# Final Design Documents Thermal Desorption Treatment of PCB-Contaminated Soil

FORMER NAVAL AIR STATION, BARBERS POINT, OAHU, HAWAII

November 2003

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



Comprehensive Long-Term Environmental Action Navy Contract Number N62742-94-D-0048, CTO 0004

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Prepared for:



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Prepared under:

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AMENDMENT NO. 0005 (FOR REFERENCE ONLY)

# AMENDMENT NO. 0006

## SPECIFICATIONS

Changes as directed below should be made to the respective specifications. Specifications incorporating these and previous amendment changes have been issued with this amendment.

- a. Changes to Section 01110
  - SECTION 01110 GENERAL PARAGRAPHS PARAGRAPH 1.1.1 GENERAL PROJECT DESCRIPTION Second paragraph, Delete the first sentence and substitute: "The work includes furnishing all labor, materials, and equipment necessary for the low-temperature thermal desorption treatment of a minimum of 46,034 cubic yards (CY) not to exceed 56,052 CY of soil from three sources referred to as Group A, Group B, and Group C soils as shown in Table I."

Table I. Amend Group C minimum and maximum volume as shown below:

SOILS	MINIMUM VOLUME (CY)	MAXIMUM VOLUME (CY)
Group A	5,965	5,965
Group B	10,466	13,082
Group C	29,604	37,004

2. SECTION 01110 GENERAL PARAGRAPHS PARAGRAPH 1.1.4 CONTAMINANTS OF CONCERN

First sentence of the second paragraph, replace "7,211 CY" with "10,466 CY." Third sentence of the second paragraph, replace "251 CY" with "261 CY."

First sentence of the third paragraph, replace "11,612 CY" with "29,604 CY."

3. SECTION 01110 GENERAL PARAGRAPHS PARAGRAPH 1.1.5 TREATMENT SYSTEM

First paragraph, second sentence, replace "could" with "may."

4. SECTION 01110 GENERAL PARAGRAPHS PARAGRAPH 1.1.6 STOCKPILE MAINTENANCE

First paragraph, first sentence, add "Existing" at the beginning of this sentence and change the 's' in "Stockpile" to lower case.

5. SECTION 01110 GENERAL PARAGRAPHS PARAGRAPH 1.2.1 AVAILABLE UTILITIES

First sentence, replace "the drawings." with "Drawing C2."

6. SECTION 01110 GENERAL PARAGRAPHS PARAGRAPH 1.10.4 GROUP C SITES (IN-SITU SOIL AND SOME STOCKPILED SOIL):

Delete the first sentence that reads: "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."

7. SECTION 01110 GENERAL PARAGRAPHS PARAGRAPH 1.12 CONTRACT DRAWINGS

The following drawings, bearing revision date of November 12, 2003, supersede previously issued drawings bearing the same number and title:

DWG <u>NO.</u>	NAVFAC <u>DWG NO.</u>	REVISION <u>LTR.</u>	TITLE
T1	7952139	С	VICINITY MAP AND SHEET INDEX
T1A	7960688	С	VICINITY MAP AND SHEET INDEX
T2	7952140	С	SITE LOCATION MAP – FORMER NAS BARBERS POINT
T4	7952142	С	SITE LOCATION MAP – SHIPYARD
T6	7952144	С	SITE LOCATION MAP – IROQUOIS POINT, PHNC
T7	7952145	С	SITE LOCATION MAP – NRTF LUALUALEI
Τ8	7960689	С	SITE LOCATION MAP, HALAWA-MAIN GATE, NAVAL HOUSING AREA, AND PWC MAIN COMPLEX
Т9	7960690	С	SITE LOCATION MAP, WAIPIO PENINSULA, AND WEST LOCH
T11	7960692	С	SITE LOCATION MAP, NAVMAG PH LUALUALEI
C1	7952146	С	GENERAL LOCATION MAP – TREATMENT SITE AND RELATED LOCATIONS
C3	7952148	С	CORAL PIT FILLING PLAN
C4	7952149	С	FORMER DRUM CRUSHING AREA FORMER NAS BARBERS POINT
C5	7952150	С	TRANSFORMER SITES TA-01 AND TC-04, FORD ISLAND, PHNC
C10	7952155	С	TRANSFORMER SITES TF-04 AND TF-05, FORD ISLAND, PHNC
C12	7952157	С	TRANSFORMER SITES TF-09 AND TF-17, FORD ISLAND, PHNC
C13	7952158	С	TRANSFORMER SITES TF-18 AND TG-01, FORD ISLAND, PHNC
C15	7952160	С	TRANSFORMER SITES TI-03 AND TI-04D, FROD ISLAND, PHNC
C16	7952161	С	TRANSFORMER SITES TD-10 AND TF-06, FORD ISLAND, PHNC
C17	7952162	С	TRANSFORMER SITE TC-01, FORD ISLAND, PHNC
C19	7952164	С	TRANSFORMER SITES D-02 AND E-09. PHNC
C22	7952167	С	BUILDING 81, NRTF, LUALUALEI
C23	7952169	С	TRANSFORMER SITE ANALYTICAL DATA
C24	7952170	С	TRANSFORMER SITE ANALYTICAL DATA
C25	7952171	С	TRANSFORMER SITE ANALYTICAL DATA
C26	7952172	С	TRANSFORMER SITE ANALYTICAL DATA

C53

C54

7960719

7960720

С

С

ember 12, 2003	Dr	aft Group C Design,	Amendment No. 000	06	Page 3 of 22
Thermal Desorption	Treatment	of PCB-Contaminated	d Soil at the Former NA	S Barbers Point, Oahu	, Hawaii
C27	7960693	С	TRANSFORMER SIT HALAWA-MAIN GA	TES BUILDING 653 A ATE	AND H-2,
C28	7960694	С	TRANSFORMER SIT	TE H-5, HALAWA-M	AIN GATE
C29	7960695	С	TRANSFORMER SIT MAIN GATE	TES J-12 AND J-17, H	ALAWA-
C30	7960696	С	TRANSFORMER SIT MAIN GATE	TES J-21 AND J-29, H	ALAWA-
C31	7960697	С	TRANSFORMER SIT MAIN GATE	TES K-14 AND K-15,	HALAWA-
C32	7960698	С	TRANSFORMER SIT GATE AND W-4/W-5	TES K-20, HALAWA- 5, WAIPIO PENINSU	MAIN LA
C33	7960699	С	TRANSFORMER SIT AREA	TE M-3, NAVAL HOU	JSING
C34	7960700	С	TRANSFORMER SIT	TE M-5, PWC MAIN (	COMPLEX
C35	7960701	С	TRANSFORMER SIT	TES A-2 AND A-4, SH	IIPYARD
C36	7960702	С	TRANSFORMER SIT	TE A-10, SHIPYARD	
C37	7960703	С	TRANSFORMER SIT	TE C-2, SHIPYARD	
C38	7960704	С	TRANSFORMER SIT	TE C-4, SHIPYARD	
C39	7960705	С	TRANSFORMER SIT	TE C-7, SHIPYARD	
C40	7960706	С	TRANSFORMER SIT	TES C-8 AND C-13, S	HIPYARD
C41	7960707	С	TRANSFORMER SIT	TES E-11 AND E-13, S	SHIPYARD
C42	7960708	С	TRANSFORMER SIT	TES E-16 AND E-25, S	SHIPYARD
C43	7960709	С	TRANSFORMER SIT SHIPYARD	TES F-3 AND F-20/F-2	20A,
C44	7960710	С	TRANSFORMER SIT	TES G-12, SHIPYARE	)
C45	7960711	С	TRANSFORMER SIT	TE W-11, WAIPIO PE	NINSULA
C46	7960712	С	FORMER TRANSFO	RMER SITE S33, WE	ST LOCH
C47	7960713	С	TRANSFORMER SIT WAHIAWA	TES 121 AND 236, NO	CTAMS
C48	7960714	С	TRANSFORMER SIT BUILDING 68, NRTF	TES BUILDING 1 AN F LUALUALEI	D
C49	7960715	С	FORMER TRANSFO LUALUALEI	RMER SITE S84, NR	TF
C50	7960716	С	TRANSFORMER SIT PH LUALUALEI	TES S380 AND S382, T	NAVMAG
C51	7960717	С	FORMER TRANSFO LUALUALEI, AND T S-1761, FORMER NA	RMER SITE S384, NA TRANSFORMER SUE S BARBERS POINT	AVMAG PH BSTATION
C52	7960718	С	TRANSFORMER SIT	TE ANALYTICAL DA	ΔТА

TRANSFORMER SITE ANALYTICAL DATA

TRANSFORMER SITE ANALYTICAL DATA

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Thermal Desorption	Treatment of PC	B-Contaminated	d Soil at the Former	NAS Barbers Point, Oahu	ı, Hawaii
C55	7960721	С	TRANSFORMER	SITE ANALYTICAL DA	ATA
C56	7960722	С	TRANSFORMER	SITE ANALYTICAL DA	ATA
C57	7960723	С	TRANSFORMER	SITE ANALYTICAL DA	ATA
C58	7960724	С	TRANSFORMER	SITE ANALYTICAL DA	ATA
C59 7	960725	С	TRANSFORMER	SITE ANALYTICAL DA	ATA

Add the following 23 new drawings to the list of drawings, thereby making a total of 95 drawings:

DWG <u>NO.</u>	NAVFAC <u>DWG NO.</u>	TITLE
C22A	7960729	TRANSFORMER SITE I-4, IROQUOIS POINT AND BUILDING 81, NRTF LUALUALEI PHNC
C28A	7960730	TRANSFORMER SITE H-3, HALAWA-MAIN GATE
C36A	7960731	TRANSFORMER SITE A-10, SHIPYARD
C36B	7960732	TRANSFORMER SITE A-8, SHIPYARD
C37A	7960733	TRANSFORMER SITE B-2, SHIPYARD
C38A	7960734	TRANSFORMER SITE C-4, SHIPYARD
C38B	7960735	TRANSFORMER SITE C-4, SHIPYARD
C39A	7960736	TRANSFORMER SITE C-7, SHIPYARD
C39B	7960737	TRANSFORMER SITE C-7, SHIPYARD
C39C	7965467	TRANSFORMER SITE C-7, SHIPYARD
C39D	7965468	TRANSFORMER SITE C-7, SHIPYARD
C44A	7965469	TRANSFORMER SITE G-12, SHIPYARD
C44B	7965470	TRANSFORMER SITE K, SHIPYARD
C45A	7965471	TRANSFORMER SITE W-11, WAIPIO PENINSULA
C45B	7965472	TRANSFORMER SITE W-11, WAIPIO PENINSULA
C45C	7965473	TRANSFORMER SITE W-11, WAIPIO PENINSULA
C45D	7965474	TRANSFORMER SITE W-11, WAIPIO PENINSULA
C45E	7965475	TRANSFORMER SITE W-11, WAIPIO PENINSULA
C46A	7965476	FORMER TRANSFORMER SITE S11, WEST LOCH
C49A	7965477	FORMER RIGGER SHOP, NRTF LUALUALEI
C60	7960726	TRANSFORMER SITE ANALYTICAL DATA
C61	7960727	TRANSFORMER SITE ANALYTICAL DATA
C62	7960728	TRANSFORMER SITE ANALYTICAL DATA

b. Changes to Section 02111

1.SECTION 02111EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL<br/>PARAGRAPH 1.3SURVEYS

Delete the second and third sentences that read: "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." In the fourth sentence, add the words "that exceed action levels where soil will be left in place" between the words "samples" and "shall."

#### 2. SECTION 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL

Add the following paragraph:

2.1.4 Clean Quarry at TA-01

Provide "clean quarry" gravel backfill in areas at Transformer Site TA-01 as specified in Attachment II of this section. The areas that require clean quarry fill are shown on Drawing C5.

3. SECTION 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL PARAGRAPH 3.12 FIELD QUALITY CONTROL

Third paragraph, bullet letter a., delete: "per lift" after "One test per excavation."

4. SECTION 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL PARAGRAPH 3.13.2 REPLACE ASPHALST AND CONCRETE PAVEMENTS AND SIDEWALKS

Last sentence, delete "or to the following minimum thickness requirements" at the end of the sentence.

5. SECTION 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL CONFIRMATION SAMPLING AND ANALYSIS

First paragraph, third sentence, change "Attachment II" to "Attachment III."

6. SECTION 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL ATTACHMENTS

Change cover page of Attachment II for the Sampling and Analysis Plan "Earth Tech, Inc. 2003....February" to Attachment III.

7. SECTION 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL ATTACHMENTS

Add Attachment II to this amendment.

- c. Changes to Section 02731
  - 1. SECTION 02731
     AGGREGATE SURFACE COURSE

     PARAGRAPH 3.1
     PREPARATION OF UNDERLYING COURSE SUBGRADE

Last sentence, delete "a" after the words "...or other operations."

- d. Changes to Section 02742
  - 1. SECTION 02742
     ASPHALT PAVING

     PARAGRAPH 3.1.2
     SURFACE PREPARATION OF UNDERLYING COURSE

First sentence, replace "SECTION 02315 EXCAVATION AND FILL" with "SECTION 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL."

- e. Changes to Section 02770
  - 1. SECTION 02770 CONCRETE SIDEWALKS AND CURBS AND GUTTERS PARAGRAPH 3.1.3 MAINTENANCE OF SUBGRADE

Last sentence, delete words "free from frost" after "...to produce a subgrade."

f. Changes to SECTION 03300

1.	SECTION 03300	CAST-IN-PLACE CONCRETE
	PARAGRAPH 3.2	CONCRETE PAVEMENT AND PADS

First sentence, add the words "a minimum of" before the words "6 inches thick."

#### DRAWINGS

a. Changes to Drawings

Changes as directed below have been made to the respective drawings. Drawings incorporating the directed changes are issued with this amendment.

DWG	NAVFAC	REVISION	
<u>NO.</u>	DWG NO.	<u>LTR.</u>	TITLE/CHANGES
T1	795139	С	VICINITY MAP AND SHEET INDEX
			1. Revise Title for drawing T1A C17.
			2. Delete Note.
			3. Add Drawing C22A.
			4. Update note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03."
			5. Add Abbreviation (HDPE)
			6. Update Sheet Index.
T1A	7960688	С	SHEET INDEX
			1. Revise title of drawing C28, C33, C36, C37, C44, C46, C49.
			2. Add drawings.
			3. Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03."
T2	7952140	С	SITE LOCATION MAP FORMER NAS BARBERS POINT
			1. Update haul route.
			<ol> <li>Update note to read "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/3."</li> </ol>
			<ol> <li>Update label to read "FORMER DRUM CRUSHING AREA DRAWING C4 GROUP B SITE."</li> </ol>

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Thermal D	Desorption Treatmer	nt of PCB-Cont	taminated Soil at the Former NAS Barbers Point, Oah	ı, Hawaii
T4	7952142	С	SITE LOCATION MAP SHIPYARD	
			1. Update site location map.	
			2. Update note to read "THIS DRAWING SUPERSEDES DRAWING DATED 6	r /16/03."
Т6	7952144	С	SITE LOCATION MAP IROQUOIS POIN	T, PHNC
			1. Update location site location map.	
			2. Add note to read "THIS DRAWING S DRAWING DATED 6/16/03."	UPERSEDES
Τ7	7952145	С	SITE LOCATION MAP – NRTF LUALUA	LEI
			1. Update location of former rigger shop.	
			2. Add note "THIS DRAWING SUPERS DRAWING DATED 6/16/03."	EDES
Τ8	7960689	С	SITE LOCATION MAP – HAWALA-MA NAVAL HOUSING AREA, AND PWC M COMPLEX	N GATE, AIN
			1. Update site location map.	
			<ol> <li>Add note "THIS DRAWING SUPERS DRAWING DATED 6/16/03."</li> </ol>	EDES
			3. Delete Site NWF.	
Т9	7960690	С	SITE LOCATION MAP – WAIPIO PENIN WEST LOCH	ISULA AND
			1. Update site location map.	
			<ol> <li>Add note "THIS DRAWING SUPERS DRAWING DATED 6/16/03."</li> </ol>	EDES
T11	7960692	С	SITE LOCATION MAP – NAVMAG PH I	LUALUALEI
			1. Update drum volume.	
			2. Update note to read "THIS DRAWING SUPERSEDES DRAWING DATED 6/1	6/03."
			3. Update soil volume in note.	
C1	7952146	C	GENERAL LOCATION MAP TREATME AND RELATED LOCATIONS	NT SITE
			1. Update note to read "THIS DRAWING SUPERSEDES DRAWING DATED 6/1	6/03."
			2. Update the drum count (to 50 drums) and 14 C.Y.).	d volume (to
C2	7952147	С	TREATMENT SITE EXISTING CONDIT	IONS
			<ol> <li>Delete note: "INSTALL TEMPORARY LINK SECURITY GATE AND SECUR FENCE."</li> </ol>	CHAIN- ITY
			2. Update note to read "THIS DRAWING SUPERSEDES DRAWING DATED 6/1	6/03."
C3	7952148	С	CORAL PIT FILLING PLAN	

