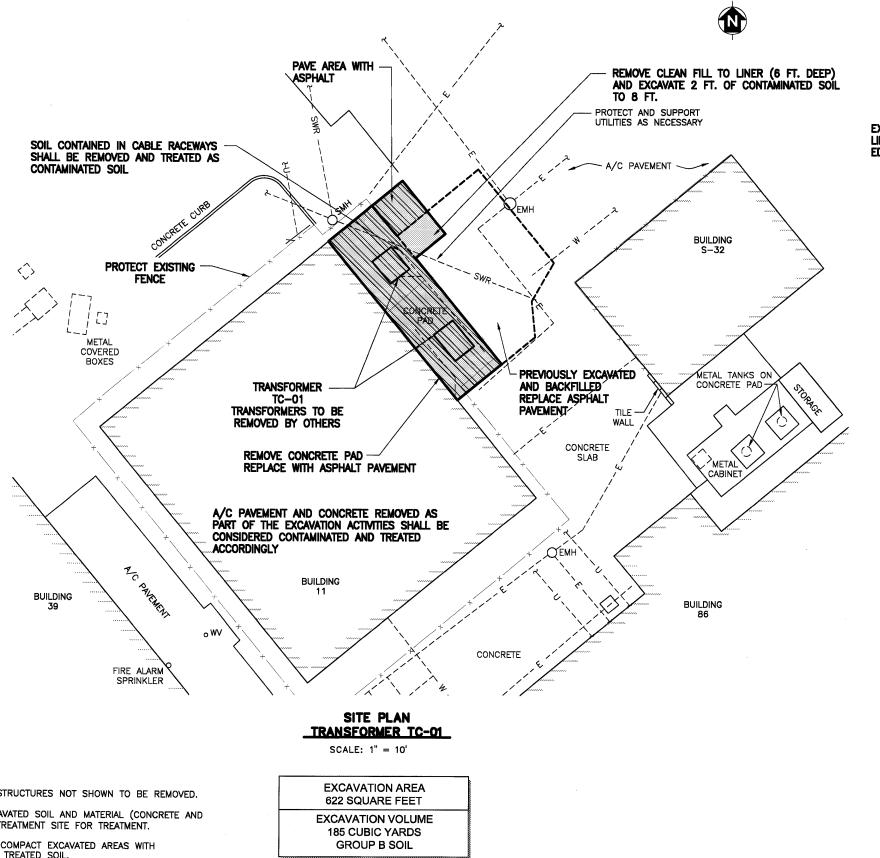
THERMAL DESORPTION TREATMENT OF POB-CONTAMINATED SOIL AT THE FORMER NAVAL AIR STATION BARBERS POINT OAHU, HAWAII 841 BISHOP STREET, SUITE 500 HONOLULU, HARAI 96813 DES SPB DR DMF CHK RGH
SUPV REB / CH ENG KEV SUBMITTED BY TITLE PROGRAM MANAGER TRANSFORMER SITES TG-03 AND PACDIV NFEC: RVD_ BR MGR TG-06, FORD ISLAND, PHNC 7952159 CONSTR CONTR NO N62742-02-R-1800

SCALE AS NOTED SPEC NO 02-1800-0001

SHEET 21 OF 31







POINT A IS CORNER OF BUILDING REMOVE CLEAN FILL TO LINER (6 FT. DEEP) AND EXCAVATE 2 FT. OF CONTAMINATED SOIL EXCAVATE TO BUILDING — LINE A—F COINCIDES WITH EDGE OF BUILDING

FROM POINT	TO POINT	DISTANCE (FEET)	INTERIOR ANGLE (DEG-MIN-SEC)
Α	В	19.90'	A 90°00'00"
В	С	14.18'	B 90'00'00"
С	D	8.00'	C 90.00,00,
D	E	28.52'	D 270'00'00"
E	F	11.90'	E 90°00'00"
F	A	42.70'	F 90°00'00"

EXCAVATION PLAN TRANSFORMER TC-01

SCALE: 1" = 10'

LEGEND

EXCAVATION AREA - DEPTH 2 FT. ADDITIONAL AFTER REMOVING 6 FT. OF CLEAN FILL

EXCAVATION AREA - DEPTH 8 FT.

BUILDING

ASPHALT CONCRETE

ELECTRIC MANHOLE EMH

SEWER MANHOLE WATER VALVE

---SD--- STORM DRAIN

--- U --- UNKNOWN UTILITY

---E --- ELECTRICAL

--SWR-- SEWER

----×---- FENCE

FOR COMMANDER NAVFAC

DESCRIPTION PREP'D BY DATE APPROVED REVISIONS

EARTH TE CH

841 BISHOP STREET, SUITE 500
HONOLULU, HWAM 98513 PACIFIC DIVISION THERMAL DESORPTION TREATMENT OF PCB—CONTAMINATED SOIL AT THE FORMER NAVAL AIR STATION BARBERS POINT OAHU, HAWAII SUBMITTED BY JUME DATE JULIC
FIRM MEMBER TITLE PROGRAM MANAGER TRANSFORMER SITE TC-01 PACDIV NFEC: RVD_____BR MGR_ FORD ISLAND, PHNC

> 7952162 CONSTR CONTR NO N62742-02-R-1800 SCALE AS NOTED SPEC NO 02-1800-0001

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT

SCALE REDUCED ACCORDINGLY

SCALE: 1'' = 10'

C18

1. PROTECT ALL STRUCTURES NOT SHOWN TO BE REMOVED.

2. HAUL ALL EXCAVATED SOIL AND MATERIAL (CONCRETE AND ASPHALT) TO TREATMENT SITE FOR TREATMENT.

3. BACKFILL AND COMPACT EXCAVATED AREAS WITH SUCCESSFULLY TREATED SOIL.

4. SEED, FERTILIZE AND MULCH GRASS AREAS.

5. RESTORE ASPHALTIC CONCRETE PAVEMENT WHERE REMOVED.

6. RESTORE PORTLAND CEMENT CONCRETE PAVEMENT WHERE REMOVED.

6' OF CLEAN FILL (11 CUBIC YARDS) INCLUDED IN VOLUME

PREVIOUS WORK HAS BEEN DONE AT THIS SITE. ONLY REMAINING WORK IS SHOWN.

LEGEND

EMH

DISTURBED AREA — RESEED

ELECTRIC MANHOLE SEWER MANHOLE

BUILDING CATCH BASIN ASPHALT CONCRETE

---SD--- STORM DRAIN --- W --- WATER

--- U --- UNKNOWN UTILITY ---E --- ELECTRICAL -----% ----- FENCE

DISTURBED AREA - REPAVE W/CONCRETE

The Contractor will be responsible for coordinating the work among the vorious trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

DFPE _____PDE __

FOR COMMANDER NAVFAC

PACIFIC DIVISION
MAKALAPA, HAWAII EARTH TEG H THERMAL DESORPTION TREATMENT OF PCB-CONTAMINATED SOIL AT THE FORMER NAVAL AIR STATION BARBERS POINT OAHU, HAWAII TRANSFORMER SITE TF-10

REVISIONS

FORD ISLAND, PHNC

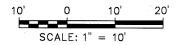
CONSTR CONTR NO N62742-02-R-1800 SCALE AS NOTED SPEC NO 02-1800-0001 SHEET 25 OF 31

TRANSFORMER TF-10

SCALE: 1" = 10'

NOTE:

PREVIOUS WORK HAS BEEN DONE AT THIS SITE. ONLY REMAINING RESTORATION WORK IS SHOWN.

