No Further Action Report SWMUs 1, 2, 3, 4, 5

August 2001

Giant Refining Company Ciniza Refinery

Revision 0.0

Volume I

Submitted to:

New Mexico Environment Department Hazardous and Radioactive Materials Bureau 2905 Rodeo Park Road, Building E Santa Fe, New Mexico 87505

Prepared by:

Ciniza Refinery Route 3, Box 7 Gallup, New Mexico 87301

EXECUTIVE SUMMARY

Giant Refining Company – Ciniza Refinery (Ciniza) is proposing no further action (NFA) for 11 of its 14 solid waste management units (SWMUs). These SWMUs were identified at the Ciniza Refinery during a Resource Conservation and Recovery Act (RCRA) facility assessment (RFA) performed in August 1987, managed as regulated units pursuant to the RCRA Post-Closure Care Permit for the Land Treatment Unit (August 2000), and described in detail in the Part B Post-Closure Permit Application (Revision 0, May 2000). This proposal for NFA is based on the five criteria for NFA proposals established by the New Mexico Environment Department (NMED) and addresses the applicable elements identified in NMED's guidance for NFA proposals.

This report provides documentation supporting the proposal for NFA for the following SWMUs identified at the Ciniza Refinery:

- SWMU No. 1, Aeration Basin
- SWMU No. 2, Evaporation Ponds
- SWMU No. 3, Empty Container Storage Area
- SWMU No. 4, Old Burn Pit
- SWMU No. 5, Landfill Areas
- SWMU No. 7, Fire Training Area
- SWMU No. 9, Drainage Ditch Near the Inactive Land Treatment Area
- SWMU No. 10, Sludge Pits
- SWMU No. 11, Secondary Oil Skimmer
- SWMU No. 12, Contact Wastewater Collection System
- SWMU No. 13, Drainage Ditch Between API and Evaporation Ponds

The information presented in this report is based on the RCRA facility investigation (RFI), RFA, Part B Post-Closure Permit Application, Post-Closure Permit operating records, and sampling and analysis data.

The SWMUs discussed in this report are located within Ciniza's property boundary. Ciniza is a crude oil refining facility located in McKinley County, New Mexico, at Township 15 North, Range 15 West, Sections 28 and 33, the northern one-third of Section 4 of the New Mexico coordinate system. Ciniza is on the north side of Interstate 40, approximately 17 miles east of Gallup, New Mexico.

Ciniza was constructed in 1957. Current Ciniza operations include production of multiple grades of unleaded gasoline, two grades of jet fuel, kerosene, diesel, residual fuel, butane, and propane. The

refinery is supported by a tank farm. The refinery facility and location of each SWMU within the facility are shown in Map 1. Each SWMU is also shown in the figures provided in the following sections of this report.

In August 1987, an RFA was conducted at Ciniza that identified 17 SWMUs and 10 units of concern that required investigation as suspected sources of hazardous material releases to the environment. From the original 27 SWMUs identified in the RFA, the U.S. Environmental Protection Agency (EPA) identified and designated 13 SWMUs in the permit issued to Ciniza in 1998 under the Hazardous and Solid Waste Amendments of 1984 (HSWA permit). The *Aeration Basin*, not previously classified as either a SWMU or unit of concern, was added to the list in Ciniza's HSWA Permit as (i) *Aeration Basin*, resulting in 14 SWMUs. In 1990, in response to permit requirements, Ciniza conducted a release verification and source characterization study and developed a site-specific RFI Work Plan. In the RFI Work Plan, the *Inactive Land Treatment Area* and the *Drainage Ditch* were combined to become SWMU No. 9, the *Drainage Ditch Near the Inactive Land Farm*, resulting in 13 SWMUs.

The Ciniza SWMU numbering system differs in the various Ciniza and EPA reference documents related to SWMUs. The 1998 HSWA permit lists each SWMU preceded by a lowercase Roman numeral. The lowercase Roman numeral reflects the document numbering format, not SWMU identification number. The 1990 RFI Work Plan provides the first SWMU numbering system for the 14 SWMUs. EPA correspondence (1994) refers to both the RFI Work Plan numbering system and to Arabic numbers assigned to the roman numerals used in the HSWA permit as a format numbering system. Table 1 provides a crosswalk between the SWMU numbers designated in the various reference documents. This NFA proposal report uses the SWMU numbering system from the RFI Work Plan, which is also used in the Land Treatment Unit (LTU) Part B post-closure permit application and LTU Post Closure Permit.

Between November 1990 and October 1992, Ciniza prepared three RFI reports covering the 14 SWMUs and submitted them to the EPA for review and comment. Based on the nature and extent of contamination detected during the RFI, 10 of the SWMUs were recommended for NFA. The four remaining SWMUs were recommended for corrective action. Voluntary Corrective Action Plans (VCAPs) were prepared for these four SWMUs and submitted to EPA for review. The attachments to this NFA proposal report describe the activities conducted during RFIs and corrective actions conducted, as required. Table 2 provides the SWMU number, SWMU title, and current status of the Ciniza SWMUs.

Description	HSWA ¹ Permit 1988	RFI ² Work Plan 1990	EPA ³ Letters 1994	LTU ⁴ Post-Closure Care Permit 2000
Aeration Basin	i	1	1	1
Evaporation Ponds	ii	2	2	2
Empty Container Storage Area	v	3 3	5	3
Old Burn Pit	viii	4	8	4
Landfill Areas	vii	5. 1. 1. State of 5 .	7	5
Tank Farm	iii	6	6	6
Fire Training Area	iv	7	4	7
Railroad Rack Lagoon, Overflow Ditch and Fan Out Area	vi	8 	8	8
Inactive Land Treatment Area	x and xiii	9		9 and 14
Sludge Pits	ix	10	9	10
Secondary Oil Skimmer and Associated Drainage Ditch	xi	11	11	11
Contact Waste Water Collection System	xii	12	13	12
Drainage Ditch Between APIs Evaporation Ponds and Neutralization Tank Evaporation	xiv	13	13	13
Ponds				
API Separator		14		14

Table 1. Ciniza Refinery-Solid Waste Management Unit Identification

¹Solid Waste Management Unit Numbers as designated in the HSWA Permit (Section C, Corrective Actions for Continuing Releases, 5(a)(1), December 1988.

²Solid Waste Management Unit Numbers as designated in the RCRA Facility Investigation Work Plan (submitted May 1990).

³Solid Waste Management Unit Numbers as designated in the EPA letters (provided in SWMU Reports).

⁴Solid Waste Management Unit Numbers as designated in the RCRA Post-Closure Care Permit (Module IV, Appendix A).

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SWMU No. ¹	SWMU Title	Status	Report
1	Aeration Basin (i) ²	EPA approval of NFA given in January 1994. Survey plat submitted to EPA. Investigative process complete. Five-year sampling of soil around basin required again in 2001. Part of NMOCD regulated process waste water treatment system and exempt from RCRA regulation.	Appendix I-1 ³ : Aeration Basin - SWMU No. 1 Summary Report
2	Evaporation Ponds (ii)	EPA approval of NFA given in January 1994. Investigative process complete. Follow-up monitoring required. Survey plat submitted. Five- year sampling required again in 2001. Part of NMOCD regulated process waste water treatment system and exempt from RCRA regulation.	Appendix I-2 ³ : Evaporation Ponds - SWMU No. 2 Summary Report
3	Empty Container Storage Area (v)	EPA approval of NFA given January 1994. Investigative process complete. Survey plat submitted to EPA. Corrective action complete.	Appendix I-3 ³ : Empty Container Storage Area - SWMU No. 3 Summary Report
4	Old Burn Pit (viii)	RFI 1990; sampling report identified corrective action. Site capped in 1998. Investigative process complete. Survey plat submitted. Corrective action complete	Appendix I-4 ³ : Old Burn Pit - SWMU No. 4 Summary Report
5	Landfill Areas (vii)	VCAP submitted February 1993 and approved in January 1994. Closure plan prepared and certified by PE, 1998.	Appendix I-5 ³ : Landfill Areas - SWMU No. 5 Closure Certification
6	Tank Farm—Leaded Gasoline Tanks (iii)	VCAP submitted in April 1996. Investigative process complete. Corrective action currently under way. Survey plat submitted.	Appendix I-6 ³ : Tank Farm— Leaded Gasoline Tanks - SWMU No. 6 Summary Report
7	Fire Training Area (iv)	VCAP submitted in March 1993, and approved via fax in March 1996. RFI sampling complete. Investigative process complete. Survey plat submitted. Corrective action complete.	Appendix I-7 ³ : Fire Training Area - SWMU No. 7 Summary Report
8	Railroad Rack Lagoon (vi)	VCAP submitted in December 1992, and approved in November 1994. RFI sampling complete. Investigative process complete. Corrective action ongoing. Survey plat submitted.	Appendix I-8 ³ : Railroad Rack Lagoon - SWMU No. 8 Summary Report

Table 2. Solid Waste Management Units

SWMU	•		
No. ¹	SWMU Title	Status	Report
9	Drainage Ditch Near the Inactive Land Farm (x and xiii)	RFI sampling complete. Report on additional RFI sampling suggested NFA. Investigative process complete. Survey plat submitted to EPA. Corrective action complete.	Appendix I-9 ³ : Drainage Ditch and the Inactive Land Farm - SWMU No. 9 Summary Report
10	Sludge Pits (ix)	VCAP submitted in December 1992, and approved in January 1994. RFI sampling complete. Investigative process complete. Survey plat submitted. Corrective action complete.	Appendix I-10 ³ : Sludge Pits - SWMU No. 10 Summary Report
11	Secondary Oil Skimmer (xi)	RFI sampling complete. Report on additional RFI sampling suggested NFA. Investigative process complete. Corrective action complete. Survey plat submitted.	Appendix I-11 ³ : Secondary Oil Skimmer - SWMU No. 11 Summary Report
12	Contact Wastewater Collection System (CWWCS) (xii)	Investigative process complete. EPA requires inspection every 5 years. Ciniza currently repairing and inspecting system. Part of NMOCD regulated process waste water treatment system and is exempt from RCRA regulation.	Appendix I-12 ³ : Contact Wastewater Collection System - SWMU No. 12 Summary Report
13	Drainage Ditch Between API Evaporation Ponds and Neutralization Tank Evaporation Ponds (xiv)	EPA approval of NFA given in January 1994. Follow-up monitoring required. Survey plat submitted to EPA. Soil sampling collected around drainage ditch required again in 2001. Part of NMOCD regulated process waste water treatment system and is exempt from RCRA regulation.	Appendix I-13 ³ : Drainage Ditch Between API Evaporation Ponds and Neutralization Tank Evaporation Ponds - SWMU No. 13 Summary Report
14	API Separator	Active ⁴	

Table 2. Solid Waste Management Units (continued)

¹Solid Waste Management Unit Numbers as designated in the RCRA Facility Investigation Work Plan (submitted May 1990).

²Solid Waste Management Unit Numbers as designated in the HSWA Permit (Section C, Corrective Actions for Continuing Releases, 5.(a)(1). December 1988.

³Part B Post-Closure Permit Application, Volume III. May 2000.

⁴RCRA Post-Closure Care Permit, Module IV, Appendix A, August 2000

SWMU No. 1, Aeration Basin

The aeration basin site was identified as a solid waste management unit (SWMU) and designated as 2 SWMU No. 1 during a Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) 3 conducted at the Giant Refining Company - Ciniza Refinery (Ciniza) in the early 1990s. Soil samples 4 were collected on the perimeter of the site and analyzed for volatile organic compounds (VOCs), 5 semivolatile organic compounds (SVOCs), and metals. Based on soil sample results, Ciniza 6 recommended no further action (NFA) for this SWMU. The U.S. Environmental Protection Agency 7 (EPA) formally agreed with this finding; however, EPA required periodic soil sample collection around 8 the aeration basin every five years. Ciniza submitted a survey plat of the site to EPA in 1995. Ciniza 9 conducted the first sampling event in October 1996, and submitted results to the New Mexico 10 Environment Department (NMED) and EPA in their Quarterly Progress Report for fourth quarter 1996. 11

The Aeration Basin is also regulated by OCD, pursuant to the Clean Water Act (G10-32-Part A). Because the Aeration Basin is part of a wastewater treatment system connected to a permitted unit, it is exempt from the Hazardous and Solid Waste Amendments. Correspondence from the NMED to Ciniza Refinery confirms that SWMU No. 1, Aeration Basin, falls under the jurisdiction of OCD and is regulated under the facility OCD Discharge Plan (GW-032).

17 1.1 Site Description and Operational History

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SWMU No. 1, Aeration Basin, (Figure 1-1), located west of the Ciniza tank farm, consists of three man-18 made earthen basins connected in series on a site measuring approximately 500 feet by 450 feet. The three 19 20 basins include two aerated lagoons, equipped with aeration pumps to oxygenate the water, and Evaporation Pond No. 1, which serves as a holding pond upstream from the evaporation ponds. The 21 aeration basin is a component of the refinery wastewater treatment system. Effluent water from the API 22 Separator is directed to an air stripping system for removal of benzene and other VOCs and then passed 23 on to the aeration basin for oxygenation and biological stimulation before evaporation. Total hydraulic 24 holding capacity is approximately 2 million gallons. The aeration basin was constructed in 1987 and has 25 been in continuous operation since that time. Photographs of the aeration basin, taken during the 1998 site 26 inspection performed by Practical Environmental Services, Inc. (PES), are provided in SWMU No. 1 27 28 Summary Report.