			1. Update note to read "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03."
			2. Update treatment volumes.
C4	7952149	С	FORMER DRUM CRUSHING AREA FORMER NAS BARBERS POINT
			1. Update notes to read "4. REMOVE TEMPORARY CONSTRUCTION FENCING FROM AROUND THE FORMER DRUM CRUSHING AREA AND DISPOSE OR REUSE OF ACCORDINGLY.", "5. REMOVE AND DISPOSE OF APPROXIMATELY TWENTY 8-FOOT BY 35-FOOT ASBESTOS- CONTAINING PANELS AND ASSOCIATED DEBRIS IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.", and "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/3", and "SITE DRUM CRUSHING AREA."
			2. Update Legend.
			3. Add table of criteria.
			4. Add sample point (0) DCA-1D.
			5. Change excavation boundaries.
C5	7952150	С	TRANSFORMER SITES TA-01 AND TC-04, FORD ISLAND, PHNC
			1. Change note to read "REMOVE CONTAMINATED SEDIMENT WITHIN THE OPEN CONCRETE VAULT", and "REMOVE ASPHALT AND REPLACE WITH "CLEAN QUARRY" AS DISCUSSED IN SPECIFICATION (637 SQ. FT.)", and "FOR ANALYTICAL DATA SEE DRAWING C24."
			<ol> <li>Add note to read "THIS DRAWING SUPERSEDES DRAWING DATE 2/3/03", and "OPEN EXCAVATION TO 3' BGS. EXCAVATE CONTAMINATED SOIL FROM 3' TO 6' BGS."</li> </ol>
			3. Update site plan and notes to read "REMOVE AND REPLACE CONCRETE PAVEMENT 247 SQ. FT."
			<ol> <li>Change TA-01 delineation based on relocation of TA-01-SS samples (within concrete vault).</li> </ol>
			5. Update excavation area and volume.
C10	7952155	С	TRANSFORMER SITES TF-04 AND TF-05, FORD ISLAND, PHNC
			<ol> <li>Add note reading "THIS DRAWING SUPERSEDES DRAWING DATED 2/3/03."</li> </ol>
			<ol> <li>Delete note reading "REMOVE AND REPLACE CONCRETE SIDEWALK 219 SQ.FT."</li> </ol>
C12	7952157	С	TRANSFORMER SITES TF-09 AND TF-17, FORD ISLAND, PHNC

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			<ol> <li>Add note "THIS DRAWING SUPERSEDES DRAWING DATED 2/3/03."</li> </ol>
C13	7952158	С	TRANSFORMER SITES TF-18 AND TG-01, FORD ISLAND, PHNC
			1. Change excavation boundary.
			<ol> <li>Add note "THIS DRAWING SUPERSEDES DRAWING DATED 2/3/03."</li> </ol>
			3. Update concrete sidewalk and building location (north corner).
			<ol> <li>Delete note "EQUIPMENT ON CONCRETE PAD" and delete pad.</li> </ol>
			5. Delete not "GRAVEL."
C15	7952160	С	TRANSFORMER SITES TI-03 AND TI-04D, FORD ISLAND, PHNC
			<ol> <li>Update note to read "REMOVE OLD CONCRETE PAD 19 SQ. FT. DO NOT REPLACE."</li> </ol>
			<ol> <li>Add note "THIS DRAWING SUPERSEDES DRAWING DATED 2/3/03" and "FOR ANALYTICAL DATA SEE DRAWING C23."</li> </ol>
C16	7952161	С	TRANSFORMER SITES TD-10 AND TF-06, FORD ISLAND, PHNC
			<ol> <li>Add note "THIS DRAWING SUPERSEDES DRAWING DATED 2/3/03."</li> </ol>
			2. Change note to read: "FURTHER ACTION TO BE DETERMINED BY THE NAVY."
			3. Remove note.
C17	7952162	С	TRANSFORMER SITE TC-01, FORD ISLAND, PHNC
			<ol> <li>Add note "THIS DRAWING SUPERSEDES DRAWING DATED 2/3/03."</li> </ol>
			2. Update excavation boundaries and coordinates in the excavation plan.
			3. Delete transformers.
			4. Update note in excavation plan to read "REMOVE CLEAN FILL TO LINER (6 FT. DEEP) AND EXCAVATE 2 FT. OF CONTAMINATED SOIL TO 8 FT. STOCKPILE CLEAN FILL ON-SITE AND REUSE AS BACKFILL." Update note directly below the excavation volume box to read "6' OF CLEAN FILL (18 CUBIC YARDS) INCLUDED IN VOLUME"
			5. Update the excavation area and volume.
C19	7952164	С	TRANSFORMER SITES D-02 AND E-09, PHNC
			1. Add historic data points

2. Add notes "STOCKPILE CLEAN FILL ON-SITE

			AND REUSE AS BACKFILL" and "THIS DRAWING SUPERSEDES DRAWING DATED 2/3/03."
			<ol> <li>Update note #3 by replacing the word "EXCAVATED" with the word "CONTAMINATED."</li> </ol>
			<ol> <li>Update D-02 delineation based on discussions with CTO 39 team.</li> </ol>
			5. Update excavation area and volume.
			6. Update excavation plan and distance/interior angl table.
C22	7952167	С	BUILDING 81, NRTF LUALUALEI
			1. Add excavation plan.
			2. Move transformer I-4 and building 81 stockpiles sheet C22A.
			<ol> <li>Change building 81 delineation based on addition data</li> </ol>
			4. Update excavation area and volume
			<ol> <li>Add note "THIS DRAWING SUPERSEDES DRAWING DATED 2/3/03."</li> </ol>
C22A	7960729	С	TRANSFORMER SITE I-4 IROQUOIS POINT, AN BUILDING 81, NRTF LUALUALEI PHNC
			<ol> <li>Sheet C22A was added to provide for changes to sheet C22. No changes to transformer I-4 drawin were made.</li> </ol>
			2. Update note to read: "PROTECT UTILITY POL
			3. Add note to remove concrete pad.
			4. Delete concrete pad and note from excavation pla
C23	7952169	С	TRANSFORMER SITE ANALYTICAL DATA
			<ol> <li>Correct data point DCA-11 at 4 feet to non-detec (ND).</li> </ol>
			2. Add arsenic data for the former drum crushing ar
			<ol> <li>Add note "THIS DRAWING SUPERSEDES DRAWING DATED 2/3/03."</li> </ol>
			4. Correct the table headers for the former drum crushing area to read "Contaminants (mg/kg)"
			5. Move data for Building 81 to sheet C26.
			6. Update sheet sequence.
C24	7952170	С	TRANSFORMER SITE ANALYTICAL DATA
			<ol> <li>Add note "THIS DRAWING SUPERSEDES DRAWING DATED 2/3/03."</li> </ol>
			2. Add data for TC-01.

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C25	7952171	С	TRANSFORMER SITE ANALYTICA	L DATA
			3. Add note "THIS DRAWING SUP DRAWING DATED 2/3/03."	ERSEDES
			4. Add data to read: "CONTINUED (	ON SHEET C26."
C26	7952172	С	TRANSFORMER SITE ANALYTICA	L DATA
			1. Add note "THIS DRAWING SUP DRAWING DATED 2/3/03."	ERSEDES
			2. Relocate data for Building 81 from	sheet C23.
C27	7960693	С	TRANSFORMER SITES BUILDING HALAWA-MAIN GATE	653 AND H-2,
			1. Update confirmation sample location coordinates in excavation plan.	ons and
			2. Add note "THIS DRAWING SUP DRAWING DATED 6/16/03."	ERSEDES
			3. Update note "CONTINUED FROM	A SHEET C25."
C28	7960694	С	TRANSFORMER SITE H-5, HALAW	A-MAIN GATE
			1. Move transformer site H-3 to sheet accommodate changes to transform	C28A to her site H-5.
			2. Add note "THIS DRAWING SUP DRAWING DATED 6/16/03."	ERSEDES
			3. Update excavation area due to add	itional data.
			4. Update confirmation sample location coordinates in excavation plan.	ons and
C28A	7960730	С	TRANSFORMER SITE H-3, HALAW	A-MAIN GATE
			1. Add new sheet to accommodate ch transformer H-5.	anges to
			2. Update confirmation sample location coordinates in excavation plan.	ons and
			3. Update label "FORMER TRANSF	ORMER H-3."
C29	7960695	С	TRANSFORMER SITES J-12 and J-17 MAIN GATE	, HALAWA-
			1. Update confirmation sample location coordinates in excavation plan.	ons and
			2. Add note "THIS DRAWING SUP DRAWING DATED 6/16/03"	ERSEDES
C30	7960696	С	TRANSFORMER SITES J-21 and J-29 MAIN GATE	), HALAWA-
			1. Update confirmation sample location coordinates in excavation plan.	ons and
			2. Add notes "THIS DRAWING SU DRAWING DATED 6/16/03," "W FOOT ABOVE GROUND ATTA BUILDING (PROTECT)," and "R	PERSEDES VATER LINE 1 CHED TO ESTORE

			ASPHALT PARKING LOT."
			3. Update sample labels "J21-12(0,2) and "J21-10( <b>0</b> ,0.5,2)."
			4. Update label "TV Manhole (PROTECT)."
C31	7960697	С	TRANSFORMER SITES K-14 and K-15, HALAWA- MAIN GATE
			1. Update confirmation sample locations and coordinates in excavation plan.
			<ol> <li>Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03"</li> </ol>
			3. Update label "DRAINAGE GRATE (PROTECT)"
C32	7960698	С	TRANSFORMER SITES K-20, HALAWA-MAIN GATE AND W-4/W-5, WAIPO PENINSULA
			1. Update confirmation sample locations and coordinates in excavation plan.
			<ol> <li>Add notes "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03."</li> </ol>
			3. Update note "DETERIORATED ASPHALT."
C33	7960699	С	TRANSFORMER SITE M-3, NAVAL HOUSING AREA
			<ol> <li>Transformer NH-f was deleted from the scope of this project.</li> </ol>
			2. Update confirmation sample locations and coordinates in excavation plan.
			<ol> <li>Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03."</li> </ol>
			4. Change sheet title.
C34	7960700	С	TRANSFORMER SITE M-5, PWC MAIN COMPLEX
			1. Update confirmation sample locations and coordinates in excavation plan.
			<ol> <li>Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03"</li> </ol>
C35	7960701	С	TRANSFORMER SITES A-2 AND A-4, SHIPYARD
			1. Update confirmation sample locations and coordinates in excavation plan.
			<ol> <li>Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03" and "METAL UTILITY BOX (PROTECT)."</li> </ol>
C36	7960702	С	TRANSFORMER SITE A-10, SHIPYARD
			<ol> <li>Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03"</li> </ol>
			2. Change excavation boundary, area, and volume due to additional data.

C36A

C36B

C37

C37A

C38

7960731

7960732

7960703

7960733

7960704

С

С

С

С

С

#### Draft Group C Design, Amendment No. 0006

Thermal Desorption Treatment of PCB-Contaminated Soil at the Former NAS Barbers Point, Oahu, Hawaii 3. Delete notes and renumber notes.

- 4. Move transformer A-8 to sheet C36B.
- 5. Change sheet title.

#### TRANSFORMER SITE A-10, SHIPYARD

- 1. Add new sheet to accommodate changes to transformer A-10.
- 2. Update excavation plan for additional excavation due to new samples;
- 3. Update excavation and confirmation sample locations and coordinates.

#### TRANSFORMER SITE A-8, SHIPYARD

- 1. Add new sheet to accommodate changes to transformer A-10.
- 2. Update confirmation sample locations and coordinates in the excavation plan.

#### TRANSFORMER SITE C-2, SHIPYARD

- 1. Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03"
- 2. Update site plan and include new data and revise excavation.
- 3. Update excavation area and volume.
- 4. Update excavation and confirmation sample locations and coordinates in excavation plan.
- 5. Update excavation plan boundaries.
- 6. Move transformer B-2 to sheet C37A.
- 7. Change sheet title.

#### TRANSFORMER SITE B-2, SHIPYARD

- 1. Add new sheet to accommodate changes to transformer C-2.
- 2. Update confirmation sample locations and coordinates.
- 3. Correct volume calculation.

#### TRANSFORMER SITE C-4, SHIPYARD

- 1. Change excavation boundary due to sample points.
- 2. Add excavation marker and note reading "DURING BACKFILL OPERATIONS, PLACE A 10 MIL HDPE LINER ON EAST SIDE OF EXCAVATION ALONG CURB AS A VERTICAL BARRIER FROM 2 TO 6 FT. BGS."
- 3. Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03"
- 4. Update excavation area and volume.

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Thermal Desorp	tion Treatment	of PCB-Contam	inated Soil at the Former NAS Barbers Po	int, Oahu, Hawaii
			5. Update note "HAUL ALL EX AND MATERIAL (CONCRE TO TREATMENT SITE FOR METAL REBAR WITHIN TH METAL RAILING SHALL B DECONTAMINATED AND I	CAVATED SOIL TE AND ASPHALT) TREATMENT. IE BERM AND E RECYCLED."
C38A	7960734	С	TRANSFORMER SITE C-4, SHIP	YARD
			1. New drawing added to accomment transformer C-4.	nodate changes to
			2. Add excavation marker and no BACKFILL OPERATIONS, F HDPE LINER ON EAST SID ALONG CURB AS A VERTH FROM 2 TO 6 FT. BGS."	te reading "DURING PLACE A 10 MIL E OF EXCAVATION CAL BARRIER
			3. Update excavation boundary a	nd sampling locations.
			4. Update excavation area and vo	lume.
C38B	7960735	С	TRANSFORMER SITE C-4, SHIP	YARD
			1. New sheet added to accommod transformer C-4.	late changes to
			2. Update excavation boundary a	nd sampling locations.
			3. Update confirmation sampling coordinates.	locations and
C39	7960705	С	TRANSFORMER SITE C-7, SHIP	YARD
			1. Add note "THIS DRAWING S DRAWING DATED 6/16/03."	SUPERSEDES
			2. Update excavation boundaries	and depths.
			3. Add sample locations and data	
			4. Update excavation area to and	volume.
C39A	7960736	С	TRANSFORMER SITE C-7, SHIP	YARD
			1. New sheet added to accommod excavation at transformer C-7.	late additional
			2. Update excavation boundaries	and depths.
			3. Add sample locations and data	
C39B	7960737	С	TRANSFORMER SITE C-7, SHIP	YARD
			1. New sheet added to accommod excavation at transformer C-7.	late additional
			2. Update excavation boundaries	and depths.
			3. Update confirmation sample lo	ocations and data.
C39C	7965467	С	TRANSFORMER SITE C-7, SHIP	YARD
			1. New sheet added to accommod excavation at transformer C-7.	late additional
			2. Update excavation boundaries	and depths.

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The	ermal Desorp	tion Treatme	ent of PCB-Contam	inated Soi	I at the Former NAS Barbers Point	., Oahu, Hawaii
				3.	Update confirmation sample loca	tions.
				4.	Add note "EXCLUDE FROM E2 SQ. FT. (SEE SHEET C38B)."	XCAVATION 587
	C39D	7965468	С	TRA	ANSFORMER SITE C-7, SHIPY	ARD
				1.	New sheet added to accommodat excavation at transformer C-7.	e additional
				2.	Update coordinates for excavatio samples.	n and confirmation
	C40	7960706	С	TRA	ANSFORMER SITES C-8 AND (	C-13, SHIPYARD
				1.	Update confirmation sample loca coordinates in excavation plan.	tions and
				2.	Add note "THIS DRAWING SU DRAWING DATED 6/16/03."	PERSEDES
	C42	7960708	С	TRA	ANSFORMER SITES E-16 and E	-25, SHIPYARD
				1.	Update confirmation sample loca coordinates in excavation plan.	tions and
				2.	Add note "THIS DRAWING SU DRAWING DATED 6/16/03."	PERSEDES
				3.	Update excavation area and volumeremoval of transformer.	me for E-25 due to
				4.	Update excavation coordinates.	
				5.	Remove note.	
				6.	Update note "POINT A IS THE I THE GRAVEL PATCH."	EAST CORNER OF
	C43	7960709	С	TR/ SHI	ANSFORMER SITES F-3 AND F IPYARD	-20/F-20A,
				1.	Update excavation boundary and	depths.
				2.	Add sample locations.	
				3.	Update excavation boundary coo	rdinates.
				4.	Update confirmation sample loca coordinates in excavation plan.	tions and
				5.	Add note "THIS DRAWING SU DRAWING DATED 6/16/03."	PERSEDES
				6.	Update note "EXCAVATE ARO TO EXTENT PRACTICAL; IF ( SAMPLES 1, 2, 3, 5, 20, OR 21 ( GREATER THAN 1 ppm, REST DIRECTED BY NAVY."	UND MANHOLES CONFIRMATION CONTAIN PCBs ORE SITE AS
	C44	7960710	С	TRA	ANSFORMER SITE G-12, SHIPY	YARD
				1.	Update sample locations.	
				2.	Update excavation boundaries an	d depths.

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3. Add note "THIS DRAWING SUPERSEDES

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Thermal Desorption Treatment of PCB-Contaminated Soil at the Former NAS Barbers Point, Oahu, Hawaii

			DRAWING DATED 6/16/03."
			4. Move transformer K to sheet C44B.
			5. Change sheet title.
C44A	7965469	С	TRANSFORMER SITE G-12, SHIPYARD
			1. Sheet added to accommodate additional excavation for transformer G-12.
			2. Update excavation boundaries and depths.
			3. Update confirmation sample locations and coordinates.
			4. Update excavation boundary coordinates.
C44B	7965470	С	TRANSFORMER SITE K, SHIPYARD
			1. New sheet added to accommodate additional excavation for transformer G-12.
			2. Add building number 1031.
			3. Update confirmation sample locations and coordinates.
C45	7960711	С	TRANSFORMER W-11, WAIPIO PENINSULA
			1. Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03" and "SEGREGATE ALL METAL, RUBBER, AND MISCELLANEOUS MATERIAL IN DEBRIS AND BRUSH PILES AND DISPOSE OF IN ACCORDANCE WITH APPLICABLE REGULATIONS."
			2. Update excavation boundary and sample locations.
			3. Update excavation area and volume.
			4. Update reference to analytical data.
			5. Add removal of debris and brush piles.
C45A	7965471	С	TRANSFORMER SITE W-11, WAIPIO PENINSULA
			1. New sheet added to accommodate changes to transformer W-11.
			2. Update excavation boundaries and sampling locations.
			3. Update excavation area and volume.
			4. Update reference to analytical data.
			5. Add removal of debris and brush piles.
			6. Add note "SEGREGATE ALL METAL, RUBBER, AND MISCELLANEOUS MATERIAL IN DEBRIS AND BRUSH PILES AND DISPOSE OF IN ACCORDANCE WITH APPLICABLE REGULATIONS."
C45B	7965472	С	TRANSFORMER SITE W-11, WAIPIO PENINSULA
			1. New sheet added to accommodate changes to

			transformer W-11.
			2. Update excavation boundaries and sampling locations.
			3. Update excavation area and volume.
			4. Update reference to analytical data.
			5. Add removal of debris and brush piles.
C45C	7965473	С	TRANSFORMER SITE W-11, WAIPIO PENINSULA
			1. New sheet added to accommodate changes to transformer W-11.
			2. Update locations of confirmation samples.
			3. Add note "FOR CONFIRMATION SAMPLE LOCATION AND EXCAVATION BOUNDARY COORDINATES SEE DRAWING C45E."
C45D	7965474	С	TRANSFORMER SITE W-11, WAIPIO PENINSULA
			1. New sheet added to accommodate changes to transformer W-11.
			2. Update locations of confirmation samples.
			3. Add note "FOR CONFIRMATION SAMPLE LOCATION AND EXCAVATION BOUNDARY COORDINATES SEE DRAWING C45E."
C45E	7965475	С	TRANSFORMER SITE W-11, WAIPIO PENINSULA
			1. New sheet added to accommodate changes to transformer W-11.
			2. Update coordinates of confirmation samples.
			3. Update coordinates of excavation boundaries.
C46	7960712	С	FORMER TRANSFORMER SITE S33, WEST LOCH
			<ol> <li>Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03" and "EXISTING PARKING BUMPER (REMOVE AND REPLACE)."</li> </ol>
			2. Add sample locations.
			3. Update excavation boundaries and depths.
			4. Update excavation boundary coordinates.
			5. Update confirmation sample locations and coordinates.
			6. Update reference to analytical data.
			7. Transformer S11 moved to sheet C46A.
			8. Change sheet title.
C46A	7965476	С	FORMER TRANSFORMER SITE S11, WEST LOCH
			1. Sheet added to accommodate additional excavation to transformer S11.