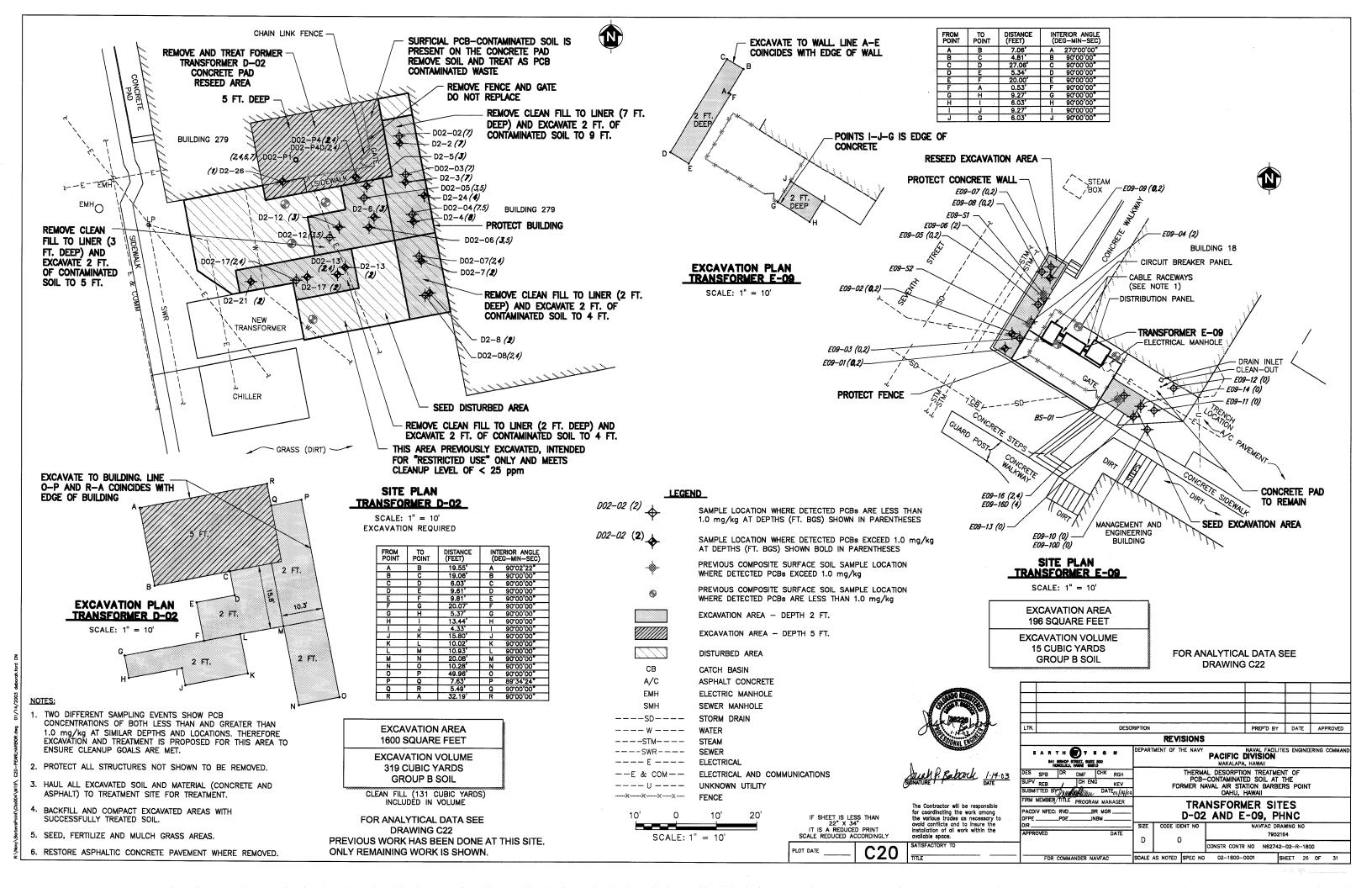


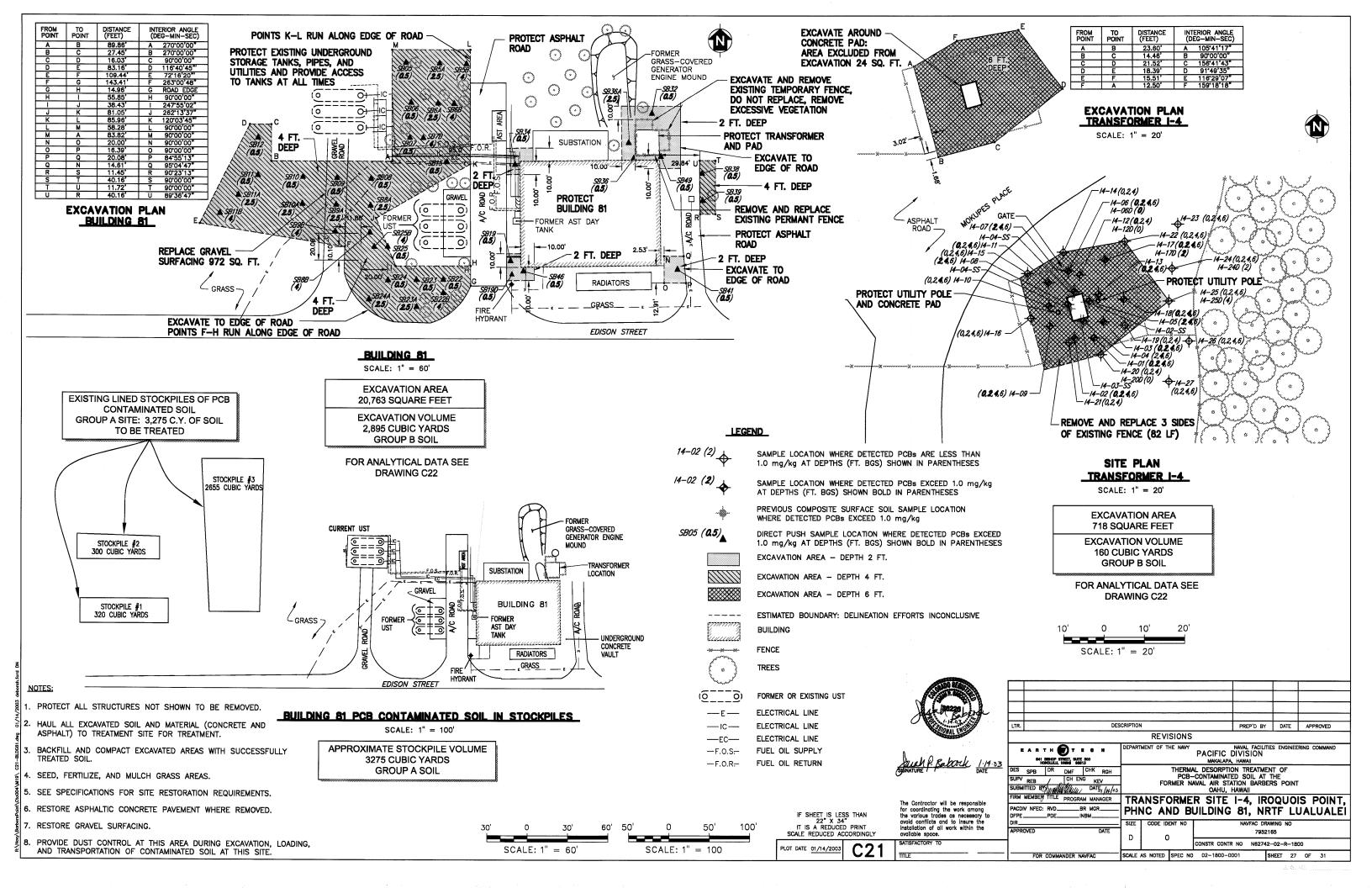
IF SHEET IS LESS THAN
22" X 34"
IT IS A REDUCED PRINT
SCALE REDUCED ACCORDINGLY

PLOT DATE 01/14/2003

SATISFACTORY TO

PREP'D BY DATE APPROVED





FORMER DRUM CRUSHING AREA SEE SHEET C4

DCA-10D	FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)/ PESTICIDES (mg/kg)
DCA-02 DCA-02 DCA-02 2				4, 4'-DDT 3.9
DCA-02				
DCA-02 DCA-02 DCA-02 A 2/1/2002 ND DCA-03 DCA-04 DCA-03 DCA-04 DCA-04 DCA-04 DCA-04 DCA-04 DCA-04 DCA-05 DCA-05 DCA-05 DCA-05 DCA-05 DCA-06 DCA-07 DCA-06 DCA-07 DCA-07 DCA-07 DCA-07 DCA-08 DCA-08 DCA-09 DC	DCA-02	١٥	2/1/2002	
DCA-02 DCA-02 DCA-02 DCA-03 DCA-04 DCA-04 DCA-04 DCA-04 DCA-04 DCA-04 DCA-04 DCA-05 DCA-05 DCA-05 DCA-05 DCA-05 DCA-05 DCA-05 DCA-05 DCA-06 DCA-07 DCA-08 DCA-07 DCA-08 DCA-07 DCA-08 DCA-08 DCA-08 DCA-08 DCA-09 DCA-08 DCA-09 DCA-08 DCA-09 DCA-08 DCA-09 DC	DCA-02	1 2	2/1/2002	
DCA-02 DCA-03 DCA-04 DCA-04 DCA-04 DCA-04 DCA-04 DCA-04 DCA-05 DCA-05 DCA-05 DCA-05 DCA-05 DCA-05 DCA-06 DCA-06 DCA-06 DCA-06 DCA-06 DCA-06 DCA-06 DCA-06 DCA-06 DCA-07 DCA-08 DCA-08 DCA-08 DCA-07 DCA-07 DCA-08 DCA-07 DCA-08 DCA-07 DCA-08 DCA-09 DCA-08 DCA-09 DC				
DCA-03 0				
DCA-03 DCA-03 DCA-03 DCA-03 DCA-03 DCA-03 DCA-03 DCA-04 DCA-05 DCA-05 DCA-05 DCA-05 DCA-05 DCA-06 DCA-07 DCA-08 DCA-07 DCA-08 DCA-08 DCA-08 DCA-08 DCA-08 DCA-08 DCA-08 DCA-09 DC				4, 4'-DDE 60
DCA-03	DCA 07		2 /4 /2222	
DCA-03 DCA-04 DCA-05 DCA-04 DCA-05 DCA-05 DCA-05 DCA-05 DCA-05 DCA-05 DCA-06 DCA-07 DCA-06 DCA-07 DCA-08 DCA-08 DCA-07 DCA-08 DCA-08 DCA-08 DCA-08 DCA-08 DCA-08 DCA-08 DCA-08 DCA-09 DCA-08 DCA-09 DCA-10 DCA-10 DCA-11 DCA-11 DCA-11 DCA-11 DCA-11 DCA-12 DCA-12 DCA-13 DCA-13 DCA-14 DCA-14 DCA-15 DCA-15 DCA-15 DCA-15 DCA-15 DCA-15 DCA-15 DCA-16 DCA-17 DCA-17 DCA-17 DCA-17 DCA-18 DCA-18 DCA-19 DCA-19 DCA-19 DCA-19 DCA-10 DCA-11 DC				
DCA-04 DCA-06 DCA-05 DCA-05 DCA-05 DCA-05 DCA-05 DCA-05 DCA-06 DCA-07 DCA-06 DCA-07 DCA-08 DCA-07 DCA-08 DCA-07 DCA-08 DCA-08 DCA-08 DCA-08 DCA-09 DCA-08 DCA-09 DCA-10 DCA-10 DCA-10 DCA-10 DCA-11 DCA-11 DCA-11 DCA-11 DCA-11 DCA-11 DCA-11 DCA-11 DCA-11 DCA-12 DCA-12 DCA-13 DCA-14 DCA-15 DCA-16 DCA-17 DCA-17 DCA-17 DCA-17 DCA-17 DCA-17 DCA-18 DCA-18 DCA-18 DCA-18 DCA-19 DC				
DGA-04 DGA-04 DGA-04 DGA-04 DGA-04 DGA-04 DGA-04 DGA-04 DGA-05 DGA-06 DGA-07 DGA-08 DGA-08 DGA-08 DGA-08 DGA-08 DGA-08 DGA-08 DGA-09 DGA-10 DGA-10 DGA-10 DGA-10 DGA-10 DGA-11 DGA-12 DGA-13 DGA-14 DGA-14 DGA-13 DGA-14 DGA-14 DGA-15 DGA-16 DGA-16 DGA-16 DGA-17 DGA-17 DGA-18 DGA-19 DGA-19 DGA-11				
DCA-04 DCA-04 DCA-04 E DCA-05 DCA-05 DCA-05 DCA-05 DCA-05 DCA-05 DCA-05 E DCA-05 DCA-05 DCA-05 DCA-06 DCA-07 DCA-08 DCA-07 DCA-08 DCA-07 DCA-08 DCA-07 DCA-08 DCA-08 DCA-08 DCA-08 DCA-08 DCA-09 DCA-08 DCA-09 DCA-10 DCA-11 DCA-11 DCA-11 DCA-11 DCA-12 DCA-12 DCA-13 DCA-13 DCA-14 DCA-13 DCA-14 DCA-15 DCA-15 DCA-16 DCA-16 DCA-17 DCA-17 DCA-17 DCA-18 DCA-18 DCA-19 DCA-19 DCA-10 DCA-10 DCA-11 DCA-11 DCA-11 DCA-12 DCA-13 DCA-14 DCA-15 DCA-16 DCA-16 DCA-17 DCA-17 DCA-17 DCA-18 DCA-18 DCA-19 DCA-19 DCA-10 DCA-10 DCA-10 DCA-10 DCA-11 DCA-11 DCA-11 DCA-11 DCA-12 DCA-11 DCA-11 DCA-11 DCA-11 DCA-12 DCA-13 DCA-14 DCA-15 DCA-16 DCA-16 DCA-17 DCA-17 DCA-16 DCA-17 DCA-17 DCA-18 DCA-19 DCA-19 DCA-19 DCA-10 DCA-10 DCA-11 DCA-11 DCA-11 DCA-11 DCA-11 DCA-11 DCA-11 DCA-12 DCA-13 DCA-14 DCA-15 DCA-15 DCA-16 DCA-16 DCA-17 DCA-16 DCA-17 DCA-17 DCA-17 DCA-18 DCA-19 DCA-19 DCA-19 DCA-19 DCA-19 DCA-11 DCA-11 DCA-11 DCA-11 DCA-11 DCA-11 DCA-11 DCA-12 DCA-13 DCA-14 DCA-15 DCA-15 DCA-16 DCA-16 DCA-17 DCA-17 DCA-17 DCA-17 DCA-18 DCA-19 DC				
DCA-04 6 2/1/2002 ND DCA-05 1 2/1/2002 ND DCA-05 1 2/1/2002 ND DCA-05 1 2/1/2002 ND DCA-05 2 2/1/2002 ND DCA-05 4 2/1/2002 ND DCA-05 6 2/1/2002 ND DCA-06 0 2/1/2002 ND DCA-06 2 2/1/2002 ND DCA-06 2 2/1/2002 ND DCA-06 4 2/1/2002 ND DCA-06 4 2/1/2002 ND DCA-06 5.5 2/1/2002 ND DCA-07 2 2/1/2002 N, 4'-DDE 81 N'-DDD 12 DCA-07 4 2/1/2002 ND DCA-08 2 2/1/2002 ND DCA-08 2 2/1/2002 ND DCA-08 4 2/1/2002 ND DCA-08 4 2/1/2002 ND DCA-08 6 2/1/2002 ND DCA-09 0 2/1/2002 ND DCA-09 0 2/1/2002 ND DCA-09 1 2/1/2002 ND DCA-10 1 2/1/2002 ND DCA-11 1 2 2/1/2002 ND DCA-10 1 2/1/2002 ND DCA-11 1 2 2/1/2002 ND DCA-12 1 4 2/1/2002 ND DCA-13 0 2/1/2002 ND DCA-14 1 2/1/2002 ND DCA-15 0 2/1/2002 ND DCA-16 1 2/1/2002 ND DCA-17 0 6 2/1/2002 ND DCA-10 6 2/1/2002 ND DCA-11 0 0 2/1/2002 ND DCA-12 0 0 2/1/2002 ND DCA-13 0 2/1/2002 ND DCA-14 0 0 2/1/2002 ND DCA-15 0 0 2/1/2002 ND DCA-16 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				
DCA-05 DCA-06 DCA-07 DCA-06 DCA-07 DCA-08 DCA-07 DCA-07 DCA-08 DCA-07 DCA-08 DCA-08 DCA-08 DCA-08 DCA-08 DCA-09 DCA-10 DCA-10 DCA-11 DC				
DCA-05 2 2/1/2002 ND DCA-05 4 2/1/2002 ND DCA-05 6 2/1/2002 ND DCA-06 0 2/1/2002 ND DCA-06 1 2/1/2002 ND DCA-06 DCA-06 2 2/1/2002 ND DCA-06 DCA-06 1 2/1/2002 ND DCA-06 DCA-06 1 2/1/2002 ND DCA-06 DCA-06 DCA-07 2 2/1/2002 4, 4'-DDE 2.8 DCA-07 2 2/1/2002 4, 4'-DDE 12 DCA-07 6 2/1/2002 4, 4'-DDE 11 DCA-08 2 2/1/2002 4, 4'-DDE 11 DCA-08 2 2/1/2002 ND DCA-08 1 2/1/2002 ND DCA-08 DCA-09 DCA-08 4 2/1/2002 ND DCA-09 DCA-09 DCA-09 DCA-09 1 2/1/2002 ND DCA-09 DCA-10 DCA-10 DCA-10 DCA-10 DCA-10 DCA-11 DCA-11 DCA-11 DCA-11 DCA-11 DCA-11 DCA-12 DCA-12 DCA-13 DCA-13 DCA-14 DCA-14 DCA-15 DCA-16 DCA-17 DCA-17 DCA-17 DCA-18 DCA-19 DCA-19 DCA-19 DCA-19 DCA-10 DCA-10 DCA-11 DCA-11 DCA-11 DCA-11 DCA-11 DCA-12 DCA-13 DCA-14 DCA-14 DCA-15 DCA-15 DCA-16 DCA-17 DCA-17 DCA-17 DCA-17 DCA-18 DCA-19 DCA-1				
DCA-05				
DCA-05 6 2/1/2002 ND DCA-06 0 2/1/2002 4, 4'-DDE 2.8 DCA-06 2 2/1/2002 ND DCA-06 2 2/1/2002 ND DCA-06 4 2/1/2002 ND DCA-06 4 2/1/2002 ND DCA-06 4 2/1/2002 ND DCA-06 5.5 2/1/2002 A, 4'-DDE 2.8 DCA-07 2 2/1/2002 A, 4'-DDE 81 4, 4'-DDE 12 DCA-07 4 2/1/2002 A, 4'-DDE 11 DCA-07 6 2/1/2002 A, 4'-DDE 11 DCA-07 6 2/1/2002 A, 4'-DDE 11 DCA-08 2 2/1/2002 A, 4'-DDE 12 DCA-08 2 2/1/2002 ND DCA-08 6 2/1/2002 ND DCA-09 0 2/1/2002 ND DCA-09 0 2/1/2002 ND DCA-09 1 2/1/2002 ND DCA-09 1 2/1/2002 ND DCA-09 4 2/1/2002 ND DCA-09 4 2/1/2002 ND DCA-09 4 2/1/2002 ND DCA-09 6 2/1/2002 ND DCA-09 6 2/1/2002 ND DCA-09 6 2/1/2002 ND DCA-10 1 2/1/2002 ND DCA-10 1 2/1/2002 ND DCA-10 1 2/1/2002 ND DCA-10 1 2/1/2002 ND DCA-11 0 0 0/1/2002 ND DCA-11 0 0 0/1/2002 ND DCA-11 0 0 0/1/2002 ND DCA-12 0 0 0/1/2002 ND DCA-13 0 0 0/1/2002 ND DCA-13 0 0 0/1/2002 ND DCA-14 0 0 0/1/2002 ND DCA-15 0 0/1/2002 ND DCA-16 0 0/1/2002 ND DCA-17 0 0/1/2002 ND DCA-18 0 0/1/2002 ND DCA-19 0 0/1/2002 ND DCA-19 0 0/1/2002 ND DCA-10 0 0/1/2002 ND DCA-11 0 0 0/1/2002 ND DCA-12 0 0 0/1/2002 ND DCA-13 0 0 0/1/2002 ND DCA-14 0 0 0/1/2002 ND DCA-15 0 0/1/2002 ND DCA-16 0 0 0/1/2002 ND DCA-17 0 0 0/1/2002 ND DCA-18 0 0 0/1/2002 ND DCA-19 0 0/1/2002 ND DCA-19 0				
DCA-06		6		
DCA-06 DCA-07 DCA-06 DCA-07 DCA-07 DCA-07 DCA-07 DCA-07 DCA-07 DCA-07 DCA-07 DCA-07 DCA-08 DCA-07 DCA-08 DCA-08 DCA-08 DCA-08 DCA-08 DCA-08 DCA-08 DCA-09 DCA-09 DCA-09 DCA-09 DCA-09 DCA-09 DCA-10 DCA-10 DCA-10 DCA-10 DCA-11 DC	DCA-06	0		
DCA-06 DCA-06 DCA-06 DCA-06 DCA-06 DCA-06 DCA-06 DCA-07 DCA-06 DCA-07 DCA-06 DCA-07 DCA-08 DCA-07 DCA-08 DCA-09 DCA-10 DCA-10 DCA-10 DCA-10 DCA-10 DCA-11 DCA-12 DCA-12 DCA-13 DCA-13 DCA-14 DCA-14 DCA-14 DCA-15 DCA-15 DCA-14 DCA-15 DCA-16 DCA-17 DCA-17 DCA-17 DCA-18 DCA-18 DCA-19 DCA-19 DCA-19 DCA-19 DCA-10 DCA-10 DCA-10 DCA-11 DCA-12 DCA-11 DCA-12 DCA-13 DCA-14 DCA-14 DCA-15 DCA-16 DCA-17 DC	DCA-06	2		
DCA-06 DCA-07 DCA-08 DCA-07 DCA-08 DCA-07 DCA-08 DCA-07 DCA-08 DCA-07 DCA-08 DCA-08 DCA-08 DCA-08 DCA-08 DCA-08 DCA-08 DCA-09 DCA-09 DCA-09 DCA-09 DCA-09 DCA-09 DCA-09 DCA-10 DCA-10 DCA-10 DCA-10 DCA-11 DCA-12 DCA-12 DCA-13 DCA-13 DCA-14 DCA-14 DCA-14 DCA-14 DCA-15 DCA-15 DCA-15 DCA-16 DCA-17 DCA-17 DCA-17 DCA-17 DCA-18 DCA-18 DCA-18 DCA-19 DCA-19 DCA-19 DCA-19 DCA-10 DCA-10 DCA-10 DCA-10 DCA-11 DC				
DCA-08 5.5 2/1/2002 4, 4'-DDE 2.8 DCA-07 2 2/1/2002 4, 4'-DDE 81 DCA-07 4 2/1/2002 4, 4'-DDE 81 4, 4'-DDB 12 4, 4'-DDE 11 12 DCA-07 6 2/1/2002 4, 4'-DDE 11 DCA-08 2 2/1/2002 4, 4'-DDE 140 4, 4'-DDB 130 140 4, 4'-DDE 140 4, 4'-DDB 130 1200 ND 120 DCA-08 6 2/1/2002 ND 120 DCA-09 0 2/1/2002 4, 4'-DDE 90 4, 4'-DDB 30 4, 4'-DDD 35 DCA-09 4 2/1/2002 ND ND DCA-10 2 2/1/2002 ND ND DCA-10 4 2/1/2002 ND 4, 4'-DDE 19 DCA-10 4 2/1/2002 ND ND ND DCA-11 <td></td> <td></td> <td></td> <td></td>				
DCA-07 2 2/1/2002				
DCA-07				
DCA-07				4, 4'-DDD 12
DCA-07 DCA-08 DCA-09 DCA-10 DCA-10 DCA-10 DCA-10 DCA-10 DCA-11 DCA-12 DCA-12 DCA-12 DCA-13 DCA-13 DCA-14 DCA-14 DCA-14 DCA-15 DCA-15 DCA-15 DCA-16 DCA-17 DCA-17 DCA-17 DCA-18 DCA-18 DCA-19 DC	DCA-07	4	2/1/2002	
DCA-08 2	DCA-07	- 6	2 /1 /2002	
DCA-08				
DCA-08 4 2/1/2002 ND DCA-08 6 2/1/2002 ND DCA-09 0 2/1/2002 4, 4'-DDE 90 4 4'-DDD 230 4, 4'-DDD 230 DCA-09 2 2/1/2002 ND ND DCA-09 6 2/1/2002 ND ND DCA-10 2 2/1/2002 ND 100 DCA-10 4 2/1/2002 ND 140 A, 4'-DDT 51 51 51 DCA-10 4 2/1/2002 4, 4'-DDE 19 A, 4'-DDT 51 51 51 51 DCA-10 4 2/1/2002 4, 4'-DDE 6.2 19 DCA-11 0 2/4/2002 4, 4'-DDE 6.2 19 DCA-11 0 2/4/2002 4, 4'-DDE 1.6 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8	DON GO	1 -	2/1/2002	
DCA-08 6 2/1/2002 ND DCA-09 0 2/1/2002 4, 4'-DDE 90 DCA-09 2 2/1/2002 4, 4'-DDE 90 DCA-09 2 2/1/2002 ND DCA-0D 35 DCA-09 6 2/1/2002 ND DCA-0D DCA-0D ND DCA-0D ND DCA-0D ND DCA-0D ND DCA-0D ND DCA-14 4, 4'-DDE 100 14, 4'-DDE 100 14, 4'-DDE 100	DCA-08	4	2/1/2002	
DCA-09 0 2/1/2002 4, 4'-DDE 90 DCA-09 2 2/1/2002 4, 4'-DDE 55 DCA-09 4 2/1/2002 ND DCA-09 6 2/1/2002 ND DCA-10 2 2/1/2002 4, 4'-DDE 100 4, 4'-DDT 4 2/1/2002 4, 4'-DDT 51 DCA-10 4 2/1/2002 4, 4'-DDT 51 DCA-10 4 2/1/2002 4, 4'-DDT 51 DCA-10 4 2/1/2002 4, 4'-DDE 1.9 DCA-10 6 2/1/2002 ND ND DCA-11 0 2/4/2002 ND ND DCA-11 4 2/4/2002 ND ND DCA-11 4 2/4/2002 ND ND DCA-12 0 2/4/2002 ND ND DCA-12 1 2 2/4/2002 ND DCA-12 2 2/4/2002 ND N	DCA-08	6		
DCA-09 2 2/1/2002 4, 4'-DDE 230 DCA-09 4 2/1/2002 ND DCA-09 6 2/1/2002 ND DCA-10 2 2/1/2002 ND DCA-10 2 2/1/2002 ND DCA-10 4 2/1/2002 4, 4'-DDE 100 4, 4'-DDE 151 DCA-10 4 2/1/2002 4, 4'-DDE 151 DCA-10 5 2/1/2002 1, 4'-DDE 151 DCA-10 6 2/1/2002 1, 4'-DDE 151 DCA-10 6 2/1/2002 1, 4'-DDE 151 DCA-11 0 2/4/2002 1, 4'-DDE 161 4, 4'-DDT 8.1 DCA-11 2 2/4/2002 1, 4'-DDE 151 DCA-11 4 2/4/2002 1, 4'-DDE 151 DCA-11 6 2/4/2002 1, 4'-DDE 151 DCA-12 0 2/4/2002 1, 4'-DDE 151 DCA-13 0 2/4/2002 1, 4'-DDE 151 DCA-14 0 2/4/2002 1, 151 DCA-15 0 2/4/2002 1, 151 DCA-16 0 2/4/2002 1, 151 DCA-17 0 0 2/4/2002 1, 151 DCA-18 0 0 2/4/2002 1, 151 DCA-19 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DCA-09	0		
DCA-09			_, .,	
DCA-09 DCA-09 DCA-09 DCA-10 DCA-11 DCA-12 DCA-12 DCA-12 DCA-13 DCA-13 DCA-13 DCA-13 DCA-13 DCA-14 DCA-14 DCA-14 DCA-15 DCA-14 DCA-14 DCA-14 DCA-15 DCA-16 DCA-16 DCA-16 DCA-17 DCA-16 DCA-17 DC	DCA-09	2	2/1/2002	4, 4'-DDE 55
DCA-09 6 2/1/2002 ND DCA-10 2 2/1/2002 4, 4'-DDE 100 4, 4'-DDD 4, 4'-DDD 140 4, 4'-DDD 150 DCA-10 4 2/1/2002 4, 4'-DDE 1.9 4, 4'-DDD 3.9 4, 4'-DDE 6.2 DCA-10 6 2/1/2002 ND DCA-11 0 2/4/2002 4, 4'-DDE 6.2 DCA-11 2 2/4/2002 ND ND DCA-11 4 2/4/2002 ND ND DCA-11 4 2/4/2002 ND ND DCA-11 6 2/4/2002 ND ND DCA-12 0 2/4/2002 ND ND DCA-12 0 2/4/2002 ND ND DCA-12 4 2/4/2002 ND ND DCA-13 0 2/4/2002 ND ND DCA-13 2 2/4/2002 ND ND	DO4 00			
DCA-10 2				
DCA-10				
DCA-10 4	DCA-10	2	2/1/2002	
DCA-10 4	,			
A, 4'-DDD 3,9 A, 4'-DDT 20 DCA-10D	DCA-10	4	2/1/2002	
DCA-10D 4 2/1/2002 4, 4'-DDE 6.2 DCA-10 6 2/1/2002 ND DCA-11 0 2/4/2002 4, 4'-DDE 16 DCA-11 2 2/4/2002 ND ND DCA-11 4 2/4/2002 A, 4'-DDE 4.4 DCA-11 6 2/4/2002 ND ND DCA-12 0 2/4/2002 ND ND DCA-12 0 2/4/2002 ND ND DCA-12 2 2/4/2002 ND ND DCA-12 4 2/4/2002 ND ND DCA-13 0 2/4/2002 ND ND DCA-13 2 2/4/2002 ND ND DCA-13 4 2/4/2002 ND ND DCA-13 6 2/4/2002 ND ND DCA-14 0 2/4/2002 ND ND DCA-14 0 2/4/2002 ND A, 4'-DDT<				4, 4'-DDD 3.9
DCA-10 6 2/1/2002 ND DCA-11 0 2/4/2002 4, 4'-DDE 16 DCA-11 2 2/4/2002 ND ND DCA-11 4 2/4/2002 4, 4'-DDE 4.4 4, 4'-DDE 4, 4'-DDE 4.4 4, 4'-DDE 8.4 4, 4'-DDT 6 2/4/2002 ND heptachlor epoxide of gamma-Chlordane alpha-Chlordane alpha-Chlord	004 400			
DCA-11 0 2/4/2002 4, 4'-DDE 16 DCA-11 2 2/4/2002 ND ND DCA-11 4 2/4/2002 4, 4'-DDE 4.4 4, 4'-DDT 8.4 4, 4'-DDT 6.8 DCA-11 6 2/4/2002 heptachlor epoxide (gamma-Chlordane elpha-Chlordane elpha-Chlordane elpha-Chlordane elpha-Chlordane elpha-Chlordane elemant elpha-Chlordane elemant elem				
DCA-11 2 2/4/2002 ND DCA-11 4 2/4/2002 4, 4'-DDT 8.1 DCA-11 6 2/4/2002				
DCA-11 2 2/4/2002 ND DCA-11 4 2/4/2002 4, 4'-DDE 4, 4'-DDE 4, 4'-DDE 4, 4'-DDE 4, 4'-DDE 4, 4'-DDE 8,4 4, 4'-DDE 4,4'-DDE 8,4 4, 4'-DDE 1,200 ND ND <td< td=""><td>DOA-11</td><td> " </td><td>2/4/2002</td><td></td></td<>	DOA-11	"	2/4/2002	
DCA-11 4	DCA-11	2	2/4/2002	
## 4'-DDD				
DCA-11 6 2/4/2002 heptachlor epoxide (gamma—Chlordane gamma—Chlordane dipha—Chlordane			27 17 2002	
DCA-12 0 2/4/2002 heptachlor epoxide (gamma-Chlordane gamma-Chlordane slpha-Chlordane slpha-Chlordan				
Gamma		6		ND
DCA-12 2 2/4/2002 ND	DCA-12	0	2/4/2002	
DCA-12 2 2/4/2002 ND DCA-12 4 2/4/2002 ND DCA-12 6 2/4/2002 ND DCA-13 0 2/4/2002 ND DCA-13 2 2/4/2002 ND DCA-13 4 2/4/2002 ND DCA-13 6 2/4/2002 ND DCA-13 6 2/4/2002 ND DCA-13 6 2/4/2002 ND DCA-14 0 2/4/2002 ND DCA-15 1.0				gamma—Chlordane 930 alpha—Chlordane 540
A, 4'-DDT 6000 A				4, 4'-DDE 1200
DCA-12 4 2/4/2002 ND DCA-12 6 2/4/2002 ND DCA-13 0 2/4/2002 4, 4'-DDE 42 DCA-13 2 2/4/2002 ND ND DCA-13 4 2/4/2002 ND ND DCA-13 6 2/4/2002 ND ND DCA-14 0 2/4/2002 ND ND DCA-14 0 2/4/2002 MD A, 4'-DDT 650 4, 4'-DDT 3000 4, 4'-DDT 3000 A, 4'-DDT 100 A, 4'-DDT 100 A, 4'-DDT 100 A, 4'-DDT 100 A, 4'-DDT 16 DCA-14 A, 4'-DDT 16 DCA-14 A, 4'-DDT 1.0 A, 4'-DDT 1.1 A, 4'-DDT 1.1 A, 4'-DDT 1.1 A, 4'-DDT 1.2 A, 4'-DDT A, 4'-DDT 1.2 A, 4'-DDT A, 4'-DDT 1.7 DCA-15 A, 4'-DDT 1.7 A, 4'-DDT 1.7 A, 4'-DDT 1.3 A, 4'-DDT				4, 4'DDT 6000
DCA-12	DO4 40			
DCA-12 6 2/4/2002 ND DCA-13 0 2/4/2002 4, 4'-DDE 42 4, 4'-DDT 15 4 2/4/2002 ND 15 DCA-13 4 2/4/2002 ND 10				
DCA-13 0 2/4/2002 4, 4'-DDE 42 4, 4'-DDT 15 DCA-13 2 2/4/2002 ND DCA-13 6 2/4/2002 ND DCA-13 6 2/4/2002 ND DCA-14 0 2/4/2002 gamma-Chlordane alpha-Chlordane 4, 4'-DDE 650 4, 4'-DDD 100 4, 4'-DDT 3000 DCA-14 2 2/4/2002 4, 4'-DDE 10 4, 4'-DDT 16 DCA-14 4 2/4/2002 4, 4'-DDE 1.2 4, 4'-DDT 2.1 DCA-15 0 2/4/2002 4, 4'-DDE 2.1 4, 4'-DDT 1.7 DCA-15 4 2/4/2002 ND DCA-15 4 2/4/2002 ND DCA-15 0 2/4/2002 4, 4'-DDE 1.7 A 4'-DDT 1.7				
DCA-13 2 2/4/2002 ND DCA-13 4 2/4/2002 ND DCA-13 6 2/4/2002 ND DCA-14 0 2/4/2002 gamma-Chlordane dlpha-Chlordane 4, 4'-DDE 650 4, 4'-DDD 100 4, 4'-DDT 3000 DCA-14 2 2/4/2002 4, 4'-DDE 10 4, 4'-DDE 10 100 4, 4'-DDT 16 DCA-14 4 2/4/2002 4, 4'-DDE 1.2 4, 4'-DDE 1.2 10 100 100 100 100 100 100 100 100 100				
DCA-13 2 2/4/2002 ND DCA-13 4 2/4/2002 ND DCA-13 6 2/4/2002 gamma-Chlordane dipha-Chlordane dipha-Chlo	DOA-13	"	2/4/2002	
DCA-13 4 2/4/2002 ND DCA-13 6 2/4/2002 ND DCA-14 0 2/4/2002 gamma-Chlordane dipha-Chlordane dipha-Chlordane 4, 4'-DDE 100 4, 4'-DDT	DCA-13	2	2 /4 /2002	
DCA-13 6 2/4/2002 ND DCA-14 0 2/4/2002 gamma-Chlordane dipha-Chlordane 4, 4'-DDE 650 4, 4'-DDD 100 4, 4'-DDD 100 4, 4'-DDT 3000 DCA-14 2 2/4/2002 4, 4'-DDE 10 4, 4'-DDT 16 DCA-14 4 2/4/2002 4, 4'-DDE 1.2 4, 4'-DDE 1.2 4, 4'-DDT 2.1 DCA-14 6 2/4/2002 ND DCA-15 0 2/4/2002 4, 4'-DDE 2.1 4, 4'-DDE 1.7 DCA-15 2 2/4/2002 ND DCA-15 4 2/4/2002 4, 4'-DDE 1.0 4, 4'-DDE 1.0 4, 4'-DDT 1.3				
DCA-14 0 2/4/2002 gamma-Chlordane dipha-Chlordane 4, 4'-DDE 650 4, 4'-DDD 100 4, 4'-DDT 3000 DCA-14 2 2/4/2002 4, 4'-DDE 10 4, 4'-DDT 16 DCA-14 4 2/4/2002 4, 4'-DDE 1.2 4, 4'-DDE 1.2 DCA-14 6 2/4/2002 ND DCA-15 0 2/4/2002 4, 4'-DDE 2.1 4, 4'-DDT 1.7 DCA-15 2 2/4/2002 ND DCA-15 4 2/4/2002 ND DCA-15 0 2/4/2002 4, 4'-DDE 1.7 DCA-15 4 2/4/2002 4, 4'-DDE 1.0 4, 4'-DDT 1.7				
CA-14 2 2/4/2002 4, 4'-DDE 10				
DCA-14 2 2/4/2002 4, 4'-DDT 100 4, 4'-DDT 3000 DCA-14 2 2/4/2002 4, 4'-DDT 16 DCA-14 4 2/4/2002 4, 4'-DDT 1.2 DCA-15 0 2/4/2002 4, 4'-DDE 1.7 DCA-15 2 2/4/2002 ND DCA-15 4 2/4/2002 4, 4'-DDE 1.7 DCA-15 4 2/4/2002 4, 4'-DDE 1.7 DCA-15 4 2/4/2002 4, 4'-DDE 1.0 4, 4'-DDT 1.3			_, .,	alpha—Chlordane 51
DCA-14 2 2/4/2002 4, 4'-DDT 10 DCA-14 4 2/4/2002 4, 4'-DDE 10 4, 4'-DDT 16 DCA-14 6 2/4/2002 ND DCA-15 0 2/4/2002 4, 4'-DDE 1.7 DCA-15 2 2/4/2002 ND DCA-15 4 2/4/2002 ND DCA-15 4 2/4/2002 ND DCA-15 1.7				4, 4'-DDE 650
DCA-14 2 2/4/2002 4, 4'-DDE 10				4, 4'-DDD 100
DCA-14				
DCA-14 4 2/4/2002 4, 4'-DDE 1.2 4, 4'-DDT 2.1 DCA-14 6 2/4/2002 ND DCA-15 0 2/4/2002 4, 4'-DDE 1.7 DCA-15 2 2/4/2002 ND DCA-15 2 2/4/2002 ND DCA-15 4 2/4/2002 4, 4'-DDT 1.3 CA-15 4 2/4/2002 4, 4'-DDT 1.3	DCA-14	2	2/4/2002	
DCA-14 6 2/4/2002 ND DCA-15 0 2/4/2002 4, 4'-DDE 2.1 DCA-15 2 2/4/2002 ND DCA-15 4 2/4/2002 4, 4'-DDE 1.7 DCA-15 4 2/4/2002 4, 4'-DDE 1.0 4, 4'-DDT 1.3	DCA-14	4	2/4/2002	
DCA-15 0 2/4/2002 4, 4'-DDE 2.1 4, 4'-DDT 1.7 DCA-15 2 2/4/2002 ND DCA-15 4 2/4/2002 4, 4'-DDE 1.0 4, 4'-DDT 1.3 1.3 1.3				4, 4'-DDT 2.1
DCA-15 2 2/4/2002 ND DCA-15 4 2/4/2002 4, 4'-DDT 1.7 \$\frac{4}{4}\times \frac{4}{2}\times \frac{1}{2}\times \frac{1}{2}				
DCA-15 2 2/4/2002 ND DCA-15 4 2/4/2002 4, 4'-DDE 1.0 4, 4'-DDT 1.3	DCA-15	0	2/4/2002	
DCA-15 4 2/4/2002 4, 4'-DDE 1.0 4, 4'-DDT 1.3	DCA-15	1 2	2/4/2002	
4, 4'-DDT 1.3				
		'	Z/ T / 2002	
DCA-15 6 2/4/2002 ND	DCA-15	6	2/4/2002	

FORMER DRUM CRUSHING AREA CONTINUED

FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
DCA-16	0	2/4/2002	heptachlor epoxide 0.73 gamma—Chlordane 74 alpha—Chlordane 76 4, 4'—DDE 370 4, 4'—DDT 420
DCA-16	2	2/4/2002	4, 4'-DDE 300 4, 4'-DDT 84
DCA-16	4	2/4/2002	ND
DCA-16	6	2/4/2002	ND
DCA-1	0	2/4/2002	4, 4'-DDE 32 4, 4'-DDT 17
DCA-1D	0	2/4/2002	4, 4'-DDE 6.6 4, 4'-DDT 3.4
DCA-1	2	2/4/2002	ND
DCA-1	4	2/4/2002	ND
DCA-1	6	2/4/2002	ND

TRANSFORMER D-02 SEE SHEET C20

FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
D02-02	7	2/19/2002	ND
D2-2	7	8/30/2001	16
D02-03	7	2/19/2002	ND
D2-3	7	8/30/2001	6.1
D02-04	7.5	2/19/2002	ND
D2-4	8	8/30/2001	1.6
D02-05	3	2/19/2002	ND
D02-05	5	2/19/2002	ND
D2-5	3	8/30/2001	7.6
D02-06	3	2/19/2002	1.9
D02-06	5	2/19/2002	ND
D26	3	8/30/2001	5.8
D02-07	2	2/19/2002	ND
D02-07	4	2/19/2002	ND
D2-7	2	8/30/2001	2.7
D02-08	2	2/19/2002	ND
D02-08	4	2/19/2002	ND
D2-8	2	8/30/2001	1.3
D02-12	3	2/19/2002	ND
D02-12	5	2/19/2002	ND
D2-12	3	8/30/2001	9.2
D02-13	2	2/19/2002	1.7
D02-13	4	2/19/2002	ND
D2-13	2	8/30/2001	17
D02-17	2	2/19/2002	ND
D02-17	4	2/19/2002	ND
D2-17	2	8/30/2001	3.7
D2-21	2	8/28/2001	1.4
D2-24 (wall)	4	8/28/2001	1.6
D2-26 (wall)	1	9/5/2001	200
D02-P1	2	3/2/2002	ND
D02-P1	4	3/2/2002	ND
D02-P1	6	3/2/2002	ND
D02-P1	7	3/2/2002	ND
D02-P4	2	2/19/2002	35
D02-P4D	2	2/19/2002	ND
D02-P4	4	2/19/2002	ND
D02-P4D	4	2/19/2002	ND

TRANSFORMER E-09 SEE SHEET C20

FIELD SAMPLE ID	DEPTH	DATE SAMPLED	TOTAL PCBs (mg/kg)
	(ft bgs)		
E09-01	0	2/11/2002	3.6
E0901	2	2/11/2002	ND
E09-02	0	2/11/2002	4.0
E09-02	2	2/11/2002	ND
E09-03	0	2/11/2002	ND
E09-03	2	2/11/2002	ND
E09-04	2	2/11/2002	ND
E09-05	0	2/11/2002	ND
E09-05	2	2/11/2002	ND
E09-06	2	2/11/2002	· ND
E09-07	0	2/11/2002	ND
E09-07	2	2/11/2002	ND
E09-08	0	2/11/2002	ND
E09-08	2	2/11/2002	ND
E09-09	0	2/11/2002	2.6
E09-09	2	2/11/2002	ND
E09-10	0	2/11/2002	ND
E09-10D	0	2/11/2002	ND
E09-11	0	2/11/2002	ND
E09-12	0	2/11/2002	ND
E09-13	0	2/11/2002	ND
E09-14	0	2/11/2002	ND
E09-16	2	2/11/2002	ND
E09-16	4	2/11/2002	ND
E09-16D	4	2/11/2002	ND

TRANSFORMER 1-4

_	TRANSE	ORMER 1-4	Ł
	SHE	ET C21	
ELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
I-01	0	1/23/2002	1.4
i–01	2	1/23/2002	1.9
I-01	4	1/23/2002	6.1
I-01	6	1/23/2002	ND
I-02	0	1/23/2002	1.5
-02	2	1/23/2002	1.9
I-02	4	1/23/2002	15
-02	6	1/23/2002	ND
⊢03	0	1/23/2002	3.6
-03	2	1/23/2002	3.9
-03	4	1/23/2002	1.9
-03	6	1/23/2002	ND
-04	2	1/23/2002	ND
-04	4	1/23/2002	7.0
-04	6	1/23/2002	ND
-05	2	1/23/2002	3.4
-05	4	1/23/2002	16
-05	6	1/23/2002	ND
06	 0	1/23/2002	6.5
-06D	0	1/23/2002	5.2
-06	2	1/23/2002	3.1
-06	4	1/23/2002	1.2
-06	6	1/23/2002	ND
-07	2	1/23/2002	6.1
-07	4	1/23/2002	10
-07	6	1/23/2002	ND
-08	2	1/23/2002	14
08	4	1/23/2002	11
-08	6	1/23/2002	ND
-09	0	1/23/2002	21
-09	2	1/23/2002	4.4
-09	4	1/23/2002	18
-09	6	1/23/2002	ND
-10	0	1/23/2002	ND
⊢10	2	1/23/2002	ND
− 10	4	1/23/2002	3.5
–10	6	1/23/2002	ND
–11	0	1/23/2002	9.8
⊢11	2	1/23/2002	ND
−11	4	1/23/2002	6.5
–11	6	1/23/2002	ND
-12	0	1/23/2002	4.1
_120	_	4 /07 /0000	ND

0 1/23/2002

2 1/23/2002 4 1/23/2002

I4-12D

14-12

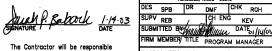
TRANSFORMER 1-4 CONTINUED

FIELD SAMPLE ID	(ft bgs)		TOTAL PCBs (mg/kg
14–13	0	1/23/2002	5.4
1413	2	1/23/2002	6.2
14–13	4	1/23/2002	7.9
14–13	6	1/23/2002	ND
14-14	0	2/4/2002	ND
14-14	2	2/4/2002	ND
14-14	4	2/4/2002	ND
14-15	0	2/4/2002	ND
14-15	2	2/4/2002	ND
14-15	4	2/4/2002	ND ND
14-15	6	2/4/2002	ND ND
14-16	+ -		ND ND
14-16 14-16	2	2/4/2002	ND
		2/4/2002	
14-16	4	2/4/2002	ND
14-16	6	2/4/2002	ND
14-17	0	2/4/2002	5.4
14-17	2	2/4/2002	11
I4-17D	2	2/4/2002	6.7
14-17	4	2/4/2002	14
l 4 –17	6	2/4/2002	ND
I4-18	0	2/4/2002	5.0
14-18	2	2/4/2002	ND
14-18	4	2/4/2002	2.5
14-18	6	2/4/2002	ND
14-19	- 0	2/4/2002	ND ND
14-19	1 2		ND ND
	4	2/4/2002	ND ND
14-19		2/4/2002	
14-20	0	2/4/2002	ND
14-20D	0	2/4/2002	ND
14-20	2	2/4/2002	ND
14-20	4	2/4/2002	ND
I4-21	0	2/4/2002	ND
14-21	2	2/4/2002	ND
14-21	4	2/4/2002	ND
14-22	0	2/22/2002	ND
14-22	2	2/22/2002	ND
14-22	4	2/22/2002	ND
14-22	6	2/22/2002	ND ND
14-23	1 0	2/22/2002	ND ND
14-23	1 2		ND ND
14-23 14-23	4	2/22/2002	ND ND
		2/22/2002	
14-23	6	2/22/2002	ND
1424	0	2/22/2002	ND
14-24	2	2/22/2002	ND
14-24D	2	2/22/2002	ND
14-24	4	2/22/2002	ND
14-24	6	2/22/2002	ND
14-25	0	2/22/2002	ND
14-25	2	2/22/2002	ND
14-25	4	2/22/2002	ND
14-25D	4	2/22/2002	ND
I4-25	6	2/22/2002	ND ND
14-26	1 0		ND ND
14-26	1 2	2/22/2002	
		2/22/2002	ND ND
14-26	4	2/22/2002	ND
14-26	6	2/22/2002	ND
14-27	0	2/22/2002	ND
14-27	2	2/22/2002	ND
14-27	4	2/22/2002	ND
14-27	6	2/22/2002	ND