1 1.2 Land Use

The aeration basin is currently in active service treating wastewater at the Ciniza refinery. It is expected
that the aeration basin will continue functioning in this capacity into the future. The land will continue
under the ownership of the Ciniza refinery.

5 1.3 Investigation Activities

6 Applied Earth Sciences (AES) investigated the aeration basin site during the early 1990s. Soil samples 7 were collected and analyzed. No organic contaminants were detected in any sample. Trace metals were 8 detected in all samples; a few of these samples indicated levels slightly above ambient background 9 concentration.

10 1.3.1 Investigation #1

During the initial site investigation and subsequent monitoring assessment, AES collected and analyzed soil samples from around the perimeter of the aeration basin site. Samples were collected at multiple depths and at both upgradient and downgradient locations. Several borings were angled to collect samples from beneath the basins.

In 1991, AES collected samples from six locations and four depths ranging from 4 to 16 feet below ground surface. Neither VOCs nor SVOCs were detected in the samples. Trace metals were detected in all samples; of which six samples indicated levels slightly above ambient background concentration.

18 Detection of trace amounts of metals at levels slightly above ambient background concentration is likely 19 due to normal soil variation. Therefore, these results are not indicative of direct contamination or 20 migration of contamination.

21 1.3.2 Investigation #2

In 1996, Giant Refining Company - Ciniza Refinery (Ciniza) collected and analyzed monitoring samples from six locations at depths ranging from 4 to 20 feet below ground surface. VOCs and SVOCs were not detected in 25 of the samples. Two samples collected adjacent to the inlet aeration basin at a depth of 4 feet contained trace quantities of benzene, toluene, ethylbenzene, xylenes (BTEX); of which xylenes was the highest concentration at 2.2 mg/kg. Ciniza collected and analyzed confirmatory samples: one sample did not contain VOCs or SVOCs; the other sample contained trace ethylbenzene at 0.61 mg/kg.

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1 The State of New Mexico corrective action levels for BTEX in soil is 50 mg/kg total and 10 mg/kg 2 benzene. Three of 53 samples indicated trace BTEX, the highest of which was less than 5 mg/kg total, 3 well below the 50 mg/kg action level.

The trace detection of BTEX constituents near the sidewalls of the inlet aeration cell is common and predictable for this service. The absence of BTEX at depth and at all other locations is confirmatory of the highly impermeable characteristic of the confining soil. This location and low level of detection are indicative of no significant impact or migration.

8 1.4 Site Conceptual Model

9 There is no impact on the environmental fate of the land.

10 1.5 Site Assessments

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11 During the week of March 23, 1998, PES performed an on-site screening assessment of the aeration 12 basin. The observations are as follows:

- The aeration basin was in active service treating effluent wastewater from the air strippers. Aeration pumps were observed running and the system was functioning normally.
- All berms and sidewalls were intact and stable based on a visual inspection of all three cells. No erosion, damage, or signs of containment failure were observed. A dark mineral dust coating was present around the interior perimeter of the cells.
- Native shrubs and grasses were growing around the perimeter of each cell. Downwind vegetation was discolored by the dark mineral dust, but was not otherwise distressed.
- Local soil in the vicinity of the aeration basin is bentonitic clays and silts. Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than 10-7 cm/sec.

PES did not perform any sampling or analysis during this site inspection. The inspection was limited onlyto visual observations.

Based on this inspection, PES determined that the aeration basin is in active service, functioning normally, oxygenating wastewater, and stimulating biological activity. The aeration basin is properly designed and located in an appropriate geologic setting in which the underlying bentonitic soil has a very low hydraulic conductivity, which effectively serves as an aquiclude.

28 1.6 NFA Proposal

29 Ciniza is proposing that no further action is required for SWMU No. 1 based on the following criteria:

• No release to the environment has occurred or is likely to occur in the future from the aeration basin. (NFA Criterion 3)

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- The SWMU is characterized and managed under another authority, OCD, which adequately addresses RCRA corrective action. (NFA Criterion 4)
- The SWMU has been characterized in accordance with current applicable state regulations and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use. (NFA Criterion 5)

The rationale for the proposed NFA is based on the status of the aeration basins as part of the process 8 wastewater treatment system and the results of the investigations of the aeration basin, indicating no 9 significant impact or migration. The investigations found no contamination requiring corrective action. 10 The trace amounts of metals at levels slightly above ambient background concentration are likely due to 11 normal soil variation. The trace detection of BTEX constituents near the sidewalls of the inlet aeration 12 cell is common and predictable for this service. The absence of BTEX at depth and at all other locations is 13 14 confirmatory of the highly impermeable characteristic of the confining soil. All berms and sidewalls were intact and stable and there is no sign of erosion, damage, or containment failure. 15

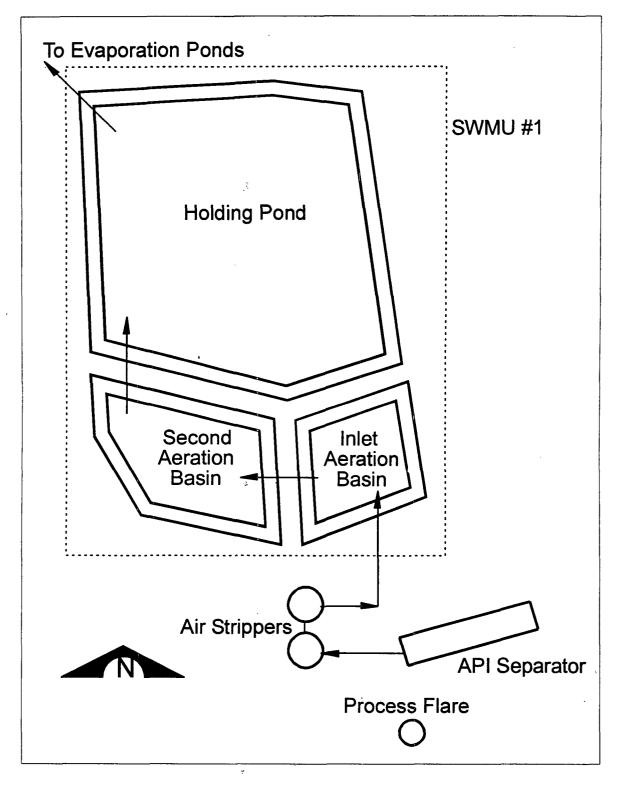


Figure 1-1. SWMU No. 1, Aeration Basin Site

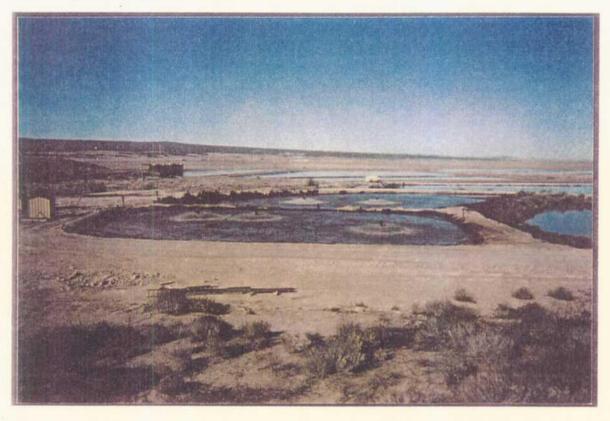
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SWMU # 1 Summary Report

Aeration Basins Ciniza Refinery McKinley County, New Mexico



Prepared for:

Ciniza Refinery Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

Prepared by:

Practical Environmental Services, Inc. 1444 Wazee Street, Suite 225 Denver, Colorado 80202

Job No. 98-205-03

April 23, 1998

1.0 EXECUTIVE SUMMARY

Practical Environmental Services, Inc. (PES) has been retained by Giant-Ciniza Refinery (Ciniza) to perform a visual inspection, data evaluation, and status assessment for the aeration basins located within the Ciniza Refinery, in McKinley County, New Mexico.

The aeration basins site was identified as a Solid Waste Management Unit (SWMU), and designated as SWMU #1, during a RCRA Facility Investigation conducted at the refinery in the early 1990's. This investigation included soil sampling and analysis, determined that no significant impact had occurred, and recommended no further action (NFA).

In 1994, the Environmental Protection Agency Region VI Office (EPA) concurred in this finding, approved cessation of the investigative process, but requested ongoing soil monitoring. Monitoring samples were collected and analyzed in 1996, and the results confirmed that no significant impact has occurred.

This summary report for SWMU #1 has been prepared in conjunction with submittal of a Resource Conservation and Recovery Act (RCRA) Part B permit application covering post closure care of the Ciniza Refinery Land Treatment Unit. All investigative activities for SWMU #1 have been completed. This assessment is summarized as follows.

- ⇒ The aeration basins continue in active service treating wastewater at the refinery and are functioning normally.
- ⇒ Containment berms and basin sidewalls have been inspected and are intact and stable.
- ⇒ Local soil underlying the basins predominantly consists of bentonitic clays and silts having a very low hydraulic conductivity.
- ⇒ Soil sampling and analysis was conducted during an initial site investigation and subsequent monitoring assessment. Trace organic contaminants were detected below corrective action levels. The site was recommended for NFA and approved by the EPA.
- ⇒ SWMU #1 has been characterized in accordance with current applicable state and federal regulations, and the available data indicate that no significant environmental impact or migration has occurred.

2.0 BACKGROUND

During 1987, a RCRA Facility Assessment was conducted at the Ciniza Refinery. This assessment identified various "units of concern" and recommended further evaluation. A RCRA Facility Investigation (RFI) was subsequently conducted and the aeration basins site was identified as SWMU #1.

Applied Earth Sciences (AES) investigated the aeration basins site during the early 1990s. Soil samples were collected and analyzed. No organic contaminants were detected in any sample. Trace metals were detected in all samples; of which, a few samples indicated levels slightly above ambient background concentration.

As a result of the investigation, AES recommended no further action for this SWMU. Results and recommendations were reported to the EPA in 1991. The EPA approved the NFA finding in 1994, with the added provision that soil monitoring be performed every five years.

3.0 SITE LOCATION AND DESCRIPTION

SWMU #1 is located within the Ciniza Refinery's property boundary. This refinery is located on the north side of Interstate 40, approximately 17 miles east of Gallup, New Mexico. Within the refinery, SWMU #1 is located west of the tank farm, northwest of the flare, and adjacent to the API separator. See Figure No. 1 for location details.

The aeration basins are a component of the refinery wastewater treatment system. Effluent water from the API separator is directed to an air stripper for removal of VOCs and then passed on to the aeration basins for oxygenation and biological stimulation prior to evaporation.

SWMU #1 consists of three man-made earthen basins connected in series. The first two basins are equipped with aeration pumps which are used to oxygenate the water. The last basin serves as a holding pond upstream of the evaporation ponds. The three basins are located adjacent to each other on a site measuring approximately 500 feet by 450 feet. Total hydraulic holding capacity is approximately 2 million gallons.

The aeration basins were constructed in 1987 and have been in continuous operation since that time.

4.0 SITE INSPECTION

During the week of March 23, 1998, an on-site inspection was performed. Photographs are included in the appendix to this report. Observations are noted as follows:

- The aeration basins were observed in active service treating effluent wastewater from the air strippers. Aeration pumps were observed running and the system was functioning normally.
- Berms and sidewalls were visually inspected on all three basins. All were found to be intact and stable. No erosion, damage, or sign of containment failure was observed. A dark mineral dust coating was observed around the interior perimeter of the basins.

- Native shrubs and grasses were observed growing around the perimeter of all basins. Downwind vegetation was also discolored by the dark mineral dust, but otherwise was not found to be distressed.
- Local soil in the vicinity of the aeration basins presented as bentonitic clays and silts. Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than 10⁻⁷ cm/sec.

5.0 DATA REVIEW

Soil samples from around the perimeter of the aeration basin site were collected and analyzed during the initial site investigation and a subsequent monitoring assessment. Samples were collected at multiple depths and at both upgradient and downgradient locations. Several borings were angled to collect samples from beneath the basins.

In 1991, the initial site investigation collected samples from six locations and four depths ranging from 4 to 16 feet below ground surface. Analysis found no detection of VOCs or SVOCs in any sample. Trace metals were detected in all samples; of which, six samples indicated levels slightly above ambient background concentration.

In 1996, monitoring samples were collected and analyzed. Six locations were sampled at depths ranging from 4 to 20 feet below ground surface. Analysis again found no detection of VOCs and SVOCs in 25 of the samples. However, two samples collected adjacent to the inlet aeration basin at a depth of 4 feet detected trace quantities of BTEX; of which, xylenes at 2.2 mg/kg was the highest detection. Confirmatory samples were subsequently collected and analyzed. One resample showed non-detect and the other detected trace ethylbenzene at 0.61 mg/kg.

State of New Mexico corrective action levels for BTEX in soil is 50 mg/kg total and 10 mg/kg of benzene. Three of 53 samples indicated trace BTEX, the highest of which was less than 5 mg/kg total; well below the 50 mg/kg action level.