			2.	Update confirmation sample locations and coordinates.
			3.	Update reference to analytical data.
C47	7960713	С	TR. WA	ANSFORMER SITES 121 AND 236, NCTAMS AHIAWA
			1.	Update confirmation sample locations and coordinates in excavation plan.
			2.	Update reference to analytical data.
			3.	Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03" and "TRANSFORMER 121 IS LOCATED IN AN ACTIVE CHAPEL PARKING LOT."
			4.	Update note "REMOVE 4 FOOT HIGH PICKET FENCE (DO NOT REPLACE)."
C48	7960714	С	TR. BU	ANSFORMER SITES BUILDING 1 AND ILDING 68, NRTF LUALUALEI
			1.	Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03."
			2.	Update reference to analytical data.
			3.	Update location and coordinates for confirmation samples.
			4.	Update excavation boundaries and coordinates.
			5.	Update excavation area and volume.
C49	7960715	С	FOI LU	RMER TRANSFORMER SITE S84, NRTF ALUALEI
			1.	Update excavation coordinates, area, and volume.
			2.	Update confirmation sample locations and coordinates in excavation plan.
			3.	Update reference to analytical data.
			4.	Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03."
			5.	Change sheet title.
C49A	7965477	С	FO	RMER RIGGER SHOP, NRTF LUALUALEI
			1.	Add new sheet to accommodate changes to transformer S84.
			2.	Update confirmation sample locations and coordinates.
C50	7960716	С	TR. PH	ANSFORMER SITES S380 AND S382, NAVMAG LUALUALEI
			1.	Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03."
			r	Undete confirmation comple leastions and

2. Update confirmation sample locations and coordinates in excavation plan.

			3. Update reference to analytical data.
			4. Add data point "S382-22."
C51	7960717	С	FORMER TRANSFORMER SITE S384, NAVMAG PH LUALUALEI, AND TRANSFORMER SUBSTATION S-1761, FORMER NAS BARBERS POINT
			1. Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03," "ANALYTICAL DATE FOR SAMPLES ALONG ESTIMATED BOUNDARY H-0 ARE NOT AVAILABLE, BUT ASSUMED TO BE NON-DETECT," and "CONCRETE SIDEWALK (REMOVE AND REPLACE)."
			2. Update excavation area and volume for S-1761 due to additional data.
			3. Update confirmation sample locations and coordinates.
			4. Update reference to analytical data.
C52	7960718	С	TRANSFORMER SITE ANALYTICAL DATA
			<ol> <li>Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03."</li> </ol>
			<ol> <li>Move data for transformers K-14 and K-15 to sheet C53.</li> </ol>
			3. New data added to transformer H-5.
			4. New data added to transformer J-21.
			5. Update sheet reference for transformer H-3.
C53	7960719	С	TRANSFORMER SITE ANALYTICAL DATA
			<ol> <li>Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03."</li> </ol>
			2. Added data for transformers K-14 and K-15.
			<ol> <li>Change analytical result for transformer K-14, boring K14-02, depth 0.5 to ND.</li> </ol>
			4. Remove NH-f data.
			5. Update sheet reference for transformer A-8.
C54	7960720	С	TRANSFORMER SITE ANALYTICAL DATA
			<ol> <li>Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03."</li> </ol>
			2. Move data for transformer C-4 to sheet C55.
			3. New data added to transformer A-10.
			4. New data added to transformer C-2.
			5. Update sheet reference for transformer B-2.
C55	7960721	С	TRANSFORMER SITE ANALYTICAL DATA
			1. Add note "THIS DRAWING SUPERSEDES

			DRAWING DATED 6/16/03."
			2. Move data for transformer C-7 to sheet C56.
			3. New data added to transformer C-4.
			4. Update sheet reference for transformer C-4.
C56	7960722	С	TRANSFORMER SITE ANALYTICAL DATA
			1. Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03."
			2. Move data for transformers E-11, E-13, E-16 to sheet C57.
			3. Move data for transformers E-25 and F-3 to sheet C58.
			4. New data added to transformer C-7.
			5. Update sheet reference for transformer C-7.
			6. Data added for transformer C-4.
C57	7960723	С	TRANSFORMER SITE ANALYTICAL DATA
			1. Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03."
			2. Move data for transformers F-3, F-20/20A, and G-12 to sheet C58.
			3. Move data for transformers K, W-4/W-5, and W-11 to sheet C59.
			4. New data added to transformer C-7.
			5. Update sheet reference for E-11.
C58	7960724	С	TRANSFORMER SITE ANALYTICAL DATA
			1. Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03."
			2. Move data for transformer W-11 to sheet C59 and C60.
			3. Move data for transformers S11 and S33 to sheet C60.
			4. Move data for transformer 121 to sheet C61.
			5. Data added for transformers E-25, F-3, F-20/F-20A, and G-12.
C59	7960725	С	TRANSFORMER SITE ANALYTICAL DATA
			1. Add note "THIS DRAWING SUPERSEDES DRAWING DATED 6/16/03."
			2. Move data for transformers building 68, S384, S84, Former Rigger Shop, and Building 1 to sheet C61.
			3. Data added for transformers K, W-4/W-5, and W-11.
			4. Update reference sheets for transformers K and W-11.
C60	7960726	С	TRANSFORMER SITE ANALYTICAL DATA

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	Thermal Desc	rption Treatm	ent of PCB-Conta	aminated Soil at the Former NAS Barbers Po	oint, Oahu, Hawaii
				1. This sheet was added to accomm	nodate additional data.
				2. New data added for transformer transformer S33.	W-11 and former
				3. Updated sheet reference for form	mer transformer S11.
	C61	7960727	С	TRANSFORMER SITE ANALYT	TICAL DATA
				1. This sheet was added to accomm	nodate additional data.
				2. Change analytical results for tra	nsformer building 68.
				3. New data added to transformer	S84.
				4. Updated sheet reference for For	mer Rigger Shop.
	C62	7960728	С	TRANSFORMER SITE ANALYT	TICAL DATA
				1. This sheet was added to accomm	nodate additional data.
				2. New data added to transformer	substation S-1761.

# b. Addition of New Drawings

Add the following 23 new drawings to the list of drawings, thereby making a total of 95 drawings:

DWG	NAVFAC	
<u>NO.</u>	DWG NO.	TITLE
C22A	7960729	TRANSFORMER SITE I-4 IROQUOIS POINT, AND BUILDING 81, NRTF LUALUALEI PHNC
C28A	7960730	TRANSFORMER SITE H-3, HALAWA-MAIN GATE
C36A	7960731	TRANSFORMER SITE A-10, SHIPYARD
C36B	7960732	TRANSFORMER SITE A-8, SHIPYARD
C37A	7960733	TRANSFORMER SITEB-2, SHIPYARD
C38A	7960734	TRANSFORMER SITE C-4, SHIPYARD
C38B	7960735	TRANSFORMER SITE C-4, SHIPYARD
C39A	7960736	TRANSFORMER SITE C-7, SHIPYARD
C39B	7960737	TRANSFORMER SITE C-7, SHIPYARD
C39C	7965467	TRANSFORMER SITE C-7, SHIPYARD
C39D	7965468	TRANSFORMER SITE C-7, SHIPYARD
C44A	7965469	TRANSFORMER SITE G-12, SHIPYARD
C44B	7965470	TRANSFORMER SITE W-11, WAIPIO PENINSULA
C45A	7965471	TRANSFORMER SITE W-11, WAIPIO PENINSULA
C45B	7965472	TRANSFORMER SITE W-11, WAIPIO PENINSULA
C45C	7965473	TRANSFORMER SITE W-11, WAIPIO PENINSULA
C45D	7965474	TRANSFORMER SITE W-11, WAIPIO PENINSULA
C45E	7965475	TRANSFORMER SITE W-11, WAIPIO PENINSULA
C46A	7965476	TRANSFORMER SITE S-11, WEST LOCH
C49A	7965477	FORMER RIGGER SHOP, NRTF LUALUALEI

C62 7960728 TRANSFORMER SITE ANALYTICAL DATA

**DESIGN SPECIFICATIONS** 

Thermal Desorption of Contaminated Soil at Former NAS Barbers Point

02-1800-0001

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

CONTRACT NUMBER: N62742-02-R-1800 CTO: 0001 ND 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



November 2003

NOTE: THIS DOCUMENT SUPERSEDES SPECIFICATIONS DATED FEBRUARY 2003

SPECIFICATION SUBMITTED BY: 2	Jaroh	Brblock DA	TE: 11.12.03
(	Sarah P. B	abcock, P.E.	

SPECIFICATION APPROVED BY:

\_\_ DATE: \_\_\_\_\_

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- 01330 SUBMITTAL PROCEDURES
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- 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

# **DIVISION 13 - SPECIAL CONSTRUCTION**

## 13281 REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING MATERIAL

-- 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 46,034 cubic yards (CY) not to exceed 56,052 CY of soil from three sources referred to as Group A and Group B, and Group C soils 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 IAnticipated Quantities by Soil Group

SOILS	MINIMUM CY	MAXIMUM CY
Group A	5,965	5,965
Group B	10,466	13,082
Group C	29,604	37,004

The quantities given in Table I have been estimated as bulked (ex situ) cubic yards by the Navy

# 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, including approximately 300 CY of group A soils in supersacks that will require transport to the treatment area, 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.

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 and drums at former NAS Barbers Point and in drums located at Buildings 77 and 399 NAVMG PH L ualualei and will require transport to the treatment area.

# 1.1.4 Contaminants of Concern

There are approximately 5,965 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 10,466 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 261 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 29,604 CY of soil contaminated with PCBs are expected from Group C sites, stockpiled and drummed soil at Former NAS Barbers Point, and drummed soil at Buildings 77 and 399 NAVMAG PH Lualualei. Delineation sampling has been conducted to define area and depth of contamination at the Group C sites as shown on the drawings. Where delineation sampling has not fully defined the horizontal extent of PCB contamination in soil, approximate excavation boundaries are shown in the drawings as dashed lines.

## 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 may 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 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

Existing 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 Drawing C2. 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; G

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 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, Group B, and Group C 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 (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;
- d. Haul contaminated soil from existing stockpiles to the treatment site;
- e. Conduct confirmation sampling and analysis to demonstrate that all contaminated soil requiring treatment has been removed. As directed by the NTR, excavate additional contaminated soil and conduct additional confirmation sampling, if confirmation samples indicate PCB concentration exceeding 1.0 milligram per kilogram are present. Backfill excavations (using successfully treated soil or certified clean import material) 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
T1A	7960688	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

DRAWIN	G NAVE	
<u>NU.</u> T5	<u>DWG NU.</u> 7052142	IIILE Recorned Waikala Exception Dalated
15	7932143	Reserved - warkere Excavation Deleted
T6	7952144	Site Location Map, Iroquois Point, PHNC
T7	7952145	Site Location Map - NRTF Lualualei
Т8	7960689	Site Location Map, Halawa-Main Gate, Naval Housing Area, and PWC Main Complex
Т9	7960690	Site Location Map, Waipio Peninsula, and West Loch
T10	7960691	Site Location Map, NCTAMS Wahiawa
T11	7960692	Site Location Map, VAVMAG PH Lualualei
C1	7952146	General Location Map - Treatment Site and Related Locations
C2	7952147	Treatment Site Existing Conditions
C3	7952148	Coral Pit Filling Plan
C4	7952149	Former Drum Crushing Area, Former NAS Barbers Point
C4A	7952168	Stockpile Area Existing Conditions, Former NAS Barbers Point
C5	7952150	Transformer Sites TA-01 and TC-04, Ford Island, PHNC
C6	7952151	Transformer Sites TC-06D and TC-07D, Ford Island, PHNC
C7	7952152	Transformer Sites TD-01 and TD-02, Ford Island, PHNC
C8	7952153	Transformer Sites TD-03 and TD-05, Ford Island, PHNC
C9	7952154	Transformer Sites TD-07, TF-01, and TF-01D, Ford Island, PHNC
C10	7952155	Transformer Sites TF-04 and TF-05, Ford Island, PHNC
C11	7952156	Transformer Sites TF-07 and TF-08, Ford Island, PHNC
C12	7952157	Transformer Sites TF-09 and TF-17, Ford Island, PHNC

DRAWING	G NAVFA	C
<u>NO.</u>	DWG NO.	TITLE
C13	7952158	Ford Island, PHNC
C14	7952159	Transformer Sites TG-03 and TG-06, Ford Island, PHNC
C15	7952160	Transformer Sites TI-03 and TI-04D, Ford Island, PHNC
C16	7952161	Transformer Sites TD-10 and TF-06, Ford Island, PHNC
C17	7952162	Transformer Site TC-01, Ford Island, PHNC
C18	7952163	Transformer Site TF-10, Ford Island, PHNC
C19	7952164	Transformer Sites D-02 and E-09, PHNC
C20	7952165	Reserved - Work at TransformerSites J-16 and M-14, PHNC Deleted
C21	7952166	Reserved - Excavation at Transformer Sites S61 and S127, Waikele Branch, PHNC Deleted.
C22	7952167	Building 81, NRTF, Lualualei
C22A	7960729	Tranformer Site I-4, Iroquois Point
C23	7952169	Transformer Site Analytical Data
C24	7952170	Transformer Site Analytical Data
C25	7952171	Transformer Site Analytical Data
C26	7952172	Transformer Site Analytical Data
C27	7960693	Transformer Sites Building 653 and H-2, Halawa-Main Gate
C28	7960694	Transformer Site H-5, Halawa-Main Gate
C28A	7960730	Transformer Site H-3, Halawa-Main Gate
C29	7960695	Transformer Sites J-12 and J-17, Halawa-Main Gate
C30	7960696	Transformer Sites J-21 and J-29, Halawa-Main Gate
C31	7960697	Transformer Sites K-14 and K-15, Halawa-Main Gate
C32	7960698	Transformer Sites K-20, Halawa-Main Gate and W-4/W-5, Waipio Peninsula

DRAWIN	IG NAVFA	AC
<u>NO.</u>	DWG NO.	TITLE
C33	7960699	Transformer Sites M-3 and NH-f Naval Housing Area
C34	7960700	Transformer Sites M-5, PWC Main Complex
C35	7960701	Transformer Sites A-2 and A-4, Shipyard
C36	7960702	Transformer Site A-10, Shipyard
C36A	7960731	Transformer Site A-10, Shipyard
C36B	7960732	Transformer Site A-8, Shipyard
C37	7960703	Transformer Site C-2, Shipyard
C37A	7960733	Transformer Site B-2, Shipyard
C38	7960704	Transformer Site C-4, Shipyard
C38A	7960734	Transformer Site C-4, Shipyard
C38B	7960735	Transformer Site C-4, Shipyard
C39	7960705	Transformer Site C-7, Shipyard
C39A	7960736	Transformer Site C-7, Shipyard
C39B	7960737	Transformer Site C-7, Shipyard
C39C	7965467	Transformer Site C-7, Shipyard
C39D	7965468	Transformer Site C-7, Shipyard
C40	7960706	Transformer Sites C-8 and C-13, Shipyard
C41	7960707	Transformer Sites E-11 and E-13, Shipyard
C42	7960708	Transformer Sites E-16 and E-25, Shipyard
C43	7960709	Transformer Sites F-3 and F-20/F-20A, Shipyard
C44	7960710	Transformer Site G-12, Shipyard
C44A	7965469	Transformer Site G-12, Shipyard
C44B	7965470	Transformer Site K, Shipyard
C45	7960711	Transformer Site W-11, Waipio Peninsula
C45A	7965471	Transformer Site W-11, Waipio Peninsula

DRAWING	G NAVFA	C
<u>NO.</u>	DWG NO.	TITLE
C45B	7965472	Transformer Site W-11, Waipio Peninsula
C45C	7965473	Transformer Site W-11, Waipio Peninsula
C45D	7965474	Transformer Site W-11, Waipio Peninsula
C45E	7965475	Transformer Site W-11, Waipio Peninsula
C46	7960712	Former Transformer Site S33, West Loch
C46A	7965476	Former Transformer Site S11, West Loch
C47	7960713	Transformer Sties 121 and 236, NCTAMS Wahiawa
C48	7960714	Transformer Sties Building 1 and Building 68, NRTF Lualualei
C49	7960715	Former Transformer Site S84, NRTF, Lualualei
C49A	7965477	Former Rigger Shop, NRTF, Lualualei
C50	7960716	Transformer Sites S380 and S382, NAVMAG PH Lualualei
C51	7960717	Former Transformer Site S384, NAVMAG PH Lualualei, and Transformer Substation S-1761, Former NAS Barbers Point
C52	7960718	Transformer Site Analytical Data
C53	7960719	Transformer Site Analytical Data
C54	7960720	Transformer Site Analytical Data
C55	7960721	Transformer Site Analytical Data
C56	7960722	Transformer Site Analytical Data
C57	7960723	Transformer Site Analytical Data
C58	7960724	Transformer Site Analytical Data
C59	7960725	Transformer Site Analytical Data
C60	7960726	Transformer Site Analytical Data
C61	7960727	Transformer Site Analytical Data
C62	7960728	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