BUILDING 81 SEE SHEET C21

FIELD SAMPLE ID	(ft bgs)		TOTAL PCBs (mg/kg
SB05	0.5	1/2000	7.74
SB5A	0.5	1/2000	21
SB5B	0.5	2/2000	3.9
SB06	0.5	1/2000	129
SB06	2.5	1/2000	5.06
SB6A	0.5	1/2000	82.1
SB6B	2.5	2/2000	10
SB07	0.5	1/2000	377
SB07	2.5	2/2000	1.9
SB7B	0.5	2/2000	17
SB7B	2.5	2/2000	14
SB08	0.5	1/2000	14.9
SB08	2.5	1/2000	3.61
SB8A	0.5	1/2000	2.9
SB8A	2.5	1/2000	1.5
SB8B	0.5	2/2000	4.4
SB09	0.5	1/2000	6.73
SB9A	0.5	1/2000	16
SB9B	0.5	2/2000	120
SB9B	2.5	2/2000	13
SB10	0.5	1/2000	84.2
SB10A	0.5	1/2000	7.3
SB10A	2.5	1/2000	10
SB11	0.5	1/2000	4.8
SB11A	0.5	1/2000	1.5
SB11B	0.5	2/2000	1.6
SB15	0.5	1/2000	2.5
SB19	0.5	1/2000	15.4
SB19D	0.5	1/2000	1.3
SB22	0.5	1/2000	3.7
SB22B	0.5	2/2000	2.6
SB23	0.5	1/2000	35.2
SB23	2.5	1/2000	75.7
SB23A	0.5	1/2000	3.7
SB24	0.5	1/2000	38.7
SB24A	0.5	1/2000	4.09
SB25	0.5	1/2000	2.4
SB25	2.5	1/2000	2.5
SB25B	0.5	2/2000	180
SB25B	2.5	2/2000	7.2
SB32	0.5	1/2000	3.1
SB34	0.5	1/2000	18.9
SB36	0.5	1/2000	5.59
SB36A	0.5	1/2000	2.3
SB38	0.5		39
SB39	0.5	1/2000	2.94
		1/2000	1.7
SB41	0.5	1/2000	
SB46	0.5	1/2000	20.2
SB49	0.5	1/2000	1.3





The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

LTR.					DESCR	RIPTION	PREP'D BY	DATE	APPROVED
						REVISIONS			
		E	<i>,</i>	-	н		DIVISION	ES ENGINE	ERING COMMAN
DES	SPB	100)MF	СНК	RGH	THERMAL DESOR	TION TREATMEN		
	REB	/ ~	CH EN			FORMED MAVAI AIR	STATION BARBER		г
		enuuumti	Miller	DA	501/14(03	OAH	J, HAWAII		
	DES SUPV SUBMI	DES SPB SUPV REB SUBMITTED BY	E A R T H S41 BENDY STREET HOROULU, WA DES SPB DR 1 SUPV REB	E A R T H THE STREET SATE SHEWDOWN STREET SATE PARTICULAR SATE SHEWDOWN STREET SATE SHEWDOWN STREET SATE SHEWDOWN SATE OF ENI SUBMITTED REFAIRMENTALMAN	E A R T H T E C 941 MENOR STREET, MARE 500 105 SPB DR DMF CHK SUPV REB CH ENG K SUBMITTED REMAINS DAY SUBMITTED REMAINS AND DAY SUBMITTED REMAINS AND DAY DAY DAY DAY DAY DAY DAY DAY	E A R T H	REVISIONS E A R T H T E C H SHEED SHEET	REVISIONS A R T H T E C H DEPARTMENT OF THE NAVY PACIFIC DIVISION	REVISIONS A R T H T E C H DEPARTMENT OF THE NAVY PACIFIC DIVISION

TRANSFORMER SITE ANALYTICAL DATA

CONSTR CONTR NO N62742-02-R-1800 SCALE AS NOTED SPEC NO 02-1800-0001 FOR COMMANDER NAVFAC

PACDIV NFEC: RVD _____BR MGR ____ DFPE _____PDE ____INBM ____

IF SHEET IS LESS THAN
22" X 34"
IT IS A REDUCED PRINT
SCALE REDUCED ACCORDINGLY PLOT DATE 01/14/2003

ND

ND

FIELD SAMPLE ID TA01-01-SS TA01-01 TA01-01	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/
TA01-01			
	0	4/6/2000	2.84
	0	1/10/2002	ND
1001-01	2	1/10/2002	ND
TA01-01	4	1/10/2002	ND ND
TA01-01	6	1/10/2002	ND
TA01-02	0	1/10/2002	17
FA01-02-SS	 	4/6/2000	140
TA01-02	2	1/10/2002	ND
TA01-02	+ 4		74
A01-02	6	1/10/2002	ND ND
TA01-03-SS		1/10/2002	7.92
FA01-03-33	1 2	4/6/2000	7.92 ND
A01-03	4	1/10/2002	200
A01-03	6	1/10/2002	ND ND
TA01-04-SS	- 0	+	6.63
TA01-04	2	4/6/2000	ND
TA01-04	4	1/10/2002	16
TA01-04	6	1/10/2002	
TA01-04		1/10/2002	ND
TA01-05		1/10/2002	2.2
	2	1/10/2002	ND
TA01-06	2	1/10/2002	ND
TA01-06	4	1/10/2002	1.5
A01-06	6	1/10/2002	ND
A01-07	2	1/10/2002	40
A01-07	4	1/10/2002	470
A01-07	6	1/10/2002	ND
A01-08	0	1/10/2002	ND
A01-08	2	1/10/2002	ND
A01-08	4	1/10/2002	4.8
A01-08	6	1/10/2002	ND
TA01-09	0	1/10/2002	41
TA0109	2	1/10/2002	1.7
A01-09	4	1/10/2002	36
A01-09	6	1/10/2002	ND
ΓA01-10	2	1/10/2002	ND
ΓA01-10	4	1/10/2002	9.9
TA01-10	6	1/10/2002	ND
TA01-11	2	1/10/2002	ND
TA01-11D	2	1/10/2002	ND
ΓA01-11	4	1/10/2002	18
FA01-11	6	1/10/2002	ND
A01-12	0	1/10/2002	1.4
A01-12	2	1/10/2002	ND
A01-12	4	1/10/2002	ND
A01-12	6	1/10/2002	6.3
	0	1/25/2002	ND
		, ./ 20/ 2002	110
TA01-13	2	1/25/2002	ND
TA01-13 TA01-13		1/25/2002	ND ND
TA01-13 TA01-13 TA01-13	4	1/25/2002	ND
TA01-13			

TA01-08	2	1/10/2002	ND
TA01-08	4	1/10/2002	4.8
TA01-08	6	1/10/2002	ND
TA01-09	0	1/10/2002	41
TA01-09	2	1/10/2002	1.7
TA01-09	4	1/10/2002	36
TA01-09	6	1/10/2002	ND
TA01-10	2	1/10/2002	ND
TA01-10	4	1/10/2002	9.9
TA01-10	6	1/10/2002	ND
TA01-11	2	1/10/2002	ND
TA01-11D	2	1/10/2002	ND
TA01-11	4	1/10/2002	18
TA01-11	6	1/10/2002	ND
TA01-12	0	1/10/2002	1.4
TA01-12	2	1/10/2002	ND
TA01-12	4	1/10/2002	ND
TA01-12	6	1/10/2002	6.3
TA01-13	0	1/25/2002	ND
TA01-13	2	1/25/2002	ND
TA01-13	4	1/25/2002	ND
TA01-13	6	1/25/2002	ND
TA01-14	0	1/25/2002	ND
TA01-14	2	1/25/2002	ND
TA01-14	4	1/25/2002	ND
TA01-14D	4	1/25/2002	ND
TA01-14	6	1/25/2002	ND
TA01-15	0	1/25/2002	390
TA01-15	2	1/25/2002	ND
TA01-15	4	1/25/2002	3.1
TA01-15D	4	1/25/2002	ND
TA01-15	6	1/25/2002	ND
TA0116	0	1/25/2002	ND
TA01-16	2	1/25/2002	ND
TA01-16	4	1/25/2002	ND
TA01-16	6	1/25/2002	ND
TA01-17	0	1/30/2002	ND
TA01-17	2	1/30/2002	ND
TA01-17	4	1/30/2002	ND
TA01-17	6	1/30/2002	ND
TA01_18		4 /70 /0000	ND

1/30/2002

1/30/2002

1/30/2002

2/19/2002

2/19/2002

6 1/30/2002

0 1/30/2002

0 2/19/2002

2 2/19/2002

0 2/19/2002

2 2/19/2002

4 2/19/2002

6 2/19/2002

4

TA01-18

TA01-18

TA01-18

TA01-19

TA01-20

TA01-21

TA01-21

TA01-21

TA01-21

TA01-22

TA01-22

TA01-22

TA01-22

TC07D-13

TC07D-13D

TC07D-13

ND

ND

ND

ND

ND

ND

ND

ND

ND

2.1

ND

TRANSFORMER TA-01 CONTINUED

FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TA01-23	0	2/22/2002	ND
TA01-23	2	2/22/2002	ND
TA01-23	4	2/22/2002	ND
TA01-23	6	2/22/2002	ND
TA01-24	0	2/22/2002	ND
TA01-24	2	2/22/2002	ND
TA01-24	4	2/22/2002	ND
TA01-24	6	2/22/2002	ND
TA01-25	0	2/22/2002	ND
TA01-25	2	2/22/2002	ND
TA01-25D	2	2/22/2002	ND
TA01-25	4	2/22/2002	ND
TA01-25	6	2/22/2002	ND

TRANSFORMER TC-04 SEE SHEET C6

FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TC04-01-SS	0	3/29/2000	1.01
TC04-01	2	12/26/2001	ND
TC04-02	2	12/26/2001	ND
TC04-03	1.5	12/26/2001	ND
TC04-04	1.5	12/26/2001	ND
TC04-05	2	12/26/2001	ND
TC04-06	2	12/26/2001	ND
TC04-07-SS	0	3/29/2000	2.24
TC04-07	1.5	12/26/2001	1.2
TC04-07	2	12/26/2001	ND
TC04-08	0	12/26/2001	ND
TC04-09	0	12/26/2001	ND
TC04-10	0	12/26/2001	ND
TC04-11	0	1/24/2002	ND
TC04-12	0	1/24/2002	ND
TC04-12	2	1/24/2002	ND

TRANSFORMER TO-070

FIELD SAMPLE ID DEPTH (ft bgs) TC07D-01-SS 0 3/29/2000 2.41 TC07D-01 2 12/27/2001 84 TC07D-01 4 12/27/2001 ND TC07D-02 5 12/27/2001 8 TC07D-02 4 12/27/2001 8 TC07D-02 4 12/27/2001 ND TC07D-03 2 12/27/2001 ND TC07D-03 4 12/27/2001 ND TC07D-03 4 12/27/2001 ND TC07D-03 4 12/27/2001 ND TC07D-03 4 12/27/2001 ND TC07D-03 6 12/27/2001 ND TC07D-04 12/27/2001 ND TC07D-05 0 12/27/2001 ND TC07D-04 12/27/2001 ND TC07D-05 0 12/27/2001 ND TC07D-05 0 12/27/2001 ND TC07D-05 12/27/2001 ND TC07D-05 12/27/2001 ND TC07D-05 12/27/2001 ND							
Cord Cord	<u>Transformer TC-07D</u> See sheet C7						
TC07D-01 2 12/27/2001 84 TC07D-01 4 12/27/2001 170 TC07D-01 6 12/27/2001 ND TC07D-02 2 12/27/2001 120 TC07D-02 2 12/27/2001 120 TC07D-02 4 12/27/2001 ND TC07D-02 6 12/27/2001 ND TC07D-03 12 12/27/2001 ND TC07D-03 4 12/27/2001 ND TC07D-03 6 12/27/2001 ND TC07D-04 12/27/2001 ND TC07D-05 0 12/27/2001 ND TC07D-05 0 12/27/2001 ND	g/kg)						
TCO7D-01 4 12/27/2001 170 TCO7D-01 6 12/27/2001 ND TCO7D-02-SSD 0 3/29/2000 24.9 TCO7D-02 2 12/27/2001 120 TCO7D-02 4 12/27/2001 8 TCO7D-02 6 12/27/2001 ND TCO7D-03 2 12/27/2001 ND TCO7D-03 4 12/27/2001 ND TCO7D-03 6 12/27/2001 ND TCO7D-04 2 12/27/2001 ND TCO7D-04 4 12/27/2001 ND TCO7D-04 6 12/27/2001 ND TCO7D-05 0 12/27/2001 ND TCO7D-05 2 12/27/2001 ND							
TCO7D-01 6 12/27/2001 ND TCO7D-02-SSD 0 3/29/2000 24.9 TCO7D-02 2 12/27/2001 120 TCO7D-02 4 12/27/2001 8 TCO7D-02 6 12/27/2001 ND TCO7D-03 2 12/27/2001 ND TCO7D-03 4 12/27/2001 ND TCO7D-03 6 12/27/2001 ND TCO7D-04 2 12/27/2001 ND TCO7D-04 2 12/27/2001 ND TCO7D-04 4 12/27/2001 ND TCO7D-04 6 12/27/2001 ND TCO7D-04 6 12/27/2001 ND TCO7D-04 6 12/27/2001 ND TCO7D-05 0 12/27/2001 ND TCO7D-05 0 12/27/2001 ND							
TC07D-02-SSD 0 3/29/2000 24.9 TC07D-02 2 12/27/2001 120 TC07D-02 4 12/27/2001 8 TC07D-02 6 12/27/2001 ND TC07D-03 2 12/27/2001 ND TC07D-03 4 12/27/2001 ND TC07D-03 6 12/27/2001 ND TC07D-04 2 12/27/2001 ND TC07D-04 4 12/27/2001 ND TC07D-04 6 12/27/2001 ND TC07D-05 0 12/27/2001 ND TC07D-05 2 12/27/2001 ND							
TC07D-02 2 12/27/2001 120 TC07D-02 4 12/27/2001 8 TC07D-02 6 12/27/2001 ND TC07D-03 2 12/27/2001 ND TC07D-03 4 12/27/2001 ND TC07D-03 6 12/27/2001 ND TC07D-04 2 12/27/2001 ND TC07D-04 4 12/27/2001 ND TC07D-04 6 12/27/2001 ND TC07D-05 0 12/27/2001 ND TC07D-05 2 12/27/2001 ND							
TC07D-02 4 12/27/2001 8 TC07D-02 6 12/27/2001 ND TC07D-03 2 12/27/2001 ND TC07D-03 4 12/27/2001 ND TC07D-03 6 12/27/2001 ND TC07D-04 2 12/27/2001 ND TC07D-04 4 12/27/2001 ND TC07D-04 6 12/27/2001 ND TC07D-04 6 12/27/2001 ND TC07D-05 0 12/27/2001 ND TC07D-05 0 12/27/2001 ND							
TC07D-02 6 12/27/2001 ND TC07D-03 2 12/27/2001 ND TC07D-03 4 12/27/2001 ND TC07D-03 6 12/27/2001 ND TC07D-04 2 12/27/2001 ND TC07D-04 4 12/27/2001 ND TC07D-04 6 12/27/2001 ND TC07D-04 6 12/27/2001 ND TC07D-05 0 12/27/2001 ND TC07D-05 0 12/27/2001 ND							
TC07D-03 2 12/27/2001 ND TC07D-03 4 12/27/2001 ND TC07D-03 6 12/27/2001 ND TC07D-04 2 12/27/2001 3.1 TC07D-04 4 12/27/2001 ND TC07D-04 6 12/27/2001 ND TC07D-05 0 12/27/2001 ND TC07D-05 2 12/27/2001 ND							
TC07D-03 4 12/27/2001 ND TC07D-03 6 12/27/2001 ND TC07D-04 2 12/27/2001 3.1 TC07D-04 4 12/27/2001 ND TC07D-04 6 12/27/2001 ND TC07D-05 0 12/27/2001 ND TC07D-05 2 12/27/2001 ND							
TC07D-03 6 12/27/2001 ND TC07D-04 2 12/27/2001 3.1 TC07D-04 4 12/27/2001 ND TC07D-04 6 12/27/2001 ND TC07D-05 0 12/27/2001 ND TC07D-05 2 12/27/2001 ND							
TC07D-03 6 12/27/2001 ND TC07D-04 2 12/27/2001 3.1 TC07D-04 4 12/27/2001 ND TC07D-04 6 12/27/2001 ND TC07D-05 0 12/27/2001 ND TC07D-05 2 12/27/2001 ND							
TC07D-04 4 12/27/2001 ND TC07D-04 6 12/27/2001 ND TC07D-05 0 12/27/2001 ND TC07D-05 2 12/27/2001 ND							
TC07D-04 6 12/27/2001 ND TC07D-05 0 12/27/2001 ND TC07D-05 2 12/27/2001 ND							
TC07D-05 0 12/27/2001 ND TC07D-05 2 12/27/2001 ND							
TC07D-05 0 12/27/2001 ND TC07D-05 2 12/27/2001 ND							
- 12/27/2001							
TC07D-06 2 12/27/2001 ND							
TC07D-06 4 12/27/2001 ND							
TC07D-07 0 12/27/2001 ND							
TC07D-07 2 12/27/2001 ND							
TC07D-07 4 12/27/2001 ND							
TC07D-08 1.5 12/27/2001 6.8							
TC07D-08 2 12/27/2001 72							
TC07D-08 4 12/27/2001 5.1							
TC07D-08 6 12/27/2001 ND							
TC07D-09 1.5 12/27/2001 7.4							
TC07D-09 2 12/27/2001 ND							
TC07D-10 0 1/31/2002 ND							
TC07D-10 2 1/31/2002 ND							
TC07D-11 1.5 1/31/2002 ND							
TC07D-11 2 1/31/2002 ND							
TC07D-12 0 1/31/2002 ND							
TC07D-12 2 1/31/2002 ND							
TC07D-12 4 1/31/2002 ND							
TC07D-12 6 1/31/2002 ND							
TC07D-13 1.5 1/31/2002 ND							
TC07D-13 2 1/31/2002 ND							

4 1/31/2002

6 1/31/2002

1/31/2002

ND

ND

TRANSFORMER TC-06D SEE SHEET C7

FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TC06D-01	0	1/7/2002	ND
TC06D-01-SS	0	3/29/2000	7.32
TC06D-01-SSD	0	3/29/2000	7.39
TC06D-02	0	1/7/2002	ND
TC06D-02-SS	0	3/29/2000	15.1
TC06D-03-SS	0	3/29/2000	5.53
TC06D-03	2	1/7/2002	ND
TC06D-04	2	1/7/2002	ND
TC06D-05	0	1/7/2002	ND
TC06D-06	0	1/7/2002	ND
TC06D-07	2	1/7/2002	ND
TC06D-07	4	1/7/2002	ND
TC06D-08	2	1/7/2002	ND
TC06D-09	0	1/7/2002	ND
TC06D-10	0	1/7/2002	ND
TC06D-11	0	1/7/2002	ND
TC06D-12	2	1/7/2002	ND
TC06D-13	0	1/7/2002	12
TC06D-13	2	1/7/2002	ND
TC06D-13	4	1/7/2002	3.1
TC06D-13	6	1/7/2002	ND
TC06D-14	0	2/22/2002	ND
TC06D-14	2	2/22/2002	ND
TC06D-14	4	2/22/2002	ND
TC06D-15	0	2/22/2002	1.4
TC06D-15D	0	2/22/2002	1.0
TC06D-15	2	2/22/2002	ND

TRANSFORMER TD-01 SEE SHEET C8

FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg
TD01-01-SS	0	4/4/2000	22.3
TD01-01-SSD	0	4/4/2000	26.2
TD01-02-SS	0	4/4/2000	1.66
TD01-02	2	1/2/2002	ND
TD01-03-SS	0	4/4/2000	4.32
TD01-03	2	1/2/2002	ND
TD01-04-SS	0	4/4/2000	10.5
TD01-04	2	1/2/2002	ND
TD01-04	4	1/2/2002	ND
TD01-05-SS	0	4/4/2000	29.6
TD01-05	2	1/2/2002	ND
TD01-05	5	1/2/2002	ND
TD01-06-SS	0	4/4/2000	1.32
TD01-06	2	1/2/2002	ND
TD01-06	4	1/2/2002	ND
TD01-07	2	1/2/2002	2.0
TD01-07	4	1/2/2002	ND
TD01-08	2	1/2/2002	ND
TD01-09	2	1/2/2002	ND
TD01-09	4	1/2/2002	ND
TD01-11	2	1/2/2002	ND
TD01-12	2	1/2/2002	ND
TD01-12	4	1/2/2002	5.2
TD01-12	6	1/2/2002	ND
TD01-13	0	1/2/2002	ND
TD01-14	0	1/2/2002	ND
TD01-15	0	1/2/2002	47
TD01-15	2	1/2/2002	ND
TD01-15	4	1/2/2002	ND
TD01-15	6	1/2/2002	ND
TD01-16	0	1/2/2002	14
TD01-16	2	1/2/2002	ND
TD01-16	4	1/2/2002	ND
TD01-16	6	1/2/2002	ND
TD01-17	0	1/2/2002	ND
TD01-17	2	1/2/2002	ND
TD01-18	0	1/2/2002	ND
TD01-19	0	1/2/2002	· ND
TD01-20	0	1/2/2002	ND
TD01-21	0	1/2/2002	ND
TD01-21	2	1/2/2002	ND
TD01-21	4	1/2/2002	ND
TD01-22	0	1/2/2002	ND
TD01-22	2	1/2/2002	ND
TD01-22	4	1/2/2002	ND
TD01-23	0	1/2/2002	ND
TD01-24	0	1/2/2002	ND

TRANSFORMER TD-02 SEE SHEET C8

FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg
TD02-01	0	1/8/2002	ND ND
TD02-01-SS	0	4/4/2000	2.07
TD02-01-SSD	0	4/4/2000	1.7
TD02-02	0	1/8/2002	ND
TD02-02-SS	0	4/4/2000	5.74
TD02-03	0	1/8/2002	ND
TD02-04-SS	0	4/4/2000	12.9
TD02-04	2	1/8/2002	ND
TD02-05-SS	0	4/4/2000	2.24
TD02-05	2	1/8/2002	ND
TD02-06	0	1/8/2002	ND
TD02-07	0	1/8/2002	ND
TD02-08	0	1/8/2002	ND
TD0209	0	1/8/2002	ND
TD02-10	0	1/8/2002	ND
TD02-10D	0	1/8/2002	ND
TD02-11	0	1/8/2002	ND
TD02-12	2	1/8/2002	ND
TD02-12	4	1/8/2002	ND
TD02-13	2	1/8/2002	ND
TD02-13D	2	1/8/2002	ND
TD02-13	4	1/8/2002	ND
TD02-14	0	1/10/2002	ND
TD02-15	2	1/10/2002	ND
TD02-16	2	1/10/2002	ND
TD02-17	0	1/10/2002	ND
TD02-18	0	1/10/2002	ND
TD02-19	0	1/10/2002	ND
TD02-20	2	1/10/2002	ND
TD02-20D	2	1/10/2002	ND
TD02-21	2	1/21/2002	ND
TD02-22	2	1/21/2002	ND
TD02-23	2	2/1/2002	ND

TRANSFORMER TD-03

	SEE	SHEET C9	
FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg
TD03-01	0	1/9/2002	ND
TD03-01-SS	0	4/5/2000	21.2
TD03-01-SSD	0	4/5/2000	31.9
TD03-02	0	1/9/2002	ND
TD03-02-SS	0	4/5/2000	4.03
TD03-03	0	1/9/2002	ND
TD03-04	0	1/9/2002	ND
TD03-04-SS	0	4/5/2000	5.95
TD0305	0	1/9/2002	ND
TD0305SS	0	4/5/2000	6.48
TD03-06-SS	0	4/5/2000	1.08
TD0306	2	1/9/2002	ND
TD03-07	2	1/9/2002	ND
TD03-08	2	1/9/2002	ND
TD03-08D	2	1/9/2002	ND
TD03-09	2	1/9/2002	ND
TD0309	4	1/9/2002	ND
TD03-10	0	1/9/2002	ND
TD0311	2	1/9/2002	ND
TD03-12	2	1/9/2002	ND
TD03-13	2	1/9/2002	ND
TD03-14	0	1/9/2002	ND
TD03-15	2	1/9/2002	ND
TD03-16	0	1/9/2002	ND
TD03-17	0	1/9/2002	ND
TD03-17D	0	1/9/2002	ND
TD03-18	0	1/9/2002	ND
TD03-19	0	1/9/2002	ND
TD03-20	0	1/9/2002	ND
TD03-21	0	1/9/2002	ND
TD03-21	2	1/9/2002	ND
TD03-22	2	1/9/2002	ND

TRANSFORMER TD-05 SEE SHEET C9

FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TD05-01-SS	0	4/5/2000	12.3
TD05-01-SSD	0	4/5/2000	17.8
TD05-01	2	12/19/2001	ND
TD0501	4	12/19/2001	ND
TD05-02-SS	0	4/5/2000	23.9
TD05-02	2	12/19/2001	ND ND
TD05-02	4	12/19/2001	ND ND
TD05-02D	4	12/19/2001	ND ND
TD05-03	2	12/19/2001	ND ND
TD05-03	4	12/19/2001	ND ND
TD05-04	1 2	12/19/2001	ND
TD05-04D	2	12/19/2001	ND
TD05-04	4	12/19/2001	ND
TD05-05	2	12/19/2001	ND
TD05-05D	 -	12/19/2001	ND ND
TD05-05	4	12/19/2001	ND ND
TD05-05	6	12/19/2001	ND ND
TD05-06	2	12/19/2001	ND
TD05-06	4	12/19/2001	28
TD05-06	6	12/19/2001	ND ND
TD05-07	10	12/19/2001	ND ND
TD05-07D	1 0	12/19/2001	1,4
TD05-07	2	12/19/2001	ND ND
TD05-08	-	12/19/2001	8.8
TD05-08D	0	12/19/2001	ND ND
TD05-08	2	12/19/2001	ND ND
TD05-09	-	12/19/2001	4.5
TD05-09D	 0	12/19/2001	ND ND
TD05-09	2	12/19/2001	ND ND
TD05-10	0	12/19/2001	12
TD05-10	2	12/19/2001	ND ND
TD05-10	4	12/19/2001	ND ND
TD05-10	6	12/19/2001	ND ND
TD05-11	1.5	12/19/2001	19
TD05-11	2	12/19/2001	12
TD05-11	4	12/19/2001	2.1
TD05-11	6	12/19/2001	ND ND
TD05-12	1 0	12/19/2001	2.9
TD05-12D	1 0	12/19/2001	ND ND
TD05-12	1 2	12/19/2001	ND ND
TD05-13	1 0	1/24/2002	0.39
TD05-13	1 2	1/24/2002	ND ND
TD05-14	 -	1/24/2002	0.48
TD05-14	1 2	1/24/2002	ND ND
TD05-15	+ -	1/24/2002	2.0
TD05-15	1 2	1/24/2002	ND ND
		1/27/2002	