6.0 ASSESSMENT

Based on the site inspection and data review, the aeration basins site is assessed as follows.

- The aeration basins are in active service, functioning normally, and performing the necessary task of oxygenating wastewater and stimulating biological activity.
- The aeration basins are properly designed and located in an appropriate geologic setting in which the underlying bentonitic soil has a very low hydraulic conductivity which effectively serves as an aquiclude.

- Trace detection of BTEX constituents near the sidewalls of the inlet aeration basin is common and predictable for this service: The absence of BTEX at depth and at all other locations is confirmatory of the highly impermeable characteristic of the confining soil. This location and low level of detection are indicative of no significant impact or migration.
- Trace detection of metals at levels slightly above ambient background concentration is likely due to normal soil variation.
- The no further action finding that was recommended by AES and approved by the EPA is appropriate for this site.
- The next soil monitoring event is scheduled for 2001. If this sampling and analysis confirms previous findings, further monitoring is unnecessary and should be discontinued.

7.0 PROFESSIONAL ENGINEER'S CERTIFICATION

This summary report for SWMU #1 has been prepared under the direct supervision and control of a Registered Professional Engineer.

Client: Ciniza Refinery Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

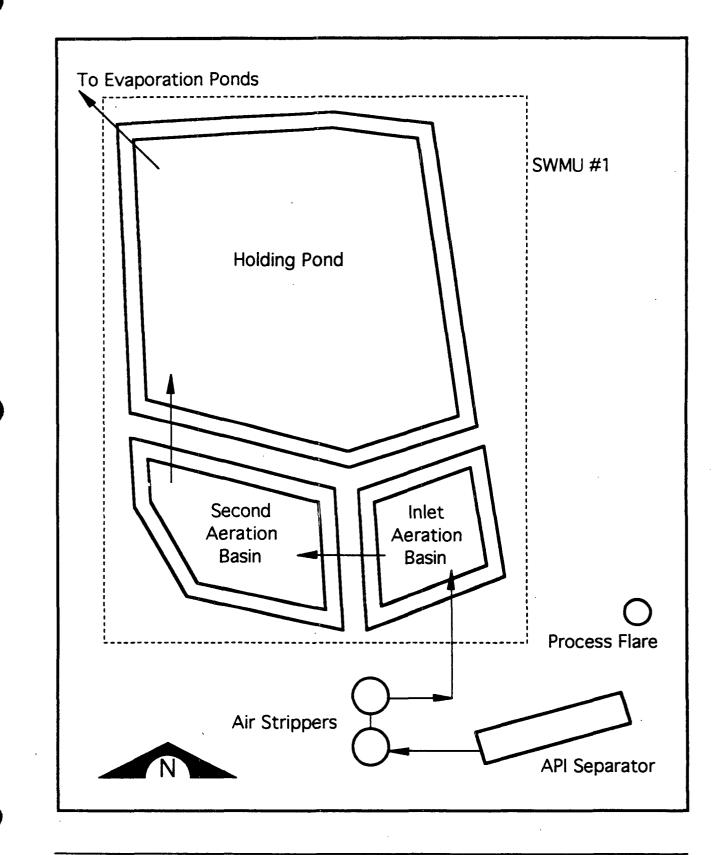
Job No.: 98-205-03

Date: April 23, 1998

Prepared and Certified by:

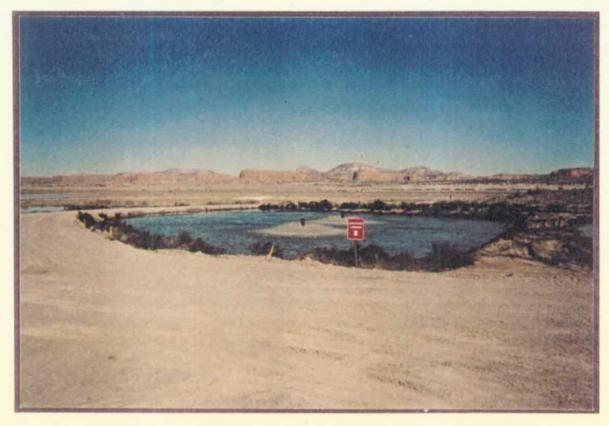
Thomas D. Atwood, P.E. Colorado Registration No. 22866

Figure No. 1 Aeration Basin Site

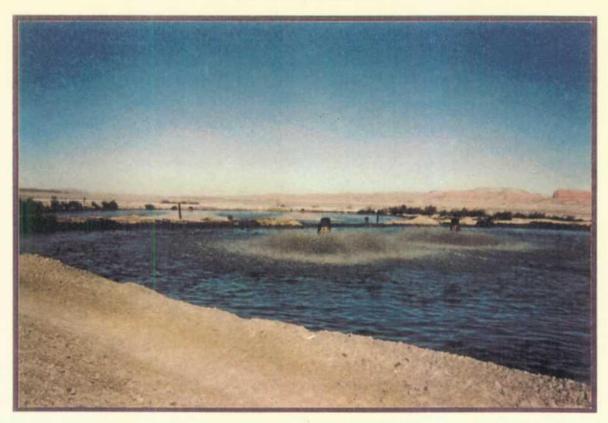


SWMU #1 Summary Report

Site Inspection Photographs



View of Aeration Basin



Close-up of Aeration Pumps

SWMU #1 Summary Report

Appendix

SWMU-1 AERATION LAGOONS





Route 3, Box 7 Gallup, New Mexico 87301

505. 722.3833

Mr. Benito Garcia, Bureau Chief New Mexico Environment Department Hazardous and Radioactive Materials Bureau 2044 Galisteo P. O. Box 26110 Santa Fe, New Mexico 87502

SUBJECT: QUARTERLY PROGRESS REPORT - 4th Quarter, 1996 and 1st Quarter, 1997

Dear Mr. Garcia:

March 20, 1997

Pursuant to Giant's <u>HSWA Permit Condition C.4., Page 11</u> and the May 31, 1990, <u>RFI</u> <u>Workplan Approval</u>, Giant Refining Company is submitting information for the fourth Quarter of 1996 and the first Quarter of 1997.

SWMU 6 - Tank Farm / Tank 569 :

A letter was submitted to Mr. Patricio Sanchez of the Oil Conservation Division (OCD) on November 25, 1996. The office of the HRMB was copied on this correspondence which addressed the borings completed between 8/22/96 and 9/9/96. Submitted with that letter were the following items: Boring Logs for borings 0643 through 0650, Well Installation Diagrams for OW-29 and OW-30, analytical results from soil and groundwater samples, and a site map indicating all borings done to date.

Free product and groundwater recovery from the Tank 569 area has begun. The boring originally identified as B-2 was completed as a well and designated as OW-27. This well is now called RW-1.

Giant has received verbal permission from the owner to do soil borings and sample groundwater on his property. This project is now in the planning stage. Boring Logs and analytical results will be forwarded to your office as soon as they are available.

SWMU1 - Aeration Lagoons :

As reported in the Quarterly Progress Report submitted 9/10/96, several samples taken at the perimeter of the Aeration Lagoons showed the possible presence of some volatile organic compounds. Confirmatory samples were taken on 2/18/97. The analytical results are provided with this report. One sample showed a small amount of ethylbenzene (below NM Groundwater Standards). All other results were Not Detected (ND).

SWMU 13 - Drainage Ditch :

As part of the "No Further Action" Approval with Modifications for SWMU -13 (Drainage Ditch), the EPA, in it's 8/24/94 correspondence to Giant, directed that additional sampling be performed every 5 years. The required samples were to be drilled at an angle with soil from the $6 - 6 \frac{1}{2}$ foot depth sent for analysis. Volatile Organic Compounds, Semi-Volatile Compounds, and metals were analyzed on the three samples taken. Enclosed are the analytical results for the first 5 year sampling event, which was performed 10/23/96. A diagram indicating the sample points is also enclosed. No volatile or semi-volatile compounds were detected. Metal results are comparable (or lower) that those found in the original RFI work.

If you have questions or concerns regarding this report, please do not hesitate to call me at (505) 722-0217 or Dorinda Mancini at (505) 722-0227.

"I certify under penalty of law that this document and all attachments were prepared under my direction to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sincerely

Prolice

David Pavlich, HSE Manager Giant Refining Company

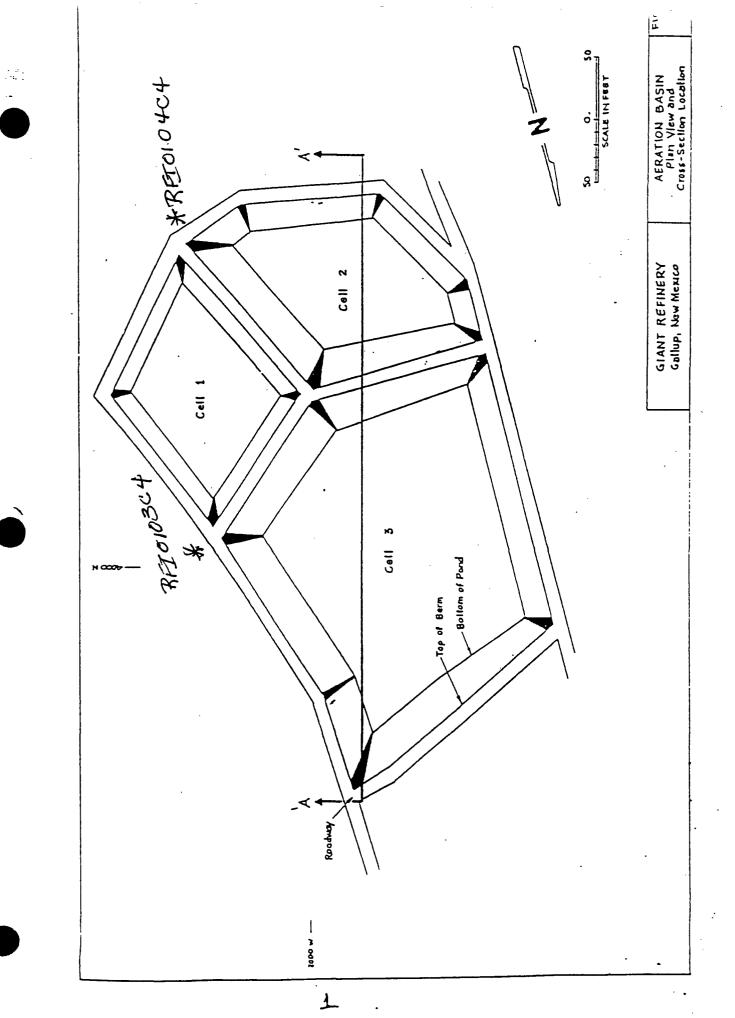
cc: Kim Bullerdick, Corporate Counsel, Giant Industries Arizona, Inc. Dick Platt, General Manager, Ciniza Refinery Dorinda Mancini, Environmental Manager, Ciniza Refinery Steve Morris, Environmental Specialist, Ciniza Refinery Patricio Sanchez, Petroleum Engineer, OCD

RFI1Q97

SWMU-1 AERATION LAGOONS ANALYTICAL RESULTS REFINING CO.

RFI QUARTERLY PROGRESS REPOR

4TH OTR. 96, IST OTR 97



EPA METHOD 8260 VOLATILE ORGANIC COMPOUNDS

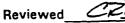
Parameter	•	Result	PQL	Units
Matrix:	Soil		Date Extracted: Date Analyzed:	02/28/97 03/03/97
Lab ID:	B970821		Date Received:	02/20/97
Project ID:	Ciniza		Date Sampled:	02/18/97
Sample ID:	RFI0103C4		Date Reported:	03/17/97
Client:	GIANT REFINING COMPANY	,		

Toluene Xylenes (total)	ND ND	0.5 mg/kg 0.5 mg/kg
QUALITY CONTROL - Surrogate Recovery	%	QC Limits
1,2-Dichloroethane-d4	110	70 - 121
Bromofluorobenzene	99	74 - 121
Toluene-d8	111	81 - 117

'D - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8260, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Rev. 1, November 1992.

Analyst E.O.



EPA METHOD 8260 VOLATILE ORGANIC COMPOUNDS

Client: Sample ID: Project ID: Lab ID: Matrix:	GIANT REFINING COMPANY RFI0104C4 Ciniza B970822 Soil		Date Reported: Date Sampled: Date Received: Date Extracted: Date Analyzed:	03/17/97 02/18/97 02/20/97 02/28/97 03/03/97
Parameter		Result	PQL	Units
Ethylbenzene Xylenes (total)		0.61 ND	0.5 0.5	mg/kg mg/kg
	ITROL - Surrogate Recovery	%	QC Limits	
1,2-Dichloroet		110	70 - 121	
Bromofluorobe Toluene-d8	nzene	107 112	74 - 121 81 - 117	

D - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8260, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Rev. 1, November 1992.