DRAFT

# 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

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# 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

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APPLICATION		GUIDELINES ON MODELING PROCEDURES FOR A PREVENTION OF SIGNIFICANT DETERIORATION AND COVERED SOURCE PERMIT APPLICATION
Prevention of Significant	1. Consister	nt with PSD regulations, 40 CFR Part 51 Appendix W and State guidelines.
Deterioration (New and Major Modification)	2. Submissio 3. Submissio	ion of an air modeling protocol. ion of an air quality and meteorological monitoring protocol or exemption request.
	4. Screen M	Addeling:
	A)	SCREEN3 or CTSCREEN.
	() () ()	Should address simple terrain, complex terrain, intermediate terrain and downwash. Except for CTSCREEN, a receptor grid should start at the nearest distance to ambient air and receptors spaced every ten
		meters.
	Ωű	For screening analysis , use State annual scaling factor. For CTSCREEN use State scaling factors
	5. Refine Mo	
	A)	Meteorological data preference. (1) The available or minimum one vear of most recent onsite stack ton wind data. 10-meter stability data and 2-meter
		the demonstration of the state
		(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.
	Ĩ	(4) Use Meteorological Processor for Regulatory Models program to process data.
	B)	Heceptors
		<ol> <li>The number of receptors used in the coarse grid should provide sufficient coverage to identify the general location of the maximum immact(s)</li> </ol>
		(2) The recent in the refine and should be equal to or less than 100 meters. Should a predicted impact at (2)
		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.
	G C)	Refine modeling should address simple terrain, complex terrain, intermediate terrain and downwash. eening and refine modeling should he based on notential to emit or allowable emissions for point sources. The Department may
	request t	the inclusion of any fugitive emission sources, area sources and volume sources at the facility on a case-by-case basis.
	7. Backgrou	und air quality data should be representative, meet USEPA monitoring requirements, and collected within a three year period
	preceding	g application submission. The Department should be contacted for available data.
	o. The Dependence	al lineit itay tequest tiearuy sources be aureu to tite etitissiolis itivetitory and itioueleu with proposed emission units to to total amissions impact
	9. The Depa	artment may request other types of analyses or modeling to ensure the protection of ambient air quality.
	10. All metec	orological data, building downwash, and model input and output files should be provided to the Department on 3.5" floppy
	diskettes	

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GUIDELINES ON MODELING PROCEDURES FOR A PREVENTION OF SIGNIFICANT DETERIORATION AND COVERED SOURCE PERMIT APPLICATION	It.       Screen Modeling:         icroition       8       Soudd address simple terrain, complex terrain, intermediate terrain and downwash.         B       Shoudd address simple terrain, complex terrain, intermediate terrain and downwash.         C       Except for CTSCREEN, ar secentor grid should start at the nearest distance to ambient air and receptors spaced every tennerets.         D)       For STSCREEN, use State amual scaling factor.         E)       For STSCREEN, use State scaling factor.         C)       Minimum one year of most recent onsite stack top wind data. 10-meter stability data, and 2-meter temperature data.         C)       Minimum one year of most recent consite stack top wind are 10.         C)       Minimum one year of most recent consite stack top wind are 10.         C)       Minimum one year of most recent consite stack top wind are 10.         C)       Minimum one year of most recent consite start from SCRAM BBS, National Climatic Data Center, MWS, or FAA, with Department approval.         C)       Minimum one year of most recent consite start from SCRAM BBS, National Climatic Data Center, MWS, or FAA, usin Department approval.         C)       For complex terrain.         C)       For complex terrain.         C)       For complex terrain.         C)       For complex terrain.         C)       The nearonograad to the receprost used in the corase grid should be equied. A refine receptor
APPLICATION	

# NOTES: 1. 3.

- 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.

# SECTION 01330 Page 3

- 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 \_\_\_\_\_, Date \_\_\_\_\_ (Signature when applicable)

Certified by QC manager \_\_\_\_\_, Date \_\_\_\_" (Signature)

(2) When approving authority is QC manager, QC manager shall use the following approval statement when returning submittals to contractor as "Approved" or "Approved as Noted."

"I hereby certify that the (material) (equipment) (article) shown and marked in this submittal and 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 (approved) (not approved) for use.

Certified by Submittal Reviewer \_\_\_\_\_, Date \_\_\_\_\_ (Signature when applicable)

Approved by QC manager \_\_\_\_\_, Date \_\_\_\_" (Signature)

- 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  $8 \frac{1}{2}$  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 --

			SUBI	ER						CONTRACT	<sup>-</sup> <sub>NO.</sub> 02-R-180	0					
TITLE	AND	LOCATION		CONTRAC	TOR					-		-					
The	rmal	Desorpt	ion of PCB-Contaminated Soil														
					G O	C SC	ONTRACTO	R: TES		ITRACTOR ACTION		APF	ROVING AU	THOR	ITY		
ACT-V-TY ZO	TRANSM-TTAL NO	S P E C S E C T	DESCRIPTION ITEM SUBMITTED	P A R A G R A P H	VT OR A/E REVWR CLASS-F-CAT-ON	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACT-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)	(I)	(m)	(n)	(o)	(p)	(q)	(r)
		01110	SD-01 Preconstruction Submittals														
			Site Work Plan	1.5.1	G												
			Treatment Site Layout and Design	1.5.1	G												
			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										
			QC Testing Plan and Log	1.6													
			QC Test Results Summary Report	1.6													
			SD-07 Certificates	-													

			SUBI	ER						CONTRACT	<sup>-</sup> <sub>NO.</sub> 02-R-180	0					
TITLE	AND	LOCATION		CONTRAC	TOR												
The	rmal	l Desorpt	ion of PCB-Contaminated Soil														
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ACTIVITY NO	TRANSMITTAL NO	S P E C S E C T	DESCRIPTION ITEM SUBMITTED	P A R A # G R A P H	VT OR A/E REVWR CLASSIFICATION	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)	(I)	(m)	(n)	(o)	(p)	(q)	(r)
		01110	Contractor 29 CFR employee	1.7													
			hazardous waste training records														
			SD-11 Closeout Submittals														
			Remediation Verification Report;	1.8	G												
		01330	SD-11 Closeout Submittals														
			Submittal register	1.3.1	G												
		01501	SD-01 Preconstruction Submittals														
			Traffic control plan	1.5	G												
			Traffic control plan	2.2.4	G												
		01575	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													
			Laboratory analysis	1.6.2													
			SD-11 Closeout Submittals														
			Solid waste disposal permit	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														

			SUBI	ER						CONTRACT	<sup>.</sup> NO. 02-R-180	0					
TITLE	AND	LOCATION		CONTRAC <sup>®</sup>	TOR												
The	rmal	l Desorpt	ion of PCB-Contaminated Soil														
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(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(I)	(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														

			SUBI	ER						CONTRACT	<sup>.</sup> <sub>NO.</sub> 02-R-180	0					
TITLE	AND	LOCATION		CONTRAC	TOR												
The	rmal	l Desorpt	ion of PCB-Contaminated Soil														
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ACT-V-TY NO	TRANSMITTAL NO	S P E C S E C T	DESCRIPTION ITEM SUBMITTED	P A R A G R A P H	CLASSIFICATION	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACT-OZ CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACH-OZ CODW	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)
		02731	Sampling and Testing	1.4													
		02742	SD-05 Design Data														
			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													
		02770	SD-03 Product Data														
			Concrete	2.1													
			SD-06 Test Reports														
			Field Quality Control	3.8													
		02821	SD-02 Shop Drawings	0.0													
			Post spacing	321													
			Location of gate corner end and	321													
			pull posts	<u>, , , , , , , , , , , , , , , , , , , </u>			1										
			SD-03 Product Data														
			Chain-link Fencing	21													
			Fabric	211			1										
			Cates	2.1.1													
			Eroming	2.1.2													
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		02920															
			Seed Mix	2.1		1	1										

			SUBI	ER						CONTRACT NO. N62742-02-R-1800							
TITLE	AND	LOCATION		CONTRACTOR													
The	rmal	Desorpt	ion of PCB-Contaminated Soil														
					G O	CONTRACTOR: SCHEDULE DATES		CONTRACTOR ACTION			APF	ROVING AUTHORITY					
ACT-V-TY NO	TRANSMITTAL NO	S P E C S E C T	DESCRIPTION ITEM SUBMITTED	P A R A G R G R A P H	VT OR A/E REVWR CLASSIFICATION	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACT-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)	(I)	(m)	(n)	(0)	(p)	(q)	(r)
		02920	fertilizer content	2.2													
			Replacement trees	2.4													
		03300	SD-03 Product Data														
			Wire Fabric	2.2.6													
			SD-05 Design Data														
			Mix Design	2.1.1													
			SD-06 Test Reports														
			Slump	2.1.1													
			Compressive Strength	2.1.1													
			Field Slump Tests	3.8.2.1													
			Field Compressive Strength Tests	3.8.2.2													
			SD-07 Certificates														
			Batch Tickets	3.5													
		13281	SD-06 Test Reports														
			Waste determination results	1.5.1	G												
			Air sampling results	1.5.2	G												
			SD-07 Certificates														
			Initial exposure assessment test	1.3.6	G												
			plan		-												
			Class II employee training	1.3.2	G												
			Testing laboratory	1.3.7	G												
			Competent person documentation		G												
			Landfill approval	1.3.8	G												
			Waste shipment records	1.3.8	G		1										
			Hazardous waste manifest	138	G		1										
			Notifications	133	-		1										

SUBMITTAL FORM, Jan 96

			SUBI	ER						CONTRACT NO. N62742-02-R-1800							
TITLE AND LOCATION							CONTRACTOR										
Thermal Desorption of PCB-Contaminated Soil																	
<b>ベロナーシーナン</b>	TRANSMIHAL Z	SPEC SEC	DESCRIPTION	PARA# GRAP	GOVT OR A/E REVW CLASSIFICATIO		APPROVAL	RES	ACTION COD	DATE OF	DATE FWD TO APPR AUTH/ DATE RCD FROM	APP DATE FWD	DATE RCD	A C T O N C O D	DATE	MAILED TO CONTR/ DATE RCD FRM APPR	
Ö	Ö	Ť	ITEM SUBMITTED	Ĥ	N R	SUBMIT	BY	BY	Ē	ACTION	CONTR	REVIEWER	REVIEWER	Ē	ACTION	AUTH	REMARKS
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(I)	(m)	(n)	(o)	(p)	(q)	(r)
		13281	SD-11 Closeout Submittals		-												
			Notifications	1.3.3	G												
			Permits and licenses		G												

# 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 and erect security gate at former NAS Barbers Point with a temporary 8-foot high chain link fence and gates as shown on the drawings 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.
  - 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.
  - 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:
  - 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 ADMINISTRATIVE 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 and dust during demolition of concrete, during excavation and during transport of soil from excavation sites to treatment sites and at all project sites.

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 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 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 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 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:	itle: POC/Phone:					
Contract Number:		Delivery Order:		Pr	Proj. Location:			
Date of Project:								
	Land	filled	Recy	/cled	Demo	lished	Incine	erated
Type of Waste	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 Procedures 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 Offsite 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 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 remediationrelated 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 apply. The hazardous waste management facility that is on the other DOE installation would have to have be determined acceptable.

# Scenario 3





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 CER-CLA 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.

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.

<b>Regional Off-Site Contacts (ROCs)</b>				
Region	Primary Contact	Backup Contact		
I	Lynn Hanifan (617) 573-5755	Austine Frawley (617) 573-5758		
Ш	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		
<b>V</b> .	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		
x	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 offsite 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-

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 CER-CLA 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	.C.)	
33 U.S.C. 2701 (et seq.)	Oil Pollution Act (OPA)	
AMERICAN SOCIETY FOR T	ESTING 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. Locations of confirmation samples that exceed action levels where soil will be left in place 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)

<u>SIEVE SIZE</u>	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.

# 2.1.4 Clean Quarry at TA-01

Provide "clean quarry" gravel backfill in areas at Transformer Site TA-01 as specified in Attachment II of this section. The areas that require clean quarry fill are shown on Drawing C5.

# 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 Dewateringg

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 and Loading

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 and loading 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. Use dry brush or other approved decontamination procedures to minimize generation of decontamination waste streams.

# 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 (Deleted)

# 3.6 CONFIRMATION SAMPLING AND ANALYSIS

Confirmation sampling at Group A and B sites shall be conducted by others. Conduct confirmation soil sampling at Group C sites at approximate locations shown in the design drawings. Sample collection, handling, and analytical methods shall be conducted in accordance with the Sampling and Analysis Plan (see Attachment III). The Contractor shall provide all labor and field supplies, including sample containers and shipping coolers, and incur all costs for collecting and shipping samples for laboratory testing. The Contractor shall properly collect, label, and package the samples, fill out all chain-of-custody forms, and ship the samples by one-day delivery service to the laboratory for analysis.

The Contractor shall procure an analytical laboratory, approved by the Naval Facilities Engineering Service Center (NFESC), to perform analyses on collected samples. The Contractor shall provide continued acceptable analytical performance and shall establish a procedure to address data deficiencies identified by the NTR. The Contractor shall provide and implement a mechanism for monitoring the lab's performance and for performing corrective action procedures.

Location of confirmation soil samples shall be marked in the field and documented on the as-built drawings by the Contractor. Where sidewall samples are shown on the project drawings, excavation sidewall samples shall be collected from the vertical center of the wall measured from the ground surface to the toe of the excavation. The Contractor shall collect Group C confirmation soil samples from excavation bottom and sidewalls using certified clean sampling equipment. Confirmation soil samples shall be collected using a dedicated disposable hand trowel directly from the excavation sidewall or may be collected from a backhoe bucket. The sample collection interval shall be from the excavation surface to a maximum depth of 0.5 foot. If used, the backhoe bucket shall be decontaminated before collection of each confirmation soil sample. If entry into the excavation is required to conduct soil sampling, a competent person shall first determine acceptable entry conditions including sloping, shoring, and air monitoring requirements, personal protective equipment, and inspections in accordance with 29 CFR 1910.146 and 29 CFR 1926 Subpart B.

The Contractor shall provide all confirmation sample analytical data to the NTR within 1 day of receipt. The NFESC-approved laboratory turnaround time shall not exceed 5 working days. If confirmation samples indicate PCB concentrations exceeding 1.0 milligram per kilogram are present, the Contractor shall excavate additional contaminated soil and conduct additional confirmation sampling, as directed by the NTR.

All data will be validated in accordance with PACDIV standard operating procedure no. I-A-8 including a 10/90 percent split between level D and C validation. All sampling data collected under this contract shall be archived in the PACDIV central repository in Seattle.

# 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 relation in 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.
- 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. -- 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/ 941 1 3 APR 2000

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1 ......

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,

Mellin 3. Inthe

MELVIN Z. WAKI, P.E. 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

# ATTACHMENT II CLEAN QUARRY SPECIFICATIONS FOR BACKFILL AT TRANSFORMER SITE TA-01

•	·••	TA-	01	(Speco	)		
FROM :	P 25 93110:404M:GRACE PACIFIC QUARKY	:842 3470		Aug. 27 2003 05	5:17PM P2	r p	
C	CORPORATION P.O. Box 78 / Honolulu, Hawaii 96810	Administrative Office Paving Office Quarry Office	(806) 674-8393 (808) 441-0650 (868) 672-3345	lax (808) 674-104∪ tax (808) 441-0651 fax (808) 672-3998			
	August 25. 2003						
	Pincridge Trucking 611 Middle Street Honolulu, HI 96819 Ann: Georgette Project: Shaw Group Subject: Clean Quarry Letter Gar Hai. Dear Georgette. The source of the limestone aggregate Kalaeloa Sand Plant on O'ahu, Hawa defined as to be free of hazardous and fuels, oils, wood, plastics or other bio produced at this quarry for the above Course.	c is at the Grace F ii, and it is a "clea i degradable mate degradable in the project is Limest	recific Corpor an" quarry. A trials such as trial. The agg one 3B Fine a	ation quarry in Note: "clean" is chemicals, asbesto: regate products and Limestone Base	5.	~	
	Should you have any questions conce 864-6542. Sincercly, George Homatsu Quality Control Supervisor	rning this matter.	please call m	e at 672-3844 or			2
-0	"An Eq	ual Employment Op;	Portunity Employ	er"			

FROM :

Aug. 25 2003 11:00AM P3



0

**Grace Pacil** CORPORATION F.O. Box 78 / Monolu'U, Mawali 98810

Apministrative Office (806) 574-3365 (nx (809) 574-1040 Paving Office (806) 845-3991 (nx (808) 842-3206 Quarry Office (808) 572-35+5 (5x (808) 572-398



# LAB TEST ANALYSIS FOR LIMESTONE BASE COURSE

Company: Pineridge Trucking

Project: Shaw Group

Attention: Georgette 842 7470

Sampled From:	St	ockpile
Sampled By.	A	Acob
Sieved By:	A	Acob

PHYSICAL TEST RESULTS

Quarry Kalaeloa/Barber's Pt.

#### AVERAGE GRADATION

Sq. Mesh Sieve #	Sieve Size (mm)	Spec.	ASTM cubachi % Passing
3 <sup>n</sup>	76.1	10.00	
2 1/2"	54.0		
2'	60.8	100	100
1 1/2"	38.1	90-100	100.0
51	26.4		87.5
3/4"	19.0	50-90	67.7
1/2"	12.7		51.7
3/8	9.51		43.2
No. 4	4.76	25-50	31.9
No. 8	2.38		
No.10	2.00		25.7
Nc.16	1.19		
No 20	0.841		
No. 30	0.595		
No. 40	0.420		18.5
No. 50	0.297		
No. 80	0.177		14.4
No. 100	0.149		13.7
No. 200	0.024	3-12	11.4

and the second se		-
Assorption.	ASTH C121	
CBR:	ASTN DINIS	57
Cley Lumps & Frioble Particles	A879 C143	
Fist & Elongates:	AUTH CIAL	
LA Abrasiona SCO Revolutions:		36
Liqu:d Limits:	ASTE DISTE	21
Maximum Dry Density	AASHTO-THM	126
Moisture Contont %:		4.76
Optimum Moistura:	AASNTQ-TINO	10.2
Organic Matter	ASTH DO074	
Ph Analysia		
Plasticity Inces:	AFTS DIJIE	4
Remistivity (minamum):		
Sanc Equivalent:	ASTN D2419	35+
Soil Classification:	ASTH 03487	1
Soundress'	457M C88	
Specific Gravity:	ACTA C121	
Stripping;		
Specification Compliance:		State of Hawani

Georgetie St Sales Rep.-Quarries ns.