	I			L				
LTR.	DESCRIPTION	PREP'D BY	DATE	APPROVED				
	REVISIONS							

EARTH TECH DEPARTMENT OF THE NAVY 841 BISHOP STREET, SUITE 500 HONOLULU, HARAE 96813 DES SPB DR DMF OHK RGH
SUPV REB CH ENG KEV
SUBMITTED BOTWARD
FIRM MEMBER TITLE PROGRAM MANAGER PACDIV NFEC: RVD _____BR MGR ___ DFPE _____PDE ____INBM _

FOR COMMANDER NAVFAC

PACIFIC DIVISION
MAKALAPA, HAWAII THERMAL DESORPTION TREATMENT OF PCB-CONTAMINATED SOIL AT THE FORMER NAVAL AIR STATION BARBERS POINT OAHU, HAWAII

TRANSFORMER SITE **ANALYTICAL DATA**

7952167 CONSTR CONTR NO N62742-02-R-1800 SCALE AS NOTED SPEC NO 02-1800-0001

IF SHEET IS LESS THAN
22" X 34"
IT IS A REDUCED PRINT
SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space. SATISFACTORY TO

PLOT DATE 01/14/2003

31	-		-			1.				
	5	Ε	E	SI	HE	E	Γ	C1	0	

FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TD07-01-SS	0	4/5/2000	347
TD07-01	2	12/18/2001	ND
TD07-02-SS	0	4/5/2000	34.5
TD07-02	2	12/18/2001	ND
TD07-02	4	12/18/2001	ND
TD07-03-SS	0	4/5/2000	2.29
TD07-03-SSD	0	4/5/2000	1.6
TD07-03	2	12/18/2001	ND
TD07-03	4	12/18/2001	ND
TD07-03D	4	12/18/2001	ND
TD07-04	2	12/18/2001	ND
TD07-05	2	12/18/2001	ND
TD07-05	4	12/18/2001	ND
TD07-06	2	12/18/2001	ND
TD07-06	4	12/18/2001	ND
TD07-07	6	12/19/2001	ND
TD07-08	1.5	12/19/2001	2.5
TD07-08	4	12/19/2001	ND
TD0709	0	12/19/2001	190
TD07-09	2	12/19/2001	ND
TD07-09	3	12/19/2001	ND
TD07-09	6	12/19/2001	ND
TD07-10	1.5	12/19/2001	130
TD07-10	2	12/19/2001	1.2
TD07-11	0	12/19/2001	5.8
TD07-11	2	12/19/2001	ND
TD07-12	1.5	12/19/2001	12
TD07-12	2	12/19/2001	ND
TD07-12	4	12/19/2001	ND
TD07-13	0	12/19/2001	ND
TD07-13D	0	12/19/2001	ND
TD07-13	2	12/19/2001	ND
TD07-13	4	12/19/2001	ND
TD07-14	0	1/31/2002	ND
TD07-14	2	1/31/2002	ND
TD07-14	4	1/31/2002	ND
TD07-14	6	1/31/2002	ND
TD07-15	0	1/31/2002	ND
TD07-15	2	1/31/2002	ND
TD07-15	4	1/31/2002	ND
TD07-15	6	1/31/2002	ND
TD07-16	0	1/31/2002	ND
TD07-16	2	1 /71 /0000	ND

TRANSFORMER TF-01

2 1/31/2002

0 1/31/2002

2 1/31/2002 2 1/31/2002

3 1/31/2002 0 2/1/2002

2 2/1/2002 4 2/1/2002

	SEE	SHEET C10	
FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TF01-01-SS	0	3/29/2000	1.85
TF01-02-SS	0	3/29/2000	1.74
TF01D-02-SS	0	3/29/2000	4.86
TF01D-02-SSD	0	3/29/2000	7.05
TF01-02	2	12/28/2001	ND
TF01-02	4	12/28/2001	ND
TF01-02	6	12/28/2001	ND
TF01-03	2	12/28/2001	ND
TF01-04	2	12/28/2001	ND
TF01-05	0	12/28/2001	ND
TF01-06	0	12/28/2001	ND
TF01-06	2	12/28/2001	ND
TF01-07	2	12/28/2001	ND
TF01-08	0	12/28/2001	ND
TF01-09	0	12/28/2001	ND
TF01-10	0	1/11/2002	ND
TF01-10	2	1/11/2002	ND
TF01-10	4	1/11/2002	ND
TF01-11	2	1/11/2002	28
TF01-11	4	1/11/2002	ND
TF01-11	6	1/11/2002	ND
TF01-12	2	1/11/2002	ND
TF01-12D	2	1/11/2002	ND
TF01-12	4	1/11/2002	ND

CONTINUED

TF04-21

TF04-22

TF04-22

TF04-22

TF04-22

TF04-23

TF04-23

TF04-23

TF04-23

TRANSFORMER TF-01 CONTINUED

FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TF01-13	0	1/11/2002	10
TF01-13	2	1/11/2002	ND
TF01-13	4	1/11/2002	ND
TF01-13	6	1/11/2002	ND
TF01-14	0	1/25/2002	9
TF01-14	2	1/25/2002	ND
TF01-15	0	1/25/2002	1.5
TF01-15D	0	1/25/2002	ND
TF01-15	2	1/25/2002	ND
TF01-16	0	2/14/2002	ND
TF01-16	2	2/14/2002	ND
TF01-17	0	2/14/2002	ND
TF01-17	2	2/14/2002	ND
TF01-18	0	3/1/2002	640
TF01-19	0	3/2/2002	ND
TF01-19	2	3/2/2002	ND
TF01-19	4	3/2/2002	ND

TRANSFORMER TF-04 SEE SHEET C11

FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TF04-01	0	1/11/2002	2.1
TF04-01	1 2	1/11/2002	ND ND
TF04-01-SS	1 -	5/8/2001	1,022
TF04-02	 	1/11/2002	ND ND
TF04-03-SS	1 0	5/8/2001	1.027
TF04-03	1 2	1/11/2002	ND ND
TF04-04	1 0	1/11/2002	1.9
TF04-04-SS	 	5/8/2001	4.982
TF04-04-SSD	1 0	5/8/2001	4.853
TF04-04	2	1/11/2002	6.9
TF04-04	4	1/11/2002	ND ND
TF04-04	6		ND ND
TF04-05	2	1/11/2002	ND ND
TF04-05	4	1/11/2002	ND ND
TF04-06	2	1/11/2002	
TF04-06		1/11/2002	ND ND
	0	1/11/2002	ND ND
TF04-08	3	1/30/2002	ND .
TF04-09	0	1/30/2002	1.4
TF04-09	2	1/30/2002	ND
TF04-10	0	1/30/2002	1.8
TF04-10	2	1/30/2002	ND
TF04-11	0	1/30/2002	8.4
TF04-11	2	1/30/2002	ND
TF04-12	0	1/30/2002	ND
TF04-12	2	1/30/2002	16
TF04-12D	2	1/30/2002	9.9
TF04-12	4	1/30/2002	5.5
TF04-12	6	1/30/2002	ND
TF04-13	2	1/30/2002	ND
TF04-14	0	2/14/2002	D
TF04-14	2	2/14/2002	10
TF04-14	4	2/14/2002	9.1
TF04-14	6	2/14/2002	ND
TF04-15	0	2/14/2002	ND
TF04-15	2	2/14/2002	5.9
TF04-15	4	2/14/2002	ND
TF04-15	6	2/14/2002	ND
TF04-16	0	2/14/2002	ND
TF04-16D	0	2/14/2002	ND
TF04-16	2	2/14/2002	ND
TF04-16	4	2/14/2002	ND
TF04-17	0	2/14/2002	3.6
TF04-17	2	2/14/2002	ND
TF04-18	0	2/14/2002	42
TF04-18	2	2/14/2002	ND
TF04-19	0	2/14/2002	ND
TF04-19	2	2/14/2002	ND
TF04-20	0	2/14/2002	1.5
TF04-20D	0	2/14/2002	8.9
TF04-20	2	2/14/2002	ND ND
		_//2002	

2/14/2002

2/14/2002

3/2/2002 3/2/2002

3/2/2002

3/2/2002

3/2/2002 3/2/2002 3/2/2002 3/2/2002

0

2

4

6

0

6

7.9 CONTINUED

ND

ND

1.0

ND

ND

ND

12

8.9

TRANSFORMER TF-04 CONTINUED

	(CONTINUED	
FIELD SAMPLE ID	(ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TF04-24	0	3/2/2002	ND
TF04-24	2	3/2/2002	17
TF04-24	4	3/2/2002	5.3
TF04-24	6	3/2/2002	3.6
TF04-25	0	3/2/2002	ND
TF04-25D	0	3/2/2002	9.4
TF04-25	2	3/2/2002	13
TF04-25	4	3/2/2002	5.0
TF04-25	6	3/2/2002	1.0
TF04-26	0	3/2/2002	ND
TF04-26	2	3/2/2002	ND
TF04-27	0	3/2/2002	13
TF04-27D	0	3/2/2002	4.5
TF04-27	2	3/2/2002	ND
TF04-28	0	3/2/2002	1.8
TF04-28	2	3/2/2002	ND
TF04-29	0	3/2/2002	ND
TF04-29	2	3/2/2002	ND
TF04-30	0	3/2/2002	ND
TF04-30	2	3/2/2002	ND
TF04-30D	2	3/2/2002	ND
TF04-31	0	3/18/2002	ND
TF04-31	2	3/18/2002	12
TF04-31	3.5	3/18/2002	27
TF04-32	0	3/18/2002	ND
TF04-32	2-4	3/18/2002	ND
TF04-33	0	3/18/2002	ND
TF04-33	2	3/18/2002	3.7
TF0433	3	3/18/2002	3.7
TF04-34	0	3/18/2002	ND
TF04-34	2	3/18/2002	19
TF04-35	0	3/18/2002	ND
TF04-35D	0	3/18/2002	ND
TF04-35	2	3/18/2002	8.3
TF04-35	4	3/18/2002	9.2
TF04-35	5.5	3/18/2002	18
TF04-36	0	3/18/2002	ND ND
TF04-36	1.5	3/18/2002	16
TF04-36	4	3/18/2002	5.1
TF04-36	5	3/18/2002	2.1
TF04-36	7	3/18/2002	ND ND
TF04-37	0	3/18/2002	ND ND
TF04-37	2	3/18/2002	ND ND
TF04-37	4	3/18/2002	ND ND
TF04-38	0	3/18/2002	ND ND
TF04-38	2		ND ND
TF04-39	0	3/18/2002	ND ND
TF04-39D	0	3/18/2002	ND ND
TF04-39	2	3/18/2002	ND ND
11 04-39		3/18/2002	טא

TRANSFORMER TF-05

SEE SHEET C11					
FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)		
IF05-01-SS	0	3/30/2000	36.7		
IF05-01	2	1/4/2002	78		
IF05-01	4	1/4/2002	ND		
IF05-02	0	1/4/2002	ND		
IF05-02-SS	0	3/30/2000	14.5		
IF05-02-SSD	0	3/30/2000	16.2		
IF05-02	2	1/4/2002	ND		
IF05-02	4	1/4/2002	ND		
TF05-03-SS	0	3/30/2000	27		
IF05-03	2	1/4/2002	ND		
TF05-03	4	1/4/2002	ND		
IF05-04	0	1/4/2002	ND		
IF05-04-SS	0	3/30/2000	1.86		
IF05-04	2	1/4/2002	ND		
IF05-05	0	1/4/2002	4.4		
IF05-05	2	1/4/2002	ND		
IF05-05	4	1/4/2002	ND		
IF05-05	6	1/4/2002	ND		
IF05-06	0	1/4/2002	ND		
IF05-06	2	1/4/2002	ND		
IF05-09	0	1/4/2002	ND		
IF05-09	2	1/4/2002	ND		
IF05-10	0	1/4/2002	5.9		
IF05-10	2	1/4/2002	ND		
IF05-11	0	1/4/2002	10		
IF05-11	2	1/4/2002	13		
IF05-11	4	1/4/2002	ND		
F05-11	6	1/4/2002	ND		
IF05-12	0	1/4/2002	ND		

TRANSFORMER TF-05 CONTINUED

FIELD SAMPLE ID	(ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TF05-13	0	1/4/2002	ND
TF05-13	. 2	1/4/2002	ND
TF05-13	4	1/4/2002	ND
TF05-14	2	1/4/2002	ND
TF05-14	4	1/4/2002	ND
TF05-14	6	1/4/2002	ND
TF05-15	0	1/4/2002	ND
TF05-15	2	1/4/2002	7.2
TF05-16	2	1/4/2002	ND
TF05-16	4	1/4/2002	ND
TF05-17	0	1/4/2002	2.4
TF05-17	2	1/4/2002	12
TF05-18	0	1/4/2002	ND
TF05-18	2	1/4/2002	ND
TF05-19	0	1/4/2002	ND
TF05-20	2	1/4/2002	ND
TF05-21	2	1/4/2002	ND
TF05-22	0	1/4/2002	ND
TF05-23	0	1/4/2002	ND
TF05-24	0	1/24/2002	ND
TF05-24	2	1/24/2002	ND
TF05-24	4	1/24/2002	ND
TF05-25	0	1/24/2002	ND
TF05-25D	0	1/24/2002	ND
TF05-25	2	1/24/2002	ND
TF05-26	0	1/24/2002	1.7
TF05-26	2	1/24/2002	ND
TF05-27	0	1/24/2002	ND
TF05-27	2	1/24/2002	ND
TF05-28	0	1/24/2002	ND
TF05-28	2	1/24/2002	ND
TF05-29	0	1/24/2002	ND
TF05-29D	0	1/24/2002	ND
TF05-29	2	1/24/2002	ND
TF05-29	4	1/24/2002	ND
TF05-29	6	1/24/2002	ND
TF05-30	0	1/24/2002	5,3
TF05-30D	0	1/24/2002	ND
TF05-30	2	1/24/2002	ND
TF05-31	0	1/24/2002	ND
TF05-31	2	1/24/2002	ND
TF05-32	0	2/14/2002	ND
TF05-32	2	2/14/2002	ND
TF05-33	0	2/14/2002	ND
TF05-33	2	2/14/2002	ND

TRANSFORMER TF-07 SEE SHEET C12

	JEE	SHEET CIZ	
FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TF07-01-SS	0	3/30/2000	2.48
TF07-01	2	12/26/2001	ND
TF07-02-SS	0	3/30/2000	1.9
TF07-02	2	12/26/2001	ND
TF07-03-SS	0	3/30/2000	1.72
TF07-03	2	12/26/2001	ND
TF07-04-SS	0	3/30/2000	1.51
TF07-04	2	12/26/2001	ND
TF07-05	2	12/26/2001	ND
TF07-06	2	12/26/2001	ND
TF07-07	2	12/26/2001	ND
TF07-08	2	12/26/2001	ND
TF07-09	1.5	12/26/2001	ND
TF07-10	1.5	12/26/2001	ND
TF07-11	0	12/26/2001	ND
TF07-12	1.5	12/26/2001	ND
TF07-13	0	12/26/2001	ND
TF07-14	0	12/26/2001	ND
TF07-15	0	12/26/2001	ND
TF07-16	0	12/26/2001	ND
TF07-17	0	3/6/2002	ND
TF07-17	2	3/6/2002	ND
TF07-18	0	3/6/2002	ND
TF07-18	2	3/6/2002	ND

SIGNATURE

IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT SCALE REDUCED ACCORDINGLY

The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

SATISFACTORY TO

TRANSFORMER TF-08 SEE SHEET C12

	SEE SH	EEI CIZ			
FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg		
TF08-01-SS	10	3/30/2000	10.1		
TF08-01	2	12/21/2001	ND		
TF08-02-SS	0	3/30/2000	13.2		
TF08-02	2	12/21/2001	ND		
TF08-02D	2	12/21/2001	ND		
TF08-02	4	12/21/2001	ND		
TF08-02	6	12/21/2001	ND		
TF08-03-SS	0	3/30/2000	41		
TF08-03	2	12/21/2001	ND		
TF08-03	4	12/21/2001	ND		
TF08-03	6	12/21/2001	ND		
TF08-04-SS	0	3/30/2000	2.13		
TF08-04	2	12/21/2001	ND		
TF08-04	4	12/21/2001	1.8		
TF08-04	6	12/21/2001	ND ND		
TF08-05	1 2	12/21/2001	ND ND		
TR08-05D	2	12/21/2001	ND ND		
TF08-05	4	12/21/2001	ND ND		
TF08-06	2	12/21/2001	ND ND		
TF08-06	4	12/21/2001	ND ND		
TF08-07	2		ND ND		
TF08-07	4	12/21/2001	ND ND		
TF0808	2		ND ND		
TF08-08D	2	12/21/2001	ND ND		
TF08-08	4	12/21/2001	ND ND		
TF08-09	1 7	12/21/2001	2.0		
TF08-09	2	12/21/2001	ND ND		
TF08-09	4	12/21/2001	ND ND		
TF08-10	0	12/21/2001	1.2		
TF08-10D	0	12/21/2001	ND		
TF08-100	2	12/21/2001	ND ND		
		12/21/2001			
TF08-11	0	12/21/2001	2.1		
TF08-11	2	12/21/2001	ND		
TF08-12	0	12/21/2001	1.1		
TF08-12	2	12/21/2001	ND		
TF08-13	0	12/21/2001	1.5		
TF08-13	2	12/21/2001	ND		
TF08-13	4	12/21/2001	ND		
TF08-14	0	12/21/2001	11		
TF08-14	2	12/21/2001	ND		
TF08-14	4	12/21/2001	ND		
TF08-14	6	12/21/2001	ND		
TF08-15	1.5	12/21/2001	ND		
TF08-16	1.5	12/21/2001	ND		
TF08-17	1.5	12/21/2001	ND		
TF08-17D	1.5	12/21/2001	ND		
TF08-17	2	12/21/2001	ND		
TF08-17	4	12/21/2001	ND		
TF08-17	6	12/21/2001	ND		
		12/21/2001	CONTINUED		

CONTINUED



LTR.	DESCRIPTION	PREP'D BY	DATE	APPROVED	
	REVISIONS				

NAVAL FACILITIES ENGINEERING COMMAI EARTH T TEGH 841 BISHOP STREET, SUITE 500 HONOLULU, HAWAE 96813 MAKALAPA, HAWAII DES SPB DR DMF CHK RGH
SUPV REB CH ENG KEV
SUBMITTED SMALL AND CHEM DATE OF LINE OF STREET OF ST THERMAL DESORPTION TREATMENT OF PCB-CONTAMINATED SOIL AT THE FORMER NAVAL AIR STATION BARBERS POINT OAHU, HAWAII TRANSFORMER SITE PACDIV NFEC: RVD _____BR MGR _ ___PDE_

ANALYTICAL DATA

7952168 CONSTR CONTR NO N62742-02-R-1800 SCALE AS NOTED SPEC NO 02-1800-0001 SHEET 30 OF 31

TD07-16 TD07-16

TD07-17

TD07-17

TD07-17D TD07-17

TD07-18

TD07-18

TD07-18

PLOT DATE 01/14/2003

CONTINUED

FOR COMMANDER NAVFAC

TRANSFORMER TF-08 CONTINUED

FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TF08-18	0	12/21/2001	ND
TF08-19	0	12/21/2001	ND
TF08-19D	0	12/21/2001	ND
TF08-20	1.5	12/21/2001	ND
TF08-20	2	12/21/2001	ND
TF08-21	0	1/24/2002	ND
TF08-21D	0	1/24/2002	ND
TF08-21	2	1/24/2002	ND
TF08-22	0	1/24/2002	ND
TF08-22	2	1/24/2002	ND
TF08-23	0	1/24/2002	ND
TF08-23	2	1/24/2002	ND
TF08-24	0	1/24/2002	1.6
TF08-24D	0	1/24/2002	ND
TF08-24	2	1/24/2002	ND
TF08-25	0	1/24/2002	1.2
TF08-25	2	1/24/2002	ND
TF08-26	0	1/24/2002	ND
TF08-26	2	1/24/2002	ND
TF08-27	0	2/14/2002	ND
TF08-27	2	2/14/2002	ND
TF08-28	0	2/14/2002	ND
TF08-28	2	2/14/2002	ND
TF08-29	0	2/14/2002	ND
TF08-29	2	2/14/2002	ND
TF08-30	0	2/14/2002	ND
TF08-30	2	2/14/2002	ND

TRANSFORMER TF-09 SEE SHEET C13

FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg
TF09-01	0	1/11/2002	ND
TF09-01-SS	0	3/30/2000	17.9
TF09-01	2	1/11/2002	ND
TF09-02	0	1/11/2002	ND
TF09-02-SS	0	3/30/2000	46.4
TF09-02	4	1/11/2002	ND
TF09-02	6	1/11/2002	ND
TF09-03	0	1/11/2002	ND
TF09-03-SS	0	3/30/2000	10.1
TF09-03	2	1/11/2002	ND
TF09-04	0	1/11/2002	ND
TF09-04D	0	1/11/2002	ND
TF09-05	2	1/21/2002	ND
TF09-05	4	1/21/2002	ND
TF09-06	2	1/21/2002	ND
TF09-06	4	1/21/2002	ND
TF09-07	2	1/21/2002	ND
TF09-07	4	1/21/2002	ND
TF0908	2	1/21/2002	ND
TF09-08D	2	1/21/2002	ND
TF09-08	4	1/21/2002	ND
TF09-09	2	1/21/2002	ND
TF09-09	4	1/21/2002	ND
TF09-10	2	1/21/2002	ND
TF09-10	4	1/21/2002	ND
TF09-11	0	1/21/2002	2.8
TF09-11	2	1/21/2002	ND
TF09-11D	0	1/21/2002	2.1
TF09-13	4	1/30/2002	ND
TF09-14	4	1/30/2002	ND
TF09-15	4	1/30/2002	ND
TF09-16	0	2/14/2002	ND
TF09-16D	0	2/14/2002	ND
TF09-16	2	2/14/2002	ND

TRANSFORMER TF-17 SEE SHEET C13

FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TF17-02-SS	0	3/29/2000	4
TF17-01	2	12/27/2001	ND
TF17-02	2	12/27/2001	ND
TF17-03	1.5	12/27/2001	ND
TF17-04	1.5	12/27/2001	ND
TF1705	1.5	12/27/2001	ND
TF17-06	1.5	12/27/2001	ND

TRANSFORMER TF-18 SEE SHEET C14

FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TF18-01-SS	0	3/30/2000	15.7
TF18-01	2	1/3/2002	ND
TF18-01	4	1/3/2002	ND
TF18-02-SS	0	3/30/2000	25.5
TF18-02	2	1/3/2002	ND
TF18-02	4	1/3/2002	ND
TF18-03	0	1/3/2002	ND
TF18-03-SS	0	3/30/2000	43.2
TF18-04	0	1/3/2002	ND
TF18-04-SS	0	3/30/2000	4.94
TF18-05	0	1/3/2002	ND
TF18-05-SS	0	3/30/2000	2.33
TF18-06	2	1/3/2002	ND
TF18-06	4	1/3/2002	ND
TF18-07	2	1/3/2002	ND
TF18-08	2	1/3/2002	ND
TF18-08	4	1/3/2002	ND
TF18-09	2	1/3/2002	ND
TF18-09	4	1/3/2002	ND
TF18-10	2	1/3/2002	ND
TF18-11	2	1/3/2002	ND
TF18-12	0	1/3/2002	ND
TF18-13	0	1/3/2002	ND
TF18-14	0	1/3/2002	ND
TF18-16	0	1/3/2002	ND
TF18-17	0	1/3/2002	ND
TF18-18	0	1/31/2002	ND
TF18-19	2	1/31/2002	ND
TF18-19D	2	1/31/2002	ND
TF18-19	4	1/31/2002	ND
TF18-19D	4	1/31/2002	ND
TF18-20	2	1/31/2002	ND
TF18-20D	2	1/31/2002	ND

TRANSFORMER TG-01

	SEE	SHEET C14	
FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TG-01-01-SS	0	1/3/2000	28.9
TG-01-01-SSD	0	1/3/2000	56.7
TG01-01	2	12/18/2001	ND
TG0101	4	12/18/2001	ND
TG-01-02-SS	0	1/3/2000	1.41
TG01-02	2	12/18/2001	ND
TG01-02	4	12/18/2001	ND
TG01-03-SS	0	1/3/2000	8
TG01-03	2	12/18/2001	ND
TG-01-04-SS	0	1/3/2000	24.1
TG01-04	2	12/18/2001	ND
TG01-04D	2	12/18/2001	ND
TG01-05	2	12/18/2001	ND
TG01-06	2	12/18/2001	ND
TG01-07	2	12/18/2001	ND
TG01-07	4	12/18/2001	ND
TG01-08	2	12/18/2001	ND
TG01-08	4	12/18/2001	ND
TG0109	0	12/18/2001	ND
TG01-10	0	12/18/2001	ND
TG01-11	0	12/18/2001	ND
TG01-12	0	12/18/2001	ND
TG01-13	0	12/18/2001	ND
TG01-14	0	12/18/2001	ND
TG01-15	0	12/18/2001	ND
TG01-16	1.5	12/18/2001	ND

TRANSFORMER TG-03 SEE SHEET C15

FIELD SAMPLE ID	DEPTH	DATE SAMPLED	TOTAL PCBs (mg/kg
	(ft bgs)		TOTAL TODO (IIIg) Kg
TG0301	2	12/17/2001	ND
TG03-02	2	12/17/2001	ND
TG03-02	4	12/17/2001	ND
TG03-02	6	12/17/2001	ND
TG03-03	2	12/17/2001	ND
TG03-04-SS	0	1/3/2000	32.33
TG03-04	2	12/17/2001	ND
TG03-05	0	12/17/2001	ND
TG03-05-SS	0	1/3/2000	7.05
TG03-06	0	12/17/2001	ND
TG03-07	0	12/17/2001	ND
TG03-07D	0	12/17/2001	ND
TG03-08	0	12/17/2001	3.0
TG03-08	2	12/17/2001	ND
TG03-09	0	12/17/2001	ND
TG03-09	2-2.5	12/17/2001	ND
TG03-09D	2.5-3	12/17/2001	ND
TG03-09	4	12/17/2001	ND
TG03-09	6	12/17/2001	ND
TG03-10	0	12/17/2001	ND
TG03-11	0	1/21/2002	15
TG03-11	0	1/25/2002	1.2
TG03-11	2	1/25/2002	ND
TG03-11	4	1/25/2002	ND
TG03-11	6	1/25/2002	ND
TG03-12	0	1/25/2002	ND
TG03-12	2	1/25/2002	ND
TG03-12	4	1/25/2002	ND
TG03-12D	4	1/25/2002	ND
TG03-12	6	1/25/2002	ND

TRANSFORMER TG-06 SEE SHEET C15

FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TG06-01	2	12/17/2001	ND
TG06-02	2	12/17/2001	ND
TG06-03	0	12/17/2001	ND
TG06-03D	0	12/17/2001	ND
TG06-03-SS	0	1/10/2000	3,62
TG06-04	0	12/17/2001	ND
TG06-05	0	12/17/2001	ND