Analyst 🖻 0

Reviewed 27

EPA METHOD 8260 VOLATILE ORGANIC COMPOUNDS

Client:GIANT REFINING COMPANYSample ID:Trip BlankProject ID:CinizaLab ID:B970823Matrix:Water		Date Reported: Date Sampled: Date Received: Date Extracted: Date Analyzed:	03/10/97 02/18/97 02/20/97 NA 03/03/97
Parameter	Result	PQL	Units
Ethylbenzene	ND	5.0	ug/L
Toluene	ND -	5.0	ug/L
Xylenes (total)	ND	5.0	ug/L
QUALITY CONTROL - Surrogate Recovery	%	QC Limits	
1,2-Dichloroethane-d4	116	81 - 126	
Bromofluorobenzene	104	78 - 112	
Toluene-d8	100	83 - 127	

) - Not Detected at Practical Quantitation Level (PQL)

Reference:

Method 8260, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Rev. 1, November 1992.

Analyst E.D.

Reviewed_

LAB QA/QC EPA METHOD 8260 METHOD BLANK

Date Analyzed:03/03/97Lab ID:MBS97059Matrix:SoilDate Extracted:02/28/97

Parameter	Result	PQL	Units
Toluene	ND	0.2	mg/kg
Xylenes (total)	ND	0.2	mg/kg
QUALITY CONTROL - Surrogate Recovery	%	QC Limits	
1,2-Dichloroethane-d4	114	80 - 120	
Bromofluorobenzene	108	74 - 121	
. oluene-d8	124 #	81 - 117	

ND - Not Detected at Practical Quantitation Level (PQL) # - Surrogate Recovery not within control limits.

Reviewed_

Analyst E.O.

LAB QA/QC EPA METHOD 8260 WATRIX SPIKE / MATRIX SPIKE DUPLICATE SUMMARY

Date Analyzed:03/03/97Lab ID:0597H00821Matrix:SoilDate Extracted:02/28/97

Original Sample Parameters

Parameter	Spike Added (mg/kg)	Sample Result (mg/kg)	Spike Result (mg/kg)	MS Recovery %	QC Limits Rec.
1,1-Dichloroethene	12.5	0	8.58	69 *	75 .145
Benzene	12.5	0	10.4	83	71.120
Chlorobenzene	12.5	· 0	11.4	91	76.127
Toluene	12.5	0.33	13.3	104	71 -127
Trichloroethene (TCE)	12.5	0	10.6	85	75 -130
Duplicate Sample Parameters					

	Spike Added	MSD Result	MSD Recovery	RPD	QC Limi		C Limits
Parameter	(mg/kg)	(mg/kg)	%	%		RPD	Rec.
1,1-Dichloroethene	12.5	10.8	86	23	+	22	75.145
Benzene	12.5	12.3	98	17		24	71 -120
Chlorobenzene	12.5	13.1	105	14		21	76 .127
Toluene	12.5	15.8	124	17		21	71 -127
Trichloroethene (TCE)	12.5	12.7	102	18		21	75 .130

Note: Spike Recoveries are calculated using zero for Sample result if Sample result was less than PQL (Practical Quantitation Level).

Spike Recovery:1 out of10outside QC limits.RPD:1 out of5 outside QC limits.

Analyst E.D.

Reviewed_

Inter · Mountain Laboratories. Inc.



Date Analyzed:	03/03/97
_ab ID:	LCS97059
Matrix:	Soil
Date Extracted	02/28/97

Parameter	Spike Added (mg/kg)	Sample Result (mg/kg)	LCS Result (mg/kg)	LCS Recovery %	QC Limits Rec.
1,4-Dichlorobenzene	2.0	0	2.4	120	70 -130
1,1,2-Trichloroethane	2.0	0	2.2	110	70 -130
1,2-Dibromoethane (EDB)	2.0	0	1.6	80	70 -130
1,2-Dichloroethane	2.0	0	2.4	120	70 -130
1,2-Dichloropropane	2.0	0	1.7	85	70 -130
Benzene	2.0	0	2.0	100	70 -130
Bromoform	2.0	0	1.7	85	70 -130
n Tetrachloride	2.0	0	1.9	95	70 -130
3-Dichloropropene	2.0	0	2.2	110	70 -130
Tetrachloroethene (PCE)	2.0	· 0	1.8	90	70 -130
Trichloroethene (TCE)	2.0	O .	2.1	105	70 -130
Vinyl Chloride	2.0	0	2.9	145 *	70 -130

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
Bromofluorobenzene	109 113	74 -121 70 -121
1,2-Dichloroethane-d4 Toluene-d8	118 #	81 -117

Spike Recovery:	1 out of 12 outside QC limits.	
Surrogates:	Surrogate Recovery affected by Matrix Effect.	

Reviewed

Analyst E.D.

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☐ 1701 Phillips Circle Gillette, Wyoming 82718 Telephone (307) 682-8945					Sur									5260	5460	Time			Resamp	-
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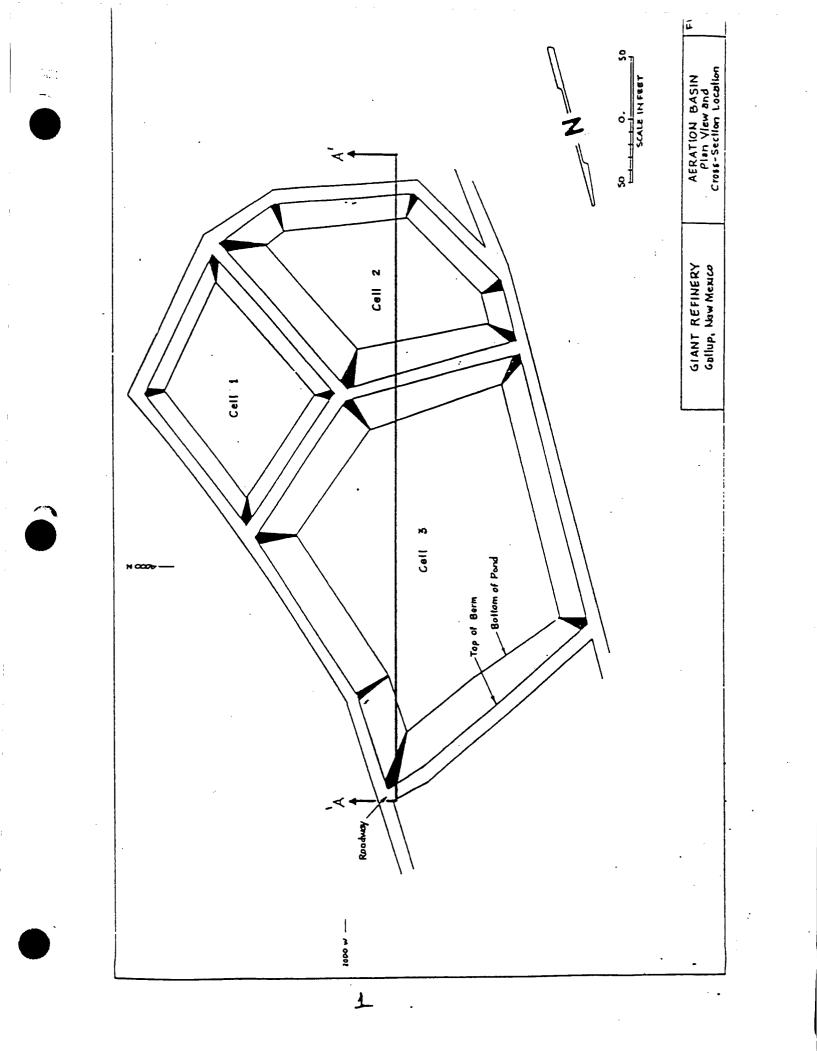
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I.

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MATERIAL REQUISITION NOT A PURCHASE ORDER

SUGGESTED VENPORS 001 \mathbf{S} neering

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Nº 17722 Mar 97 DATE

PURCHASE ORDER NUMBER ISSUED: _

QUAN.	UNIT	DESCRIPTION		UNIT PRICE	AMOUNT	г
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		NOTE: GIVE FULL DESCRIPTION PART NUMBER, CATALOG MODEL AND SERIAL NUM	NUMBER, BRAND NAM	1E,		
REQU	ESTED BY	Deurla Mancini	DELIVER TO:			
	UNT NO./ NO.:	997-9801-07	FOR USE AT:			
	OVED BY:	op	PRIOR CODE: E	1 2	3	
HAVE	YOU CHE	CKED THIS REQUISITION FOR REAL NEED?	NO LATER THAN DATE:			
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PRECISION ENGINEERING, INC.

P.O. BOX 422 • LAS CRUCES, NM 88004 Ph: (505) 523-7674
 FAX: (505) 523-7248 • E-mail: werpei@aol.com

Invoice: 6342

Ms. Dorenda Mancini Giant Refining Company Route 3, Box 7 Gallup, NM 87301 Terms: Please Pay upon Receipt Date: February 28, 1997

Project: February 1997 Sampling Event, Ciniza Refinery File: 97-015

Quantity	Description	Unit	Extension
	Charges thru February 28, 1997		
5.75 Hours	Mobilization	\$120.00	\$682.50
1.50 Hours	Standby	\$145.00	\$217.50
3.75 Hours	Sampling as Required	\$145.00	\$543.75

 Project Total:
 \$1,443.75

 New Mexico Gross Receipts Tax (@ 6.375%):
 \$92.04

 \$1,535.79

Per Diem: 2 Men/Day \$120.00 Total Now Due: \$1,655.79

We Appreciate Your Business

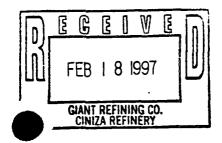
SUBSURFACE MODELING GEOTECHNICAL INVESTIGATIONS

MATÉRIALS TESTING LABORATORY ENVIRONMENTAL MONITORING SYSTEMS

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I.

	-97 TUE 12:25 IML CORPORATE	Fax No. 3076729	845	P. 02
	***** INVOIC	CB *****		PAGE: 1
	NTER-MOUNTAIN LABORATORIES, INC.	INVOICE N	UMBER: 00343	312-IN
Р.	.O. BOX 4006 HERIDAN, WY 82801		DATE: 11/22	
(3	307) 674-7506		CATION:0000 gton, NM	
	iant Refining Company t #3, Box 7	CUSTOM CUSTOMER	ER NO: 03-00 P.O.:	00799
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یہ ہے ہے ہے ہو	Attn: Sto DESCRIPTION COC# 37869, Ciniza Rcd: 10/25/96 Lab#0396 G2343-234	QUANTITY		
ALES CD	Attn: Ste D DESCRIPTION COC# 37869, Ciniza Rcd: 10/25/96 Lab#0396 G2343-234 PS# 574	QUANTITY	PRICE	AMOUNT
ALES CD	Attn: Ste D DESCRIPTION COC# 37869, Ciniza Rcd: 10/25/96 Lab#0396 G2343-234 PS# 574 BETX-Soil	QUANTITY	PRICE	AMOUNT
ALES CD 301700 199999	Attn: Ste D DESCRIPTION COC# 37869, Ciniza Rcd: 10/25/96 Lab#0396 G2343-234 PS# 574 BETX-Soil Analytical Suite 8260(Including Extraction)	QUANTITY 2.0 3.0	PRICE 50.00 202.50	AMOUNT 100.00 607.50
ALES CD 301700 199999	Attn: Ste D DESCRIPTION COC# 37869, Ciniza Rcd: 10/25/96 Lab#0396 G2343-234 PS# 574 BETX-Soil Analytical Suite 8260(Including Extraction)	QUANTITY 2.0 3.0 3.0	PRICE 50.00 202.50 85.00	AMOUNT 100.00 607.50 255.00
ALES CD 301700 199999 650 650	Attn: Ste D DESCRIPTION COC# 37869, Ciniza Rcd: 10/25/96 Lab#0396 G2343-234 PS# 574 BETX-Soil Analytical Suite 8260(Including Extraction) TCLP Metals Analysis TCLP Metals Extraction	2.0 2.0 3.0 3.0 3.0 3.0	PRICE 50.00 202.50 85.00 60.00	AMOUNT 100.00 607.50 255.00 180.00
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****THIS IS A DUPLICATE INVOICE****

NET INVOICE:

OK

2,958.30

(TENTATIVE) OCD INSPECTION 4-29 MON -BALL, PUMP & SAMPLE OW 16, 25, 26 PUMP mwd, ows, 7 -17 4-30 TUES -SAMPLE MW-4, OWS, 7 PUMP OW 1, 2, 9, +10) 5-1 WED -SAMPLE OWI, Z,9 + 10 INSPECT 5-2+3 THU + FRI OPEN (FINISH INSPECTION, SAMPLE 0w12,13,14,20) RFI PHASE I +I MON, MAY 6 - Swmo #8 - 2 samples 1-11/2' + DUPLICATE, I TRIP BEANK SWMU #6 - TANIL #54, 453 11-11/2' #568 - 11-11.12 OUT DIKE ON #567 FOR TUESDAY (TUES) MAY 7 - SAMPLE #567-11-11/2' (-1-DOPLICATE) (1DUP) (EAPT RINSE) # 569-(2 sample points) 11-11/2' 8.3.51 (TRIP BLANK) #570- 11-11/2' # 571_ (WED) MAY 8- Samueto 2 sampits @ 15-15/7 (I DUPLICATE + 1 GOOD BEANK) (SLUDGE PIT) VISUAL @ 191 (STEAM BUCKET @ 12.13') I VISUAL ON 3rd HOLE @ 15-151, VISUALE 18' SEPARATE SAMPLE OF BLACK SLUDGE FOR INSITU REMEDIATION ~ /gt.

