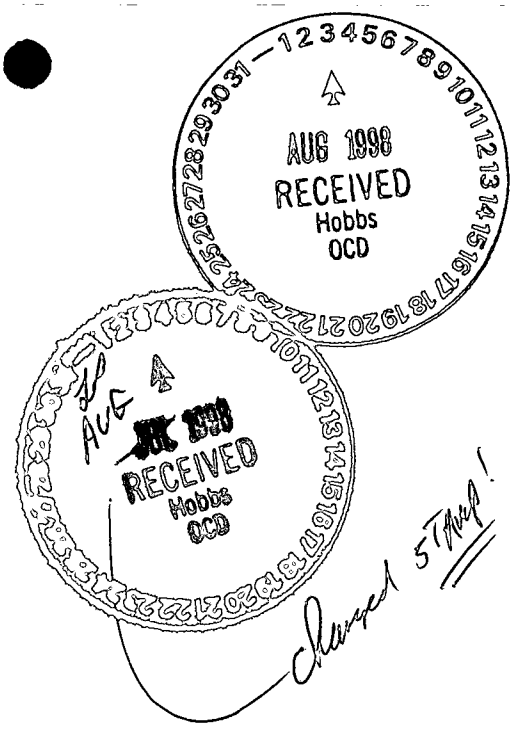
1R - 187

REPORTS

DATE:

1998



Changed 5 Aug!

To: Scott Webb / Ocean Energy
Wayne Price / NMOCD

From: Mike Griffin / Whole Earth Environmental

Date: August 1, 1998

Subject: Protocol Revision / Carlisle State COM # 1

Attached, please find Revision B of WEQP-41 containing amendments to include more description of the monitor wells and soil concentrations below the liner. The revision additionally corrects several typographical errors.

Pit Remediation Protocol
Ocean Energy Corporation
Carlisle State COM # 1
Pits Requiring Modeling

1.0 Purpose

This protocol is provide a detailed outline of the steps to be employed in the remediation and final closure of the Ocean Energy pits using risk assessment modeling.

2.0 Scope

This protocol is site specific for the Carlisle State COM # 1 emergency disposal pits.

3.0 Preliminary

Prior to any field operations, Whole Earth Environmental shall conduct the following activities:

3.1 Client Review

3.1.1 Whole Earth shall meet with cognizant personnel within Ocean Energy to review this protocol and make any requested modifications or alterations prior to submittal to the State of New Mexico Oil Conservation Division.

3.1.2 Changes to this protocol will be documented and submitted for final review by Ocean Energy prior to submittal to the Oil Conservation Division.

3.2 Oil Conservation Division Review

3.2.1 Upon client approval, this protocol and associated modeling results will be submitted to the New Mexico Oil Conservation Division for review and comment. Recommended changes will be reviewed by the client prior to implementation.

3.2.2 Any recommended changes effecting costs will require a revised quotation to be issued to the client for approval prior to the commencement of any on-site remediation activity.

4.0 Safety

4.1 Prior to work on the site, Whole Earth shall obtain the location and phone numbers of the nearest emergency medical treatment facility. We will review all safety-related issues with the appropriate Ocean Energy personnel, sub-contractors and exchange phone numbers.

4.2 A tailgate safety meeting shall be held and documented each day. All sub-contractors must attend and sign the daily log-in sheet.

4.3 Anyone allowed on to location must be wearing sleeved shirts, steel-toed boots, and long pants. Each vehicle must be equipped with two-way communication capabilities.

4.4 Prior to any excavation, the area shall be surveyed with a line finder. If lines are discovered within the area to be excavated, they shall be marked with pin flags on either side of the line at maximum five-foot intervals. The area will be photographed prior to any excavation or fluid removal.

4.5 Each pit area will be swept with a Ludlam 2350 to determine if NORM is present in concentrations greater than 40μr / hr.

5.0 Fluid Removal

Prior to any excavation, the pit fluids including liquids contained within the reserve pits shall be removed by vacuum truck and transported to the Gandy Crossroads recycling facility. A shipping manifest and an O.C.D. Form C-117-A shall be prepared for each waste load.