August 25, 2003

Date

# ATTACHMENT III

Earth Tech, Inc. 2003. Sampling and Analysis Plan, Removal Action Design Support and Confirmation Sampling - Group C Sites. Halawa-Main Gate, Naval Housing GSA, PWC Main Complex GSA, Shipyard GSA, Waipio Peninsula GSA, West Loch GSA, NCTAMS Wahiawa, NRTF, Lualualei, NAVMAG PH Lualualei, Oahu Hawaii. February.
# 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 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 ADMINISTRATIVE RULES (HAR)

HAR 11-59.4Ambient Air Quality StandardsNATIONAL FIRE PROTECTION ASSOCIATION (NFPA)NFPA 30(1996; Errata; TIA 96-2) Flammable and Combustible<br/>Liquids CodeNFPA 31(1997) Installation of Oil Burning EquipmentNFPA 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 an indirectly 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

### SECTION 02181 Page 1

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 24,788 CY of soil and maximum of 30,654 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 be less than or equal to 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. 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 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: EPA 8082 (full list) for PCBs, EPA 8081A for pesticides, EPA 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

Conduct confirmation soil sampling at Group C sites at locations shown in the design drawings. Confirmation sampling at Group A and B sites shall be conducted by others.

### 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 (PM 10)

Air monitoring and fugitive dust emissions testing shall be conducted using 40 CFR 50 Appendix J 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 50 mg/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

# SECTION 02181 Page 11

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

#### Risk-Based Screening Concentrations for Ambient Air

Chemical	CAS	Inhalation Reference Dose <sup>a</sup> (mg/kg-day)	Inhalation Slope Factor <sup>a</sup> (mg/kg-day) <sup>-1</sup>	Risk-based Concentration - Noncancer Effects <sup>b</sup> (ug/m <sup>3</sup> )	Risk-based Concentration - Cancer Risk <sup>b</sup> (ug/m <sup>3</sup> )	Risk-based Screening Concentration <sup>c</sup> (ug/m <sup>3</sup> )
1,1,2,2-Tetrachloroethane	79-34-5	6.0E-02	2.0E-01	2.2E+02	5.4E-01	5.4E-01
1,1,2-Trichloroethane	79-00-5	4.0E-03	5.6E-02	1.5E+01	2.0E+00	2.0E+00
1,2,4-Trichlorobenzene	120-82-1	5.7E-02		2.1E+02		2.1E+02
1,3-Butadiene	106-99-0		9.8E-01		1.1E-01	1.1E-01
cis-1,3-Dichloropropene	542-75-6	5.7E-03	1.4E-02	2.1E+01	7.8E+00	7.8E+00
trans-1,3-Dichloropropene	542-75-6	5.7E-03	1.4E-02	2.1E+01	7.8E+00	7.8E+00
1,4-Dichlorobenzene	106-46-7	3.0E-02	2.2E-02	1.1E+02	5.0E+00	5.0E+00
2,4,6-Trichlorophenol	88-06-2	1.0E-04	1.1E-02	3.7E-01	1.0E+01	3.7E-01
2-Butanone (MEK)	78-93-3	2.9E-01		1.0E+03		1.0E+03
3,3-Dichlorobenzidene	91-94-1		4.5E-01		2.4E-01	2.4E-01
Antimony <sup>e</sup>	1309-64-4	5.7E-05		2.1E-01		2.1E-01
Arsenic	7440-38-2		1.5E+01		7.3E-03	7.3E-03
Benzene	71-43-2	8.6E-03 <sup>d</sup>	2.9E-02	3.1E+01	3.8E+00	3.8E+00
Benzo(a)anthracene	56-55-3		7.3E-01		1.5E-01	1.5E-01
Benzo(a)pyrene	50-32-8		7.3E+00		1.5E-02	1.5E-02
Benzo(b)fluoranthene	205-99-2		7.3E-01		1.5E-01	1.5E-01
Benzo(k)fluoranthene	207-08-9		7.3E-02		1.5E+00	1.5E+00
Beryllium	7440-41-7	5.7E-06	8.4E+00	2.1E-02	1.3E-02	1.3E-02
Bromoform	75-25-2	2.0E-02	3.9E-03	7.3E+01	2.8E+01	2.8E+01
Cadmium	7440-43-9		6.3E+00		1.7E-02	1.7E-02
Carbon disulfide	75-15-0	2.0E-01		7.3E+02		7.3E+02
Carbon tetrachloride	56-23-5	7.0E-04	5.3E-02	2.6E+00	2.1E+00	2.1E+00
Chlordane	12789-03-6	2.0E-04	3.5E-01	7.3E-01	3.1E-01	3.1E-01
Chlorobenzene	108-90-7	1.7E-02		6.2E+01		6.2E+01
Chloroform	67-66-3	8.6E-04		3.1E+00		3.1E+00
Chromium (total)	1/0/1900		4.2E+01		2.6E-03	2.6E-03

#### Attachment I

#### Risk-Based Screening Concentrations for Ambient Air

Chemical	CAS	Inhalation Reference Dose <sup>a</sup> (mg/kg-day)	Inhalation Slope Factor <sup>a</sup> (mg/kg-day) <sup>-1</sup>	Risk-based Concentration - Noncancer Effects <sup>b</sup> (ug/m <sup>3</sup> )	Risk-based Concentration - Cancer Risk <sup>b</sup> (ug/m <sup>3</sup> )	Risk-based Screening Concentration <sup>c</sup> (ug/m <sup>3</sup> )
Chromium VI	18540-29-9	2.2E-06	2.9E+02	8.0E-03	3.7E-04	3.7E-04
Cobalt	7440-48-4	5.7E-06	9.8E+00	2.1E-02	1.1E-02	1.1E-02
DDE	72-55-9		3.4E-01		3.2E-01	3.2E-01
Dibenz(a,h)anthracene	53-70-3		7.3E+00		1.5E-02	1.5E-02
Dimethylphthalate	131-11-3	1.0E+01		3.7E+04		3.7E+04
di-n-Butylphthalate	84-74-2	1.0E-01		3.7E+02		3.7E+02
Dinitrotoluene (mixture)	25321-14-6		6.8E-01		1.6E-01	1.6E-01
Dioxins/Furans (2,3,7,8-TCDD)	1746-01-6				4.5E-08 <sup>j</sup>	4.5E-08 <sup>j</sup>
Ethylbenzene	100-41-4	2.9E-01	3.9E-03	1.1E+03	2.8E+01	2.8E+01
Hexachlorobenzene	118-74-1	8.0E-04	1.6E+00	2.9E+00	6.8E-02	6.8E-02
Hexachlorobutadiene	87-68-3	3.0E-04	7.8E-02	1.1E+00	1.4E+00	1.1E+00
Hexachlorocyclopentadiene	77-47-4	5.7E-05		2.1E-01		2.1E-01
Hexachloroethane	67-72-1	1.0E-03	1.4E-02	3.7E+00	7.8E+00	3.7E+00
Hydrogen sulfide	7783-06-4	5.7E-04 <sup>d</sup>		2.1E+00		2.1E+00
Isophorone	78-59-1	2.0E-01	9.5E-04	7.3E+02	1.2E+02	1.2E+02
Lead <sup>g</sup>	7439-92-1					1.5E+00 <sup>f</sup>
Manganese	7439-96-5	1.4E-05		5.1E-02		5.1E-02
Mercury <sup>g</sup>	7487-94-7					1.0E+02 <sup>h</sup>
Methylene Chloride	75-09-2	8.6E-01	1.6E-03	3.1E+03	6.7E+01	6.7E+01
MTBE	1634-04-4	8.6E-01	3.5E-04	3.1E+03	3.1E+02	3.1E+02
Naphthalene	91-20-3	8.6E-04		3.1E+00		3.1E+00
Nickel <sup>g</sup>	7440-02-0					1.0E+03 <sup>h</sup>
Nitrobenzene	98-95-3	5.7E-04		2.1E+00		2.1E+00
N-Nitrosodimethylamine	62-75-9		4.9E+01		2.2E-03	2.2E-03
PCBs	1336-36-3		2.0E+00		5.5E-02	5.5E-02
Pentachlorophenol	87-86-5	3.0E-02	1.2E-01	1.1E+02	9.1E-01	9.1E-01

#### Attachment I

#### **Risk-Based Screening Concentrations for Ambient Air**

Chemical	CAS	Inhalation Reference Dose <sup>a</sup> (mg/kg-day)	Inhalation Slope Factor <sup>a</sup> (mg/kg-day) <sup>-1</sup>	Risk-based Concentration - Noncancer Effects <sup>b</sup> (ug/m <sup>3</sup> )	Risk-based Concentration - Cancer Risk <sup>b</sup> (ug/m <sup>3</sup> )	Risk-based Screening Concentration <sup>c</sup> (ug/m <sup>3</sup> )
Phenol	108-95-2	6.0E-01		2.2E+03		2.2E+03
Phosphorus <sup>g</sup>	7723-14-0					1.0E+02 <sup>h</sup>
Selenium <sup>g</sup>	7782-49-2					2.0E+02 <sup>h</sup>
Styrene	100-42-5	2.9E-01		1.1E+03		1.1E+03
Tetrachloroethene	127-18-4	1.7E-01	1.0E-02	6.2E+02	1.1E+01	1.1E+01
Toluene	108-88-3	1.1E-01		4.0E+02		4.0E+02
m-Xylene	1330-20-7	2.9E-02		1.1E+02		1.1E+02
o-Xylene	1330-20-7	2.9E-02		1.1E+02		1.1E+02
p-Xylene	1330-20-7	2.9E-02		1.1E+02		1.1E+02
Vinyl acetate	108-05-4	5.7E-02		2.1E+02		2.1E+02
Vinyl chloride	75-01-4	2.9E-02	3.1E-02 <sup>i</sup>	1.0E+02	3.5E+00	3.5E+00

Notes:

	Not available or not applicable.
а	Values from EPA (2002) unless otherwise indicated.
b	See Table 2 for algorithms and assumptions.
с	Based on the minimum risk-based concentration for noncancer effects and cancer risk.
d	Value from EPA (2003).
e	Inhalation toxicity criteria are not available for antimony; antimony trioxide was used as a surrogate.
f	State of Hawaii and Federal ambient air quality standard. Value is designed to protect public health and prevent the significant deterioration of air quality.
g	Inhalation toxicity criteria are not available.
h	Value shown is the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL). PELs are eight-hour, time-weighted averages.
i	Value shown is for assessing continuous lifetime exposure from birth.
j	Based on the EPA Region 9 Preliminary Remediation Goals as agreed upon by the Navy, October 8, 2003.
CAS	Chemical Abstract Service number
mg/kg-day	Milligrams per kilogram per day
ug/m <sup>3</sup>	Micrograms per cubic meter

#### **References:**

U.S. Environmental Protection Agency (EPA) Region 9. 2002. Preliminary Remediation Goals. October 1. On-line address: http://www.epa.gov/region09/waste/sfund/prg/index.htm EPA. 2003. Intetegrated Risk Information System. Online address: http://www.epa.gov/iris/index.html

# Algorithms and Assumptions Used To Calculate Risk-Based Screening Concentrations for Ambient Air

	$RBC_{NC} (ug/m^3) = \frac{THQ x}{RBC_C} (ug/m^3) = \frac{T}{2}$	$\frac{x \operatorname{RfD}_{i} x \operatorname{BW}_{a} x \operatorname{AT}_{i}}{\operatorname{IR}_{a} x \operatorname{EF}_{r} x \operatorname{ED}_{r}}$ $\frac{\operatorname{Rx} \operatorname{BW}_{c} x \operatorname{AT}_{C} x \operatorname{C}_{c}}{\operatorname{SF}_{i} x \operatorname{IR}_{c} x \operatorname{ED}_{r} x \operatorname{ED}_{r} x \operatorname{EI}_{i}}$	r r F r	
Parameter		Units	Value	Source
RBC <sub>NC</sub>	Risk-based concentration, noncancer effects	ug/m <sup>3</sup>	calculated	
RBC <sub>C</sub>	Risk-based concentration, cancer risk	ug/m <sup>3</sup>	calculated	
THQ	Target hazard quotient	unitless	1	
TR	Target cancer risk level	unitless	1E-06	
RfD <sub>i</sub>	Inhalation reference dose	mg/kg-day	chemical-specific	See Attachment I
SF <sub>i</sub>	Inhalation slope factor	(mg/kg-day) <sup>-1</sup>	chemical-specific	See Attachment I
IRa	Inhalation rate, adult resident	m <sup>3</sup> /day	20	EPA 2002
IRc	Inhalation rate, child resident	m <sup>3</sup> /day	10	EPA 2002
EFr	Exposure frequency, resident	days/year	350	EPA 2002
EDr	Exposure duration, resident	years	1	site-specific
BWa	Body weight, adult resident	kg	70	EPA 2002
BWc	Body weight, child resident	kg	15	EPA 2002
AT <sub>NC</sub>	Averaging time, noncarcinogens	days	365	EDr x 365 days/year
AT <sub>C</sub>	Averaging time, carcinogens	days	25,550	EPA 2002
CF	Conversion factor	ug/mg	1,000	

Notes:

E

	Not applicable
kg	Kilograms
mg/kg-day	Milligrams per kilogram per day
m <sup>3</sup> /day	Cubic meters per day
ug/m <sup>3</sup>	Micrograms per cubic meter
ug/mg	Micrograms per milligram

# **References:**

U.S. Environmental Protection Agency (EPA) Region 9. 2002. Preliminary Remediation Goals. October 1. On-line address: http://www.epa.gov/region09/waste/sfund/prg/index.htm

# 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 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 T	ESTING 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
ASTM D 2041	(1995) Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
ASTM D 2726	(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:

Test Property	Values
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 <u>Percent</u>
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  $2000 \pm 400$  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 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL. 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 alignment 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 compatible 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 3000 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 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 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 C 94/94M-00e2	(2002) Standard Specification for Ready-Mixed Concrete	
ASTM F 883	(1997) Padlocks	
U.S. GENERAL SERVICES	ADMINISTRATION (GSA)	
FS RR-F-191	(Rev. K) Fencing, Wire and Post Metal (and Gates, 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.

#### 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 approved means 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 T	ESTING 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

Thermal Desorption of Contaminated Soil at Former NAS Barbers Point

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 a minimum of 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 --

## SECTION 13281

#### REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING 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.

#### AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E 1368 (1997) Visual Inspection of Asbestos Abatement Projects
U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
29 CFR 1926.1101 Construction Industry Standard for Occupational Exposure to Asbestos
40 CFR 61-SUBPART M National Emission Standard for Asbestos
40 CFR 763 Asbestos Containing Material in Schools

### U.S. NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC)

ND OPNAVINST 5100.23

(Rev. D) Navy Occupational Safety and Health (NAVOSH) Program Manual

# U.S. DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA)

CPL 2-2.63(Revised)

Inspection Procedures for Occupational Exposure to Asbestos

## STATE OF HAWAII ADMINISTRATIVE RULES (HAR)

11 HAR 501

Asbestos Requirements

#### 1.2 DEFINITIONS

## 1.2.1 ACP

Asbestos-Cement Pipe, also commonly referred to as transite pipe.

1.2.2 Asbestos

The term asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, and actinolite asbestos and any of these minerals that has been chemically treated or altered. Materials are considered to contain asbestos if the asbestos content of the material is determined to be at least one

percent.

## 1.2.3 Asbestos Fibers

Those fibers having an aspect ratio of at least 3:1 and longer than 5 micrometers as determined by National Institute for Occupational Safety and Health (NIOSH) Method 7400.

1.2.4 Contractor

The Contractor is that individual, or entity under contract to the Navy to perform the herein listed work.

1.2.5 Friable Asbestos Material

One percent asbestos containing material that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.

## 1.2.6 Glovebag Technique

Those asbestos removal and control techniques put forth in 29 CFR 1926.1101 Appendix G.

#### 1.2.7 NEA

Negative exposure assessment.

#### 1.2.8 NTR

Navy Technical Representative.

1.2.9 Nonfriable Asbestos Material

Material that contains asbestos in which the fibers have been immobilized by a bonding agent, coating, binder, or other material so that the asbestos is well bound and will not normally release asbestos fibers during any appropriate use, handling, storage or transportation. It is understood that asbestos fibers may be released under other conditions such as demolition, removal, or mishap.

#### 1.2.10 Qualified Person (QP)

That qualified person hired by the Contractor who is capable of identifying existing asbestos hazards at the work place, determining if a NEA exists, is qualified to train other workers, and has the authority to take prompt corrective measures to eliminate a hazardous exposure. The qualified person shall have successfully completed training and is therefore accredited under a legitimate State Model Accreditation Plan as described in 40 CFR 763 as a Building Inspector, Contractor/Supervisor Abatement Worker, and Asbestos Project Designer; and has successfully completed the National Institute of Occupational Safety and Health (NIOSH) 582 course "Sampling and Evaluating Airborne Asbestos Dust" or equivalent. The QP must be qualified to perform visual inspections as indicated in ASTM E 1368. The QP shall be appropriately licensed in the State of Hawaii.

#### 1.3 REQUIREMENTS

#### 1.3.1 Description of Work

The work covered by this section includes the handling and control of asbestos sheeting at the Drum Crushing Area (DCA) and describes some of the resultant procedures and equipment required to protect workers, the environment and occupants of the building or area, or both, from contact with

airborne asbestos fibers. The work also includes the disposal of any ACP and friable asbestos material encountered or generated during excavation. This work activity is identified as a Class II asbestos removal activity by 29 CFR 1926.1101, with the ACP removal being done utilizing a valid Negative Exposure Assessment (NEA).