TRANSFORMER TI-03 SEE SHEET C16

FIELD SAMPLE ID	(ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TI03-01-SS	0	1/4/2000	1.04
TI03-01	2	12/20/2001	ND
TI03-01D	2	12/20/2001	ND
TI03-02	2	12/20/2001	ND
T103-03	2	12/20/2001	ND
TI03-04-SS	0	1/4/2000	1.02
TI03-04	2	12/20/2001	ND
TI03-05	0	12/20/2001	ND
TI03-06	1.5	12/20/2001	ND
TI03-07	0	12/20/2001	ND
TI03-07D	0	12/20/2001	ND
TI03-08	0	12/20/2001	ND
TI03-08D	0	12/20/2001	ND
TI03-09	0	12/20/2001	ND
TI03-09D	0	12/20/2001	ND

TRANSFORMER TI-04D SEE SHEET C16

FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TI-04D-01-SS	(It bgs)	1/4/2000	6.1
TI04D-01-SSD	0	1/4/2000	4.56
TIO4D-01	2	12/20/2001	ND
TIO4D-01D	 2	12/20/2001	ND
TI04D-02-SS	 -	1/4/2000	2
TI04D-02	2	12/20/2001	ND ND
TIO4D-03	2	12/20/2001	ND
TI04D-04-SS		1/4/2000	40
TIO4D-04	1 2	12/20/2001	ND ND
TIO4D-04	4	12/20/2001	2.6
TI04D-04	6	12/20/2001	ND
TI04D-05	2		ND ND
TI04D-05D	2	12/20/2001	ND
TI04D-05	4	12/20/2001	ND ND
TI04D-05	6	12/20/2001	
		12/20/2001	ND
TI04D-06	2	12/20/2001	7.7
TI04D-06	4	12/20/2001	2.1
TI04D-06	6	12/20/2001	ND
TI04D-07	0	12/20/2001	14
TI04D-07D	0	12/20/2001	13
Π04D-07	2	12/20/2001	ND
TI04D-07	4	12/20/2001	7
TI04D-07	6	12/20/2001	ND
TI04D-08	0	12/20/2001	ND
TI04D-08	2	12/20/2001	ND
TI04D-08	4	12/20/2001	ND
TI04D-08	6	12/20/2001	ND
TI04D-09	1.5	12/20/2001	ND
TI04D-10	0	12/20/2001	· ND
TI04D-10D	 0	12/20/2001	ND ND
TIO4D-11	1.5	12/20/2001	ND ND
TIO4D-11	2		ND ND
TIO4D-11	4	12/20/2001	ND ND
TIO4D-11	6	12/20/2001	ND ND
TIO4D-12	1 0	12/20/2001	
		12/20/2001	ND
TIO4D-12D	0	12/20/2001	ND
TIO4D-12	2	12/20/2001	ND
TI04D-12	4	12/20/2001	ND
TI04D-12	6	12/20/2001	ND
Π04D-13	1.5	12/20/2001	35
TIO4D-13	2	12/20/2001	ND
Π0 4 D−13	4	12/20/2001	36
TI04D-13	6	12/20/2001	ND
Π04D−14	0	12/20/2001	ND
TI04D-14D	0	12/20/2001	ND
TI04D-14	2	12/20/2001	ND
TI04D-14	4	12/20/2001	ND
TI04D-14	6	12/20/2001	ND .
TI04D-15	1 0		ND ND
TIO4D-15	2	1/23/2002	ND ND
TIO4D-15		1/23/2002	
	4	1/23/2002	ND
TI04D-15	6	1/23/2002	ND

TRANSFORMER TI-04D CONTINUED

FIELD SAMPLE ID	DEPTH (ft bgs)	DATE SAMPLED	TOTAL PCBs (mg/kg)
TI04D-16	0	1/23/2002	ND
TI04D-16	2	1/23/2002	ND
TI04D-16	4	1/23/2002	ND
TI04D16	6	1/23/2002	ND
TI04D-17	0	1/23/2002	4.8
TI04D-17D	0	1/23/2002	1.9
TI04D17	2	1/23/2002	ND
TI04D-17	4	1/23/2002	2.3
TI04D-17	6	1/23/2002	- ND
TI04-18	0	2/19/2002	ND
TI04-18	2	2/19/2002	ND
TI04-18	4	2/19/2002	ND
TI04-18	6	2/19/2002	ND
TI04-19	0	2/19/2002	ND
TI0419	2	2/19/2002	ND
TI04-19	4	2/19/2002	ND
TI04-19	6	2/19/2002	ND
TI04-20	0	2/19/2002	3.0
TI04-20D	0	2/19/2002	ND
TI04-20	2	2/19/2002	ND
TI04-20	4	2/19/2002	ND
TI04-20	6	2/19/2002	ND



The Contractor will be responsible for coordinating the work among the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space.

IF SHEET IS LESS THAN
22" X 34"
IT IS A REDUCED PRINT
SCALE REDUCED ACCORDINGLY PLOT DATE 01/14/2003

C25

SATISFACTORY TO

FOR COMMANDER NAVFAC

LTR.	DESCRIPTION	PREP'D BY	DATE	APPROVED
	REVISIONS			
	DEPARTMENT OF THE NAVY	NAVAL FACILITIE	S ENGINEE	RING COMMAN

R T H T T E C H 841 BISHOP STREET, SUITE 500 HONOLULU, HAWAE 98813 DES SPB DR DMF CHK RGH
SUPV REB CHEROLOGICAL DATE

The Contractor will be responsible

The Contractor will be responsible PACDIV NFEC: RVD _____BR MGR ___

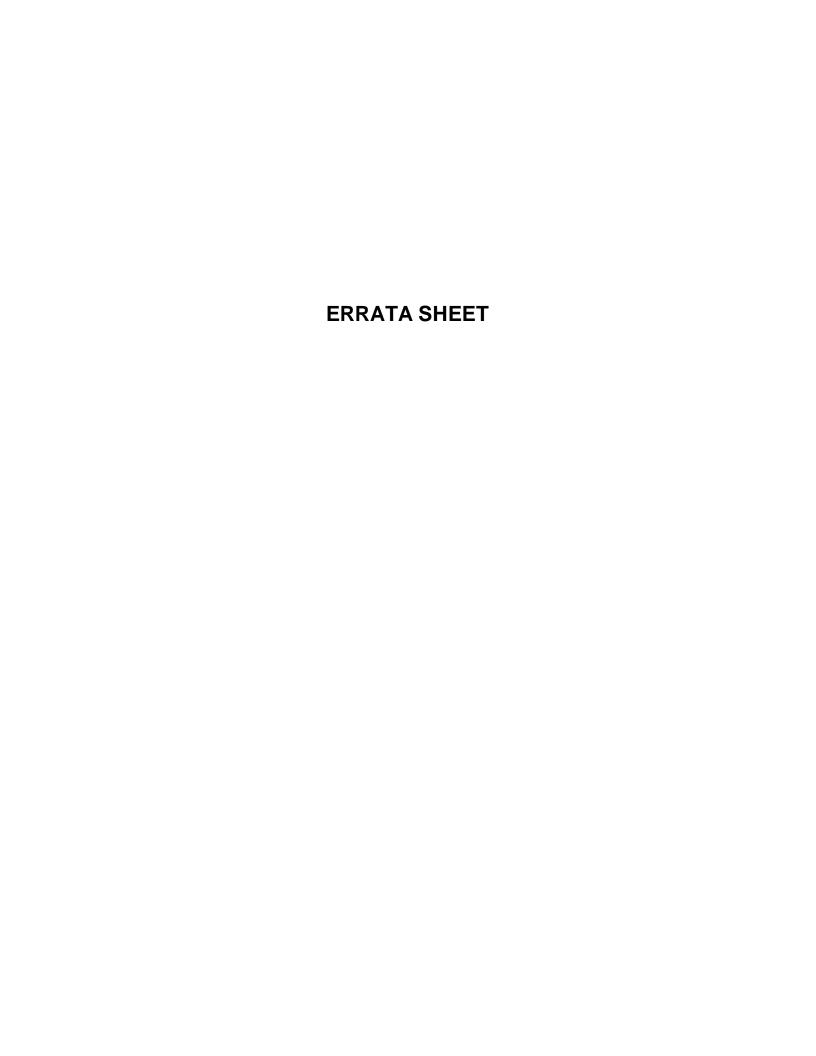
OF THE NAVY
PACIFIC DIVISION

MAKALAPA, HAWAII

THERMAL DESORPTION TREATMENT OF PCB-CONTAMINATED SOIL AT THE FORMER NAVAL AIR STATION BARBERS POINT OAHU, HAWAII

TRANSFORMER SITE ANALYTICAL DATA

NAVFAC DRAWING NO 7952169 CONSTR CONTR NO N62742-02-R-1800 SCALE AS NOTED SPEC NO 02-1800-0001



Change			
No.	Location of Revision	Revision	Reason For Change
1	Specifications Cover	Date was revised to January 2003. Name of professional engineer, Sarah Babcock, was added under "submitted by."	Updated for current draft.
2	Specifications, Section 01110 ; Paragraph 1.1.1 and Table I	The anticipated Group A, B, and C soil quantities were revised.	More information was available on the volumes based on delineations and estimates.
3	Specifications, Section 01110; Paragraph 1.1.3.	The last two paragraphs were updated to provide better information about where Group B and C soils are and clarify that some soil will be in stockpiles and some will require excavation. Waikele was removed from the Group B list of locations.	More information was available on the Group B and C soils based on sampling efforts. Waikele sites were removed from the scope of this design.
4	Specifications, Section 01110; Paragraph 1.1.4.	The anticipated Group A, B, and C soil quantities were revised.	More information was available on the volumes based on delineations and estimates.
5	Specifications, Section 01110; Paragraph 1.1.5.	The paragraph was changed to specify that the Drum Crushing Area soil will not be treated but sent off-island for disposal.	Navy and EPA agreed to dispose of the Drum Crushing Area soil off-island without treatment.
6	Specifications, Section 01110; Paragraph 1.3	This paragraph was added to require the contractor to coordinate the work on Ford Island sites with a contact at Family Housing. Subsequent paragraphs were renumbered.	The information was added per comments on the draft design.
7	Specifications, Section 01110; Paragraph 1.4.	The submittal demobilization plan was combined with the mobilization plan as one submittal called the Mobilization/Demobilization Plan.	After review of the specifications for this amendment, two submittals were not practical where one would serve the purpose.
8	Specifications, Section 01110; Paragraph 1.5.1 e	This bullet was updated to discuss the singular submittal Mobilization/Demobilization Plan and letter "i" was removed from this paragraph, as it was formerly the Demobilization Plan.	After review of the specifications for this amendment, two submittals were not practical where one would serve the purpose.
9	Specifications, Section 01110; Paragraph 1.5.1 f and g	These bullets were updated to include the location in the Section 02181 of the specifications that more information about those plans can be found.	A comment on the draft made it clear that it was confusing where more information about these submittals was.
10	Specifications, Section 01110; Paragraph 1.5.1 i	This paragraph was revised to require the contractor to obtain a Prevention of Significant Deterioration permit. The location in Section 02181 was added where more information could be found about the sampling.	The Attachment requires this although it was not specifically required in the draft specifications. A comment on the draft also requested the permit requirement.

Change			
No.	Location of Revision	Revision	Reason For Change
11	Specifications, Section 01110; Paragraph 1.8 (5)	As-built drawings were added including the requirement to have a licensed surveyor survey each excavation in state plane coordinates.	Per comments on draft design.
12	Specifications, Section 01110; Paragraph 1.10.2 o	The paragraph was changed to specify that the drum crushing area soil will not be treated but sent off-island for disposal.	Navy and EPA agreed to dispose of the drum crushing are soil off-island without treatment.
13	Specifications, Section 01110; Paragraph 1.10.1 q.	The words "and Group C" were added after "place soil back in Group B"	Review of specifications for amendment to design.
14	Specifications, Section 01110; Paragraph 1.10.3 c	The bullet was changed to specify that the Drum Crushing Area soil will not be treated but sent off-island for disposal.	Navy and EPA agreed to dispose of the drum crushing are soil off-island without treatment.
15	Specifications, Section 01110; Paragraph 1.10.3 and 1.10.4 titles.	These titles were revised to state the Group B and C soils consisted of some stockpiled soil and some soil that would require excavation.	Per comment on the draft, changes were made so that both Group B and C soil would include some stockpiles and the titles implied that these soils were all in-situ and would require excavation.
16	Specifications, Section 01110; Paragraph 1.10.3 a and 1.10.4 a	The words "and coordinate any necessary utility outages" were added after "within the areas to be excavated"	Added per comment on the draft design.
17	Specifications, Section 01110; Paragraph 1.10.4	More information was provided for the exact scope of work for the Group C sites.	More information was available on the Group C soils based on sampling efforts.
18	Specifications, Section 01110; Paragraph 1.11	The title of this paragraph was changed to "Description of Likely Contaminant Sources" to more accurately represent what the purpose of the paragraph is. The paragraph was revised to remove the parenthetical statement.	The title did not represent what information was being conveyed in this paragraph.
19	Specifications, Section 01110; Paragraph 1.12	Sheets T5 and T20 associated with the Waikele Branch Naval Magazine, PHNC, were removed from the project drawings. Sheet C5 titled, "Stockpile Area Existing Conditions, Former NAS Barbers Point" was added to the project drawings. The project drawings were renumbered appropriately.	Excavation at the Waikele sites was removed from the scope of Group B although these soils will be stockpiled for treatment. C5 provides more detail on the stockpiles south of the treatment area.
20	Specifications, Section 01330; Paragraph 1.6.4	In the last paragraph, the sentence "Electronic distribution email address will be provided after contract award" was added after "(PDF or Microsoft Office)"	Per comments on the draft design.

Change			
No.	Location of Revision	Revision	Reason For Change
21	Specifications, Section 01330; Submittal Register	The submittal register was updated to include any changes in the specifications.	The register needed to be updated to reflect any changes in the specifications.
22	Specifications, Section 01501; Paragraph 1.3	The last paragraph was changed to indicate that the contractor should use the PWC building for telephone service.	Per comments on the draft design.
23	Specifications, Section 01501; Paragraph 1.4	This paragraph was moved to Section 01575 where other dust control information can be found. Subsequent paragraphs were renumbered.	Review of specifications for amendment to design.
24	Specifications, Section 01501; Paragraph 1.5	This paragraph title was revised to PROTECTION AND MAINTENANCE OF TRAFFIC. Additional information was provided regarding traffic control and haul road construction materials and execution. Information was also added to this paragraph about maintaining access to the existing USTs at Building 81.	Per comments on the draft design.
25	Specifications, Section 01501; Paragraph 1.5.1	This paragraph was added to provide more guidance on construction of the haul roads.	Review of specifications for amendment to design.
26	Specifications, Section 01501; Paragraph 1.5.2	This paragraph was added and states to provide more guidance on use of barricades.	Review of specifications for amendment to design.
27	Specifications, Section 01501; Part 2.1	This paragraph was added and titled TEMPORARY HAUL ROADS. Additional information was provided regarding haul road aggregate. Subsequent paragraphs were renumbered.	Review of specifications for amendment to design.
28	Specifications, Section 01501; Paragraph 2.2.1	The statement "The barrier shall be provided with any and all braces, supports, anchors, pedestals, rails, tension wires, fasteners, or other such items needed to be self supporting for perpendicular wind loads up to 90 MPH." was added to this paragraph.	Review of specifications for amendment to design.
29	Specifications, Section 01501; Paragraph 3.1	A reference to the added Section 02731 was added to this paragraph.	Additional information regarding aggregate for temporary haul roads was added.
30	Specifications, Section 01501; Paragraph 3.4.1	Information was added to this paragraph to require the contractor to decontamination the stockpile liners and covers as needed prior to characterization and disposal.	Per comments on the draft design.
31	Specifications, Section 01501; Paragraph 3.4.2	A reference to Section 02181 that discusses the sampling under the stockpiles was added.	Per comments on the draft design.

Change No.	Location of Revision	Revision	Reason For Change
32	Specifications, Section 01501; Paragraph 3.4.4	The last sentence was revised to read "Uncontaminated debris shall be transported and disposed at an approved off-site landfill."	Per comments on the draft design.
33	Specifications, Section 01575	Attachment I was added to this section that is an example of a solid waste disposal report.	Per comments on the draft design.
34	Specifications, Section 01575; Paragraph 1.4.1	This paragraph was added to discuss in more detail the special requirements for dust control at Lualualei.	Per comments on the draft design.
35	Specifications, Section 01575; Paragraph 1.6.4	This paragraph was revised to reference the attachment added to this section.	Per comments on the draft design.
36	Specifications, Section 01575; Paragraph 3.4	The first sentence was revised to read, "Remove all solid waste and non-hazardous debris (except treated soil) from Government property and dispose off-site at an approved landfill." The off-site rule attachment number was changed to Attachment II.	Per comments on the draft design.
37	Specifications, Section 01575; Paragraph 3.6	This paragraph was changed to read, "Control dust at all times, including during non-work periods. Use appropriate dust control measures, such as, but not limited to, sprinkling or treating with dust suppressants, for the soil at all the sites, treatment area, stockpiles, haul roads and other areas disturbed by operations in accordance with HAR 11-60.1-179. In addition, conduct all excavation, treatment, and transport operations in accordance with HAR 11-59.4(e)(1) that limits particulates in ambient air to a mean of 50 micrograms per cubic meter per 12-month period."	Per comments on the draft design.

Change			
No.	Location of Revision	Revision	Reason For Change
38	Specifications, Section 01575; Paragraph 3.7	This paragraph was revised to provide specific guidance on noise levels acceptable in the area of the treatment site and all excavation sites based on Hawaii regulations. It now reads, "Maximize the use of low-noise emission products, as certified by the EPA; to ensure that maximum permissible sound levels are not exceeded. Sound levels should be measured at the most sensitive receptors near the treatment area (Naval Housing on Former NAS Barbers Point). HAR 11-46-4 addresses allowable noise levels for residential areas on Oahu. Noise levels at the site boundaries of the closest residential area should not exceed 55 dBA between the hours of 7 am to 10 pm, and 45 dBA between the hours of 10 pm to 7 am. In addition, vehicles used to transport soil and equipment to the treatment area should be manufactured in accordance with 40 CFR 205.52 to minimize the noise emissions.	Per comments on the draft design.
39	Specifications, Section 02111	This Section replaces Specification Section 02315: EXCAVATION AND FILL	Review of specifications for amendment to design.
40	Specifications, Section 02181	Attachments I and II were added to this Section. Attachment I is the ambient air criteria and Attachment II is guidance on calculating maximum concentrations from the ambient air criteria for different time durations.	Per comments on the draft design.
41	Specifications, Section 02181; Paragraph 1.3	The equipment submittal was revised to require government approval. The "layout" submittal was changed to a preconstruction submittal and renamed "treatment site layout and design." The "instrumentation and controls" submittal was combined with the "piping and instrumentation diagram" submittal.	Review of specifications for amendment to design.
42	Specifications, Section 02181; Paragraph 1.4	The last sentence of this paragraph was revised to refer to an Attachment for ambient air criteria instead of a paragraph within the section.	Review of specifications for amendment to design.
43	Specifications, Section 02181; Paragraph 1.5	This paragraph was revised to provide updated information on Group B and C soils including the disposal of the Drum Crushing Area soil off-site.	More information was available on the Group B and C soils based on sampling efforts. Navy and EPA agreed to dispose of the drum crushing soil off-island.

Change			
No.	Location of Revision	Revision	Reason For Change
44	Specifications, Section 02181; Paragraph 2.1.1	The total volume of soil to be treated was revised in this paragraph.	More information was available on the Group B and C soil quantities based on sampling efforts.
45	Specifications, Section 02181; Paragraph 2.1.2.1	The treatment criteria for 4,4'-DDD, 4,4'-DDE, 4,4'-DDT and heptachlor epoxide were removed from this table.	These constituents were found in the Drum Crushing Area soil only. Since this soil will not be treated, these constituents can be removed from the treatment criteria.
46	Specifications, Section 02181; Paragraph 2.1.2.2	The air emission criteria were reorganized and moved to Attachment I. The ambient air quality requirements were updated based on more updated regulations.	Per comments on the draft design.
47	Specifications, Section 02181; Paragraph 2.3.1	The first sentence was moved to the second sentence of the paragraph and the sentence "Pre-treatment of vegetation, including stumps and roots, shall include chipping or grinding as necessary to produce material that is compatible with the thermal desorption treatment unit." was added following "thermal desorption treatment system" The last sentence was deleted because the Drum Crushing Area soil will not be treated.	Per comments on the draft design and changes to the Drum Crushing Area requirements.
48	Specifications, Section 02181; Paragraph 3.1	The statement "Truck beds shall be lined with 10 mil polyethylene or other approved liner and covered properly to prevent release of the contaminated soil during transport. The burrito-type wrapping of the contaminated soil during transport is recommended" was added after "in roadworthy trucks" The last two sentences of the paragraph were revised to "Decontaminate tires and truck exterior as required to keep roadways and haul route free of contaminated soil and dust.	Review of specifications for amendment to design.
49	Specifications, Section 02181; Paragraph 3.2	The second sentence concerning the Drum Crushing Area was revised to state that this soil will not be treated.	Review of specifications for amendment to design.
50	Specifications, Section 02181; Paragraph 3.3	The subsection title under this paragraph was removed and the text is included under paragraph 3.3.	Review of specifications for amendment to design.
51	Specifications, Section 02181; Paragraph 3.4.1	In the first paragraph, the parenthesis ")" was removed from the second to last sentence following " and 2870C for PAHs"	Per comments on the draft design.

Change			
No.	Location of Revision	Revision	Reason For Change
52	Specifications, Section 02181; Paragraph 3.4.2	In the last sentence of the last paragraph, the word "clean" was replaced with "below the treatment criteria provided in paragraph 2.1.2.1 of this section."	Review of specifications for amendment to design.
53	Specifications, Section 02181; Paragraph 3.5.2	This paragraph title was revised to "Monitoring for Particulate Emissions" and the test method was revised to "40 CFR 50 Appendix B or equivalent method." The following two paragraphs were moved to Paragraph 3.5.3.	Per comments on the draft design.
54	Specifications, Section 02181; Paragraph 3.5.3	This paragraph titled "Ambient Air Monitoring" was added and includes the two paragraphs from the previous paragraph. Subsequent paragraphs were renumbered.	Review of specifications for amendment to design.
55	Specifications, Section 02181; Paragraph 3.5.4	The last paragraph concerning the OSHA PEL was deleted.	Review of specifications for amendment to design.
56	Specifications, Section 02181; Paragraph 3.6.1	This paragraph title was revised to Testing for Dioxins in Soil.	Review of specifications for amendment to design.
57	Specifications, Section 02181; Paragraph 3.6.2	This paragraph title was revised to Stack Testing for Dioxin Emissions. The last sentence of this paragraph was deleted.	Review of specifications for amendment to design.
58	Specifications, Section 02181; Paragraph 3.12	This paragraph was added and subsequent paragraphs were renumbered.	There was no specific information about the long-term operation of the treatment system and downtime.
59	Specifications, Section 02231, Paragraph 3.3	The reference to the Excavation and Fill section was changed to the replacement Section 02111.	Section 02315 was replaced by Section 02111.
60	Specifications, Section 02731	This Section was added and titled AGGREGATE SURFACE COURSE. Additional information was provided regarding temporary haul road aggregate materials and installation.	Review of specifications for amendment to design.
61	Specifications, Section 02770	This Section was added and titled CONCRETE SIDEWALKS AND CURBS AND GUTTERS. This Section provides additional information for replacement sidewalks and curb and gutter.	Review of specifications for amendment to design.
62	Specifications, Section 02821;	This Section title was revised to "CHAIN LINK FENCES AND GATES." Additional information was added to this Section regarding the required materials and installation of these site features.	Review of specifications for amendment to design.

Change			
No.	Location of Revision	Revision	Reason For Change
63	Specifications, Section 02920; Paragraph 2.3 first sentence	In the first sentence, the work "hay" was added after "Mulch shall be salt"	Review of specifications for amendment to design.
64	Specifications, Section 02920; Paragraph 3.3	This paragraph title was added and titled PLANTING AND TRANSPLANTING. This paragraph provides additional information regarding the planting and transplanting of trees.	Additional information was needed to provide guidance on successfully planting trees in this area as tree removal and replacement is a concern for the Navy.
65	Specifications, Section 02920; Paragraph 3.6	This paragraph title was added and titled TREE ESTABLISHMENT PERIOD. This paragraph and the subsequent subsections provide additional information regarding the tree establishment.	Additional information was needed to provide guidance on successfully planting trees in this area as tree removal and replacement is a concern for the Navy.
66	Specifications, Section 03300; Paragraphs 2.2.1 and 3.1	The reference to the Excavation and Fill section was changed to the replacement Section 02111.	Section 02315 was replaced by Section 02111.
67	Design Drawings	Sheets T5 and C20 were removed from the project drawings to reflect that soil excavation activities at the Waikele Branch, Naval Magazine, PHNC will not be included in the project scope of work. The project drawings were renumbered to reflect this modification.	Excavation at Waikele sites was removed from the scope of this design. Additional detail was needed for the stockpiles south of the treatment area.
		Sheet C5 "Stockpile Area Existing Conditions, Former NAS Barbers Point" was added to the project drawings. This drawing provides information regarding the PHNC soil stockpiles currently located at Former NAS Barbers Point.	