#13 mat9 Samo 4 polec 2-21/2 + 4-41/2 1-DUPLICATE 8-samples 1- TRIP BLANK 1 EQUIPMENT MAY 10,13,15 START SWMU # 2 - TAKE PROBABLY THREE DAYS 12 VERTICAL, 6 ANgle - 31/2-4, 5-51/2, 61/2-7 (54 SAmples) (3 DUPLICATES, ZEQUIP BLANKS, 3 TRIP BLANKS MAY-14 KRAMER AIR SAMPLING MAY 16'-' SMWU #1 AERAMON LAGOONS f vertical z Angle (3 DAYS) 4-41/2 , 9-91/2 , 11-111/2 , 14-141/2 24 SAMPles 2EQU BLANKS , 3 TRIP BLANKS . . . 2 OUPLICATES

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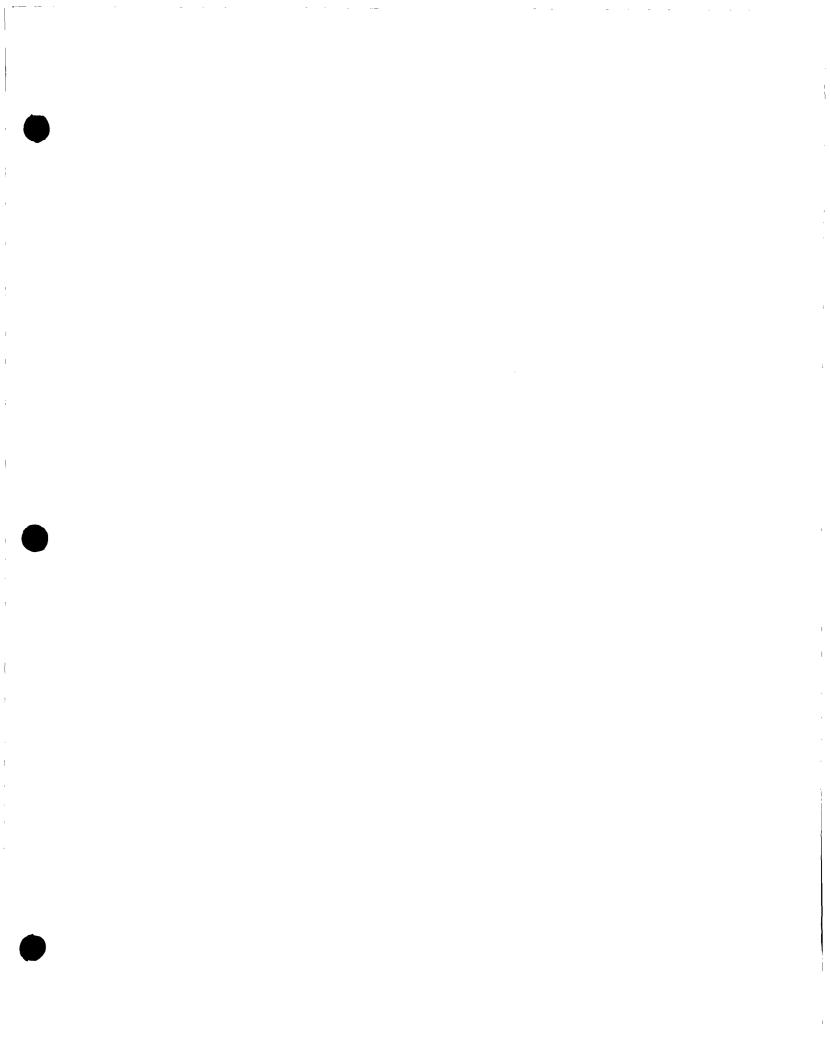
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	FACSIMILE TRANSMITT	AL ,				
UNITE	D STATES ENVIRONMENTAL PE	ROTECTION AGENCY				
	1445 BOSS AVENUE					
	DALLAS, TEXAS 75202-2733					
BANK ANOTECTE	MULTIMEDIA PERMITTING AND PLAN					
	NEW MEXICO AND FEDERAL FACILITY	ES SECTION				
	PLEASE PRINT IN BLACK INE ONLY					
TO: Ed Horst, Em	vironmental Manager - Clant Refining Con	upany, Ciniza				
MACHINE NUMBER: 505.722.0210	VERIFICATION NUMBER: 505.712.0227					
FROM: James A. Harris, Jr., RCRA F	ncility Manager/Geologist					
PHONE: (214) 665-8302	Mail Codes 6PD-N					
OFFICE: New Maxico/Federal Facilit	les Section	PAGES, INCLUDING COVER SHERT				
DATE: March 15, 1996						
	PLEASE NUMBER ALL PAGES					
INF	URMATION FOR SENDING FACSIMILE MESSAC	RS				
KUUTPMENT:	FACSIMILE NUMBER:	VERIFICATION NUMBER:				
PANAFAX UF-766	(214) 665-6762	(214) 665-6760				
COMMENTS						
E4.						
Hare's what I have been using to track Ginat, C	Inim's corrective action program. Planse perior and I	at's discuss it best week. Have a good one.				
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Prepared by: James A. Harris, Jr.\OMPN as at March 13, 1996	Secondary Oil Skimmer (11)	Fire Training Area (4)	Landfill Areas (7)	Old Burn Pit (8)	Empty Container Storage Area (5)	The Drainage Ditch between APIs Evaporation Ponds and the Neutralization Tank Evaporation Ponds (14)	Contact Waste Water Collection System (CWWCS)	The Evaporation Ponds (2)	The Aeration Basin (1)
996	3	3	3	2	Phase III	2	-	3	Phase II
	Under VCA	Under VCA	a Voluntary Corrective Action (VCA) Plan to cap the "Landfill Areas" was submitted in March 1993.			soil and groundwater sampling every five years	Inspection every 5 years beginning 1996	2	soil and groundwater sampling every five years
	discolored soil is the natural color; there is no hydrocarbon staining or odors detected; reference to "black fill" sand is actually "back fill"		EPA approved the VCA Plan on January 5, 1994 but required that additional soil borings be completed prior to Giant proceeding with the capping activities		7	Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process		Survey and closure certification must be submitted prior to initiating Class III Permit Mod process	RFI PHII RPT APP 1/94 w/modifications; Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process

5057220210;# 3/ 3

-9125H 3 :37PM ; MATE: 6 Haz Haster

SENT BY:



(TENTATIVE) OCD INSPECTION 4-29 MON -BALL, PUMP & SAMPLE OW 16, 25, 26 PUMP mwd, ows, 7 1 4-30 TUES -SAMPLE MW-4,0W5,7 PUMP OW 1, 2, 9, +10) 5-1 WED-SAMPLE OWI, Z,9 + 10 INSPECT 5-2+3 THU + FRI OPEN (FINISH INSPECTION, SAMPLE 0w12,13,14,20) RFI PHASE I +II **.** . MON, MAY 6 - Swno #8 - 2 samples 7-11/2' + DUPLICATE, I TRIP BEANK SWMU #6 - TANIC #54, 453 11-11/2' #568 - 11-11/2 ····· CUT DIKE ON #567 FOR TUESDAY (TUES) MAY 7 - SAMPLE #569-11-11/2' (-1-DOPLICATE) (100P) (EQAT RINSE) # 369-(2 sample points) 11-11/2' (TRIP BLANK) #570- 11-11/2' 8.3.51 #_571__ (WED) MAY 8-2 SAMPLES @ 15-15"/-Samo #10 (I DUPLICATE + (SLUDGE PIT) VISUAL @ 181 (STEAM BUCKET @ 12.13') I VISUAL ON 3rd HOLE @ 15-151 VISUAL@ 18' OF BLACK SLUDGE SEPARATE SAMPLE FOR INSITU REMEDIATION ~ /gt.

1010 410 mAt 9 Swm0 #13 4 polec 2-21/2 + 4-41/2 1-DOPLICATE 8-samples 1- TRYPBEANK 1 EQUIEMENT START SWMU # Z - TAKE PROBABLY MAY 10,13,15 THREE DAYS 12 VERTICAL, 6 ANGle - 31/2-4, 5-51/2, 61/2-7 (54 SAmples) (3 DUPLICATES, ZEQUIP BLANKS, 3TRIPBLANKS KRAMER AIR SAMPLING MAY -14 MAY 16'7,20 + vertical z Angte SMWU #1 AERAMON LALOONS (3 DAYS) 4-41/2 , 9-91/2 , 11-111/2 , 14-111/2 24 SAMples 2EQU BLANKS , 3 TRIP BLANKS 2 OUPLICATES

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	FACSIMILE TRANS	MITTAL ,			
UNIT	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 6 1445 ROSS AVENUE DALLAS, TEXAS 75202-2733				
And when the	MULTIMEDIA PERMITTUNG AN	d planning division			
	NEW MEXICO AND PEDERAL I	ACILITIES SECTION			
	PLEASE PRINT IN BLACK INE ONLY	r			
TO: Ed Horst, E	evironmental Manager - Ciant Refin	ing Company, Ciniza			
MACHINE NUMBER: 505.722.0210	VERIFICATION NUMBER: 505.721	0227			
FROM: James A. Harris, Jr., RCRA	Facility Manager/Geologist				
PHONE: (114) 665-8302	Meil Codet (PD-N				
OFFICE: New Maxice/Federal Faci	lities Section	PAGES, INCLUDING COVER SHERT			
DATE: March 15, 1996					
	PLEASE NUMBER ALL PAGES				
INFURMATION FOR SENDING FACSIMILE MESSAGES					
EQUIPMENT:	FACSIMILE NUMBER:	VERIFICATION NUMBER:			
PANAFAX UF-766	(214) 665-6762	(214) 445-6760			
COMMENTS					

Ed.

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Thanz,

JAMES

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Prepared by: James A. Harris, Jr.\60091 as at March 13,			•			13:	2:		**
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SENT BY:

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June 28, 1994

Rich Mayer U.S. Environmental Protection Agency Region VI 1445 Ross Avenue, Suite 1200 Dallas, Texas 75202-2733

Re: Quarterly Progress Report

Dear Mr. Mayer:

Pursuant to requirements of the HSWA Permit, Condition C.4., Page 11 and the May 31, 1990 RFI Workplan approval, Giant Refining Company - Ciniza (Giant) submits the <u>Quarterly Progress Report</u> for the second quarter of 1994.

Giant has completed piping modifications to the "Railroad Rack Lagoon" (SWMU #8) system and is presently evacuating the remaining water from the lagoon and disposing of it in the process wastewater system. As soon as it is feasible, Giant will sample the SWMU as required and begin bioremediation activities.

Giant is soliciting proposals for the survey requirement of SWMUs #1, 3, 8, 9 and 13.

Giant is also developing a scope and estimate of expense to further characterize SWMUs #4, 5, 6, 7, 10, and 11 and expects to complete that sampling during the third quarter of 1994.

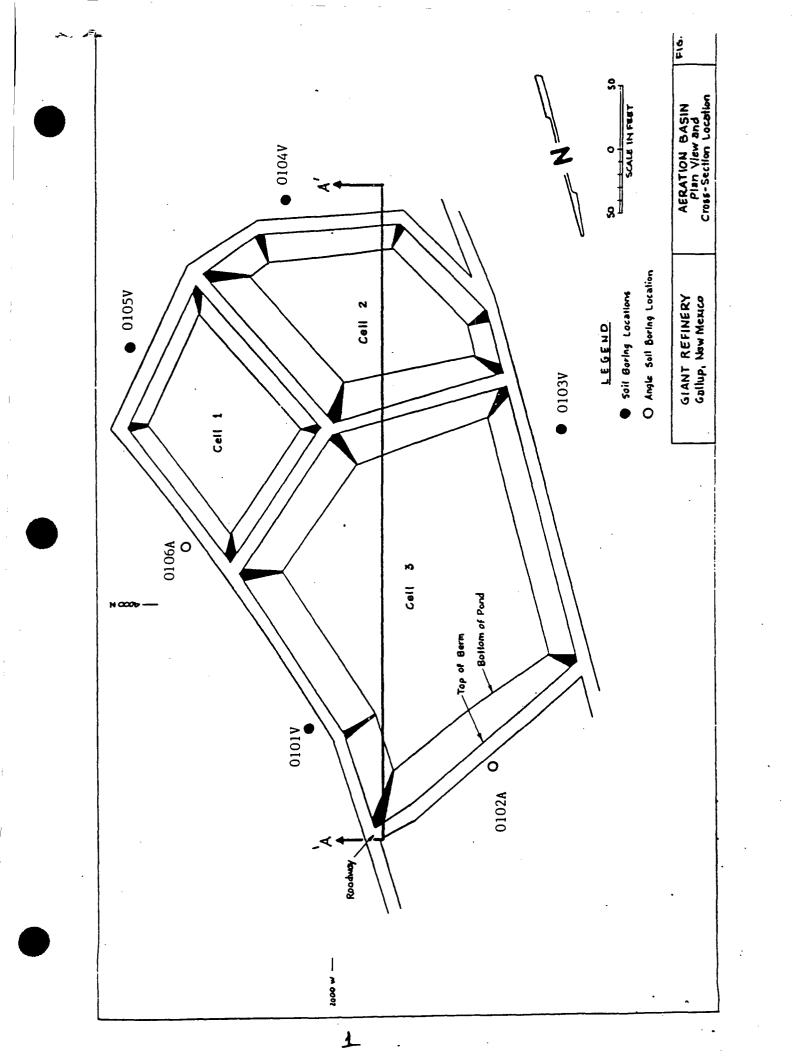
If you require additional information, please contact Lynn Shelton, of my staff, at (505) 722-0227.