## 1.3.2 Class II Employee Training

Work involving building materials including roofing, flooring, siding materials, ceiling tiles or transite panels, training shall include at a minimum the elements in 29 CFR 1926.1101 and specific work practices and engineering controls set forth in paragraph 29 CFR 1926.1101. It shall include hands-on training and it is to be at least 8 hours in length. For other Class II operations the training shall include, as a minimum, all the elements in paragraph (29 CFR 1926.1101, specific work practices and engineering controls in 29 CFR 1926.1101 and "hands-on" training. There are no specifications in the standard for the length of this training. Annual refresher is required.

#### 1.3.3 Permits, Licenses, and Notifications

Obtain necessary Permits, Licenses, and Notifications in conjunction with asbestos removal, hauling, and disposition, and furnish notification of such actions required by Federal, State, regional, and local authorities prior to the start of work in accordance with 40 CFR 61-SUBPART M and 11 HAR 501. Submit copies of all Notifications to the NTR.

## 1.3.4 Environment, Safety and Health Compliance

In addition to detailed requirements of this specification, comply with those applicable laws, ordinances, criteria, rules, and regulations of Federal, State, regional, and local authorities regarding handling, storing, transporting, and disposing of asbestos waste materials. Comply with the applicable requirements of the current issue of 29 CFR 1926.1101, 11 HAR 501, 40 CFR 61-SUBPART M, and ND OPNAVINST 5100.23. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting the work. Where the requirements of this specification, applicable laws, rules, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirement as defined by the Government shall apply.

#### 1.3.5 Qualified Person

The Contractor shall be represented on site by a qualified person in accordance with CPL 2-2.63(Revised) and 40 CFR 763 who is capable of identifying existing asbestos hazards at the work place, determining if a NEA exists, is qualified to train other workers, and has the authority to take prompt corrective measures to eliminate a hazardous exposure for all portions of the herein listed work.

#### 1.3.6 Initial Exposure Assessment Test Plan

Submit a detailed Initial Exposure Assessment (IEA) test plan or baseline report, which complies with the criteria in 29 CFR 1926.1101 and which demonstrates that the employees' exposure to airborne asbestos fibers during removal of the asbestos-cement pipe (ACP) is expected to be consistently below the Permissible Exposure Level (PEL) of less than 0.1 fiber/cubic centimeter (cc) of air for an eight (8) hour time-weighted average limit (TWA), and less than 1.0 fiber/cc of air as averaged over a sampling period of thirty (30) minutes, all as determined by the method prescribed in Appendix A of 29 CFR 1926.1101, or by an equivalent method, and therefore, the employer intends to do the ACP removal through the use of Negative Exposure Assessments (NEAs).

## 1.3.7 Testing Laboratory

Submit the name, address, and telephone number of each testing laboratory selected for the analysis

and reporting of airborne concentrations of asbestos fibers along with evidence that each laboratory selected holds the appropriate State license and/or permits and certification that each laboratory is American Industrial Hygiene Association (AIHA) accredited and that persons counting the samples have been judged proficient by current inclusion on the AIHA Asbestos Analysis Registry (AAR) and successful participation of the laboratory in the Proficiency Analytical Testing (PAT) Program. Where analysis to determine asbestos content in bulk materials or transmission electron microscopy is required, submit evidence that the laboratory is accredited by the National Institute of Science and Technology (NIST) under National Voluntary Laboratory Accreditation Program (NVLAP) for asbestos analysis.

## 1.3.8 Landfill Approval

Submit written evidence that the landfill for disposal is approved for asbestos disposal by the USEPA, State, and local regulatory agency(s). Submit to the NTR, waste shipment records, prepared in accordance with Federal regulations, signed and dated by an agent of the landfill, certifying the amount of asbestos materials delivered to the landfill, within 3 days after delivery. In those States that require a hazardous waste manifest the Contractor shall submit, within 3 days, signed copies of such to the NTR.

## 1.4 SUBMITTALS

Submit the following in accordance with Section SECTION 01330 SUBMITTAL PROCEDURES,

SD-06 Test Reports

Waste determination results; G

Air sampling results; G

## SD-07 Certificates

Initial exposure assessment test plan; G

Class II employee training; G

Testing laboratory; G

Competent person documentation; G

Landfill approval; G

Waste shipment records and if applicable exemption report; G

Hazardous waste manifest; G

Notifications

#### SD-11 Closeout Submittals

Notifications; G

Permits and licenses; G

## 1.5 LABORATORY ANALYSIS

#### 1.5.1 Waste Determination Results

Submit a copy of all laboratory analyses for waste determination of ACP and other material with the potential of becoming classified as asbestos-containing. Waste stream determinations are required as described in SECTION 01575 TEMPORARY ENVIRONMENTAL CONTROLS

#### 1.5.2 Air Sampling Results

Complete fiber counting and provide results to the QP for review within 16 hours of the "time off" of the sample pump. Notify the NTR immediately of any airborne levels of asbestos fibers in excess of the acceptable limits. Submit sampling results to the NTR and the affected Contractor employees where required by law within 3 working days, signed by the testing laboratory employee performing air sampling, the employee that analyzed the sample, and the QP.

## 1.6 REPORTS

#### 1.6.1 Qualified Person Documentation

Submit the name, address, and telephone number of the QP selected to prepare the Initial Exposure Assessment Test Plan, direct monitoring and training, and documented evidence that the QP has successfully completed training in accordance with CPL 2-2.63(Revised).

#### 1.6.2 Disposal Documentation for Asbestos Containing Material

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.

#### 1.6.3 Asbestos Disposal Quantity Report

The Contractor shall record and report the amount of asbestos containing material removed and released for disposal on a daily basis. Deliver the report for the previous day at the beginning of each day shift with amounts of material removed during the previous day reported in linear feet as described initially in this specification and in cubic feet for the amount of asbestos containing material released for disposal. The location of removed and remaining in-place transite pipe shall be surveyed and provided in the as-built drawings. ACP removal and disposal quantities shall be described in the Remediation Verification Report specified in SECTION 01110 GENERAL PARAGRAPHS

#### 1.7 RENTAL EQUIPMENT

Provide a copy of the written notification to the rental company concerning the intended use of the equipment and the possibility of asbestos contamination of the equipment.

## PART 2 PRODUCTS

Not used.

## PART 3 EXECUTION

#### 3.1 PREPARATION

Establish a regulated work area (RWA) using asbestos warning barricade tape. Provide a hand/face wash station at the entry point to the RWA and post asbestos-warning signs at the RWA entry point.

Establish a waste load-out area attached to the RWA. Once RWA is established and work begins, no access should be permitted without the required personal protective equipment.

## 3.1.1 Protective Clothing and Equipment

Provide protective clothing and equipment to all workers conducting asbestos removal consisting of steel toe boots, goggles, hard hats, safety glasses, rubber or leather gloves. Provide a hand/face wash station at the entry point to the RWA.

## 3.1.2 Tools

Use a wheel-type pipe cutter (or equivalent tool) to cut ACP or asbestos sheeting. Do not use power tools to cut ACP or asbestos sheeting. Remove all residual asbestos from reusable tools prior to storage or reuse.

## 3.1.3 Rental Equipment

If rental equipment is to be used, furnish written notification to the rental agency concerning the intended use of the equipment and the possibility of asbestos contamination of the equipment.

## 3.2 WORK PROCEDURE

Perform asbestos related work in accordance with 29 CFR 1926.1101, 40 CFR 61-SUBPART M, 11 HAR 501, and as specified herein. All ACP or asbestos sheeting cutting or breaking operations require constant pre-wetting with potable water to prevent asbestos materials from being crumbled by hand pressure and the asbestos fibers becoming air-borne (friable). Personnel shall wear and utilize protective clothing and equipment as specified herein. Eating, smoking, drinking, chewing gum, tobacco, or applying cosmetics shall not be permitted in the asbestos work or control areas. Personnel of other trades not engaged in the removal and demolition of asbestos containing material shall not be exposed at any time to airborne concentrations of asbestos unless all the personnel protection and training provisions of this specification are complied with by the trade personnel. If an asbestos fiber release or spill occurs, stop work immediately, correct the condition to the satisfaction of the NTR, prior to resumption of work.

#### 3.2.1 Air Monitoring and Sampling

As the work begins the QP must conduct and record objective data to confirm the Initial Exposure Assessment (IEA), and that the specific job-site work activity confirms the findings of the IEA, and that the PELs are not being exceeded for this work activity.

#### 3.2.2 Protection of Existing Work to Remain

Perform work without damage or contamination of adjacent work. Where such work is damaged or contaminated as verified by the NTR using visual inspection or sample analysis, it shall be restored to its original condition or decontaminated by the Contractor at no expense to the Government as deemed appropriate by the NTR. This includes inadvertent spill of dirt, dust, or debris in which it is reasonable to conclude that asbestos may exist. When these spills occur, stop work immediately. Then clean up the spill. When satisfactory visual inspection and air sampling results are obtained from the QP work may proceed at the discretion of the NTR.

#### 3.2.3 Removal of Concrete Slab

At locations where ACP penetrates existing concrete pads, concrete demolition operations should be carefully executed so that pipe damage does not occur prior to removal. A portion of the surrounding

pad may remain attached to the ACP in order to keep the pipe intact. All concrete demolition operations near ACP require constant pre-wetting with potable water to prevent ACP materials from being crumbled and the asbestos fibers becoming air-borne (friable).

#### 3.2.4 Excavation of ACP

Machine excavate to expose ACP. Hand excavate areas under pipe where cuts/breaks are planned. Excavation operations should be carefully executed so that pipe damage does not occur prior to removal.

#### 3.2.5 Glovebag

The removal of asbestos-containing material shall use the glovebag techniques as indicated in 29 CFR 1926.1101. Establish designated limits for the asbestos regulated area with the use of rope or other continuous barriers, and maintain all other requirements for asbestos control areas. The QP shall conduct personal samples of each worker engaged in asbestos handling (removal, disposal, transport and other associated work) throughout the duration of the project. If the quantity of airborne asbestos fibers monitored at the breathing zone of the workers at any time exceeds background or 0.01 fibers per cubic centimeter whichever is greater, stop work, evacuate personnel in adjacent areas or provide personnel with approved protective equipment at the discretion of the NTR. This sampling may be duplicated by the Government at the discretion of the NTR. If the air sampling results obtained by the Government differ from those obtained by the Contractor, the Government will determine which results predominate.

## 3.2.6 Pipe Removal

All pipe cutting or breaking operations require constant pre-wetting with potable water to prevent ACP materials from being crumbled and the asbestos fibers becoming air-borne (friable). Plan pipe cuts/breaks as necessary to accommodate the size/weight of pipe being removed. Use a wheel-type pipe cutter (or equivalent tool) to make the initial cut and drain pipe of residual liquids. Remove pipe sections at joint collars by breaking them with a sledgehammer, or cutting them with a wheel-type pipe cutter (soil-pipe cutter). Remove pipe sections from trench in an "intact" condition. Wet and containerize waste materials as work continues. Use lifting straps and methods that do not damage the pipe. Wet, wrap and seal pipe ends in a minimum 6 mil poly film wrap, which is securely fastened and taped to close the pipe end. Remove material and immediately place in 6 mil plastic disposal bags. ACP material shall be containerized while wet. At no time shall asbestos material be allowed to accumulate or become dry. Identify ACP materials and stockpile the waste in a designated load-out area.

## 3.3 CLEAN-UP AND DISPOSAL

#### 3.3.1 Housekeeping

Essential parts of asbestos dust control are housekeeping and clean-up procedures. Give meticulous attention to restricting the spread of dust and debris; keep waste from being distributed over the general area. When asbestos removal is complete, all asbestos waste is removed from the work-site, and final clean-up is completed, the NTR will attest that the area is safe before the signs can be removed. The NTR will visually inspect the work area for residual material or accumulated dust or debris. The Contractor shall re-clean all areas showing dust or residual materials.

#### 3.3.2 Warning Labels

Provide labels and affix to all asbestos materials, scrap, waste, debris, and other products contaminated

with asbestos. Provide labels conforming to 29 CFR 1926.1101 of sufficient size to be clearly legible, displaying the following legend:

## DANGER

## CONTAINS ASBESTOS FIBERS

## AVOID CREATING DUST

## CANCER AND LUNG DISEASE HAZARD

## BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM

## 3.3.3 Title to Materials

All waste materials, except as specified otherwise, shall become the property of the Contractor and shall be disposed of as specified in applicable local, State, and Federal regulations and herein.

## 3.3.4 Disposal of Asbestos

Collect asbestos waste, asbestos contaminated water, scrap, debris, bags, containers, equipment, and asbestos contaminated clothing which may produce airborne concentrations of asbestos fibers and place in sealed fiber-proof, waterproof, non-returnable containers (e.g. double plastic bags 6 mils thick, cartons, drums or cans). Wastes within the containers must be adequately wet in accordance with 40 CFR 61-SUBPART M and 11 HAR 501. Affix a warning and Department of Transportation (DOT) label to each container including the bags or use at least 6 mils thick bags with the approved warnings and DOT labeling preprinted on the bag. The name of the waste generator and the location at which the waste was generated shall be clearly indicated on the outside of each container. Remove all ACP from Government property and dispose of off site at an approved landfill. ACP disposal off-site must comply with most stringent local, state, and federal requirements including 40 CFR 61 and 11 HAR 501.

-- End of Section --

# **DESIGN DRAWINGS**

**RESPONSE TO COMMENTS** 

# **Response to Comments**

# Project Title: Performance Specification Package, Group C Amendment Thermal Desorption Treatment of Contaminated Soil Former Naval Air Station (NAS) Barbers Point, Oahu, Hawaii Reviewer: Ms. Janice Fukumoto, PACDIV Env1821

Comment No.	Amendment/ Drawing No.	Comment	Response
Specifications	6		
1	Item b.1, Section 01110, paragraph 1.1.1, Table I	Instead of deleting all of the footnote, delete and replace with a clarification of whether the quantity shown is banked or excavated.	The footnote was amended to state, "The quantities given in Table I have been estimated as bulked (ex situ) cubic yards by the Navy."
2a	Item b.2, Section 01110, Paragraph 1.1.3	1 <sup>st</sup> paragraph, 1 <sup>st</sup> sentence, 1): What is the 300cy of soil in supersacks to be transported?	The referenced supersacks are currently located at Former NAS Barbers Point in the stockpile area north of the treatment area. The supersacks were generated during an aboveground storage tank (AST) removal at Substation S1860 as identified in the October 3, 2000 Action Memorandum (AM), Section II.B.1.b. The supersacks are identified in the revised Drawing Sheet C1.
2b	Item b.2, Section 01110, Paragraph 1.1.3	3 <sup>rd</sup> paragraph, last sentence: Drummed soil requiring transport from NAVMAG Lualualei, others are stockpiled at former NAS Barbers Point	The amendment was revised to indicate that Group C soil includes drummed soil at Former NAS Barbers Point and drummed soil at Buildings Buildings 77 and 399 NAVMAG PH Lualualei.
За	Item b.3, Section 01110, Paragraph 1.1.4	What Group is this quantity referring to? The amendment is saying to change 6415 to 6715. My specifications has 5615.	The amendment was revised to indicate that the volume of Group A soil is 5,965 cubic yards.
3b	Item b.3, Section 01110, Paragraph 1.1.4	There are also Group C soils drummed at from Bldg 77, NAVMAG LLL. Have the revised 3 <sup>rd</sup> paragraph reflect, the in-situ soils, drummed soils from Bldg 77 and the soils stockpiled at NAS BP.	The amendment was revised to indicate that Group C soil includes drummed soil at Buildings 77 and 399 NAVMAG PH Lualualei.
4a	Item b.7, Section 01110, Paragraph 1.10.4:	The current specification also has the word "future" in front of the subheading for paragraph 1.10.4. Please note that this should be deleted.	The amendment was revised to indicate that the heading for Section 1.10.4 should be amended to delete the phrase, "future work."
4b	Item b.7, Section 01110, Paragraph 1.10.4	Please put "As directed by the NTR, excavate additional contaminated soil and conduct additional confirmation sampling, if confirmation samples indicate PCB concentration exceeding 1.0 milligram per kilogram are present."	The sentence was revised accordingly.
5a	Item d.1, Specification 01575, Paragraph 1.4	Please note that the current specifications under this paragraph only has one paragraph. The note says "Second paragraph, Delete"	The amendment was revised accordingly.
5b	Item d.1, Specification 01575, Paragraph 1.4	Revised substitute sentence to read: "Include management of soil and dust during demolition of concrete, during excavation and during transport of soil from excavation sites to treatment sites and at all project sites."	The sentence was revised accordingly.
6	Item e.2, Section 02111, Paragraph 3.3.1	Suggest adding to the subheading of "EXCAVATION" TO "EXCAVATION AND LOADING" to account for the soils from the stockpiles to be loaded into the trucks.	The subheading was revised accordingly.
7	Item e.3, Section 02111, Paragraph 3.3.2	Who will "approve" the other decontamination procedures?	The Contractor will identify decontamination procedures in the Dirt and Dust Control Plan. Tetra Tech will approve and/or provide comment on decontamination procedures during review of this submittal.
8	Item e.4, Section 02111, Paragraph 3.5	Were we going to do field screening for Group B?	Soil field screening activities were identified in the Sampling and Analysis Plan (Attachment III to Specification Section 02111). Therefore, field screening requirements were removed from Specification 02111.