Change			
No.	Location of Revision	Revision	Reason For Change
68	Design Drawings, Drawing No. T1	The site location marker reading "WAIKELE BRANCH CONTAMINATED SOIL (SEE T5)" was deleted from the drawing.	Excavation at Waikele sites was removed from the scope of this design. Additional detail was needed for the stockpiles south
		The acronym definitions for <i>Naval Facilities Engineering Command</i> (NAVFAC) and <i>Naval Computer and Telecommunications Area Master Station</i> (NCTAMS) were revised. The abbreviation for underground storage tank (UST) was added to the general abbreviations.	of the treatment area.
		Sheets T5 and C20 were removed from the project drawings to reflect that soil excavation activities at the Waikele Branch, Naval Magazine, PHNC will not be included in the project scope of work. Sheet C5 "Stockpile Area Existing Conditions, Former NAS Barbers Point" was added to the project drawings. The project drawings were renumbered to reflect these modifications.	
69	Design Drawings, Drawing No. T2	The title "FORMER NAS BARBERS POINT" was revised to "FORMER NAS BARBERS POINT GROUP A AND B SITES." The consolidation unit was removed from this drawing. The site location marker was revised to "DRUM CRUSHING AREA DRAWING C4 GROUP B SITE." A reference to Sheet C5 was added to the site location marker for the PHNC Group A sites.	Both Group A and B soil will be stockpiled at NAS Barbers Point. The consolidation unit will not longer be used because the Drum Crushing Area soil will be taken offisland.
70	Design Drawings, Drawing No. T3	The drawing numbers for the Ford Island sites were updated.	Drawings T5 and C20 were deleted and C5 was added, so drawing numbers needed to be updated.
71	Design Drawings, Drawing No. T6	Renumbered as Sheet T5.	Review of drawings for amendment to design.
72	Design Drawings, Drawing No. T7	Renumbered as Sheet. T6.	Review of drawings for amendment to
		The title "NRTF LUALUALEI" was revised to "NRTF LUALUALEI GROUP A AND B SITES"	design.
		The site location marker reading "BUILDING 81 DRAWING C21 GROUP A AND B SITE)" was revised to "BUILDING 81 DRAWING C21"	

Change			
No.	Location of Revision	Revision	Reason For Change
73	Design Drawings, Drawing No. C1	Features in the stockpile location north of the treatment site were updated to reflect current conditions in this area.	Review of drawings for amendment to design.
		The PWC prefabricated building that was recently erected was added to the drawing.	
		The site location marker reading "EXISTING LINER WILL CONTAIN PCB CONTAMINATED SOIL FROM PHNC STOCKPILED BY OTHERS GROUP B AND GROUP C SITES: 1,500 C.Y. OF SOIL TO BE TREATED" was added to the drawing.	
		The site location marker for the three existing stockpiles was revised to read "THREE EXISTING STOCKPILES OF PCB CONTAMINATED SOIL FROM FROMER NAS BARBERS POINT GROUP A SITE: 1,190 C.Y. OF SOIL TO BE TREATED."	
		The site location marker for the "EXISTING FENCED AREA: STOCKPILES OF PCB CONTAMINATED SOIL FROM PHNC" was revised to clarify the volume of soil to be treated as "GROUP A SITE: 1,150 C.Y. OF SOIL TO BE TREATED (SEE DRAWING C5)." PHNC soil stockpile extents were added to the drawing.	
		The line type identifying the Former Drum Crushing Area boundary was revised and added to the drawing legend.	
		The identification "Concrete Utility Ditch Depth = 7'" was revised to "Concrete Utility Box Depth = 7'"	
		The identification "Protect Transformer Box" was revised to "Transformer Box"	
		The text "Survey Control Point" was moved to clarify its identification as "Survey Control Point "PIT-1""	

Change			
No.	Location of Revision	Revision	Reason For Change
74	Design Drawings, Drawing No. C2	The line type identifying the Former Drum Crushing Area boundary was revised and added to the drawing legend. The hatching with the Former Drum Crushing Area was removed. The identification "Tower H=15" was removed from the Former Drum Crushing Area.	Review of drawings for amendment to design.
		The identification "Piles of Non-Contaminated Soil" was revised to "Stockpiles of Non-Contaminated Soil"	
		The identification "Partially Filled Box Extends Beyond (Both Ends) Extent Unknown" was revised to ""Partially Filled Box Extends Beyond (Both Ends) Extent Unknown, Depth = 7"	
		The identification "Protect Transformer Box and Fence" was revised to "Transformer Box and Fence"	
		The area available for treatment site was revised in the location marker to be 394,486 square feet.	
		A shaded outline was added to the north of the treatment area to more clearly define the area for parking and temporary facilities.	
		Features in the stockpile location north of the treatment site were updated to reflect current conditions in this area.	
		The PWC prefabricated building that was recently erected was added to the drawing.	
		The words "except from Former Drum Crushing Area" were added to the label on the road east of the treatment area.	
		The arrow and note "To Consolidation Unit" were removed.	
		Note 4 was revised to allow use of the road east of the treatment area for hauling contaminated soil from the Former Drum Crushing Area only.	
		The statement "Design treatment site traffic patterns to avoid contact of potentially contaminated trucks and equipment with treated soil." was added to Note 12.	
		Note 14 was revised to delete the word "Design" and add the work "Provide"	
		Note 16 was revised to remove references to treatment of the Former Drum Crushing Area and indicate that this soil is to be disposed of off-site.	

Change			
No.	Location of Revision	Revision	Reason For Change
75	Design Drawings, Drawing No. C3	Note 4 was revised to remove references to the Drum Crushing Area and its disposal in the consolidation unit.	Review of drawings for amendment to design.
		The Note to "TREATED SOIL EXCEPT FROM DRUM CRUSHING AREA MAY BE USED TO BACKFILL EXCAVATION SITES OR MAY BE PLACED IN THE CORAL PIT" was revised to "TREATED SOIL TO BE USED TO BACKFILL EXCAVATION SITES. ANY EXCESS TREATE SOILS TO BE PLACED IN THE CORAL PIT"	
		The soil volumes were revised.	
76	Design Drawings, Drawing No. C4	The transport route identification "ACCES ROAD TO REMAIN" was revised to "ROAD MAY BE USED TO HAUL SOILS FROM THE FORMER DRUM CRUSHING AREA."	Review of drawings for amendment to design.
		Note 1, the words "with successfully treated soil" was added following "excavated areas"	
		Note 3 was revised to read "Soil from this site will not be treated by thermal desorption. Dispose of soils from this site off island."	
		The excavation volume identification for the Former Drum Crushing Area was revised by adding the words "GROUP B SOIL"	
		The location identification for the Former Drum Crushing Scaffolding was revised by deleting the words "DECONTAMINATE, AND DISPOSE OF" and adding the words "TRANSPORT TO AND DECONTAMINATE SCAFFOLDING WITHIN TREATMENT SITE. DISPOSE SUCCESSFULLY DECONTAMINATED SCAFFOLDING OFF-SITE."	
77	Design Drawings, Drawing No. C5	New Sheet C5 titled "Stockpile Area Existing Conditions, Former NAS Barbers Point" was added to the project drawings.	Provide more detail in this area for the contractor so it is clear what work will need to be completed.

Change			
No.	Location of Revision	Revision	Reason For Change
78	Design Drawings, Former Drawing C5	Renumbered as Sheet C6.	Review of drawings for amendment to
		The excavation volume identification for Transformers TA-01 and TC-04 were revised by adding the words "GROUP B SOIL"	design.
		Note 2 was renumbered as Note 3 and revised by adding the words "WITH SUCCESSFULLY TREATED SOIL."	
		New Note 2 was added as "HAUL ALL EXCAVATED SOIL AND MATERIAL (CONCRETE AND ASPHALT) TO TREATMENT SITE FOR TREATMENT."	
79	Design Drawings, Drawing No. C6	Renumbered as Sheet C7.	Review of drawings for amendment to design.
		The excavation volume identification for Transformers TC-06D and TC-07D were revised by adding the words "GROUP B SOIL"	
		Note 2 was renumbered as Note 3 and revised by adding the words "WITH SUCCESSFULLY TREATED SOIL."	
		New Note 2 was added as "HAUL ALL EXCAVATED SOIL AND MATERIAL (CONCRETE AND ASPHALT) TO TREATMENT SITE FOR TREATMENT."	
80	Design Drawings, Drawing No. C7	Renumbered as Sheet C8.	Review of drawings for amendment to design.
		The excavation volume identification for Transformers TD-01 and TD-02 were revised by adding the words "GROUP B SOIL"	design.
		Note 2 was renumbered as Note 3 and revised by adding the words "WITH SUCCESSFULLY TREATED SOIL."	
		The sheet notes were revised by adding new Note 2 "HAUL ALL EXCAVATED SOIL AND MATERIAL (CONCRETE AND ASPHALT) TO TREATMENT SITE FOR TREATMENT"	

Change No.	Location of Revision	Revision	Reason For Change
81	Design Drawings, Drawing No. C8	Renumbered as Sheet C9.	Review of drawings for amendment to design.
		The excavation volume identification for Transformers TD-03 and TD-05 were revised by adding the words "GROUP B SOIL"	uesign.
		Note 2 was renumbered as Note 3 and revised by adding the words "WITH SUCCESSFULLY TREATED SOIL."	
		The sheet notes were revised by adding new Note 2 "HAUL ALL EXCAVATED SOIL AND MATERIAL (CONCRETE AND ASPHALT) TO TREATMENT SITE FOR TREATMENT"	
82	Design Drawings, Drawing No. C9	Renumbered as Sheet C10.	Review of drawings for amendment to
		The excavation extent was revised for Transformer TF-01/TF-01D to be bounded on the northwest by sample location TF-01-07. The transformer excavation area and volume were increased to be 818 square feet and 65 cubic yards, respectively.	design. Comments on draft requested a change in the delineation boundary for these sites.
		The excavation volume identification for Transformers TD-07 and TF-01/TF-01D were revised by adding the words "GROUP B SOIL"	
		Note 2 was renumbered as Note 3 and revised by adding the words "WITH SUCCESSFULLY TREATED SOIL."	
		The sheet notes were revised by adding new Note 2 "HAUL ALL EXCAVATED SOIL AND MATERIAL (CONCRETE AND ASPHALT) TO TREATMENT SITE FOR TREATMENT"	

Change No.	Location of Revision	Revision	Reason For Change
83	Design Drawings, Drawing No. C10	Renumbered as Sheet C11.	Review of drawings for amendment to
		The excavation extent was revised for Transformer TF-04 to increase the extent of excavation by 10 feet on the west and south boundaries. The transformer excavation area and volume were revised to be 2,273 square feet and 450 cubic yards, respectively.	design. Comments on draft requested a change in the delineation boundary for this site.
		The excavation volume identification for Transformers TF-04 and TF-05 were revised by adding the words "GROUP B SOIL"	
		Note 2 was renumbered as Note 3 and revised by adding the words "WITH SUCCESSFULLY TREATED SOIL."	
		The sheet notes were revised by adding new Note 2 "HAUL ALL EXCAVATED SOIL AND MATERIAL (CONCRETE AND ASPHALT) TO TREATMENT SITE FOR TREATMENT"	
84	Design Drawings, Drawing No. C11	Renumbered as Sheet C12.	Review of drawings for amendment to
		The excavation volume identification for Transformers TF-07 and TF-08 were revised by adding the words "GROUP B SOIL"	design.
		Note 2 was renumbered as Note 3 and revised by adding the words "WITH SUCCESSFULLY TREATED SOIL."	
		The sheet notes were revised by adding new Note 2 "HAUL ALL EXCAVATED SOIL AND MATERIAL (CONCRETE AND ASPHALT) TO TREATMENT SITE FOR TREATMENT"	

Change			
No.	Location of Revision	Revision	Bassan For Change
NO.	Location of Revision	Revision	Reason For Change
85	Design Drawings, Drawing No. C12	Renumbered as Sheet C13.	Review of drawings for amendment to
		The excavation extent was revised for Transformer TF-17 to be bounded on the southwest by the concrete curb. The transformer excavation area and volume were decreased to be 140 square feet and 10 cubic yards, respectively.	design. Comments on draft requested a change in the delineation boundary for this site.
		The excavation volume identification for Transformers TF-09 and TF-17 were revised by adding the words "GROUP B SOIL"	
		Note 2 was renumbered as Note 3 and revised by adding the words "WITH SUCCESSFULLY TREATED SOIL."	
		The sheet notes were revised by adding new Note 2 "HAUL ALL EXCAVATED SOIL AND MATERIAL (CONCRETE AND ASPHALT) TO TREATMENT SITE FOR TREATMENT"	
86	Design Drawings, Drawing No. C13	Renumbered as Sheet C14.	Review of drawings for amendment to
		The excavation volume identification for Transformers TF-18 and TG-01 were revised by adding the words "GROUP B SOIL"	design.
		Note 2 was renumbered as Note 3 and revised by adding the words "WITH SUCCESSFULLY TREATED SOIL."	
		The sheet notes were revised by adding new Note 2 "HAUL ALL EXCAVATED SOIL AND MATERIAL (CONCRETE AND ASPHALT) TO TREATMENT SITE FOR TREATMENT"	

Change			
No.	Location of Revision	Revision	Reason For Change
87	Design Drawings, Drawing No. C14	Renumbered as Sheet C15. The excavation extent was revised for Transformer TG-06 to be bounded on the east by the composite sample location. The transformer excavation area and volume were decreased to be 159 square feet and 12 cubic yards, respectively. The excavation volume identification for Transformers TG-03 and TG-06 were revised by adding the words "GROUP B SOIL"	Review of drawings for amendment to design. Comments on draft requested a change in the delineation boundary for this site.
		Note 2 was renumbered as Note 3 and revised by adding the words "WITH SUCCESSFULLY TREATED SOIL." The sheet notes were revised by adding new Note 2 "HAUL ALL EXCAVATED SOIL AND MATERIAL (CONCRETE AND ASPHALT) TO TREATMENT SITE FOR TREATMENT"	
88	Design Drawings, Drawing No. C15	Renumbered as Sheet C16. The excavation extent was revised for Transformer TI-03 to divide the previous extent into separate excavations, one each on the northwest and southwest concerns of the transformer station. The transformer excavation area and volume were decreased to be 184 square feet and 14 cubic yards, respectively.	Review of drawings for amendment to design. Comments on draft requested a change in the delineation boundary for this site.
		The excavation volume identification for Transformers TI-03 and TI-04D were revised by adding the words "GROUP B SOIL" Note 2 was renumbered as Note 3 and revised by adding the words "WITH SUCCESSFULLY TREATED SOIL." The sheet notes were revised by adding new Note 2 "HAUL ALL EXCAVATED SOIL AND MATERIAL (CONCRETE AND ASPHALT) TO TREATMENT SITE FOR TREATMENT"	

Change No.	Location of Revision	Revision	Reason For Change
89	Design Drawings, Drawing No. C16	Renumbered as Sheet C17.	Review of drawings for amendment to
	Beorgii Brawnigo, Brawnig No. 010	Note for TD-10 was revised to read, "EXCAVATION IS NOT ANTICIPATED AT THIS SITE."	design.
		In the note for TF-06, the word "RESTORATION" was added before "WORK IS SHOWN."	
90	Design Drawings, Drawing No. C17	Renumbered as Sheet C18.	Review of drawings for amendment to
		The excavation volume identification for Transformer TC-01 was revised by adding the words "GROUP B SOIL"	design.
		Note 2 was renumbered as Note 3 and revised by adding the words "WITH SUCCESSFULLY TREATED SOIL."	
		The sheet notes were revised by adding new Note 2 "HAUL ALL EXCAVATED SOIL AND MATERIAL (CONCRETE AND ASPHALT) TO TREATMENT SITE FOR TREATMENT"	
91	Design Drawings, Drawing No. C18	Renumbered as Sheet C19.	Review of drawings for amendment to
		In the note for TF-10, the word "RESTORATION" was added before "WORK IS SHOWN."	design.
		The areas requiring work have been outlined with bold lines to more clearly show where work is to be done.	

Change				
No.	Location of Revision	Revision	Reason For Change	
92	Design Drawings, Drawing No. C19	Renumbered as Sheet C20.	Review of drawings for amendment to	
		The Excavation Plan for Transformer D-02 was added.	design. Some changes based on commer on the draft design.	
		The identification for Transformer D-02 "REMOVE AND TREAT FORMER TRANSFORMER D-02 CONCRETE PAD" was revised by adding the words "RESEED AREA."		
		An identification for the excavation at Transformer E-09 was added to indicate "SEED DISTURBED AREA." Hashing for disturbed area was changed.		
		The pavement identification "A/C PAVEMENT (BROKEN)" was removed from the Transformer E-09 site plan.		
		The excavation volume identification for Transformers D-02 and E-09 were revised by adding the words "GROUP B SOIL"		
		Note 2 was renumbered as Note 3 and revised by adding the words "WITH SUCCESSFULLY TREATED SOIL."		
		The sheet notes were revised by adding new Note 2 "HAUL ALL EXCAVATED SOIL AND MATERIAL (CONCRETE AND ASPHALT) TO TREATMENT SITE FOR TREATMENT"		
93	Design Drawings, Drawing No. C20	Removed from the project drawings.	Transformer Sites S61 and S127 at Waikele Branch, Naval Magazine, PHNC have been removed from the project scope of work.	

Change			
No.	Location of Revision	Revision	Reason For Change
94	Design Drawings, Drawing C21	Shading was removed from Stockpiles #1, #2, and #3 associated with Building 81. The following stockpile identification was added "EXISTING LINED STOCKPILES OF PCB CONTAMINATED SOIL, GROUP A SITE: 3,275 C.Y. OF SOIL TO BE TREATED."	Review of drawings for amendment to design and comments on draft design.
		The excavation volume identification for Building 81 and Transformer I-4 were revised by adding the words "GROUP B SOIL." The excavation volume identification for Building 81 Stockpiles was revised by adding the words "GROUP A SOIL." The word "EXCAVATION" was replaced with the word "STOCKPILE" in this box.	
		The existing USTs and the associated piping was added to the drawings on this sheet. The notes near this UST include the requirement to protect the piping and utilities for this UST and to provide access to this UST at all times.	
		An excavation area on the east side of Building 81 was added and the volume and excavation area were updated accordingly.	
		The fence in the excavation area at the southeast corner of Building 81 was removed as it no longer exists.	
		The excavation area in the northeast corner of Building 81 was revised to include the two small fenced areas and notes that the fences should not be replaced and that excess vegetation in this area should be removed.	
		Note 2 was renumbered as Note 3 and revised by adding the words "WITH SUCCESSFULLY TREATED SOIL."	
		The sheet notes were revised by adding new Note 2 "HAUL ALL EXCAVATED SOIL AND MATERIAL (CONCRETE AND ASPHALT) TO TREATMENT SITE FOR TREATMENT"	
95	Design Drawings, Drawing C25	Analytical data for Transformers S61 and S127 were removed.	Transformer Sites S61 and S127 at Waikele Branch, Naval Magazine, PHNC have been removed from the project scope of work.



Basis of Design for Thermal Desorption Treatment of PCB-Contaminated Soil

Former Naval Air Station Barbers Point Oahu, Hawaii

Prepared for

Department of the Navy Pacific Division Naval Facilities Engineering Command 258 Makalapa Drive, Suite 100 Pearl Harbor, Hawaii 96860-3134

Prepared by

Earth Tech, Inc. 841 Bishop Street, Suite 500 Honolulu, Hawaii 96813-3920

and

Tetra Tech EM Inc. 2828 Paa Street, Suite 3080 Honolulu, Hawaii 96819-4448

January 2003

CONTENTS

AC	CRONYMS AND ABBREVIATIONS	iii		
1.	INTRODUCTION			
2.	. LAYOUT OF TREATMENT SITE			
	 2.1 Thermal Desorption Treatment System 2.2 Soil Preparation Area 2.3 Interim Staging Area for Treated Soil 2.4 Temporary Facilities Area 	4 5 6 6		
3.	SITE PREPARATION	6		
	 3.1 Clearing and Grubbing 3.2 Subgrade Preparation 3.3 Drainage System 3.4 Access Road and Entrances 3.5 Fencing 3.6 Site Restoration 	7 7 8 8 8 8		
4.	TREATMENT CRITERIA	9		
5.	AIR MONITORING FOR PARTICULATES AND CONTAMINANTS	10		
6.	6. SOIL SAMPLING			
7.	. WASTE DISPOSAL			
8.	EXCAVATION, HAULING, AND TREATMENT OF ADDITIONAL CONTAMINATED SOIL	13		
9.	REFERENCES	15		
	TABLES			
4-1	Contaminated Soil Treatment Criteria	10		
5-1	4-1 Ambient Air Quality Criteria			

ACRONYMS AND ABBREVIATIONS

μg/m³ Micrograms per cubic meter

CERCLA Comprehensive Environmental Response, Compensation, and

Liability Act

CFR Code of Federal Regulations cfs Cubic feet per second

CLEAN Comprehensive Long-Term Environmental Action Navy

CO Carbon monoxide CTO Contract Task Order

cy Cubic yard

4,4'-DDDDichlorodiphenyldichloroethane4,4'-DDEDichlorodiphenyldichloroethylene4,4'-DDTDichlorodiphenyltrichloroethane

DOH Department of Health

EPA U.S. Environmental Protection Agency FRAC Fixed-price remedial action contractor

GAC Granular activated carbon
HAR Hawaii Administrative Rule

hr Hour

MEK Methyl ethyl ketone mg/kg Milligrams per kilogram MTBE Methyl tertiary butyl ether

NAS Naval Air Station

NCTAMS Naval Computer and Telecommunications Area Master Station

NCTAMS PAC Naval Computer and Telecommunications Area Master Station Pacific

NIOSH National Institute for Occupational Safety and Health

NO₂ Nitrogen dioxide

NRTF Naval Radio Transmitting Facility

PACNAVFACENGCOM Pacific Division, Naval Facilities Engineering Command

PAH Polynuclear aromatic hydrocarbons

PCB Polychlorinated biphenyl
PEL Permissible exposure limit
PHNC Pearl Harbor Naval Complex

PM Particulate matter ppb Part per billion

PRG Preliminary remediation goal

 $\begin{array}{ccc} PWC & Public Works Center \\ RA & Removal action \\ SO_2 & Sulfur dioxide \\ TBD & To be determined \end{array}$

TCDD Tetrachlorodibenzodioxin
TPH Total petroleum hydrocarbon
TWA Time-weighted average

1. INTRODUCTION

This report discusses the basis of design for treating soil contaminated primarily with polychlorinated biphenyls (PCB) by thermal desorption. Some soils to be treated will be hauled from existing stockpiles; others will be excavated and hauled from various sites where contamination has been detected but no excavation has occurred. The contaminated soils all originate from Naval facilities on the island of Oahu, Hawaii. This report has been prepared for the Pacific Division, Naval Facilities Engineering Command (PACNAVFACENGCOM), under Comprehensive Long-Term Environmental Action Navy (CLEAN) II Contract No. N62742-94-D-0048, Contract Task Order (CTO) 0004. This report provides the rationale that was used to develop the drawings and performance specifications for the treatment project.

Contaminated soils to be treated by thermal desorption have been assigned to one of three groups (Group A, Group B, or Group C), as described below.

Group A Soils: The Navy has conducted several removal actions (RA) and other field activities at the Naval Computer and Telecommunications Area Master Station Pacific (NCTAMS PAC) (consisting of Naval Radio Transmitting Facility [NRFT] Lualualei and Naval Computer and Telecommunications Area Master Station [NCTAMS] Wahiawa), former Naval Air Station (NAS) Barbers Point, and Pearl Harbor Naval Complex (PHNC) that generated some of the soil to be treated. The excavated soil from NCTAMS PAC is currently stored in a stockpile adjacent to Building 81 at NRTF Lualualei. The excavated soil from former NAS Barbers Point and PHNC is currently stored separately at two temporary stockpile locations in the western part of former NAS Barbers Point, near the thermal desorption treatment site. These stockpiled soils are jointly referred to as Group A. Soil contaminated with PCBs, polynuclear aromatic hydrocarbons (PAH), and chlordane has been excavated from various sites within these Naval facilities. A portion of the soil also contains total petroleum hydrocarbons (TPH) as diesel and motor oil at concentrations that exceed the treatment criteria.

Group B Soils: In addition to the soils discussed above, previous investigations have identified additional contaminated soil at six Naval installations on Oahu: Ford Island, PHNC; PHNC; Iroquois Point, PHNC; Building 81, NRTF Lualualei; and former Drum Crushing Area, former NAS Barbers Point. Soil at most of these sites has not yet been excavated; excavation and treatment of in situ soils are part of this design. Recent sampling and analysis at each of the Group B sites have been used to establish the areas and depths for excavation areas shown on the design drawings. Some soil from Group B sites will have been excavated and stockpiled at former NAS Barbers Point for treatment as shown in the design drawings. Contamination of Group B soil is related to former operations at these sites and is primarily of PCBs associated with transformers. Soils at the former NAS Barbers Point and NRTF Lualualei sites also contain PAHs (benzo[a]pyrene). The soils at the former Drum Crushing Area at NAS Barbers Point contain dichlorodiphenyldichloroethane (4,4'-DDD), dichloro-diphenyldichloroethylene (4,4'-DDE), dichlorodiphenyltrichloroethane (4,4'-DDT), alpha-chlordane, gamma-chlordane, heptachlor epoxide, and arsenic at concentrations that exceed regulatory criteria and will not be treated in the thermal desorption unit. This soil will instead be excavated and disposed of off island.

Group C Soils: Additional soil contaminated by PCBs has been identified at the following Naval facilities on Oahu: NRTF Lualualei, NCTAMS PAC Wahiawa, PHNC Shipyard, Halawa-Main Gate, Naval Housing, West Loch, and Waipio Peninsula. These sites are designated Group C sites and consist of both in situ soil that will require excavation and stockpiled soil. Additional sampling, analysis, and other activities by the Navy are required to establish the scope of work required at each

Group C site before the Group C soils can be included in the design documents; after these areas have been delineated, an amendment to this design will be prepared.

<u>Thermal Desorption Treatment:</u> Treatment and disposal alternatives considered for contaminated soils are described in the engineering evaluation/cost analysis (Earth Tech 2000). The scope of the current design includes requirements for hauling and treating contaminated soil from Group A stockpiles and excavating, hauling, and treating contaminated soil from Group B sites to specified treatment criteria using a thermal desorption process. Any concrete or asphalt mixed with the soil will also be crushed and treated.

The thermal desorption process will heat soil to transfer organic contaminants to the gas phase. Organic vapors will then be treated by a granular activated carbon (GAC) adsorption system or other suitable treatment system. Treatment by thermal desorption will allow for reuse of the soil. Soil that has successfully been treated may be used for backfill at excavation sites. Excess soil that has been successfully treated will be placed in an existing, open coral pit adjacent to the treatment site.

<u>Drum Crushing Area:</u> Soil at the Drum Crushing Area will be excavated and sent off island for disposal without treatment.

<u>Scope of Work:</u> The work required under the design documents will include furnishing all labor, materials, and equipment for the following activities:

Treatment Site:

- Clear and grub brush and debris at the treatment site and the coral pit located south of the treatment area.
- Verify the location and status of subsurface utilities that may be affected by construction within the treatment area.
- Backfill an existing abandoned concrete utility trench at the treatment area.
- Provide a detailed design for the treatment site, including layout and access, a grading and drainage plan, and site details.
- Grade the site and establish drainage control measures that will remain in place throughout the duration of construction and treatment.
- Install a temporary fence.
- Construct areas for interim staging, preparation, and treatment of soil.
- Construct access roadways and entrances.
- Construct temporary stockpile laydown areas (segregated into daily batches) for treated soil that is pending confirmational analysis.
- Mobilize treatment equipment to the site.
- Set up the treatment system.
- Connect the treatment unit to utilities.
- Start up, shakedown, and test the treatment system.
- Conduct a definitive demonstration test of the system.
- Treat contaminated soil from Group A and Group B sites shown in the design drawings.

- Stage treated soil in temporary stockpiles.
- After analytical results confirm that the treated soil meets the cleanup criteria, use treated soil to fill excavations for Group B and C sites or place the soil in the adjacent coral pit south of the treatment area.
- If treated soil does not meet specified cleanup criteria for known contaminants, retreat the soil batch using thermal desorption.
- Maintain all new stockpiles created during the treatment project.
- After all contaminated soils have been treated, sample and analyze underlying soil at all former stockpile locations at the treatment site, including underlying sand and base course at the soil preparation area; treat contaminated soils, if any are detected, by thermal desorption.
- If the results for any treated soil fail to meet specified cleanup criteria, analyze the underlying soil at the interim staging area for treated soil; treat contaminated underlying soils by thermal desorption if contaminants are detected.
- Sample and decontaminate (if required) the treatment system pad and demolish the pad; decontaminate all equipment.
- Dispose of all treatment waste products at appropriate disposal facilities.
- Demobilize equipment and conduct final site cleanup.
- Remove temporary fencing.
- Perform incidental, related work.

Group A Sites (existing stockpiles):

- Haul contaminated soil from existing stockpiles to the treatment site.
- Conduct maintenance on the existing stockpiles at NRTF Lualualei and former NAS Barbers Point until all contaminated soil from these stockpiles has been hauled for treatment.
- Provide dust control for all Group A stockpiles, especially stockpiles at NRTF Lualualei that are subject to high winds.
- After all contaminated soils have been hauled for treatment, sample and analyze underlying soil at the locations of all former stockpiles; excavate and haul contaminated underlying soils, if any are detected, to the thermal desorption treatment site.

Group B Sites(stockpiles and soil requiring excavation):

- Verify the location and status of subsurface utilities that may be affected by construction within areas to be excavated.
- Clear and grub vegetation and debris at areas designated to be excavated.
- Excavate and haul contaminated soils to the treatment site. Move stockpiled Group B soil to treatment site. Excavate Drum Crushing Area and send contaminated soil from this site only off island for disposal.
- Provide dust control for all excavation, transfer, and transport activities.
- After confirmation sampling and analysis by others shows that all contaminated soil has been removed, backfill and restore the excavated sites.

• Excavations may be backfilled using soil that was successfully treated.

Group C Sites (future work):

• Work is expected to be similar to the scope of the Group B site work. A preliminary estimate of the number of sites and total volume of soil requiring treatment for Group C is provided in the specifications and design drawings. An amendment to the design will be prepared to provide additional detail for work at the Group C sites.