"I certify under penalty of law that this document and all attachments were prepared under my direction to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false

REFINING CO

Route 3, Box 7 Gallup, New Mexico

87301 505 722-3833





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6 1445 ROSS AVENUE, SUITE 1200 DALLAS, TX 75202-2733

Augūst 24, 1994



Mr. Lynn Shelton Senior Environmental Coordinator Giant Refining Company Route 3, Box 7 Gallup, NM 87301

Dear Mr. Shelton:

The Environmental Protection Agency (EPA) has reviewed your letter dated August 2, 1994, concerning additional RFI sampling requirements at solid waste management unit (SWMU) #1, the Aeration Basin; #2, the Evaporation Pond; and #13, the Drainage Ditch. In your letter, you propose to conduct soil and groundwater sampling every five years as opposed to the biennial sampling requirement detailed in the EPA's January 7, 1994 letter.

The EPA has reassessed your Phase II RFI Report and hereby approves your request to sample SWMUs 1, 2, and 13 every five years. Sampling shall begin in 1995 and reports shall be submitted to the EPA by December 31 of each sample year. As a reminder, a survey plat must be completed for SWMUs 1, 2, and 13 and submitted to the EPA for review and approval. Giant shall also initiate a Class 3 permit modification to terminate the RFI/Corrective Measures Study process for these SWMUs within three months of receipt of this letter.

Please contact Nancy R. Morlock of my staff at (214) 665-6650 if you have any questions or require additional information.

Sincerely yours,

William K. Honker, P.E., Chief RCRA Permits Branch

cc: Ms. Kathleen Sisneros, Director Water and Waste Management Division New Mexico Environment Department





Route 3, Box 7 Gallup, New Mexico 87301

505 722-3833

August 2, 1994

Allyn M. Davis United States Environmental Protection Agency Region VI 1445 Ross Avenue Suite 1200 Dallas, Texas 75202-2733

Re: Additional RFI Sampling

Dear Mr. Davis:

In the letter from you dated January 7, 1994 (copy enclosed), Giant Refining Company - Ciniza (Giant) received EPA's approval of Giant's recommendation of "No Further Action" on SWMU #1, the Aeration Basin; SWMU #2, the Evaporation Pond; and SWMU #13, the Drainage Ditch. The agency's approval of the "No Further Action" recommendations was accompanied with several additional requirements.

The additional requirements were to repeat the sampling protocol set forth in the approved RFI Sampling Plan (May, 1990) biennially. This additional sampling is intended to monitor potential migration of hazardous constituents from these SWMUs during the duration of their active service.

Giant understands the logic of continued sampling to document potential migration but has some reservations about the frequency of sampling and the true potential for migration of hazardous constituents.

It was determined in the RFI sampling (1990-1992) that migration of hazardous constituents had not occurred in any of the previously mentioned SWMUs and that water saturation had not occurred below five feet. This observation, coupled with the fact that hazardous constituents are not released to the three SWMUs, indicates that future contamination due to migration of hazardous constituents is virtually impossible.

Based on this knowledge, Giant proposes to sample SWMUs #1, #2, and #13, using the protocol set forth in the approved RFI Sampling Plan, every five years, beginning in 1995, with annual reports due on December 31 of the sample year. This sampling will adequately demonstrate migration, if any, of hazardous constituents. Giant appreciates your prompt attention to this proposal, as this will expedite completion of any responsibilities of Giant to fully characterize and monitor SWMUs #1, #2, and #13.

If you require additional information, please contact me at (505) 722-0227.

Sincerely,

Lynn Shelton Senior Environmental Coordinator Giant Refining Company

TLS:sp

CC	w/attachment:

David C. Pavlich, Giant Kim Bullerdick, Giant Rich Mayer, USEPA Kathleen Cisneros, NMED

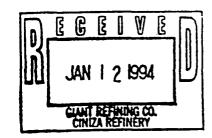


UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.



REGION 6 1445 ROSS AVENUE, SUITE 1200 DALLAS, TX 75202-2733

JAN 0 7 1994



CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Mr. John J. Stokes, Manager Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

RE: RFI Phase I and Phase II Supplemental Reports and Voluntary Corrective Action Plan Giant Refining Co. <u>NMD000333211</u>

Dear Mr. Stokes:

The Environmental Protection Agency (EPA) hereby approves your RCRA Facility Investigation (RFI) Phase I Supplemental Report, dated October 21, 1991, with the enclosed list of modifications. Your Corrective Action Plans (CAPs) for the Sludge Pits and the Railroad Rack Lagoon, submitted in November and December, 1992, respectfully, are also approved with the enclosed list of modifications.

The EPA is requiring that additional monitoring be completed at several sites. An annual report detailing the monitoring results shall be submitted to the EPA by December 31, 1994, and each year thereafter. The EPA is also requiring that additional soil sampling be completed at the Sludge Pits and the Tank Farm. Sampling results shall be submitted to the EPA by October 1, 1994. Further information concerning the additional monitoring and sampling requirements may be found in the attached list of modifications.

If you have any further questions or need additional information, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

allyn m Dows

Allyn M. Davis, Director Hazardous Waste Management Division (6H)

Enclosure

cc: Kathleen Sisneros, NMED

APPROVAL WITH MODIFICATIONS RFI PHASE I SUPPLEMENTARY REPORT RFI PHASE II REPORT AND THE VOLUNTARY CORRECTIVE ACTION PLANS

The Environmental Protection Agency (EPA) has completed a technical review of Giant Refining's RCRA Facility Investigation (RFI) Phase I Supplementary Report; RFI Phase II Report; and voluntary Corrective Action Plan (CAP) for the Sludge Pits and Railroad Rack Lagoon. The subject reports are hereby approved with the following comments and modifications.

GENERAL COMMENTS

SWMU 1, The Aeration Basin; SWMU 2, The Evaporation Pond; and SWMU 13, The Drainage Ditch

The EPA agrees with the finding of no further action for Solid Waste Management Units (SWMUs) 1, 2 and 13. The EPA is, however, requiring periodic monitoring of these SWMUs (see below under Modifications). However, this approval is contingent upon the completion of a survey plat for these SWMUs. The survey plats shall be completed in accordance with the requirements set forth in 40 CFR 264.116. Giant shall submit copies of the completed survey plats to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for these SWMUs.

SWMU 6, The Tank Parm

The EPA disagrees with Giant on their recommendation of no further action. Sampling results indicate that 9 of the 13 samples taken at the 11 foot interval (the deepest interval sampled) contained elevated levels of BTEX constituents. One sample at the 16 foot interval also contained elevated BTEX levels. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 8, The Railroad Rack Lagoon, Overflow Ditch and Fan Out Area The EPA agrees with the finding of no further action for this SWMU. The EPA understands that Giant has elected to perform voluntary corrective measures at this unit which will include bioremediation of the wastes with periodic soil and waste monitoring. Giant's voluntary bioremediation should reduce the volume and toxicity of the wastes while continuing to periodically monitor the SWMU. The EPA will, however, require that additional monitoring be completed (see below under Modifications). The EPA is also requiring that a survey plat be completed for this SWMU. The survey plat shall be completed in accordance with the requirements set forth in 40 CFR 264.116. Giant shall submit a copy of the completed survey plat to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for this SWMU.

SWMU 6, The Railroad Rack Lagoon

Giant shall take 5 soil borings within the lagoon after it has ceased receiving wastes. Three (3) of the five (5) borings must be sampled at the 0-1 foot interval. All borings must be sampled at the 5-6 foot interval, the 10-11 foot interval, and the 14-15 foot interval. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Sampling results shall be included in the 1994 Annual Monitoring Report.

Additionally, all six (6) borings required under the CAP closure (Section 5.0) must be sampled at the 5-6, 10-11, and 14-15 foot interval. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Sampling results shall be included in the appropriate Annual Monitoring Report.

Monitoring requirements under the voluntary CAP shall be submitted to EPA in the appropriate quarterly progress report. Giant shall notify the EPA when final closure of the Railroad Rack Lagoon has been initiated.

Continuation of SWMU 6, The Overflow Ditch

Giant shall complete three (3) soil borings in the Overflow Ditch after closing the Railroad Rack Lagoon. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. All results shall be included in the 1994 Annual Monitoring Report.

Continuation of SWMU 6, The Fan Out Area

Giant shall complete four (4) soil borings in the Fan Out Area after closure of the Railroad Rack Lagoon has been completed. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. Results shall be included in the 1994 Annual Monitoring Report.

SWMU #12, Contact Waste Water Collection System (CWWCS)

Giant shall perform an inspection of the CWWCS every five years beginning in calendar year 1996. The inspection shall be identical to the one performed in the previous RFI. If better technological equipment is developed, Giant may request that an alternative method be used. Results shall be included in the appropriate Annual Monitoring Report.

SWMU 9, The Sludge Pits

Giant shall complete soil borings as close as possible to sampling points 6 and 7 (numbers correspond to previous RFI sampling points, completed in May, 1991). Sampling intervals shall be at 18.0 -19.0 foot and 24.0 - 25.0 foot. Sampling procedures and analytical constituents shall be identical to those required in the previous

SWMU 9, The Sludge Pits

The EPA is unable to approve Giant's finding of no further action for this SWMU. Two (2) soil samples collected at the 15 foot interval (the deepest interval sampled) contained semivolatile contaminants. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications). Giant may begin the voluntary bioremediation (see SWMU #8 voluntary corrective action) under the CAP after the deeper soil samples have been completed.

MODIFICATIONS

SWMU 1, The Aeration Basin

Giant shall take soil samples around the Aeration Basin every two (2) years beginning in calendar year 1994. Sampling requirements shall be identical to those performed during the previous RFI, except that all soil borings shall be angled and an additional sample shall be collected at the 20-21 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

SWMU 6, The Tank Farm

Giant shall complete additional soil borings as close as possible to the following sample points (numbers correspond to previous RFI sampling points completed in May, 1991): 21, 22, 23, 25, 26, 27, 30, and 31. The sampling interval shall be at 16 feet, with the exception of sample point 31 which shall be sampled at 20 feet. Samples shall be analyzed for BTEX constituents. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to EPA by October 1, 1994.

SWMU 2, Evaporation Ponds

Giant shall monitor the seven (7) groundwater wells around the evaporation ponds biannually for the same constituents monitored for in the original RFI. Results shall be included in the Annual Monitoring Report.

SWMU 13, Drainage Ditch between APIs Byaporation Ponds and <u>Neutralization Tank Byaporation Ponds</u>

Giant shall conduct soil sampling around the Drainage Ditch every two (2) years, with sampling beginning in calendar year 1994. Sampling procedures and analytical constituents shall be identical to those required in the RFI, except that all soil borings shall be angled and an additional interval shall be sampled at from 6.0-6.5 feet. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

RFI. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to the EPA by October 1, 1994.

Before final closure of the West Pit under the CAP, all soil borings shall be sampled at the 18.0 - 19.0 and 24.0 - 25.0 foot intervals. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Four (4) soil borings shall also be completed (before closure) in the East Pit using the same requirements specified for the West Pit borings. Results shall be included in the appropriate Annual Monitoring Report.

Monitoring requirements under the voluntary CAP shall be submitted to EPA in the appropriate quarterly progress report. Giant shall notify the EPA when final closure of the Sludge Pits has been initiated.

Soil Boring Logs: The EPA has included an example of a soil boring log to be used for all future borings.

information, including the possibility of fine and imprisonment for knowing violations."

Sincerely, John Stokes

Refinery Manager

JJS/TLS:sp

cc: Kim Bullerdick, Corporate Counsel Giant Industries Arizona, Inc.

> David Pavlich, Health/Safety and Environmental Manger Giant Refining Company

INTEROFFICE MEMORANDUM

DATE: February 3, 1994

TO: David Pavlich Kim Bullerdick

FROM: Lynn Shelton 748

SUBJECT: RCRA Facility Investigation - Additional Requirements

I. Introduction

Giant Refining Company - Ciniza (Giant) performed a RCRA Facility Investigation (RFI) in three phases (I, II, and III) over three years (1990, 1991, and 1992).

Using the analytical results of those three sampling events, Giant submitted four corrective action plans and eight "No Further Action" proposals to Region VI, United States Environmental Protection Agency (EPA).

Correspondence from the EPA (1-7-94) indicated approval of the corrective action plans (with additional requirements) for three Solid Waste Management Units (SWMUs), for RFI reports Phase I, II, and III and assigns a deadline for submittals of additional data.