6.0 Monitor Wells

6.1 Harrison & Cooper will drill develop and case three monitoring wells. The first will be in the approximate southeast corner of the east pit excavation, the second at the southeast corner of the west pit. The third well will be situated at a point due south of the center of the east / west line drawn between the two previous locations at a distance equal to the distance separating the two previous wells so as to form an equilateral triangle. The third well may be cased and completed within in a 4" diameter PVC pipe to allow for future conversion to a source well. Whole Earth

will obtain soil samples at each five-foot incremental depth following our procedure QP- 77. Whole earth will additionally field screen for TPH and BTEX in accordance with QP-06 and QP-19. Calibration, record retention, and instrument reporting accuracy procedures for these field screen tests are contained in QP-25 and QP-55. If the Whole Earth screen testing reveals BTEX or chloride concentrations within the first two wells in excess of NMWQCC standards, the holes will be left uncased until laboratory confirmation is obtained. Should the criteria pollutant concentrations be confirmed to be higher than NMWQCC standards Whole Earth will obtain the necessary additional information required to model the effects of natural attenuation using the USAF Bio Screen program. If the Bio Screen model reveals contamination potential to any off-site source well, the monitoring wells may be converted to recovery wells by completing within 4" casing. All confirmation samples will be analyzed by Environmental Labs of Texas for BTEX and DRO using EPA Methods 8020, 5030 and 8015m for TPH, BTEX and chlorides.

6.2 All monitoring or recovery wells will be drilled to a minimum depth of ten feet below the top of the water table, developed, fitted with a slotted screen, grouted to surface and fitted with a locking cap mechanism for security.

7.0 Modeling

Whole Earth will model the migration potential of the plume on VADSAT to determine the maximum concentrations of criteria pollutants allowed within the excavation consistent with a 100 year, zero percentage probability of the plume impacting ground water.

8.0 Liners

Each pit will receive a liner having the minimum thickness of 20 mil high density polyethylene. The sides of the liner will be brought up a minimum distance of 5' above the average grade of the pit.

9.0 West Emergency Pit Preliminary Compaction

In order to achieve sufficient separation between the bottom of the west pit and the top of the Ogallala, the pit will be filled in with fresh soils obtained from the area immediately to the southwest of the pit to a maximum distance of 20 bgl. The soils filling the excavation will be field tested as they are deposited for BTEX, TPH and chloride. Concentrations shall not exceed 10, 5,000 and 3,000 ppm respectively. Once filled to a sufficient depth, the bottom will be compacted using D-6 or larger bulldozers.

10.0 Remediation

10.1 Prior to any contaminated soils being re-deposited within the excavations, the Hobbs office of the OCD will be notified. The OCD may either witness, or collect split samples with Whole Earth. The bottom of the pit and all four side walls will be tested for TPH and Benzene concentrations using WEQP-06 and WEQP-19. The samples will be collected and analyzed as described in 6.1 of this protocol. Acceptable criteria pollutant concentrations shall be <5,000 ppm TPH, <10 ppm benzene, <50 ppm ttl. BTEX and < 3,000 ppm soluble chlorides.

10.2 Using a trackhoe and D-6 bulldozer, the west reserve pit will be breached at the southwest corner and spread over the newly excavated area immediately southwest of the west pit. ***Extreme care must be taken to insure that no unmixed fluids or solids from the reserve pit be allowed into the western emergency pit. Temporary berms shall be erected around the eastern and southern sides of the pit.*** Once dried to a working consistency, the reserve pit solids will be tested extensively to determine average criteria pollutant concentrations, mixed and blended with the soils contained within the western spread zones and freshly excavated soils as necessary to achieve of <5,000 ppm TPH, 10 ppm benzene, 50 ppm ttl. BTEX and 3,000 ppm soluble chloride concentrations. The materials will then be re-deposited with the pit in approximately 30 yd^3 increments. The pit bottom will be tested in a minimum of four locations for each 3' lift.

10.3 As drilling and completion operations allow, the eastern reserve pit will be similarly mixed and blended with the soils contained within the eastern spread zone and deposited into the east emergency containment pit.

11. Reserve Pit Remediation

11.1 The west reserve pit will be remediated in accordance with paragraph 11.0 of this protocol. Because the pits were erected at grade, we will sample and confirm only the pit bottom concentrations as described in paragraph 12.0 of this protocol.

11.2 The east reserve pit will be partially excavated to a depth below the liner and soil samples collected in accordance with WEQP-77. If the results are nominal, indicating that the liner is intact, the pit will be closed in accordance with NMOCD Rule 105.A.