The remainder of this report discusses the design basis for the project, the necessary preparation, the general site layout, and general requirements for air monitoring, soil sampling, and waste disposal. Specific information on transportation of soil to the treatment site, operation of the treatment equipment, sampling and analysis, and waste disposal will be included in the work plan to be prepared by the fixed-price remedial action contractor (FRAC).

2. LAYOUT OF TREATMENT SITE

The area directly south of the temporary stockpile facility at former NAS Barbers Point was chosen as the site for treatment of soils contaminated primarily by PCBs based on (1) the minimal effort required for site preparation, (2) the availability of water service, (3) the accessibility of the site, (4) the minimal impact on facility operations and surrounding communities, and (5) site security (Earth Tech 2000). The available area is approximately 9 acres and is bounded on the north by an existing chain-link fence, on the west by Coral Sea Road, on the east by a dirt road, and on the south by kiawe brush and an open coral pit (see the design drawings).

The area chosen for the treatment site has been partially cleared. The cleared portion currently contains some piles of brush and debris, a 7-foot-deep concrete utility box of unknown length that may go across the site, and piles of uncontaminated fill. The ground slopes toward the western end of the site. Water is available on site from two risers on a centrally located water main.

The treatment site will include locations for (1) delivery and preparation of contaminated soil, (2) the treatment system, and (3) interim staging for treated soil pending confirmation that treatment criteria have been met. Parking, a temporary office, a lunchroom, and maintenance facilities should also be included within this site. The FRAC contractor will prepare a detailed design for the treatment site. The design will include locations and sizes of treatment components, the soil preparation area, the interim staging area for treated soil, temporary facilities, access roads, fences, and gates. The design will also include drainage and grading plans and construction details.

2.1 THERMAL DESORPTION TREATMENT SYSTEM

The design documents provide criteria for design of the treatment site including necessary preparation, general site grading and layout, and general requirements for sampling. The contractor will be responsible for providing a specific design for layout and operation of the treatment system. Specific installation and operation details provided in this document may be modified depending on the specific treatment equipment and layout designed by the FRAC contractor. The thermal desorption treatment system will be located within the designated treatment site. The thermal desorption system will consist of a heated rotary kiln to heat the soil and transfer organic contaminants to a vapor-phase stream. The vapor will be drawn through the system and treated by GAC adsorption units or other suitable treatment system. If GAC beds are used, they will be arranged in series and be situated so that they are easily accessible to facilitate change-out of the carbon when needed. The GAC beds will be placed on a foundation designed by the contractor.

Areas that underlie soil piles that are awaiting treatment will be lined and bermed. Compacted base course and an impermeable liner with surrounding berms will be installed in the areas for delivery and preparation of the soil and beneath the post-treatment stockpiles. A curbed concrete pad, designed by the contractor, will be constructed for installation and operation of the treatment system. After all contaminated soil has been treated, the surface of the concrete pad will be sampled and, when analytical results verify that the treatment criteria are not exceeded, the pad will be demolished and the resulting concrete rubble will be placed in the coral pit south of the treatment area. If concentrations on the pad exceed treatment criteria, the concrete will first be cleaned, then demolished, and placed in the coral pit. Soil that underlies stockpiles, base course, and sand at the soil delivery and preparation area, and post-treatment stockpile areas will be sampled and analyzed to evaluate whether the area has been contaminated as a result of operations. If sampling indicates that soil, base course, or sand has been contaminated, the contaminated material will be removed and treated by the thermal desorption system. The liners will also be removed and disposed of off site at an approved facility. Soil from the Drum Crushing Area and any other soil that cannot be treated by the thermal desorption system will be disposed of off island. In addition, the base course and sand in the area of the post-treatment stockpiles will require testing only if contaminant concentrations in any stockpile of treated soil exceed the treatment criteria.

Treated soil may be used as backfill for the Group B and C excavations following treatment and verification of cleanup. Excess treated soil, along with sand, base course, and concrete rubble, will be placed in the coral pit south of the treatment area after laboratory analysis confirms all criteria have been met. The thermal desorption system is expected to operate 24 hours per day and use diesel fuel. Fuel will be stored in double-walled tanks or in fuel trailers on the treatment system pad. A road will be constructed to the treatment system pad to provide access for carbon change-out and fuel delivery or fuel trailer changeout. Cooling water required by the treatment system will be piped from the existing water main, located centrally on site, to temporary storage tanks. There is no electricity available at the site; therefore, a diesel-powered generator will be required to provide electricity. An emergency backup generator will also be required.

2.2 SOIL PREPARATION AREA

A soil preparation area must be established and may include a crusher and screen, a blended stockpile of contaminated soil, a decontamination area for delivery trucks, and space for equipment to transfer soil. Federal regulations, specifically 40 Code of Federal Regulations (CFR) 761.65 (c)(9), require that temporary stockpiles of contaminated soil be established on an impermeable barrier. Because contaminated soil may be piled, transported, crushed, and blended in the preparation area, the entire preparation area should be constructed on a low-permeability liner protected by layers of compacted base course and sand. The proposed design is to lay a chemical-resistant liner over a 3-inch-thick layer of sand. A second, 3-inch-thick layer of sand will then be placed over the liner, followed by a geotextile liner, and completed with a 6-inch thick layer of base course. Potentially contaminated base course and sand will be removed, tested, and treated if necessary by the thermal desorption system at the end of the treatment program.

Haul trucks that bring contaminated soil to the preparation area will be routed and emptied to avoid cross-contamination of truck tires and to minimize requirements for decontamination. The decontamination area will be graded so that decontamination water drains to a lined collection sump. If decontamination water accumulates, reasonable quantities may be used to control dust from stockpiles of contaminated soil. Measures to control fugitive dust, such as watering the soil and covering stockpiles with a temporary liner as much as feasible, will be used to control airborne particulates.

The preparation area will be bermed to prevent contaminated soil or water from migrating from the site. A run-on control system will be constructed to collect and control the volume of water that would result from a 24-hour, 25-year storm, preventing the water from flowing onto the blending area. Data from the National Weather Service indicate that rainfall for a 25-year storm at former NAS Barbers Point is 10 inches in 24 hours. The peak anticipated rate of runoff was calculated using the Rational Method. Calculations are shown below:

```
Q = CC_{f}iA
Q = 0.4 * 1.1 * 0.417 * 9.1
Q = 1.67 \text{ cubic feet per second (cfs)}
Q = \text{peak rate of runoff}
C = \text{runoff coefficient (0.4 for a flat, residential area with impervious soil)}
C_{f} = \text{Frequency factor (1.1 for 25-year storm)}
i = \text{intensity (10 inches/24 hours)}
A = \text{acres (9.1 acres)}
```

The runoff coefficient selected is appropriate for a surface that consists of compacted base course with no vegetation.

2.3 INTERIM STAGING AREA FOR TREATED SOIL

Each day's quantity of treated soil, expected to be approximately 100 cubic yards (cy), will be held in an individual, temporary stockpile where the soil will be sampled for laboratory analysis. Soil will be staged in daily stockpiles to minimize the amount that would require retreatment if treatment criteria are not met. Treated soil will remain in the interim staging area until laboratory analysis confirms that all treatment criteria have been met; then it will be transported for backfill of the Group B sites or placed in the coral pit located south of the treatment area.

The interim staging area for the treated soil will be located within the treatment area. Ten days should be allowed to collect confirmation samples, ship the samples, allow a 5-workday turnaround for analytical results from the laboratory, and for time to transport and place treated soil. A liner will be constructed beneath the entire interim storage area; the liner will be constructed in the same manner as in the soil preparation area. An impermeable, chemical-resistant liner will be laid over a 3-inch-thick layer of sand. A second, 3-inch-thick layer of sand will then be placed over the liner, followed by a geotextile liner, and completed with a 6-inch thick layer of base course. Berms will be installed around the area to divert off-site runoff. Stockpiles will be covered with temporary 10-mil polyethylene sheeting to control fugitive dust. The open end of the stockpiles will be at the lowest elevation and will drain to lined collection sumps to prevent potentially contaminated water from flowing off site.

2.4 TEMPORARY FACILITIES AREA

Parking, a temporary office, a lunchroom, and maintenance facilities will be located adjacent to the treatment area. A pedestrian gate will provide access to the site for foot traffic if the facilities are located outside the fence.

3. SITE PREPARATION

The site will be prepared before treatment equipment is mobilized to the site. Preparation will include:

- Clearing and grubbing of the treatment site
- Clearing and grubbing the coral pit
- Preparing the pit to receive treated soil
- Disposing of existing rubble and debris at a municipal landfill
- Disposing of green waste at the public works center (PWC) composting operation adjacent to the treatment site (if approval is granted by PWC) or other approved facility
- Verifying the location and status of subsurface utilities
- Building access entrances and roads
- Backfilling the concrete utility trench located on the site
- Placing compacted base course on portions of the site
- Constructing the feed soil and soil preparation areas
- Constructing a concrete treatment pad
- Building an interim staging area
- Grading the site
- Constructing a drainage system for the site
- Fencing the site

3.1 CLEARING AND GRUBBING

The contractor will verify the location and status of all subsurface utilities before work begins. A majority of the site south of the concrete utility trench has already been cleared of brush and is covered with piles of uncontaminated fill provided by PWC. The area between the utility trench and the temporary stockpile facility at former NAS Barbers Point contains live brush and several piles of brush and debris. To prepare the site for use, the concrete utility trench will be filled with uncontaminated fill, and the area between the trench and the temporary stockpile facility at former NAS Barbers Point will be cleared of brush and debris. In addition, brush and trees will be cleared from other portions of the treatment site, including the coral pit, as necessary, to accommodate the contractor's site layout. Existing rubble and debris will be disposed of at the local municipal landfill.

3.2 SUBGRADE PREPARATION

Piles of uncontaminated fill currently located at the site that will not be used to fill the concrete utility trench may be used to grade the site. The grading pattern should be designed to generally follow existing land slopes, thereby minimizing cuts and fills. Imported fill will be used if the quantity on site is insufficient. The truck decontamination area, like the pretreatment, preparation, and interim staging areas, will be lined.

Two stockpile areas will require preparation: the soil preparation area, and the interim staging area where treated soil will be stored pending laboratory analysis. The blending area and the temporary stockpiles in the interim staging area for treated soil will be set on a foundation of sand, base course, and an impermeable barrier, as described in Section 2.1 and as required by 40 CFR 761.65 (c)(9). Stockpiles will be covered as much as feasible to prevent soil from becoming airborne and will be graded to drain to sumps to prevent contaminants from spreading to other areas. Berms will be constructed to divert off-site flow and to route runoff from the stockpiles to the sumps.

3.3 DRAINAGE SYSTEM

The storm drainage system will be designed based on a 24-hour, 25-year storm (see tentative calculations provided in Section 2.2) to capture runoff from the stockpiles and treatment area and to prevent run on of off-site drainage. Uncontaminated fill will be used to grade the site to prevent possible contamination of treated soil. A run-on control system will be constructed to prevent the flow of water into stockpile areas and to divert the volume of water that results from the design storm.

3.4 Access Road and Entrances

The road east of the temporary stockpile facility at former NAS Barbers Point is available for use for the following purposes only:

- Initial setup of the thermal desorption system (receipt of equipment and material)
- Delivery of diesel fuel
- Delivery of material and supplies

A secondary entrance to the site from this road may be constructed to allow for delivery of diesel fuel and supplies. Access roads for hauling contaminated and treated soil must be constructed to avoid cross-contamination of soils, must connect to existing roads north or west of the treatment site, and must provide adequate access to the treatment area for haul trucks. Access roads must be a minimum of 18 feet wide and be designed with an adequate surface for all-weather use. Drainage culverts must be installed where natural drainage patterns are interrupted. The access roads must be designed to accommodate the turning radius of haul trucks proposed to be used. Water will be used to control dust on haul roads, and beds on the haul trucks will be covered to control fugitive dust. Any spills will be removed promptly from the roads.

3.5 FENCING

An 8-foot-high, temporary chain-link fence will surround the treatment and stockpiles area for the duration of treatment. The fence will prevent the public from entering the area during treatment. An 8-foot-high, chain-link fence currently surrounds the temporary stockpile facility at former NAS Barbers Point. Additional fencing may be attached to the existing fence to surround the area to be used for treatment and stockpiles. Truck and equipment gates will be located at access road entrances. A pedestrian gate will be located between the treatment site and the administration area, which will be outside of the fenced treatment area.

Temporary fencing will also be required around all excavation areas until backfill operations have been completed. An 8-foot high temporary fence will be installed around any active transformer during excavation activities until site restoration is complete and the permanent fence is replaced.

3.6 SITE RESTORATION

Soil that underlies all former stockpile areas, including those at NRTF Lualualei, will be sampled after the stockpiled soil and liners have been removed. The underlying soil will be treated by thermal desorption if results indicate that it is contaminated. After all the contaminated soil is treated, all potentially contaminated compacted base course and sand from the preparation area will be sampled and, if necessary, treated by thermal desorption. The concrete treatment pad will be sampled, cleaned if necessary, and then demolished. The compacted base course and sand in the interim staging area for treated soil will be sampled and treated by thermal desorption only if any treated soil did not meet cleanup criteria. Any compacted base course that cannot be treated by the thermal desorption system will be disposed of off island; however, this outcome is not anticipated. The treated base course, sand, and concrete rubble will be placed in the coral pit south of the treatment area after laboratory results confirm that all treatment criteria have been met. Liners will be disposed of at an approved off-site facility. All equipment will be demobilized and the site will be cleaned up. All temporary facilities and fencing will be removed. Site will be regraded although revegetation will not be required.

4. TREATMENT CRITERIA

Table 4-1 presents the treatment criteria for the contaminants found in the soil. The stated treatment criterion for each contaminant in the soil must be met or the soil will be retreated.

During system startup, a definitive demonstration test will be conducted to verify that all applicable or relevant and appropriate requirements are achieved. A demonstration test plan must be submitted along with the contractor's work plan. The feed soil will be tested for the applicable contaminants and to evaluate the removal efficiency of the treatment unit. During treatment, the blended stockpiles of contaminated soil will be tested daily with a PCB field testing kit to assess the approximate concentration of PCBs in soil to be treated each day, to make certain that the desired amount of blending has occurred, and to establish corresponding required residence times in the treatment unit. Treated soil will be sampled so that the treatment criteria are met. Sampling of the treated soil will be based on the known contaminants in the soil before treatment. Feed soil will be catalogued and tracked to make certain that pretreatment contaminant levels are known.

Treated soil and vapor streams will be tested for formation of dioxins (2,3,7,8-tetrachlorodibenzodioxin [TCDD]) and furans during the definitive demonstration test. The soil will be tested after treatment during the definitive demonstration test to make certain that the concentration of dioxins or furans in the soil is below 1 part per billion (ppb), as specified in memorandum from the U.S. Environmental Protection Agency (EPA) signed on April 13, 1998 (EPA 1998). The vapor stream will be tested after it is drawn through the GAC adsorption system during the definitive demonstration test to make certain that dioxin and furan concentrations do not exceed the ambient air quality criterion presented in Table 5-1. Specific information on testing will be included in the contractor's work plan.

Table 4-1: Contaminated Soil Treatment Criteria

Contaminant	Maximum Acceptable Concentration (mg/kg)
PCBs	1.0
Dioxins/furans	0.001
TPH as diesel and motor oil	60
Benzo(a)pyrene	0.062
Benzo(b)fluoranthene	0.62
Chlordane	1.6
Alpha-chlordane	1.6
Gamma-chlordane	1.6

Notes:

PCBs = polychlorinated biphenyls

TBD = to be determined

TPH = total petroleum hydrocarbons

mg/kg = milligrams per kilogram

5. AIR MONITORING FOR PARTICULATES AND CONTAMINANTS

The State of Hawaii Department of Health (DOH) limits particulates in ambient air to a mean of 50 micrograms per cubic meter ($\mu g/m^3$) per 12-month period and to 150 $\mu g/m^3$ for any single 24-hour period. Air will be monitored for dust at the perimeter of the site and at worker locations to make certain that levels of particulates and the concentration of PCBs in air do not exceed regulatory standards. Three stationary air monitors will be set up, one upwind and two downwind from the site at the perimeter fence. These air monitors will be sampled for particulates in 24-hour increments throughout site preparation and treatment. In addition, handheld dust monitors will be used to monitor real-time fugitive emissions of dust at work locations for the duration of site preparation and treatment

During the definitive demonstration test, air samples will be collected from the discharge stack of the thermal desorption treatment system. Air modeling will then be used to estimate the levels for criteria pollutants and hazardous air pollutants in ambient air, as defined by DOH, and evaluate whether target air criteria are met. In addition, modeling will be conducted for dioxins and PCBs to evaluate whether target air criteria are met. Modeling should be conducted in accordance with the State Air Modeling Guidelines for Prevention of Significant Deterioration and Covered Source Permit Applications, Second Revision (DOH 1996), and should use a recognized air modeling program approved by the Navy and regulators. Modeling will include emissions from four distinct sources: (1) treated off gas from the thermal desorption process, (2) diesel exhaust from the thermal desorption unit, (3) diesel exhaust from the main generator, and (4) diesel exhaust from the emergency generator. The diesel fuel used to heat the treatment unit contains sulfur, so the heating system will be monitored for emissions of sulfur. Emission rates of carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and particulates will be estimated with air modeling using manufacturer's information. The modeling will be used to establish, if possible, the appropriate configuration of the treatment system to make certain that applicable air emission criteria are met. Table 5-1 presents the ambient air quality standards.

Table 5-1: Ambient Air Quality Criteria

	Maximum Ambient Concentration (μg/m3)	
Component		
Hawaii Regulated Compounds ¹		
CO	10,000	(1-hr average)
	5,000	(8-hr average)
NO ₂	70	(12-month average)
SO ₂	1,300	(3-hr average)
	365	(24-hr average)
	80	(12-month average)
Particulates (PM 10)	150	(24-hr average)
	50	(12-month average)
Carcinogenic Compounds ²		
1,1,2,2,-Tetrachloroethane	0.33	(12-month average)
1,1,2-Trichloroethane	1.2	(12-month average)
1,4-Dichlorobenzene	3.1	(12-month average)
2,4,6-Trichlorophenol	3.7	(12-month average)
3,3-Dichlorobenzidine	0.15	(12-month average)
Benzene	2.3	(12-month average)
Benzo(a)anthracene	0.092	(12-month average)
Benzo(a)pyrene	0.0092	(12-month average)
Benzo(b)fluoranthene	0.092	(12-month average)
Benzo(k)fluoranthene	0.92	(12-month average)
Bromoform	17	(12-month average)
Carbon tetrachloride	1.3	(12-month average)
Chlordane	0.19	(12-month average)
Chloroform	310	(12-month average)
cis-1,3-Dichloropropene	4.8	(12-month average)
DDE	0.2	(12-month average)
Dibenz(a,h)anthracene	0.0092	(12-month average)
Dinitrotoluene (mixture)	0.099	(12-month average)
Dioxins/Furans	4.5 x 10-7	(12-month average)
Ethylbenzene	170	(12-month average)
Hexachlorobenzene	0.042	(12-month average)
Hexachlorobutadiene	0.86	(12-month average)
Hexachloroethane	4.8	(12-month average)
Isophorone	71	(12-month average)

Table 5-2 continued: Ambient Air Quality Criteria

	Maximum Ambient Concentration	
Component		(μg/m3)
Methylene Chloride	41	(12-month average)
MTBE	190	(12-month average)
N-Nitrosodimethylamine	0.0014	(12-month average)
PCBs	0.034	(12-month average)
Pentachlorophenol	0.56	(12-month average)
Tetrachloroethene	6.7	(12-month average)
trans-1,3-Dichloropropene	4.8	(12-month average)
Vinyl chloride	1.1	(12-month average)
Non-Carcinogenic Components ³		
2-Butanone (MEK)	1,405	(12-month average)
1,2,4-Trichlorobenzene	95	(12-month average)
Carbon disulfide	7.1	(12-month average)
Chlorobenzene	833	(12-month average)
Dimethylphthalate	12	(12-month average)
di-n-Butylphthalate	12	(12-month average)
Hexachlorocyclopentadiene	0.24	(12-month average)
m-Xylene	1,036	(12-month average)
Naphthalene	119	(12-month average)
Nitobenzene	12	(12-month average)
o-Xylene	1,036	(12-month average)
Phenol	45	(12-month average)
p-Xylene	1,036	(12-month average)
Styrene	512	(12-month average)
Toluene	893	(12-month average)
Vinyl acetate	36	(12-month average)

 μ g/m3 = micrograms per cubic meter

CO = carbon monoxide

HAR = Hawaii Administrative Rule

= hour

MEK = methyl ethyl ketone

MTBE = methyl tertiary butyl ether

NIOSH = National Institute for Occupational Safety and Health

NO₂ = nitrogen dioxide

OSHA = Occupational Safety and Health Administration

PEL = permissible exposure limit

PM = particulate matter

PRGs = Preliminary Remedial Goals

 SO_2 = sulfur dioxide

TWA = time-weighted average

¹Criteria from HAR 11-59.4 (DOH 2001) ²Criteria calculated from EPA Region IX PRGs (Oct 2002) to provide 10 in 1 million risk scenario required for carcinogenic compounds in accordance with HAR 11-60.1-179 (DOH 2001) (multipled the PRG by 10).
³Criteria calculated from NIOSH TWA to provide 1/420 of the TWA as required for noncarcinogenic compounds in accordance with HAR 11-60.1-179 (DOH 2001).

6. SOIL SAMPLING

The feed stockpiles of contaminated soil will be tested daily with a PCB field testing kit to assess the approximate concentration of PCBs in soil to be treated each day and to evaluate the required residence time in the thermal desorption unit (hence to determine the feed rate to be used for that day).

One soil sample composited from at least six grab samples (one every 4 hours) will be collected from treated soil per 24-hour period. The composited samples will be analyzed by a laboratory for the known contaminants in the soil before treatment. If test results confirm that the concentration of any contaminant of concern is above its listed treatment criterion, the soil will be returned to the preparation area and retreated. If test results confirm that all treatment criteria have been met, the soil will be hauled for backfill of Group B and C sites or moved to the coral pit.

After all contaminated soil has been treated, the underlying soil of all stockpiles including the stockpiles in the treatment area, the stockpile location at NRTF Lualualei, the stockpiles north of the treatment area, and the stockpiles for the PHNC soils south of the treatment area will be tested for contamination using a square-based grid system that will overlay the entire area to be sampled. The axes of the grids will be oriented on a magnetic north-south axis centered in the area and an east-west axis perpendicular to the magnetic north-south axis, also centered in the area. A series of sampling points will be marked out 20 feet apart to the axes of the grids in every direction to completely overlay the sampling area. A sample will be collected at each grid point. All samples will be analyzed according to the compositing schemes provided in 40 CFR 761.289. Soil will be collected to a maximum of 3 inches depth at each selected sampling location. If soil analyses indicate contaminant concentrations above the cleanup criteria in Table 4-1, the top 6 inches of the area will be excavated and treated in the thermal desorption system. The sampling location will then be retested. This process will be repeated as necessary until test results confirm that contaminant concentrations in the soil below the stockpiles are below the criteria in Table 4-1.

Finally, the stockpile liners for the blending area will be removed along with underlying material will be sampled, crushed, and treated by thermal desorption as needed. The compacted base course and sand foundation for the interim staging area for treated soil will only be sampled if any treated soil failed to meet treatment criteria. If analytical results indicate the soil is contaminated, it will be crushed and treated as needed. After post-treatment testing of the material confirms that all treatment criteria have been met, the treated material will be moved to the coral pit.

7. WASTE DISPOSAL

All waste streams generated by the thermal desorption and, if applicable, GAC adsorption processes, will be characterized according to 40 CFR 262.11 and shipped to the U.S. mainland for incineration or proper disposal at a chemical waste landfill certified to accept Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) waste. If GAC is used for air pollution control, all GAC will be properly disposed of on the U.S. mainland. A detailed plan for waste handling and disposal will be included in the contractor's work plan.

8. EXCAVATION, HAULING, AND TREATMENT OF ADDITIONAL CONTAMINATED SOIL

The design drawings show the inferred vertical and lateral extent of PCB contaminated soil to be excavated at Group B sites based on recent sampling and stockpiles to be transported for treatment. The Group B sites are mostly former or current transformer sites at the following five Naval facility locations.

- Ford Island
- Pearl Harbor Naval Complex
- Iroquois Point
- Building 81, Naval Radio Transmitting Facility, Lualualei
- Former Drum Crushing Area, former Naval Air Station, Barbers Point

In general, the recent sampling and analysis efforts at each Group B site included the following:

- Sampling to determine the vertical depth at which soil does not exceed the treatment goals in locations where surface contamination had previously been detected
- Sampling to determine the lateral distance from points where surface contamination was previously detected to points where soil that does not exceed the treatment goals
- Where sampling and analysis efforts were unsuccessful, based on time constraints, in fully
 defining both the lateral and vertical extent of contamination, approximate limits are shown
 and noted as such on the design drawings

The Navy will collect and analyze samples from the sidewalls and bottom of excavations at each Group B (and future Group C) site that requires excavation. The sites will not be backfilled until analytical results for these samples indicate that treatment goals are not exceeded at the boundary of the excavation.

9. REFERENCES

- Hawaii Department of Health (DOH) Clean Air Branch. 1996. State Air Modeling Guidelines for Prevention of Significant Deterioration and Covered Source Permit Applications, Second Revision. December 30, 1996.
- Hawaii DOH Clean Air Branch. 2001. Hawaii Administrative Rule Chapter 11-59. Ambient Air Quality Standards. August.
- Hawaii DOH Clean Air Branch. 2001. Hawaii Administrative Rule Chapter 11-60.1. Air Pollution Control. August.
- Earth Tech, Inc. 2000. Engineering Evaluation/Cost Analysis for Treatment/Disposal Alternatives for Contaminated Soil at NCTAMS PAC, Former NAS Barbers Point, and Pearl Harbor Naval Complex, Oahu, Hawaii. Contract No. N62742-94-D-0048, Task Order No. 0004. Honolulu.
- U.S. EPA. 2002. Region 9 Preliminary Remedial Goals. October.
- U.S. EPA. 1998. Memorandum: Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites, signed April 13, 1998. OSWER Directive 9200.4-26.



Comment No.	Section No.	Comment	Response
Specific Co	mments – Basis o	of Design	
1	Section 4, Treatment Criteria, Page 9, 3 rd Paragraph	The document reads "to ensure that no dioxins or furans are emitted," but it is not technically possible to ensure that no dioxins or furans are emitted. A maximum emission limit should be defined either as a weight per unit of time or as a concentration (which should be a non-detect below a method detection limit) based on a defined test method.	This sentence was revised to indicate that the demonstration test will be conducted to make certain that air emissions of dioxin/furans do not exceed ambient air quality standards listed in Table 5-1.
2	Section 5, Air Monitoring for Particulates and Contaminants Page 10, 1 st Paragraph	Monitoring for particulates at the perimeter of the site is required, but there is no mention in this section of the number or position of the air monitors. Additional details are given in the Performance Specification Package, Section 02181, Part 3.5.2. Please revise the Basis of Design to include details of the number and position of the air monitors.	The following sentence was inserted after the second sentence of the first paragraph of Section 5: "Three stationary air monitors will be set up, one upwind and two downwind from the site at the perimeter fence."
3	Section 6, Soil Sampling, Page 12, 3 rd paragraph	This section refers to sampling of soil at the temporary stockpile locations to determine if it is "contaminated with PCBs", and concludes by stating that the sampling process will be repeated "until the test results confirm that the underlying soil is clean." No definition of what constitutes "contamination" or "clean" is given. Please specify what standard will be used in evaluation data from the temporary stockpile locations.	The stockpiles will be sampled for constituents found in the soil stored there. The soil is considered "clean" if it does not exceed the action limits presented in Table 4-1. A reference to this table will be added to this paragraph so it is clear what constitutes clean soil.