The additional sampling and reporting requirements, some of which are redundant and unnecessary, are the focus of this correspondence. In the following pages, the scope and cost of the additional sampling requirements will be presented.

Some explanation of a potential problem is in order. The SWMU identification numbering sequence is inconsistent. In discussing the draft letters with Rich Mayer, of Region VI EPA, the discrepancy in reference to the SWMU numbers was mentioned. Mr. Mayer responded that the correct SWMU numbers were taken from the HSWA Permit (Section C, Corrective Actions for Continuing Releases, 5.(a)(1)). Giant had used the numbering sequence from the approved RFI Workplan (revised May 17, 1990). As shown in Table 1, there are discrepancies in all three sequences. Giant should propose to use the numbering sequence identified in the revised RFI Workplan to avoid confusion with the numbering sequence of SWMUs and sample numbers already reported.

Table 2 presents an overview of the status of the SWMUs.

TABLE 1

SWMU IDENTIFICATION

RFI WORK	PLAN HSWA	EPA	Letter	R SWMU
1	1		I	Aeration Basin
2	2		2	Evaporation Ponds
3	5		5	Empty Container Storage
4	8		8	Burn Pit
5	7		7	Four Landfills
6	3		6	Tank Farm
7	4		4	Fire Training Area
8	6		8	Railroad Rack Lagoon
9	10 & 13		-	Inactive Land Treatment
10	9		9	Two Sludge Pits
11	11	1	1	Secondary Oil Skimmer
12	14	1	.3	Wastewater Collection
13	14	1	.3	Drainage Ditch

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TABLE 2

STATUS - INDIVIDUAL SWMU

<u>Caps</u>:

- * Railrack Lagoon
- * Sludge Pits
- Fire Training Area
- * Landfills

No Further Action:

- ****** Aeration Basin
- ****** Evaporation Ponds
- ** Drainage Ditch Tank Farm ** Empty Container S
- ** Empty Container Storage Old Burn Pit Secondary Oil Skimmer
- *** Inactive Land Treatment

* Accepted by EPA with Additional Requirements ** "No Further Action" Approved by USEPA

*** Not Addressed in Correspondence



Discussion

A discussion of additional requirements, by SWMU, follows. Included, as Figures 1 to 12, are drawings of the SWMUs with individual sample points.

<u>SWMU #1</u> - Aeration Lagoon

EPA approved Giant's proposal for "No Further Action". Although Giant demonstrated that no significant migration of hazardous constituents had taken place, EPA requires biennial sampling that duplicates the original RFI sampling. This is redundant and expensive. Giant should propose either a five year sampling rotation or a phased-in plan (of six sample locations, sample two biennially until all samples are taken, then start again). These sampling plans will diminish the costs considerably and still provide documentation that migration has not occurred.

EPA also requires a survey plat of the SWMU. Giant agrees that this is a reasonable requirement.

<u>SWMU #2</u> - Evaporation Ponds

EPA has also approved Giant's proposal for "No Further Action" of this SWMU. EPA requires that Giant sample the seven groundwater wells (MW-4, OW-1, OW-2, OW-5, OW-7, OW-9 and OW-10) biennially for the same constituents as monitored for in the RFI sampling event. Giant may wish to propose a five year sampling rotation.

<u>SWMU #3</u> - Empty Container Storage Area

EPA approved Giant's proposal for "No Further Action" for the SWMU, requiring only that Giant provide a survey plat.

SWMU #4 - Old Burn Pit

EPA does not approve Giant's proposal for "No Further Action". Three borings at six and ten feet will be required to characterize constituent migration in this SWMU.

<u>SWMU #5</u> - Landfill Areas

EPA requires that additional borings, at eleven, sixteen and twenty feet to fully characterize contamination.

<u>SWMU #6</u> - Tank Farm

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. EPA requires seven additional borings to sixteen feet and one additional boring to twenty feet to fully characterize contamination. When Giant performed supplemental sampling of this SWMU in 1991, it was anticipated that further sampling would be required.

<u>SWMU #7</u> - Fire Training

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. Two additional angle borings to seven and eleven vertical feet are required. Additional sampling was anticipated when this SWMU was sampled in 1992, although I question why we now have to analyze for the Skinner List constituents. Samples from this SWMU were originally analyzed for TPH and oil & grease only.

SWMU #8 - Railroad Rack Lagoon

EPA has approved Giant's corrective action plan for this SWMU, with additional requirements. After piping modifications at the railroad loading rack are complete and the railroad rack lagoon no longer receives waste, sampling is required within the footprint of the lagoon (five borings) and around the periphery of the lagoon (six borings). Sampling is also required in the overflow ditch (three borings to seven feet) and the fan out area (four borings to seven feet). Some sampling will be required during remediation of the lagoon to document completion of the corrective action plan.

A survey plat of the SWMU, after remediation, must be submitted to the EPA.

<u>SWMU #9</u> - Inactive Land Treatment Area

Although Giant had provided data and proposed no further action, this SWMU was not addressed in the correspondence with the EPA. It needs to be determined if EPA accepts our proposal or has additional requirements.

<u>SWMU #10</u> - Sludge Pits

EPA is requiring additional sampling to 25' in this SWMU (seven borings) to fully characterize any contamination. Monitoring will be required during remediation to document completion of the corrective action plan. It is reasonable to expect that EPA will require a survey plat of this SWMU after closure.

<u>SWMU #11</u> - Secondary Oil Skimmer

EPA does not approve Giant's proposal for "No Further Action" and is requiring additional sampling to ten feet (two borings). This is a reasonable request.

<u>SWMU #12</u> - Contact Wastewater System

Although onerous, the requirement to inspect the wastewater system every five years is acceptable in that we were not sure if we could get any kind of "Buy In" from EPA. Costs of monitoring this SWMU are therefore significantly less than anticipated.

<u>SWMU #13</u> - Drainage Ditch

Although EPA approves Giant's proposal of "No Further Action", additional requirements have been added. Complete resampling is required biennially. This is redundant and expensive. Even though this SWMU continues to be exposed to wastewater, Giant does not believe there is a significant possibility of migration. Giant should propose a five year sampling schedule or a "Phased-In" rotation of sampling.

A survey plat will be required for this SWMU.

III. Estimation of Expenses

Not normally a consideration of the regulatory community, expense is an indicator to industry of the scope and complexity of regulatory requirements. In providing a cost estimate, we are able to judge the economic impact for our company and determine the extent to which we are willing to contest the requirements issued to us.

The following tables (Tables 3, 4, and 5) illustrate the estimated costs per SWMU (for 1994 and biennially).

Table 3

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1994 Analyti	cal Costs
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<u>swmu ‡</u>	SAMPLES <u>REQUIRED</u>	ANALYSIS	COST
1	30	8240 8270 Metals	\$ 9,000 14,850 6,900
2	7	8240 8270 Metals pH	1,750 2,765 1,435 70
4	6	8240 8270 Metals pH	1,800 2,970 2,250 60
5	21	8240 8270 Metals	6,300 10,395 4,830
6	8	BTEX	1,000
7	4	TPH Oil & Grease	200 200
8	50	8240 8270	15,000 24,750
10	18	8240 8270 Metals	5,400 8,910 4,140
11	4	8240 8270	1,200 1,980
13	12	8240 8270	3,600 5,940

Total Analytical Cost 1994 Only

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<u>\$119,245</u>

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TABLE 4

BIENNIAL ANALYTICAL COST

SWMU #	SAMPLES REQUIRED	ANALYSIS	COST
1	30	8240 8270 Metals	\$ 9,000 14,850 6,900
2	7	8240 8270 Metals pH	1,750 2,765 1,435 70
13	12	8240 8270	8,600 5,940

Total Biennial Analytical Cost <u>\$46,310</u>

TABLE 5

TOTAL COST OF 1994 SAMPLING (ESTIMATE)

SWMU #	ANALYTICAL COST	LABOR ^t	COST
1	\$ 30,750	\$12,600	\$ 43,350
2	6,020	1,100	7,120
4	7,080	3,000	10,080
5	21,525	14,000	35,525
6	1,000	13,200	14,200
7	400	2,200	2,600
8	39,750	21,400	61,160
10	18,450	22,500	40,950
11	3,180	2,000	5,180
13	9,540	2,600	12,140
	<u>\$119,245</u>	<u>\$94,600</u>	<u>\$213,845</u>

Including Drilling Rig

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IV. Conclusions

The additional requirements to fully characterize SWMUs #4, 5, 6, 7, 8, 10 and 11 are reasonable. Although expensive, full characterization of potential pollution is the thrust of an RFI project and is Giant's objective.

The biennial sampling requirements for SWMUs #1, 2, and 13 are, in effect, a repeat of the original RFI project every two years. This is redundant, expensive and, in my opinion, unwarranted. In completing the original RFI work, it was demonstrated that SWMUs #1, 2, and 13 pose no threat to human health or the environment. Additional sampling is probably justified, because these SWMUs continue to handle wastewater, but on a smaller scale. I recommend that we propose to do additional sampling every five years on one-third of the sample points, or something of that magnitude. This should be enough sampling to document that there is no contamination.

It is important that we act now to minimize sampling requirements in that we can reasonably assume that as other SWMUs are characterized, additional long term sampling requirements for those SWMUs will be requested. This could be an expensive task that provides minimal protection to the environment.

The actual sampling process should be fairly straight forward. Sampling protocol will be identical to past projects and can be accomplished by refinery personnel. The sampling process needs to be modified to using a drilling rig to take core samples in place of backhoe and hand auger. This change is due to the increased depths of samples, the sheer number of samples to be collected, analyzed and reported during 1994, and the requirement to use more appropriate soil boring logs. Using a drilling contractor will provide the necessary speed of sampling and the lithologic observations necessary to complete this project in a timely and efficient manner.

It is in the best interest of Giant that we develop the proper response to these new requirements. I recommend that we carefully analyze our options in this matter and schedule a meeting with the RCRA staff at EPA to discuss this issue.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY



- REGION 6 1445 ROSS AVENUE, SUITE 1200 DALLAS, TX 75202-2733

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CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Mr. John J. Stokes, Manager Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

RE: RFI Phase I and Phase II Supplemental Reports and Voluntary Corrective Action Plan Giant Refining Co. NMD000333211

Dear Mr. Stokes:

The Environmental Protection Agency (EPA) hereby approves your RCRA Facility Investigation (RFI) Phase I Supplemental Report, dated October 21, 1991, with the enclosed list of modifications. Your Corrective Action Plans (CAPs) for the Sludge Pits and the Railroad Rack Lagoon, submitted in November and December, 1992, respectfully, are also approved with the enclosed list of modifications.

The EPA is requiring that additional monitoring be completed at several sites. An annual report detailing the monitoring results shall be submitted to the EPA by December 31, 1994, and each year thereafter. The EPA is also requiring that additional soil sampling be completed at the Sludge Pits and the Tank Farm. Sampling results shall be submitted to the EPA by October 1, 1994. Further information concerning the additional monitoring and sampling requirements may be found in the attached list of modifications.

If you have any further questions or need additional information, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

allyn m Dans

Allyn M. Davis, Director Hazardous Waste Management Division (6H)

Enclosure

cc: Kathleen Sisneros, NMED

APPROVAL WITH MODIFICATIONS RFI PHASE I SUPPLEMENTARY REPORT RFI PHASE II REPORT AND THE VOLUNTARY CORRECTIVE ACTION PLANS

The Environmental Protection Agency (EPA) has completed a technical review of Giant Refining's RCRA Facility Investigation (RFI) Phase I Supplementary Report; RFI Phase II Report; and voluntary Corrective Action Plan (CAP) for the Sludge Pits and Railroad Rack Lagoon. The subject reports are hereby approved with the following comments and modifications.

GENERAL COMMENTS

SWMU 1, The Aeration Basin; SWMU 2, The Evaporation Pond; and SWMU 13, The Drainage Ditch

The EPA agrees with the finding of no further action for Solid Waste Management Units (SWMUs) 1, 2 and 13. The EPA is, however, requiring periodic monitoring of these SWMUs (see below under Modifications). However, this approval is contingent upon the completion of a survey plat for these SWMUs. The survey plats shall be completed in accordance with the requirements set forth in 40 CFR 264.116. Giant shall submit copies of the completed survey plats to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for these SWMUs.

SWMU 6, The Tank Farm

The EPA disagrees with Giant on their recommendation of no further action. Sampling results indicate that 9 of the 13 samples taken at the 11 foot interval (the deepest interval sampled) contained elevated levels of BTEX constituents. One sample at the 16 foot interval also contained elevated BTEX levels. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 8, The Railroad Rack Lagoon, Overflow Ditch and Fan Out Area The EPA agrees with the finding of no further action for this SWMU. The EPA understands that Giant has elected to perform voluntary corrective measures at this unit which will include bioremediation of the wastes with periodic soil and waste monitoring. Giant's voluntary bioremediation should reduce the volume and toxicity of the wastes while continuing to periodically monitor the SWMU. The EPA will, however, require that additional monitoring be completed (see below under Modifications). The EPA is also requiring that a survey plat be completed for this SWMU. The survey plat shall be completed in accordance with the requirements set forth in 40 CFR 264.116. Giant shall submit a copy of the completed survey plat to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for this SWMU.