#### Project Title: Performance Specification Package, Group C Amendment Thermal Desorption Treatment of Contaminated Soil Former Naval Air Station (NAS) Barbers Point, Oahu, Hawaii Reviewer: Ms. Janice Fukumoto, PACDIV Env1821

Comment No.	Amendment/ Drawing No.	Comment	Response
9	Item e.5, Section 02111, Paragraph 3.6	For the confirmation sampling, per conversation with DOH, it is not really necessary to do the sidewall sampling. However, if the excavation limited by the presence of a pad or building that will not be moved as part of this excavation, we need to collect a confirmation of the sidewall representing the soils under the remaining structure. Also at sites where we have encountered unexpected contamination at depth where the surface or 2 foot sample were ND would you recommend to keep the sidewall samples?	This comment was not addressed in the draft final documents and will require discussion with the Navy.
9a	Item e.5, Section 02111, Paragraph 3.6	3 <sup>rd</sup> paragraph, 2 <sup>nd</sup> sentence, revise to the following: "Where sidewall samples are shown on the project drawings, excavation sidewall samples shall be collected from the vertical center of the wall measured from the ground surface to the toe of the excavation."	The sentence was revised accordingly.
9b	Item e.5, Section 02111, Paragraph 3.6	Correct the drawings to say that the sidewall samples to be collected as sites as shown in the drawings.	The amendment and drawing legends indicate that sidewall confirmation samples are shown in the drawings.
9c	Item e.5, Section 02111, Paragraph 3.6	Verify that sidewall samples are taken of the sidewall limited by a structure.	This comment was not addressed in the draft final documents and will require discussion with the Navy.
10	Item e.5, Section 02111, Paragraph 3.6	Last paragraph, last sentence: Please replace the sentence with "As directed by the NTR, excavate additional contaminated soil and conduct additional confirmation sampling, if confirmation samples indicate PCB concentration exceeding 1.0 milligram per kilogram are present."	The sentence was revised accordingly.
11	Item f.2, Section 02181, Paragraph 3.4.4	Last sentence: Change "Group A and B" to "Groups A and B".	The sentence was revised accordingly.
12	Item g.1 Section 02920, Paragraph 2.2	Not sure what is intended. Please see if delete "Grade 16-20-20 mixed fertilizer" and replace with "grade." is appropriate.	The intent of this revision is to amend the sentence to read, "Fertilizer shall be commercial grade." The amendment was revised as recommended.
13	Item g.2, Section 02920, Paragraph 2.2	The current specification section doesn't have the word "machinery", which this item suggests to delete. Should it have been "equipment"?	The amendment was revised to indicate that the phrase "suitable equipment" should be revised to "approved means."
Drawings 14	Sheet T1	Revise to include the revised vicinity man	The T1 sheet has been included as
		currently shown in T1A	requested.
14b	Sheet T1	Incorporate the drawings numbers that were added (put the overflow of drawing numbers on T1A)	All drawing numbers were added to sheet T1 and T1A.
14c	Sheet T1	Make note of the changes made in the "revisions" block as " revised vicinity map to show Group C sites, added sheets from Group C sites.	The PACDIV A-E guide was followed that requires numbered revisions with general explanation in the revisions block. Although the explanation isn't as detailed as requested, the associated amendment specifies the change exactly.
15	Sheet T1A	Place the overflow of the drawing numbers from Sheet T1.	Sheet T1A now only contains drawing names and numbers that could not fit on T1.
16	All Sheets	General comment on all drawings: The revisions block should state what revisions were made to the sheet at this time. For instance Sheet T2 should have "added location of S1761", Sheet T4 should have " added location of Group C sites (list the sites)	See response for comment 14c.

#### Project Title: Performance Specification Package, Group C Amendment Thermal Desorption Treatment of Contaminated Soil Former Naval Air Station (NAS) Barbers Point, Oahu, Hawaii Reviewer: Ms. Janice Fukumoto, PACDIV Env1821

Comment No.	Amendment/ Drawing No.	Comment	Response
17	Sheet T10	Please change the title on the top from PEARL HARBOR NAVAL COMPLEX GROUP C SITES to NCTAMS PAC WAHIAWA GROUP C SITES.	The change was made.
18	Sheet T11	Please indicate the buildings where the Building 77 soils are currently being held.	Sheet T11 has indications for both buildings 77 and 399 where the drums of soil are currently stored.
19a	Sheet C2	Place a note to ensure that the placement of the temporary security gate at Lake Champlain will limit vehicular access to the remaining Navy property.	Note 17 was added to this drawing.
19b	Sheet C2	Please identify, the soil sacks that are currently shown as "unknown" Kim and I have discussed.	The soil sacks have been labeled on C1.
20	Sheet C29	Site plan for J012. What is the white square off of Building 1613?	This concrete pad is now labeled.
21	Sheet C36	Transformer A10. Is it practical to leave the transformer surrounded by excavation of this depth? Same comment for other similar transformers.	Per discussions with Navy, the concrete pad at Transformer Site A10 will remain in place and contractor will be required to excavate around it. As part of this discussion, it was agreed that the concrete pad at Transformer Site I-4 will be removed and not replaced (Sheet C22A).
22	Sheet C36	Drawing C37, transformer C-2: can not read the wording over the excavation to 6 feet.	The wording is now clear to read.
23	Sheet C44	Project should remove and properly dispose of the transformer at the site, as well as the pad, fencing and concrete block.	This is now sheet C45 and has been changed to include the transformer and pad to be removed.

#### Project Title: Performance Specification Package, Group C Amendment Thermal Desorption Treatment of Contaminated Soil Former Naval Air Station (NAS) Barbers Point, Oahu, Hawaii Reviewers: P. Nakamura, M. Lau, S. Kato, T. Tengan, D. Paishon, and R. Wakumoto, Navy Regional Environmental Department

Comment No.	Amendment/ Drawing No.	Comment	Response
1	Drawings	Please indicate the quantity of loose soil and approx loads that need to be removed from the specific location. The information is currently indicated beginning on sheet C-27. Include the information in the call out boxes.	Each site has the square footage and banked soil quantities, so additional volume information will not be added for each site.
2	General	Are any of the site locations within the PH Shipyard CIA area?	There are several. A note indicates that the Navy will need notification and provide coordination for excavation at those sites.
3	General	Please provide a schedule to the individual ECs at least two weeks in advance of beginning work.	Comment noted.
4	C46, Drawings	Site plan for transformer 121: Insert note to remove fence shown at B121 to include footings. Also, the specifications will need to reflect the removal and disposal of the wooden fence and footings. Insert note about the presence of the chapel and chapel parking lot. Work at that site should be coordinated with the chaplain's office to ensure that services are not interrupted.	Fence removal is already noted on this drawing. The footings will be removed with the fencing. Transformer Site 121 is now on Sheet C47 of the drawings. A note was added to this drawing that indicates this site is adjacent to an active chapel. The resident officer in charge of construction (ROICC) will coordinate with the contractor and the chaplain's office when work is conducted at this site.
5	Drawing T7, General	The RTFLLL commander expressed concern about cutting of any communication lines. Please emphasize the importance of communication lines at RTFLLL. Contractor should locate all communication and utility lines prior to ground disturbance.	There are notes in the drawings and specifications concerning underground utilities. The ROICC will coordinate with the contractor to protect utilities in any excavation area. In addition, an emergency Job Order Number (JON) has been set up for the contractor with navy PWC to address damage to any underground utilities.
6	T1A, General	Sheets T2, T4, T7, and C2 are not listed in sheet T1A sheet index. Is this an oversight?	Sheet T1 has been added to this set of drawings, so all drawings numbers are now included.
7	T11, General	Please change to approximately "60" drums of PCB-contaminated soil "and concrete at/near Building 77"	The actual number of drums is 61. This was added to the drawings.
8	C39, General	Transformer site C-7 on near B1431. A project to pave the area is scheduled for July 03.	Comment noted.
9	General	Please ensure that all utility lines, fuel lines, gas lines, etc. are accurately shown on the drawings and located (toned) in the field prior to ground disturbance activities.	See response to comment 5.
10	General	Please ensure adequate contingency planning for quick response to damaged utility lines or spread of contaminated media.	See response to comment 5. The contractor will provide information about a contingency plan in the site work plan.

Project Title: Performance Specification Package, Group C Amendment Thermal Desorption Treatment of Contaminated Soil Former Naval Air Station (NAS) Barbers Point, Oahu, Hawaii Reviewers: P. Nakamura, M. Lau, S. Kato, T. Tengan, D. Paishon, and R. Wakumoto, Navy Regional Environmental Department

Comment No.	Amendment/ Drawing No.	Comment	Response
11	C22	Please note earlier comments on Sheet C22 of the design. We do show the removal of the contamination at the two fenced areas that he is referring to. However, we do not show the tree that is currently at the site by that transformer. We also need to be clearer on the fact that the fencing surrounding the contamination needs to be removed and not replaced and the fencing around the transformer itself needs to ultimately remain.	The difference between the temporary fence to be removed and not replaced and the permanent fence to be removed and replaced has been clearly defined in the drawings. The tree near this transformer is now shown on the drawings.

#### Project Title: Performance Specification Package, Group C Amendment Thermal Desorption Treatment of Contaminated Soil Former Naval Air Station (NAS) Barbers Point, Oahu, Hawaii Reviewer: Mr. Michael Miyasaka, Regional Environmental Department

Comment No.	Amendment/ Drawing No.	Comment	Response
1	Drawings, General	The confirmation sampling numbers and locations in this plan are not sufficient for the following transformer sites: H-5, C-2, C-4, C-13, F-3, F-20, G-12, W-11, S-33, S-84 and S-1761. In these sites where the soil excavation boundaries are not supported by clean (<1 mg/kg) PCB sampling data, sufficient confirmation surface soil samples need to be collected on the edges of these excavation boundaries to verify that all PCB contaminated soil above the 1 mg/kg level has been removed.	Confirmation sidewall samples were changed to be taken only at areas of incomplete delineation and where excavations stop at a fixed structure such as a building or active transformer.
2	Section 01110 General Paragraphs, Part 1.1.4	Contaminants of Concern, states that approximately 251 CY of the Group B soil is located at the Drum Crushing Area and contains 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, chlordane, heptachlor epoxide and arsenic. Design Drawings, Figure C4, shows a soil excavation plan for the Drum Crushing Area that is based on PCB contaminated soil concentrations. Figure C23, which shows the analytical results of the characterization sampling for the Former Drum Crushing Area does not identify any PCB contamination in the soil samples, but does identify some high levels of chlordane, DDD, DDE and DDT contamination in the soil. With no PCB contaminated soil at the Drum Crushing Area, the Navy needs to take this site out of the PCB Transformer Site removal action program and set up a separate removal action program for the pesticide contaminants on the site.	The Drum Crushing Area (DCA) is being addressed as a time critical removal action due to the proximity of the DCA to the treatment area. An AM is currently being written for this site. Sheet C4 has been revised to reflect what the contaminants of concern are for this site and their corresponding action levels.
3	Section 02181 Remediation of Contaminated Soils By Thermal Desorption, Part 3.4.2	Confirmation Sampling and Analysis Beneath Stockpiles. The locations for the confirmation samples to be collected is not clearly identified in the plan. It describes the use of a grid system, but does not identify the dimension of the grid. The Navy's normal procedure for confirmation sampling has been to use a five-foot grid and a sample collected around the center of the grid. Also, confirmation samples are discrete samples and should not be composited.	The confirmation samples beneath the stockpiles will not be shown on the drawings, but will be laid out by the contractor as discussed in this paragraph. Revisions to the specifications were not made, although changes to these confirmation sampling procedures have been discussed with the contractor in request for information (RFI) number 004.
# AMENDMENT NO. 0005 (FOR REFERENCE ONLY)

#### **SPECIFICATIONS**

Changes as directed below should be made to the respective specifications. Specifications incorporating the directed changes will not be issued with this amendment.

- a. Table of Contents
  - 1. Replace the table of contents with the updated table of contents included with this amendment (Attachment A).
- b. Changes to Section 01110
  - SECTION 01110 GENERAL PARAGRAPHS PARAGRAPH 1.1.1 GENERAL PROJECT DESCRIPTION Second paragraph, Delete the first sentence and substitute: The work includes furnishing all labor, materials, and equipment necessary for the low-temperature thermal desorption treatment of a minimum of 24,788 cubic yards (CY) not to exceed 30,654 CY of soil from three sources referred to as Group A, Group B, and Group C soils as shown in Table I."

Table I. Amend "Future Group C" to "Group C" as shown below:

SOILS	MINIMUM VOLUME (CY)	MAXIMUM VOLUME (CY)
Group A	5,965	5,965
Group B	7,211	9,013
Group C	11,612	15,676

Table I, Footnote a, Delete this footnote and substitute: "The quantities given in Table I have been estimated as bulked (ex situ) cubic yards by the Navy."

## 2. SECTION 01110 GENERAL PARAGRAPHS

PARAGRAPH 1.1.3 CONTAMINATED SOIL REQUIRING TREATMENT First paragraph, Delete this paragraph and substitute: "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, including approximately 300 C.Y. of Group A soils in supersacks that will require transport to the treatment area, 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."

Third paragraph, first sentence, before "Group C", delete: "Future."

Third paragraph, third sentence, after "stockpiles", insert: "and drums." After "Point", insert "and in drums located at Buildings 77 and 399 NAVMAG PH Lualualei."

Third Paragraph, last sentence, Delete the sentence "A....sites."

 SECTION 01110 GENERAL PARAGRAPHS PARAGRAPH 1.1.4 CONTAMINANTS OF CONCERN First paragraph, first sentence, Change "6,415" to "5,965".

Third paragraph, Delete this paragraph and substitute: "A minimum of 11,612 CY of soil contaminated with PCBs are expected from Group C sites, stockpiled and drummed soil at Former NAS Barbers Point, and drummed soil at Buildings 77 and 399 NAVMAG PH Lualualei. Delineation

sampling has been conducted to define area and depth of contamination at the Group C sites as shown on the drawings. Where delineation sampling has not fully defined the horizontal extent of PCB contamination in soil, approximate excavation boundaries are shown in the Drawings as dashed lines."

- SECTION 01110 GENERAL PARAGRAPHS PARAGRAPH 1.1.5 TREATMENT SYSTEM First paragraph, third sentence, after "and", delete: "Future."
- 5. SECTION 01110 GENERAL PARAGRAPHS PARAGRAPH 1.9 GENERAL INTENTION First paragraph, first sentence, after "and", delete: "Future."
- 6. SECTION 01110 GENERAL PARAGRAPHS PARAGRAPH 1.10.1 TREATMENT SITE Bullet o, after "Group B", insert: "Group C."
- SECTION 01110 GENERAL PARAGRAPHS PARAGRAPH 1.10.4 GROUP C SITES (future work, in-situ soil and stockpiled soil) Paragraph heading, after "SITES (", delete: "future work,".

Bullet e, Delete this bullet and substitute: "Conduct confirmation sampling and analysis to demonstrate that all contaminated soil requiring treatment has been removed. As directed by the NTR, excavate additional contaminated soil and conduct additional confirmation sampling, if confirmation samples indicate PCB concentration exceeding 1.0 milligram per kilogram are present. Backfill excavations (using successfully treated soil or certified clean import material) and restore the excavated sites."

#### 8. SECTION 01110 GENERAL PARAGRAPHS PARAGRAPH 1.12 CONTRACT DRAWINGS

The following drawings, bearing revision date of June 16, 2003, supersede previously issued drawings bearing the same number and title:

DWG <u>NO.</u>	NAVFAC <u>DWG NO.</u>	REVISION <u>LTR.</u>	TITLE
T1	795139	В	VICINITY MAP AND SHEET INDEX
T2	795140	В	SITE LOCATION MAP – FORMER NAS BARBERS POINT
T4	7952142	В	SITE LOCATION MAP – PEARL HARBOR NAVAL COMPLEX
T7	7952145	В	SITE LOCATION MAP – NRTF LUALUALEI
C1	7952146	В	GENERAL LOCATIO MAP – TREATMENT SITE AND RELATED LOCATIONS
C2	7952147	В	TREATMENT SITE EXISTING CONDITIONS
C3	7952148	В	CORAL PIT FILLING PLAN
C4	7952149	В	FORMER DRUM CRUSHING AREA FORMER NAS BARBERS POINT

Add the following 38 new drawings to the list of drawings, thereby making a total of 72 drawings:

DWG <u>NO.</u>	NAVFAC <u>DWG NO.</u>	TITLE
T1A	7960688	VICINITY MAP AND SHEET INDEX
Т8	7960689	SITE LOCATION MAP, HALAWA-MAIN GATE, NAVAL HOUSING AREA, AND PWC MAIN COMPLEX
Т9	7960690	SITE LOCATION MAP, WAIPIO PENINSULA, AND WEST LOCH
T10	7960691	SITE LOCATION MAP, NCTAMS WAHIAWA
T11	7960692	SITE LOCATION MAP, NAVMAG PH LUALUALEI
C27	7960693	TRANSFORMER SITES BUILDING 653 AND H-2, HALAWA- MAIN GATE
C28	7960694	TRANSFORMER SITES H-3 AND H-5, HALAWA-MAIN GATE
C29	7960695	TRANSFORMER SITES J-12 AND J-17, HALAWA-MAIN GATE
C30	7960696	TRANSFORMER SITES J-21 AND J-29, HALAWA-MAIN GATE
C31	7960697	TRANSFORMER SITES K-14 AND K-15, HALAWA-MAIN GATE
C32	7960698	TRANSFORMER SITES K-20, HALAWA-MAIN GATE AND W- 4/W-5, WAIPIO PENINSULA
C33	7960699	TRANSFORMER SITES M-3 AND NH-f, NAVAL HOUSING AREA
C34	7960700	TRANSFORMER SITE M-5, PWC MAIN COMPLEX
C35	7960701	TRANSFORMER SITES A-2 AND A-4, SHIPYARD
C36	7960702	TRANSFORMER SITES A-8 AND A-10, SHIPYARD
C37	7960703	TRANSFORMER SITES B-2 AND C-2, SHIPYARD
C38	7960704	TRANSFORMER SITE C-4, SHIPYARD
C39	7960705	TRANSFORMER SITE C-7, SHIPYARD
C40	7960706	TRANSFORMER SITES C-8 AND C-13, SHIPYARD
C41	7960707	TRANSFORMER SITES E-11 AND E-13, SHIPYARD
C42	7960708	TRANSFORMER SITES E-16 AND E-25, SHIPYARD
C43	7960709	TRANSFORMER SITES F-3 AND F-20/F-20A, SHIPYARD
C44	7960710	TRANSFORMER SITES G-12 AND K, SHIPYARD
C45	7960711	TRANSFORMER SITE W-11, WAIPIO PENINSULA
C46	7960712	FORMER TRANSFORMER SITES S11 AND S33, WEST LOCH
C47	7960713	TRANSFORMER SITES 121 AND 236, NCTAMS WAHIAWA
C48	7960714	TRANSFORMER SITES BUILDING 1 AND BUILDING 68, NRTF LUALUALEI
C49	7960715	FORMER TRANSFORMER SITE S84 AND FORMER RIGGER SHOP, NRTF LUALUALEI
C50	7960716	TRANSFORMER SITES S380 AND S382, NAVMAG PH LUALUALEI
C51	7960717	FORMER TRANSFORMER SITE S384, NAVMAG PH

		LUALUALEI, AND TRANSFORMER SUBSTATION S-1761, FORMER NAS BARBERS POINT
C52	7960718	TRANSFORMER SITE ANALYTICAL DATA
C53	7960719	TRANSFORMER SITE ANALYTICAL DATA
C54	7960720	TRANSFORMER SITE ANALYTICAL DATA
C55	7960721	TRANSFORMER SITE ANALYTICAL DATA
C56	7960722	TRANSFORMER SITE ANALYTICAL DATA
C57	7960723	TRANSFORMER SITE ANALYTICAL DATA
C58	7960724	TRANSFORMER SITE ANALYTICAL DATA
C59	7960725	TRANSFORMER SITE ANALYTICAL DATA

- c. Changes to Section 01330
  - SECTION 01330 SUBMITTAL PROCEDURES SUBMITTAL REGISTER Replace the submittal register with the updated submittal register provided with this amendment (Attachment B).
- d. Changes to Section 01501
  - SECTION 01501 TEMPORARY FACILITIES AND TRAFFIC CONTROL PARAGRAPH 2.2.1 FENCING First paragraph, , Delete the first sentence "Enclose....GATES." and substitute: "Enclose the treatment area and erect security gate at former NAS Barbers Point with a temporary 8-foot high chain link fence and gates as shown on the drawings in accordance with SECTION 02821 CHAIN LINK FENCES AND GATES."
- e. Changes to Section 01575
  - SECTION 01575 TEMPORARY ENVIRONMENTAL CONTROLS PARAGRAPH 1.4 DIRT AND DUST CONTROL PLAN First paragraph, Delete the third sentence and substitute: "Include management of soil and dust during demolition of concrete, during excavation and during transport of soil from excavation sites to treatment sites and at all project sites."
- f. Changes to Section 02111
  - 1. SECTION 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL PARAGRAPH 1.3 SURVEYS First paragraph, fourth sentence, after "samples," delete: "to be collected by others."
  - 2. SECTION 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL PARAGRAPH 3.3.1 EXCAVATION Paragraph heading, after "EXCAVATION", insert: "AND LOADING."