12.0 Site Restoration

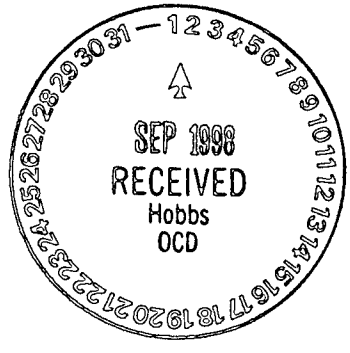
The top two feet of the excavation shall be covered in remediated materials having a maximum TPH concentration of <100 ppm and benzene concentrations of <2 ppm. The area will be seeded with a mixture of local grasses. If the sodium chloride concentrations with the spread material exceed a sodium adsorption ratio

greater than 12, additional remediation to include treatment with gypsum and / or calcium nitrate may be required.

13.0 Documentation & Reporting

At the conclusion of the pit remediation project, Whole Earth will prepare a closure report to include the following minimum information:

- A plat map of the location showing the exact location of the pit, the dimensions prior to excavation and the actual excavated dimensions.
- Photographs of the pit prior to excavation, at the point of maximum excavation and after final closure
- Field Sampling Report to include the side wall and pit bottom TPH and BTEX concentrations after excavation.
- Field Sampling Report to include TPH and BTEX concentrations of all remediated materials deposited into the pit.
- Daily calibration records of each testing instrument
- Shipping manifests and OCD Form C-117-A
- Risk assessment model and supporting documentation
- M.S.D.S. of any amendment materials
- Construction of monitor or recovery wells



CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
WHOLE EARTH ENVIRONMENTAL, INC.
ATTN: ELLIOT WERNER
19606 SAN GABRIEL
HOUSTON, TX 77084
FAX TO: (713) 578-1797

Receiving Date: 08/27/98
Reporting Date: 08/31/98
Project Number: NOT GIVEN
Project Name: CARSLILE
Project Location: LOVINGTON, NM

Sampling Date: 08/27/98
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: GP
Analyzed By: BC/AH

LAB NO.	SAMPLE ID	TPH (mg/Kg)	Cl (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE:		08/28/98	08/31/98	08/27/98	08/27/98	08/27/98	08/27/98
H3822-1	EAST. RES. PIT BOT.	2520*	624	<0.002	0.007	<0.002	0.014
Quality Control		2810	1209	0.093	0.092	0.090	0.279
True Value QC		3000	1319	0.100	0.100	0.100	0.300
% Accuracy		93.7	91.7	92.8	92.2	90.3	93.0
Relative Percent Difference		12.8	4.4	13.9	10.7	8.6	6.1

METHODS: TRPHC-SW-846 8015M;Cl-EPA 600/4-79-020 325.3 BTEX-EPA SW-846-8260
*Alkane Range: C15-C28

SEP 1998 RECEIVED Hobbs OCD

Burgess J. A. Cooke. Ph. D.

8/31/98
Date

H3822.XLS

CARDINAL LABORATORIES, INC.

2111 Beechwood, Abilene, TX 79603 (915) 673-7001 Fax (915) 673-7020
101 East Marland, Hobbs, NM 88240 (505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

H3822

Page 1 of 1

Company Name:	Whole Earth Env.	BILL TO	PO #:
Project Manager:	Elliot Werner	Company:	Same
Address:	19606 San Gabriel	Attn:	
City:	Hob. State: TX Zip: 77084	Address:	
Phone #:	1-800-854-4358	City:	
Fax #:		State:	Zip:
Project #:	Project Owner: Ocean Energy	Phone #:	
Project Name:	Carlisle	Fax #:	
Project Location:	Lovington		

FOR LAB USE ONLY				MATRIX							PRES.			SAMPLING		ANALYSIS REQUEST												
LAB I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID:	ICE / COOL	OTHER:	DATE	TIME	DRO GRO SOLS	Chloride	BETEX											
H3822-1	East Res. Pit Bot	C	1			✓							8-28-98	2:45P	1	1	1											

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collections, including attorney's fees.

Sampler Relinquished:	Date: 8-27-98	Received By:	Phone Result ☐ Yes ☐ No Additional Fax #:
	Time:		Fax Result: ☐ Yes ☐ No
Relinquished By:	Date:	Received By: (Lab Staff)	REMARKS:
	Time:		
Delivered By: (Circle One)	Sample Condition: Cool ☒ Yes ☐ No; Intact ☒ Yes ☐ No	CHECKED BY: (Initials)	
Sampler - UPS - Bus - Other:			

RECEIVED SEP 1998 OCD Hobbs

† Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020.