Comment No.	Section No.	Comment	Response
Specific Co	mments – Perforr	nance Specification Package, Section 02181	
4	Part 2.1.1.2, Air Pollution Control System Requirements Page 4	It is unclear why the air pollution control system is not specified in this section and elsewhere in the Draft Basis of Design and Draft Performance Specification Package. The specifications require only a control system such as a Granular Activated Carbon system but allow any other system that will meet the ambient air quality criteria. Please explain why the type of air pollution control system has still not been fixed at this stage in the project.	The air pollution control system is not specified for two main reasons. The first is that thermal desorption is not a commodity remediation technology and each manufacturer has a unique design that includes slightly different components. The air pollution control system will be an integral part of each manufacturer's thermal desorption unit. Second, the Navy would like to provide for fair competition, so the specifications are less specific about the components of the thermal desorption unit, but very specific about the emissions and treatment requirements. Specification Section 02181, Part 2.1.2.2 identifies the air emission criteria that the air pollution control system must achieve. Specification Section 01110, Paragraph 1.5.1(i) also requires the obtainment of a source permit and/or a Prevention of Significant Deterioration (PSD) permit before start-up of the thermal desorption unit. This permitting process will provide detailed information on the thermal desorption treatment unit and air pollution control system for regulatory review and approval. Specification Section 02181, Part 3.9 also describes the startup and shakedown activities that will be conducted to evaluate the performance of the air pollution control system before full-scale operation.

Comment No.	Section No.	Comment	Response
5	Part 2.1.2.2, Air Emission Criteria, Page 4	The air emission criteria are given as annual average concentrations without any mention of the method of extrapolating to an annual average from shorter operation periods. The fact that the system will not operate for a full year may, or may not, be taken into account in determining the annual average. The resulting criteria are an order of magnitude higher than the EPA Region IX Preliminary Remediation Goals (PRGs) for ambient air. A similar comment was made on the August 2001 version of the Basis of Design, but the comment still has not been addressed. Please explain how ambient air concentrations were extrapolated to an annual average to obtain criteria an order of magnitude higher that PRGs.	The thermal desorption unit is not considered a "major source" based on the definitions provided in Hawaii Administrative Record (HAR) 11 60. Therefore the emissions requirements are based on the surrounding ambient air concentrations and the requirements set forth in HAR 11 60.1-179. According to this regulation, the unit's emissions cannot cause "significant ambient air concentration of any hazardous air pollutant" as defined in HAR 11 60.1-179 (c). The table has been updated (as an attachment to Section 02181) with annual average concentrations of noncarcinogenic pollutants equal to 1/420 of the time-weighted average (TWA) exposure limit and annual average concentrations of carcinogenic pollutants that result in a 10 in 1 million risk (therefore 10 times the preliminary remediation goal [PRG] that represents a 1 in 1 million risk). To relate the annual average concentrations to a daily measurement, U.S. Environmental Protection Agency (EPA) guidance (EPA-454/R-92-019) provides "general case" ratios between different averaging times. Instructions from this guidance document have been added to the specification as an attachment.

Comment No.	Section No.	Comment	Response
6	Part 3.5.2, Monitoring for Fugitive Dust Emission, Page 9	This section calls for the measurement of fugitive dust emissions by "Compendium Method TO-4A in accordance with HAR 11-60.1-179", however, no mention of fugitive dust or Method TO-4A is found in HAR 11-60.1-179, which, addresses ambient air concentrations of hazardous air pollutants. In addition, Method TO-4A is considered applicable to the analysis of pesticides in air and does not include the determination of particulate matter. Since Method TO-4A is based on a high volume sampler with a polyurethane foam (PUF) collector, the method can easily be modified to determine particulates, but this section does not discuss a modification of the method. The standard method for total particulates in atmospheric air is contained in 40 CFR 50 Appendix B. Please explain if the Navy intends to adapt Method TO-4A to measure fugitive dust emissions or to use a more traditional method for measuring fugitive dust emissions.	The first paragraph of Section 02181, Paragraph 3.5.2 has been revised to read as follows: "Air monitoring and fugitive dust emissions testing shall be conducted in accordance with 40 CFR 50, Appendix B, or equivalent method."

Comment No.	Section No.	Comment	Response
Specificatio	ns		
1	Section 01110 ; paragraph 1.1.1; Table I	Revise to be the same format as the original specification with Group B soil quantity reflected as 5,890cy for the minimum and for the maximum.	The paragraph and table were revised to indicate that the minimum and maximum volumes anticipated for this contract.
2	Section 01110; paragraph 1.9.1 q.	After "Group B" add the wording "and Group C".	This paragraph was revised to indicate that treated soil meeting the cleanup criteria will be placed back in the Group B and Group C excavations.
3	Section 01110; paragraph 1.9.2	Rename the title to be Group A and portions of Group B and C (existing stockpiles)"	This paragraph (now 1.10.2) title was not revised; however, the titles for paragraphs 1.10.3 and 1.10.4 were revised to indicate that some of Group B and C soils will also be in stockpiles before treatment.
4	Section 01110; paragraph 1.9.3	Between points a. and b. Please incorporate "coordinate any necessary utility outages".	This paragraph (now 1.10.3) was revised to require the coordination of any necessary utility outages
5	Section 01110; paragraph 1.11	In the lines T5 and C20, please note that these are "reserved"	Sheets T5 and C20 were removed from the project drawings. Section 01110, Paragraph 1.11 was revised to reflect the appropriate drawing titles and numbers.
6	Section 01330; paragraph 1.6.4	Add last sentence "Electronic distribution email address will be provided after contract award." I think this was missed from the Mod 1 that was issued on the FRAC.	This paragraph was revised to indicate that the electronic distribution email address will be provided after the contract award.
7	Section 01501; paragraph 1.3; 4 th paragraph	The PWC trailer is currently vacant. I believe that the RAC contractor will be using the trailer at a later date when the CU is opened. The new PWC building is located across the road from the proposed treatment area.	The fourth paragraph of Section 01501, Paragraph 1.3 has been revised as follows: "Telephone utilities are available at a PWC building located across the road from the treatment area just southeast of the former Drum Crushing Area at former NAS Barbers Point. Contractor shall coordinate with PWC and provide connection for telephone service." The PWC building has also been added to Drawings C1 and C2.
8	Section 01501; paragraph 3.4.1	The paragraph says that HDPE liners and covers associated with the stockpiles are to be removed as solid waste. I assume that this applies to the stockpiles that the FRAC will create as well as the stockpiles that the Navy has already created at BP and LLL. Does the FRAC need to do any decontamination measures prior to disposal?	This paragraph was revised to include decontamination and characterization that may be needed to remove as a solid waste.

January 2003

Comment No.	Section No.	Comment	Response
9	Section 01575; paragraph 3.6	Needs to be stronger language, as we have already had strong concern on this issue. Suggest the following: "Control dust at all times, including during non-work periods. Use of appropriate dust control measures, such as, but not limited to, sprinkling or treating with dust suppressants, the soil at all the sites, treatment area, stockpiles, haul roads and other areas disturbed by operations in accordance with HAR 11-60.1-179. HAR 11-59.4(e)(1) limits particulates in ambient air to a mean of 50 micrograms per cubic meter per 12-month period."	Paragraph 3.6 of Section 01575 has been revised as suggested.
10	Section 01575; paragraph 3.7	We need to address the fact that the operations may potentially be a 24-hour operations and that the noise levels reaching the closest housing areas must be in an acceptable range. I am not sure how this "acceptable" would be measured. What is recommended? Are there any ordinances to this effect?	Section 01575, Paragraph 3.7 has been revised as follows: "Maximize the use of low-noise emission products, as certified by EPA, to make certain that maximum permissible sound levels are not exceeded. Sound levels should be measured at the most sensitive receptors near the treatment area, Naval Housing on Former NAS Barbers Point. Hawaii Administrative Rule (HAR) 11-46-4 addresses allowable noise levels for residential areas on Oahu. Noise levels at the site boundaries of the closest residential area should not exceed 55 dBA between the hours of 7 am to 10 pm, and 45 dBA between the hours of 10 pm to 7 am. In addition, vehicles used to transport soil and equipment to the treatment area should be manufactured in accordance with 40 CFR 205.52 to minimize the noise emissions."
11	Section 02181; paragraph 1.3	Were do we ask for the Work Plan with Health and Safety Plan, and standard operating procedures for the treatment project? The closest that I see is a Definitive Demonstration Plan which requires a summary of the operations of the thermal desorption unit during startup and definitive demonstration. It doesn't seem to be addressed in that document. How will the Navy/PCAS contactor know if the FRAC contractor is operating correctly?	Specification Section 01110, Paragraph 1.3 Submittals requires several preconstruction submittals including a Site Work Plan and Health and Safety Plan.

January 2003

Commer No.	nt Section No.	Comment	Response
12	Section 02181; paragraph 1.5	The last sentence could be revised to clarify that some of the Group B and C will already excavated and stockpiled. "The majority of Group B and, in the future, Group C soils will require excavation and transport to the treatment site. A portion of the Group B soils were excavated and are stockpiled as identified in the plans."	The last paragraph has been revised to indicate there are stockpiles as well as in-situ soil.
13	Section 02181; paragraph 2.1.2.1	For the Drum Crushing facility, we may need to reevaluate if we have covered all of the contaminants and the required treatment level.	Soil from the Drum Crushing Area will be excavated and sent off-island for disposal and not treated using the thermal desorption unit. The design documents have been changed accordingly.
14	Section 02181; paragraph 3.1	Will the decontamination of the truck bed if it is not lined be required? Do we state a general requirement to decontaminate equipment/materials that are contaminated in the specifications?	This paragraph was revised to require that the transport trucks be lined with 10 mil polyethylene liner (or other approved material) and covered appropriately, using a burrito-type method, to prevent release of contaminated soil during transport.
15	Section 02181; paragraph 3.4.1; second to the last sentence	Delete the ")" after "PAHs".	This paragraph was revised to address the typographical error.
16	Section 02231; paragraph 3.4	Would the stumps and roots need to be chipped prior to treatment with the soils? Is that what is envisioned? I would think that we would have a great amount of stumps and roots from Building 81 at NRTF LLL.	Specification Section 02181, Paragraph 2.3.1 Soil Preparation was revised to clarify that stumps, roots, and other grubbed vegetation shall be pretreated (chipped, grinding) as necessary to produce material that is compatible with the thermal pretreatment system.
17	Section 02315; paragraph 3.3	Will the trucks be required to be lined? Similar to the transport of soils previously where the soils were "burrito wrapped" in the truck bed for transportation.	See response to Comment 14. Section 02315 was replaced by Section 02111. Section 02111, Paragraph 3.3.1 indicates that the excavated material will be placed in lined trucks for transport.
18	Section 02315; paragraph 3.6.1	According to Modification #1, item #15 to the FRAC solicitation there should be a "Group B" after "Replace vegetation in".	Paragraph 3.13.1 was revised to require replacement of vegetation in all excavation areas.

Comment No.	t Section No.	Comment	Response
19	General	What Specification Section would be used to guide the replacement fences that are required in some of the excavation sites? Section 02821 does not seem to be appropriate, as it only addresses using temporary fencing material and construction and does not list if barbed wire is required.	The title of Section 02821 was revised to "CHAIN LINK FENCES AND GATES." In addition, this section was revised to provide additional materials and installation information regarding the replacement of permanent chain link fencing.
20	Section 02920; paragraph 2.3 first sentence	Recommend rewording this as it can be interpreted to allow salt to be used as mulch.	This paragraph was revised to clarify that salt hay or bahia hay may be used as mulch.
21	Section 03300; paragraph 3.3	The section states requirements on the reinforcement material if it is required. Where is it noted if the reinforcement material is required in the replacement of concrete pads/slabs/sidewalks at the various excavation sites?	Section 02770, CONCRETE SIDEWALKS AND CURB AND GUTTERS was added to the project specifications to provide additional information regarding the replacement of these site features including reinforcement requirements.
22	Sheet T1; General Abbreviations table	Please switch the definition for "NCTAMS" and "NAVFAC"	Sheet T1 was revised to provide the correct acronym definitions.
23	Sheet T1; Sheet Index	Note that sheets T5, and C20 are "reserved" as the Waikele sites will already be excavated.	Sheets T5 and C20 were removed from the project drawings. Project drawings were renumbered accordingly.
24	Sheet T2	Revise note to the stockpile site to note that Groups A, B and C soils will be at this stockpile area.	Sheet T2 was revised to also indicate that soils from Group A, B, and C will be stockpiled in this area.
25	Sheets T5 and C20	Please delete.	Sheets T5 and C20 were removed from the project drawings. Project drawings were renumbered accordingly.
26	Sheet C1	Revise note to the stockpile site to note that Groups A, B and C soils will be at this stockpile area. Complete the note to the PHNC stockpile area.	Sheet C1 was revised to indicate that Group A, B, and C soils will be stockpiled within this area and approximate volumes. The PHNC stockpile area was revised to indicate that 1,150 cy of soil are currently stockpiled within this area.
27	Sheet C3	Suggest changing the NOTE in the page to "Treated soil except from Drum Crushing Area to be used to backfill excavation sites. The remainder of the treated soils to be placed in the coral pit."	The Drum Crushing Area will not be treated, so this note was not changed.
28	General question	Are the concrete and asphalt material included in the excavation volume estimated on the sheets?	Concrete and asphalt material are included in the excavation volume estimates.

Comment No.	Section No.	Comment	Response
29		We need to discuss the limits of excavation shown for the sites. I need to understand how we came the excavation limits for transformers TD-02, TD-03, TD-05, TD-07, TF-01/TF-01D, TF-04, TF-17, TG-01, TG-06, TI-03, TI-04D, Building 81.	Based on discussions with the Navy, the excavation limits for transformers TD-03 (Sheet C8), TF-01/01D (Sheet C9), TF-04 (Sheet C10), TF-17 (Sheet C12), TG-06 (Sheet C14), and TI-03 (Sheet C15) were revised.
30	Sheet C-13, C14	For areas where we are taking down a fence around an active transformer, we need to verify if there is a requirement by PWC Utilities on extending a temporary fence vice a construction fence.	Per PWC emails from September 4, 2002, additional text was added to the specifications to indicate an 8-foot, grounded temporary fence will be required around all active transformers during excavation activities where existing fences are removed. The temporary fence will have a "Danger High Voltage Keep Out" sign.
31	Sheet C16, C18; transformer sites TF-06, TF-10	What are the requirements for the concrete pavement? (thickness, reinforcement, level?)	See response to Comment 21.
32	Sheets C17 & C19	Would there be shoring requirements during this excavation. We are going to 8' right up to a building at TC-01 and 4' right up to a building at D-02. Is it in the specifications or should we have notes in the drawing in the applicable transformer sites?	Specification Section 02111, Paragraph 3.2.2 Adjacent Structures requires the contractor to provide protection for all structures by shoring, bracing, or other appropriate means. In addition, there are similar notes on the title sheets.
33	Sheet C19	Please change the drawing to present the areas requiring "reseeding" clearer. The legend shows that the "disturbed area – reseed" are hatched. Transformer D-02 shows the hatched area and it is noted that the contractor is to "seed disturbed area". We need to reseed where we are removing the concrete pad and excavating, however the drawing doesn't show this to be a requirement. Transformer E-09 notes one of the shaded areas should be "seed disturbed area". Because the shading does not match the legend, the drawing does not show the requirement that the longer excavation area requires "reseeding".	Sheet C19 is now C20 and was revised to clarify the areas requiring reseeding. Note 5 requiring concrete replacement was removed.
34	Sheet C19; transformer E-09	Please clarify the intent of the two labels reading "A/C Pavement" and "A/C Pavement (Broken)". These labels are one above the other and there is not boundary between them. I am not sure what this is showing.	Sheet C19 was revised to indicate that the area is paved with asphalt/concrete (A/C pavement).
35	Sheet C19	Where is the "Excavation Plan" detail for transformer D-02, as presented for the other transformers?	Sheet C19 was revised to provide the Excavation Plan detail for transformer D-02.

Comment No.	Section No.	Comment	Response
36	Sheet C21; Building 81	Is there still a fence around the old underground concrete vault?	The fence no longer exists and has been removed from the drawing on this sheet.
37	Sheet C21; Transformer I-4	In light of the fact that the excavation is going to 6 feet. Is it logistically feasible to keep the pad in place? In previous discussions, I had said that since the pad is not contaminated, the pad should only be removed if the excavation required it. Do we think that under the pad it is clean and is not an issue to excavate with the pad in place?	The concrete pad does not need to be removed unless the sidewall samples adjacent to the pad still contain contamination above the action levels. This pad will otherwise be protected in place (see response to Comment 32).
38	Cost Estimate	Revise title of document titled "Opinion of Probable Cost of Construction, Thermal Desorption Treatment of PCB-Contaminated Soil at Former Naval Air Station Barbers Point, Oahu, Hawaii" to "Cost Estimate for Thermal Desorption Treatment of PCB-Contaminated Soil at Former Naval Air Station Barbers Point, Oahu, Hawaii".	The title was revised as requested.
39	Cost Estimate	Please remove costs for the excavation/transport of the Waikele transformer sites.	Costs for the excavation/ transportation of soil from the Waikele transformer sites were removed from the cost estimate.
40	Cost Estimate	Please provide an updated completed pricing sheet that had been provided in the RFP with the cost estimate. The attached information had been provided in the RFP to assist the FRAC proposers to fill out the pricing sheet. Let's discuss please. I have a preliminary split of the estimate.	An updated pricing sheet was provided.

Project Title: Performance Specification Package, Group B Amendment Thermal Desorption Treatment of Contaminated Soil Former Naval Air Station (NAS) Barbers Point, Oahu, Hawaii Reviewer: S. Kato, D. Chun, S. Konno, and J. Takeuchi Naval Facilities Engineering Command Pacific Division

Commer No.	nt Section No.	Comment	Response
1	Draft Design Basis: page 3, Group A sites (existing stockpiles)	Group A soils include soils stored at RTFLLL B81. Identified in page 1 and page 3. No mention is made of the sensitivity of the area with respect to the strong winds and the potential of dust during the loading of the trucks. Request that the basis of design identify the special requirements to control dust through windbreaks, extra watering or stoppage of work during windy periods. This valley is subject to very strong winds during the day. This requirement must be identified in the basis of design to allow an accurate cost estimate.	A brief discussion about the sensitivity of this area and special dust control requirements has been included in the design basis report and the specifications.
2	Draft Specification: 1.9 General Description; 1.9.2 Group A Sites (existing stockpiles)	Recommend that the requirements to control dust though windbreaks, extra watering or stoppage work during windy periods be mentioned in this section. This valley is subject to very strong winds.	Information has been added to Section 01110, Paragraph 1.10.2, item (b) indicating the need for additional dust control at Lualualei. As discussed in the following responses, additional information was added to several sections to indicate the need for dust control in this area.
3	Draft Specification: Section 01501 Temporary Facilities and Traffic Control; paragraph 1.4 Fugitive Dust and Storm Water Control	This section mentions air monitoring in accordance to section 02181 Remediation of Contaminated Soils by Thermal Desorption. Section 02181, paragraph 3.5.2 mentions setting up 3 air monitors with 2 downwind next to the perimeter fence. At the IR brief to the NCTAMSPAC Commanding Officer, air monitoring was mentioned as a possible control to the fugitive dust problem experience at B81. The existing specification is unclear in the usage of the air monitoring with respect to B81. If the air monitors are going to be used at B81, request that the specification clearly states the usage and location of the air monitors with respect to B81.	The second paragraph of Section 02181, Paragraph 3.5.3 has been revised as follows: "Three stationary air monitors shall be set up, one upwind and two downwind from the site at the perimeter fence. The air monitors shall be sampled daily. Realtime air monitoring shall be conducted hourly within the work areas. If dust concentrations exceed 45 mg/m3, dust suppression measures, such as watering, shall be implemented. In addition, portable air monitors will be used at the soil stockpiles during soil transportation activities. Air sampling shall be conducted daily at each stockpile location to make certain dust concentrations do not exceed 45 mg/m3. A minimum of two samples will be collected, one upwind and one downwind, each day."
4	Draft Specification: Section 01575 Temporary Environmental Controls; paragraph 1.4 Dirt and Dust Control Plan	Reference should be made to the requirements at B81.	Paragraph 1.4.1 was added to Section 01575 and provides additional dust control details for NRTF Lualualei stockpiles.

Project Title: Performance Specification Package, Group B Amendment Thermal Desorption Treatment of Contaminated Soil Former Naval Air Station (NAS) Barbers Point, Oahu, Hawaii Reviewer: S. Kato, D. Chun, S. Konno, and J. Takeuchi Naval Facilities Engineering Command Pacific Division

Comment No.	Section No.	Comment	Response
5	Draft Specification: Section 02920 Site Restoration paragraph 2.4 Replacement Trees	The section is vague and leaves to the NTR the responsibility of the replacement of trees. Request that the tree replacement details be specific in terms of type and size and submitted to NCTAMSPAC for concurrence.	The contractor will submit the type and size of trees to be replanted to the Navy Resident Officer in Charge of Construction (ROICC) per standard Navy protocol. NCTAMS PAC will receive these submittals from the ROICC and provide input to the ROICC. The ROICC will provide direction to the contractor.
6	Access to B81 and USTs	The plan needs to have a general note ensuring access to B81 and the Underground Storage Tank (UST) at all times. Since the gravel roads leading to the UST will be excavated, the work needs to allow NCTAMSPAC and a commercial fuel truck access to the UST.	The drawing was updated with the USTs and a note to allow access to these tanks at all times during excavation.
7	Sheet C21	The drawing shows excavation of 5 to 7 feet deep in the area West of B81. The area has trees. Will the trees be removed as part of the project or will the trees be saved? If possible, recommend saving the trees. See comment on Site Restoration.	It is the Navy's intention to protect as many trees in this area as is possible without compromising the intent of the removal action. Some trees will be removed as part of excavation activities, but will be replaced with young trees.
8	Sheets T7 and C21 USTs fuel and leak detection lines	Though Sheet T7 notes that no utility investigation was conducted, recommend that the FRP piping shown on NAFAC DRAWINGS 7921258 and 7921259 be noted on plan sheet C21. The Fiberglass Reinforced Piping fuel and leak detection lines need to be protected during the 5 feet deep excavation.	Drawing C21 was revised to include piping from these NAVFAC drawings and a note indicating that these pipes should be protected during excavation.
9	Sheet C21 (NAVFAC Dwg. No. 7951166)	The drawing should have a note on the requirements for dust monitoring and control. Emphasis should be made here to allow for an accurate cost estimate by the contractor.	Specification Sections 01110 and 01575 were revised to address requirements for dust monitoring and control at NRTF Lualualei. In addition, a note was added to Sheet C21 referring the need to additional dust control.
10	Spec Section 02181 – Para 2.1.2.2	In the contaminated soil, would the constituents of lead and/or H2S also be present? If so, please amend the "component list" in Section 2.1.2.2, Air Emissions Criteria accordingly.	Lead and H ₂ S are not contaminants found in the soil and are not anticipated to be an issue for air emissions. These constituents were not added to the emissions criteria.
11	Spec Section 02181 – Para 3.5	For air monitoring, will the monitoring data be kept on file?	Paragraph 3.11 was added to discuss the requirement to retain data for 5 years after completion of the project.

Project Title: Performance Specification Package, Group B Amendment Thermal Desorption Treatment of Contaminated Soil Former Naval Air Station (NAS) Barbers Point, Oahu, Hawaii Reviewer: S. Kato, D. Chun, S. Konno, and J. Takeuchi Naval Facilities Engineering Command Pacific Division

Comment No.	Section No.	Comment	Response
12	Section 01501, Page 4, Para. 3.4.4, Demolition of Treatment Site Facilities	Paragraph states that "Uncontaminated soil AND DEBRIS may be placed in the coral pit". Recommend that debris generated due to demolition of treatment site facilities should be hauled off to a proper landfill and not placed in the coral pit. The pit should only accept uncontaminated and treated soil.	This paragraph was revised to clarify that uncontaminated debris will be disposed of at an approved off-site landfill.
13	Section 01575, Page 7, Para 3.4	Paragraph states, "Remove all solid wastefrom Government property and dispose off-site at and approved landfill." Clarify whether this should reword to indicate all solid waste except the treated soil.	This paragraph was revised to clarify that all solid waste and non-hazardous debris (except treated soil) will be disposed of at an approved off-site landfill.
14	General comment	PWC just constructed a prefab building that is located closer to the thermal treatment site than the original facility. Please accurately show the location of this PWC building on the construction drawings and ensure that there are no adverse impacts to PWC's facilities and operations.	The PWC building has been added to Drawings C1 and C2.
15	General comment	If there is any field work at transformers in the vicinity of the Family Housing project on Ford Island (near the Navy Lodge) the contractor will need to coordinate the work with Family Housing. Please inform CNRH if this is the case.	The point of contact for Naval Housing near the Navy Lodge is Jon Compos (phone number 808-474-1874). This information has been added to the specifications Section 01110 General Paragraphs.

Project Title: Performance Specification Package, Group B Amendment Thermal Desorption Treatment of Contaminated Soil Former Naval Air Station (NAS) Barbers Point, Oahu, Hawaii Reviewer: S. Kato (additional comments) Naval Facilities Engineering Command Pacific Division

Comment No.	Section No.	Comment	Response
3	Plan sheet page 7951166; drawing number C21	The plan sheet does not seem to include the two fenced areas located on the Northside and Eastside of the B81 transformer. Besides excavation, the work should include the removal of the vegetation that has grown as well as the removal of the fence enclosing the two fenced areas (separate from the fence around the transformer). There is also a tree outside the fence area that the plan does not show.	This drawing has been revised to include the two fenced areas and the tree outside the fence area. A note was added to the drawing to indicate that there is vegetation in this area is to be removed.

Project Title: Performance Specification Package, Group B Amendment Thermal Desorption Treatment of Contaminated Soil Former Naval Air Station (NAS) Barbers Point, Oahu, Hawaii Reviewer: Michael Miyasaka, State of Hawaii, Department of Health

Comment No.	Section No.	Comment	Response
1	Section 1.5 Existing Conditions	[This section] identifies Group B soils from the Drum Crushing Area contaminated with DDD, DDE, DDT, alpha-chlordane, gama-chlordane, heptachlor epoxide and arsenic to be treated in the Thermal Desorption Treatment Unit. It is our understanding that the pesticide-contaminated soil meets the categorization of a RCRA listed hazardous waste. As such, the treatment of this RCRA listed hazardous waste must meet all the requirements of the RCRA program.	Soil from the Drum Crushing Area will be excavated and sent off island for disposal and not treated using the thermal desorption unit. The design documents have been changed accordingly.
2	Section 3.4.4 Confirmation Sampling at Excavation Sites	[This section] states that delineation and bottom confirmation sampling at Group B and C excavation sites will be completed by others and will not be required of the contractor. Why is the Navy not requiring the treatment and remediation contractor to do confirmation sampling? Who will be doing the confirmation sampling for the remediation work?	Confirmation sampling will be conducted by a separate oversight/ quality control (QC) contractor.

Project Title: Performance Specification Package, Group B Amendment Thermal Desorption Treatment of Contaminated Soil Former Naval Air Station (NAS) Barbers Point, Oahu, Hawaii Reviewer: Mr. Peter Nakamura, Regional Environmental Department

Comment No.	Section No.	Comment	Response
1	Subject Specifications	Per my e-mail to you today, enclosure (1) should be added to the subject specifications. The reference is Section 01575, paragraph 1.6.4 – Solid Waste Disposal Report. I'll try to get you an e-file of this form.	The form was added as an attachment to the specifications as requested.