First paragraph, seventh sentence, after "Excavation," insert: "and loading."

 SECTION 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL PARAGRAPH 3.3.2 TRANSPORTATION Bullet c, last sentence, after the period, add "Use dry brush or other approved decontamination procedures to minimize generation of decontamination waste streams."

4. SECTION 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL PARAGRAPH 3.5 FIELD SCREENING Delete this paragraph with its subparagraphs, and substitute:

3.5 (DELETED)

# SECTION 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL PARAGRAPH 3.6 CONFIRMATION SAMPLING AND ANALYSIS Delete this paragraph with its subparagraphs, and substitute:

### 3.6 CONFIRMATION SAMPLING AND ANALYSIS

Confirmation sampling at Group A and B sites shall be conducted by others. Conduct confirmation soil sampling at Group C sites at approximate locations shown in the design drawings. Sample collection, handling, and analytical methods shall be conducted in accordance with the Sampling and Analysis Plan (see Attachment II). The Contractor shall provide all labor and field supplies, including sample containers and shipping coolers, and incur all costs for collecting and shipping samples for laboratory testing. The Contractor shall properly collect, label, and package the samples, fill out all chain-of-custody forms, and ship the samples by one-day delivery service to the laboratory for analysis.

The Contractor shall procure an analytical laboratory, approved by the Naval Facilities Engineering Service Center (NFESC), to perform analyses on collected samples. The Contractor shall provide continued acceptable analytical performance and shall establish a procedure to address data deficiencies identified by the NTR. The Contractor shall provide and implement a mechanism for monitoring the lab's performance and for performing corrective action procedures.

Location of confirmation soil samples shall be marked in the field and documented on the as-built drawings by the Contractor. Where sidewall samples are shown on the project drawings, excavation sidewall samples shall be collected from the vertical center of the wall measured from the ground surface to the toe of the excavation. The Contractor shall collect Group C confirmation soil samples from excavation bottom and sidewalls using certified clean sampling equipment. Confirmation soil samples shall be collected using a dedicated disposable hand trowel directly from the excavation sidewall or may be collected from a backhoe bucket. The sample collection interval shall be from the excavation surface to a maximum depth of 0.5 foot. If used, the backhoe bucket shall be decontaminated before collection of each confirmation soil sample. If entry into the excavation is required to conduct soil sampling, a competent person shall first determine acceptable entry conditions including sloping, shoring, and air monitoring requirements, personal protective equipment, and inspections in accordance with 29 CFR 1910.146 and 29 CFR 1926 Subpart B.

The Contractor shall provide all confirmation sample analytical data to the NTR within 1 day of receipt. The NFESC-approved laboratory turnaround time shall not exceed 5 working days. If confirmation samples indicate PCB concentrations exceeding 1.0 milligram per kilogram are present, the Contractor shall excavate additional contaminated soil and conduct additional confirmation sampling, as directed by the NTR.

All data will be validated in accordance with PACDIV standard operating procedure no. I-A-8 including a 10/90 percent split between level D and C validation. All sampling data collected under this contract shall be archived in the PACDIV central repository in Seattle.

- 6. SECTION 02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL Under this Section, insert the following new Attachment (Attachment C of this amendment):
  - Attachment II Earth Tech, Inc. 2003. Sampling and Analysis Plan, Removal Action Design Support and Confirmation Sampling – Group C Sites. Halawa-Main Gate GSA, Naval Housing GSA, PWC Main Complex GSA, Shipyard GSA, Waipio Peninsula GSA, West Loch GSA, NCTAMS Wahiawa, NRTF, Lualualei, NAVMAG PH Lualualei, Oahu, Hawaii. February.

- g. Changes to Section 02181
  - 1. SECTION 02181
     REMEDIATION OF CONTAMINATED SOILS BY THERMAL DESORPTION

     PARAGRAPH 2.1.2.1
     TREATMENT CRITERIA

     First paragraph, first sentence, change "meet" to "be less than or equal to."
    - rinst paragraph, inst sentence, change meet to be less than of equal to.
  - 2. SECTION 02181 REMEDIATION OF CONTAMINATED SOILS BY THERMAL DESORPTION

PARAGRAPH 3.4.4	CONFIRMATION SAMPLING AT EXCAVATION SITES
First paragraph, Delete t	he sentence "Delineationcontractor", and substitute: "Conduct confirmation
soil sampling at Group (	C sites at locations shown in the design drawings. Confirmation sampling at
Group A and B sites sha	ll be conducted by others."

3. SECTION 02181 REMEDIATION OF CONTAMINATED SOILS BY THERMAL DESORPTION ATTACHMENT I AMBIENT AIR OUAL ITY CRITERIA: Make pages changes as follows:

ATTACHMENT I	AMBIENT AIR QUALITY CRITERIA: Make pages changes as follows:
Pamova	Replace with

Kennove	<u>Replace with</u>
ATTACHMENT I PAGE 1 OF 2	ATTACHMENT I PAGE 1 OF 2 (Attachment D)
ATTACHMENT I PAGE 2 OF 2	ATTACHMENT I PAGE 2 OF 2 (Attachment D)

4. SECTION 02181 REMEDIATION OF CONTAMINATED SOILS BY THERMAL DESORPTION ATTACHMENT II NON-CARCINOGENIC AMBIENT CONCENTRATION CALCULATIONS: Make page changes as follows:

Delete ATTACHMENT II PAGE 1 OF 1

- h. Changes to Section 02920
  - 1. SECTION 02920 SITE RESTORATION PARAGRAPH 2.2 FERTILIZER First paragraph, After "commercial", delete: "16-20-20 mixed fertilizer."
  - 2. SECTION 02920 SITE RESTORATION PARAGRAPH 3.4.2 ANCHORING MULCH WITH MACHINERY First paragraph, first sentence, Change "machinery", to "approved means."
- i. Insert the following new Section after SECTION 03300 CAST-IN-PLACE CONCRETE:
  - 1. 13281 REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING MATERIAL (Attachment E)

DRAWINGS (Attachment F)

a. Changes to Drawings

Changes as directed below have been made to the respective drawings. Drawings incorporating the directed changes are issued with this amendment.

DWG	NAVFAC	REVISION	
<u>NO.</u>	DWG NO.	<u>LTR.</u>	TITLE/CHANGES

T1	795139	В	VICINITY MAP AND SHEET INDEX
			<ul> <li>(1) Add the following site location maps call outs:</li> <li>"Halawa-main gate, Naval Housing Area, and PWC Main Complex Contaminated Soil (See T8)";</li> <li>"Waipio Peninsula contaminated soil (See T9)"; NCTAMS Wahiawa Contaminated Soil (See T10); NAVMAG PH Lualualei Contaminated Soil (See T11)</li> </ul>
			<ul><li>(2) Update the abbreviations list to include: investigative derived waste (IDW), Naval Magazine (NAVMAG), and Naval Radio Transmitter Facility (NRTF).</li></ul>
			<ul> <li>(3) Added the following note: "Although the original, Group B amendment, and Group C amendment drawings are all part of a single design, they were completed and finalized in two separate groups. These groups have been numbered 1 of 34 through 34 of 34 (Group B amendment) and 1 of 38 through 38 of 38 (Group C amendment)."</li> </ul>
			(4) Add note "THIS DRAWING SUPERSEDES DRAWING DATED 2/3/03"
			<ul><li>(5) Update sheet index with Group C drawings T1A, T8 through T11, and C27 through 59</li></ul>
T2	795140	В	SITE LOCATION MAP – FORMER NAS BARBERS POINT
			<ol> <li>Include the following transformer sites: Substation S-1761.</li> </ol>
			(2) On drawing title, after "Group B", insert: "and C."
			(3) Add note "THIS DRAWING SUPERSEDES DRAWING DATED 2/3/03"
			(4) Update contractor's haul route.
T4	7952142	В	SITE LOCATION MAP – PEARL HARBOR NAVAL COMPLEX
			<ol> <li>Add callouts for the following transformer sites: A- 2, A-4, A-8, A-10, B-2, C-2, C-4, C-7, C-8, C-13, E- 11, E-13, E-16, E-25, F-3, F-20/F-20A, G-12, and K.</li> </ol>
			(2) On drawing title, after "Group B", insert: "and C."
			(3) Add note "THIS DRAWING SUPERSEDES DRAWING DATED 2/3/03"
T7	7952145	В	SITE LOCATION MAP – NRTF LUALUALEI
			<ol> <li>Add callouts for the following transformer sites: Building 1, Building 68, Former Transformer S84, and the Former Rigger Shop.</li> </ol>
			(2) On drawing title, delete "Group A and B", insert: "Groups A, B, and C."

(3) Add note "THIS DRAWING SUPERSEDES

				DRAWING DATED 2/3/03"
C1	7952146	В	TR	EATMENT SITE EXISTING CONDITIONS
			(1)	Add the following callout: "Treat approximately 11 C.Y. of IDW soil in 39 drums (Group C)"
			(2)	Add the following callout: "Existing supersacks of PCB contaminated soil; Substation S1860 Former NAS Barbers Point, Group A site: 300 C.Y. of soil to be treated."
			(3)	Replace callout "Existing liner will containto be treated" with the following callout: "Existing liner contains PCB contaminated soil stockpiled by others from: 50 C.Y. PHNC (Group A), 175 C.Y. Waikele (Group B), 1,932 C.Y. Quarry Loch/Magazine Loch (Group C) to be treated."
			(4)	Add note "THIS DRAWING SUPERSEDES DRAWING DATED 2/3/03"
C2	7952147	В	TR	EATMENT SITE EXISTING CONDITIONS
			(1)	Insert the word "former" before "drum crushing area" in the legend, note 16, and drawing.
			(2)	Delete notation "Soil supersacksleave in place"
			(3)	Add callout "Install Temporary Chain Link Security Gate" with drawing change and add note 17: "Place a gate on Lake Champlain Street as shown to limit vehicular traffic within PWC area.
			(4)	In callout "Existing liner will containto be treated," replace "will contain" with "contains."
			(5)	Add note "THIS DRAWING SUPERSEDES DRAWING DATED 2/3/03"
C3	7952148	В	CO	RAL PIT FILLING PLAN
			(1)	Delete the notation "Group A6,415 C.Y", and substitute: "Group A Soil 5,965 C.Y."
			(2)	Delete the notation "Group B8,957 C.Y", and substitute: "Group B Soil 7,211 to 9,013 C.Y."
			(3)	Delete the notation "Future Group C20,288 C.Y", and substitute: "Group C Soil 11,612 to 15,676 C.Y."
			(4)	Delete the notation "Total35,660 C.Y", and substitute: "Total 24,788 to 30,654 C.Y."
			(5)	Add note "THIS DRAWING SUPERSEDES DRAWING DATED 2/3/03"
			(6)	Add note: "Note: maximum volume for Group B and Group C soil was calculated using 25% contingency for Group B and 35% contingency for Group C.
			(7)	Add "bulked" between "anticipated" and "volume of treated soil" in volumes callout box.

# Draft Group C Design, Amendment No. 0005

Thermal Desorption Treatment of PCB-Contaminated Soil at the Former NAS Barbers Point, Oahu, Hawaii

C4	7952149	В	FORMER DRUM CRUSHING AREA
			<ul> <li>(1) Insert approximate location of asbestos-containing panels and construction fencing with notations</li> <li>"Approximate location of asbestos-containing panels to be removed" and "Approximate location of existing construction fencing"</li> </ul>
			(2) Insert note 4 as follows: "4. Remove temporary construction fencing fro around the former drum crushing area and dispose of accordingly."
			(3) Insert note 5 as follows: "5. Remove and dispose of approximately twenty 8 foot by 3.5 foot asbestos- containing panels in accordance with all applicable regulations."
			<ul><li>(4) Add note "THIS DRAWING SUPERSEDES DRAWING DATED 2/3/03"</li></ul>

# b. Addition of New Drawings

Add the following 38 new drawings to the list of drawings, thereby making a total of 72 drawings:

DWG <u>NO.</u>	NAVFAC <u>DWG NO.</u>	TITLE
T1A	7960688	VICINITY MAP AND SHEET INDEX
Т8	7960689	SITE LOCATION MAP, HALAWA-MAIN GATE, NAVAL HOUSING AREA, AND PWC MAIN COMPLEX
T9	7960690	SITE LOCATION MAP, WAIPIO PENINSULA, AND WEST LOCH
T10	7960691	SITE LOCATION MAP, NCTAMS WAHIAWA
T11	7960692	SITE LOCATION MAP, NAVMAG PH LUALUALEI
C27	7960693	TRANSFORMER SITES BUILDING 653 AND H-2, HALAWA- MAIN GATE
C28	7960694	TRANSFORMER SITES H-3 AND H-5, HALAWA-MAIN GATE
C29	7960695	TRANSFORMER SITES J-12 AND J-17, HALAWA-MAIN GATE
C30	7960696	TRANSFORMER SITES J-21 AND J-29, HALAWA-MAIN GATE
C31	7960697	TRANSFORMER SITES K-14 AND K-15, HALAWA-MAIN GATE
C32	7960698	TRANSFORMER SITES K-20, HALAWA-MAIN GATE AND W- 4/W-5, WAIPIO PENINSULA
C33	7960699	TRANSFORMER SITES M-3 AND NH-F, NAVAL HOUSING AREA
C34	7960700	TRANSFORMER SITE M-5, PWC MAIN COMPLEX
C35	7960701	TRANSFORMER SITES A-2 AND A-4, SHIPYARD
C36	7960702	TRANSFORMER SITES A-8 AND A-10, SHIPYARD
C37	7960703	TRANSFORMER SITES B-2 AND C-2, SHIPYARD
C38	7960704	TRANSFORMER SITE C-4, SHIPYARD
C39	7960705	TRANSFORMER SITE C-7, SHIPYARD

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	C40	7960706	TRANSFORMER SITES C-8 AND C-13, SHIPYARI	)
	C41	7960707	TRANSFORMER SITES E-11 AND E-13, SHIPYAR	D
	C42	7960708	TRANSFORMER SITES E-16 AND E-25, SHIPYAR	D
	C43	7960709	TRANSFORMER SITES F-3 AND F-20/F-20A, SHIF	YARD
	C44	7960710	TRANSFORMER SITES G-12 AND K, SHIPYARD	
	C45	7960711	TRANSFORMER SITE W-11, WAIPIO PENINSULA	¥
	C46	7960712	FORMER TRANSFORMER SITES S11 AND S33, W	EST LOCH
	C47	7960713	TRANSFORMER SITES 121 AND 236, NCTAMS W	AHIAWA
	C48	7960714	TRANSFORMER SITES BUILDING 1 AND BUILD LUALUALEI	ING 68, NRTF
	C49	7960715	FORMER TRANSFORMER SITE S84 AND FORME SHOP TRANSFORMER, NRTF LUALUALEI	R RIGGER
	C50	7960716	TRANSFORMER SITES S380 AND S382, NAVMA LUALUALEI	G PH
	C51	7960717	FORMER TRANSFORMER SITE S384, NAVMAG LUALUALEI, AND TRANSFORMER SUBSTATIO	PH N S-1761
	C52	7960718	TRANSFORMER SITE ANALYTICAL DATA	
	C53	7960719	TRANSFORMER SITE ANALYTICAL DATA	
	C54	7960720	TRANSFORMER SITE ANALYTICAL DATA	
	C55	7960721	TRANSFORMER SITE ANALYTICAL DATA	
	C56	7960722	TRANSFORMER SITE ANALYTICAL DATA	
	C57	7960723	TRANSFORMER SITE ANALYTICAL DATA	
	C58	7960724	TRANSFORMER SITE ANALYTICAL DATA	
	C59	7960725	TRANSFORMER SITE ANALYTICAL DATA	