SWMU 9, The Sludge Pits

The EPA is unable to approve Giant's finding of no further action for this SWMU. Two (2) soil samples collected at the 15 foot interval (the deepest interval sampled) contained semivolatile contaminants. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications). Giant may begin the voluntary bioremediation (see SWMU #8 voluntary corrective action) under the CAP after the deeper soil samples have been completed.

MODIFICATIONS

SWMU 1, The Aeration Basin

Giant shall take soil samples around the Aeration Basin every two (2) years beginning in calendar year 1994. Sampling requirements shall be identical to those performed during the previous RFI, except that all soil borings shall be angled and an additional sample shall be collected at the 20-21 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

SWMU 6, The Tank Farm

Giant shall complete additional soil borings as close as possible to the following sample points (numbers correspond to previous RFI sampling points completed in May, 1991): 21, 22, 23, 25, 26, 27, 30, and 31. The sampling interval shall be at 16 feet, with the exception of sample point 31 which shall be sampled at 20 feet. Samples shall be analyzed for BTEX constituents. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to EPA by October 1, 1994.

SWMU 2, Evaporation Ponds

Giant shall monitor the seven (7) groundwater wells around the evaporation ponds biannually for the same constituents monitored for in the original RFI. Results shall be included in the Annual Monitoring Report.

SWMU 13, Drainage Ditch between APIs Evaporation Ponds and <u>Neutralization Tank Evaporation Ponds</u>

Giant shall conduct soil sampling around the Drainage Ditch every two (2) years, with sampling beginning in calendar year 1994. Sampling procedures and analytical constituents shall be identical to those required in the RFI, except that all soil borings shall be angled and an additional interval shall be sampled at from 6.0-6.5 feet. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

SWMU 6, The Railroad Rack Lagoon

Giant shall take 5 soil borings within the lagoon after it has ceased receiving wastes. Three (3) of the five (5) borings must be sampled at the 0-1 foot interval. All borings must be sampled at the 5-6 foot interval, the 10-11 foot interval, and the 14-15 foot interval. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Sampling results shall be included in the 1994 Annual Monitoring Report.

Additionally, all six (6) borings required under the CAP closure (Section 5.0) must be sampled at the 5-6, 10-11, and 14-15 foot interval. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Sampling results shall be included in the appropriate Annual Monitoring Report.

Monitoring requirements under the voluntary CAP shall be submitted to EPA in the appropriate quarterly progress report. Giant shall notify the EPA when final closure of the Railroad Rack Lagoon has been initiated.

Continuation of SWMU 6, The Overflow Ditch

Giant shall complete three (3) soil borings in the Overflow Ditch after closing the Railroad Rack Lagoon. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. All results shall be included in the 1994 Annual Monitoring Report.

Continuation of SWMU 6, The Fan Out Area

Giant shall complete four (4) soil borings in the Fan Out Area after closure of the Railroad Rack Lagoon has been completed. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. Results shall be included in the 1994 Annual Monitoring Report.

SWMU #12, Contact Waste Water Collection System (CWWCS)

Giant shall perform an inspection of the CWWCS every five years beginning in calendar year 1996. The inspection shall be identical to the one performed in the previous RFI. If better technological equipment is developed, Giant may request that an alternative method be used. Results shall be included in the appropriate Annual Monitoring Report.

SWMU 9, The Sludge Pits

Giant shall complete soil borings as close as possible to sampling points 6 and 7 (numbers correspond to previous RFI sampling points, completed in May, 1991). Sampling intervals shall be at 18.0 -19.0 foot and 24.0 - 25.0 foot. Sampling procedures and analytical constituents shall be identical to those required in the previous

RFI. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to the EPA by October 1, 1994.

Before final closure of the West Pit under the CAP, all soil borings shall be sampled at the 18.0 - 19.0 and 24.0 - 25.0 foot intervals. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Four (4) soil borings shall also be completed (before closure) in the East Pit using the same requirements specified for the West Pit borings. Results shall be included in the appropriate Annual Monitoring Report.

Monitoring requirements under the voluntary CAP shall be submitted to EPA in the appropriate quarterly progress report. Giant shall notify the EPA when final closure of the Sludge Pits has been initiated.

Soil Boring Logs: The EPA has included an example of a soil boring log to be used for all future borings.

CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Mr. John J. Stokes, Manager Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

RE: RFI Phase I Supplemental and RFI Phase II Reports - Giant Refining Co. - NMD000333211

Dear Mr. Stokes:

We hereby approve your Phase I Supplemental Report dated August 21, 1991 and the RFI Phase II Report dated October 21, 1991, with the enclosed modifications. The Corrective Action Plans (CAPs) for the Sludge Pits and the Railroad Rack Lagoon (submitted November and December 1992, respectfully) are also approved, with the enclosed modifications.

The Annual Monitoring (see enclosure for SWMUs requiring monitoring) Report is due to EPA by December 31, 1994, and each year thereafter. The additional soil sampling results for the Sludge Pits and the Tank Farm are due to EPA by June 1, 1994. If you have any further questions pertaining to the above discussed items, please contact Nancy Morlock or Richard Mayer of my staff at (214) 655-6650.

Sincerely yours,

Allyn M. Davis, Director Hazardous Waste Management Division

Enclosure

cc: Kathleen Sisneros, NMED

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6h-pn 6h-p 6h Neleigh Honker Morisato

APPROVAL OF THE RFI PHASE I SUPPLEMENTARY REPORT, RFI PHASE II REPORT AND THE VOLUNTARY CORRECTIVE ACTION PLANS (CAP), WITH MODIFICATIONS, FOR GIANT REFINING COMPANY

Below are EPA's general comments and modifications pertaining to Giant's RFI Reports and the voluntary CAP for the Sludge Pits and the Railroad Rack Lagoon. Under general comments, there is a discussion describing the RFI status of each SWMU and the remaining RFI process/requirements for each SWMU. The modifications consist of SWMU specific monitoring or investigations required by EPA.

General Comment: EPA agrees with the finding of no further action for the following SWMUs: SWMU #1, the Aeration Basin; SWMU #2, the Evaporation Ponds; and, SWMU #13, the Drainage Ditch. Even though EPA is not requiring further investigations/remediation (no further action determination), periodic monitoring of the above mentioned SWMUs will be required (see below under modifications).

On SWMU #6, the Tank Farm, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, 9 out of 13 samples taken at the 11 foot interval (the deepest interval sampled) contained elevated levels of BTEX constituents. One sample at the 16 foot interval also contained elevated BTEX levels. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #9, the Sludge Pits, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, two samples at the 15'interval (the deepest interval sampled) contained semivolatiles. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

EPA agrees with the finding of no further action for SWMU #6, the Railroad Rack Lagoon, Overflow Ditch and Fan Out Area. Even though EPA is not requiring further investigations/remediation (no further action determination), periodic monitoring of the above mentioned SWMU will be required. Giant has decided to perform voluntary corrective measures (bioremediation of the wastes) on the above mention SWMU and will perform periodic monitoring on the SWMU while bioremediation is occurring. Giant's voluntary bioremediation should reduce the volume and toxicity of the waste contained in the SWMUs while continuing periodic monitoring of the SWMUs (which satisfies EPA's monitoring requirements). Also, EPA included some additional monitoring requirements besides those included by Giant in the CAP (see below under modifications).

Also, EPA will require one administrative control for all SWMUS which EPA has tententively approved a no further action determination. It is the following: A survey plat of each SWMU, according to the procedures required in 40 CFR 264.116. Once Giant has sent documentation to EPA verifying completion of the administrative control (for each SWMU), then Giant can submit a Class III permit modification to terminate the RFI/CMS process for a particular SWMU.

Modifications

SWMU #1, the Aeration Basin: Giant shall take soil samples around the Aeration Basin every 2 years, with sampling beginning in the Aeration Basin every 2 years, with sampling beginning in calender year 1994. Sampling requirements shall be identical to what was performed in the previous RFI, except, that all soil borings shall be angled and that an additional interval be sampled applied in the previous chall be included in the at the 20-21 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.). SWMU #6, the Tank Farm: Giant shall take soil borings as close as possible to the following sample points (numbers are from previous possible to the following sample points (number's are from previous RFI sampling points, done 5/6 & 5/7/91): number's 21, 22, 23, 25, 26, 27, 30, and 31. Sampling intervals shall be at 16', except for #31, which shall be taken at 20'. Samples shall be analyzed for for sampled are obviously #31, which shall be taken at 20'. BTEX Constituents. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by June 1, 1994.

swhu #2, Evaporation Ponds: Giant shall monitor the seven groundwater wells around the evaporation ponds biannually for the same constituents monitored for in the original RFI. Results shall be included in the Annual Monitoring Report. WHICH WELLS

SWMU #13, Drainage Ditch between APIs Evaporation Ponds and Neutralization Tank Evaporation Ponds: Giant shall take soil samples around the Drainage Ditch every 2 years, with sampling beginning in calendar year 1994. Sampling procedures and constituents to be analyzed shall be identical to those required in the RFI, except, that all soil borings shall be angled and that an additional interval be sampled at the 6-6.5 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

SWMU TO, Railroad Rack Lagoon: Giant shall take 5 soil borings within the lagoon after it has stopped receiving wastes and it is practicable to sample. Three of the five borings must be sampled at the 0-1 foot interval. All borings must be sampled at the 5-6 foot interval, the 10-11 foot interval, and the 14-15 foot Sampling procedures and constituents to be analyzed interval. shall be identical to those required in the previous RFI. Sampling results shall be included in the 1994 Annual Monitoring Report.

Also, all six borings required under the CAP closure (Section 5.0) must be sampled at the 5-6', the 10-11' interval, and the 14-15'. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Sampling results shall be included in the appropriate Annual Monitoring Report.

Continuation of SWMU #6, the Overflow Ditch: Giant shall take 3 soil borings in the Overflow Ditch after closure (stop receiving liquid wastes) of the Railroad Rack Lagoon. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Soil borings shall be taken at the 3-4' interval and at the 6.5-7' interval. Results shall be included in the 1994 Annual Monitoring Report.

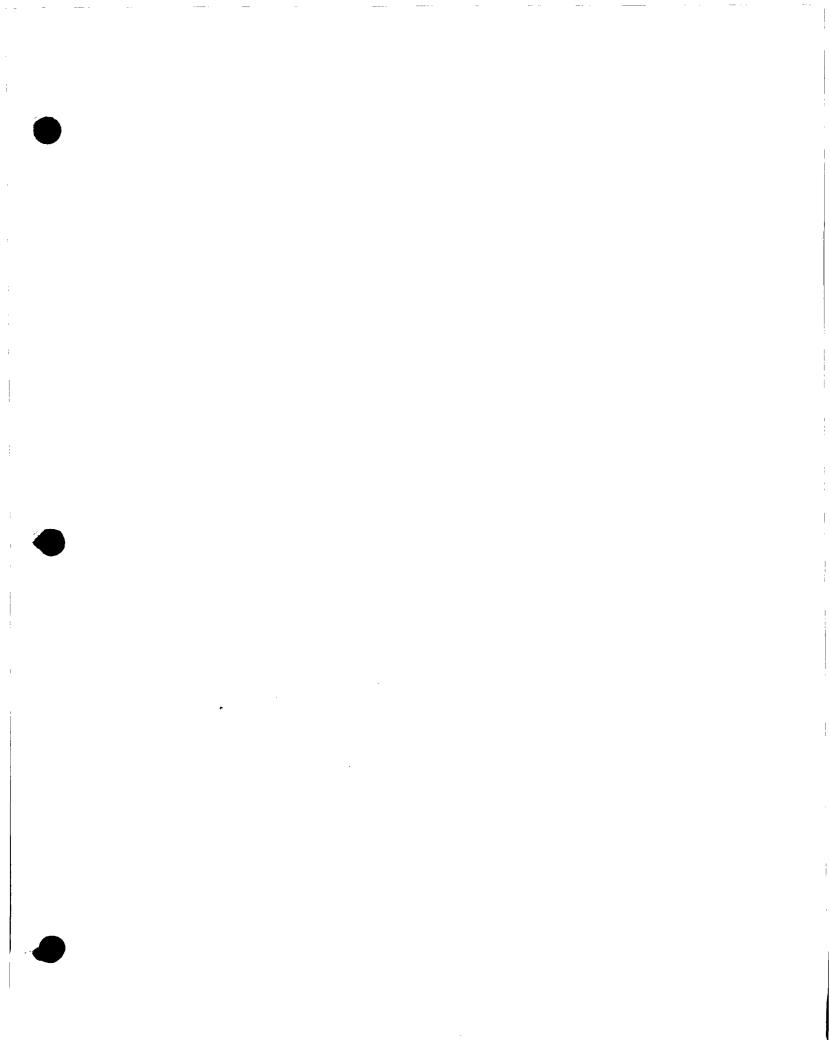
Continuation of SWMU #6, the Pan Out Area: Giant shall take 4 soil borings in the Fan Out Area after closure (stop receiving liquid wastes) of the Railroad Rack Lagoon. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Soil samples shall be taken at the 3-4' interval and at the 6.5' to 7' interval. Results shall be included in the 1994 Annual Monitoring Report.

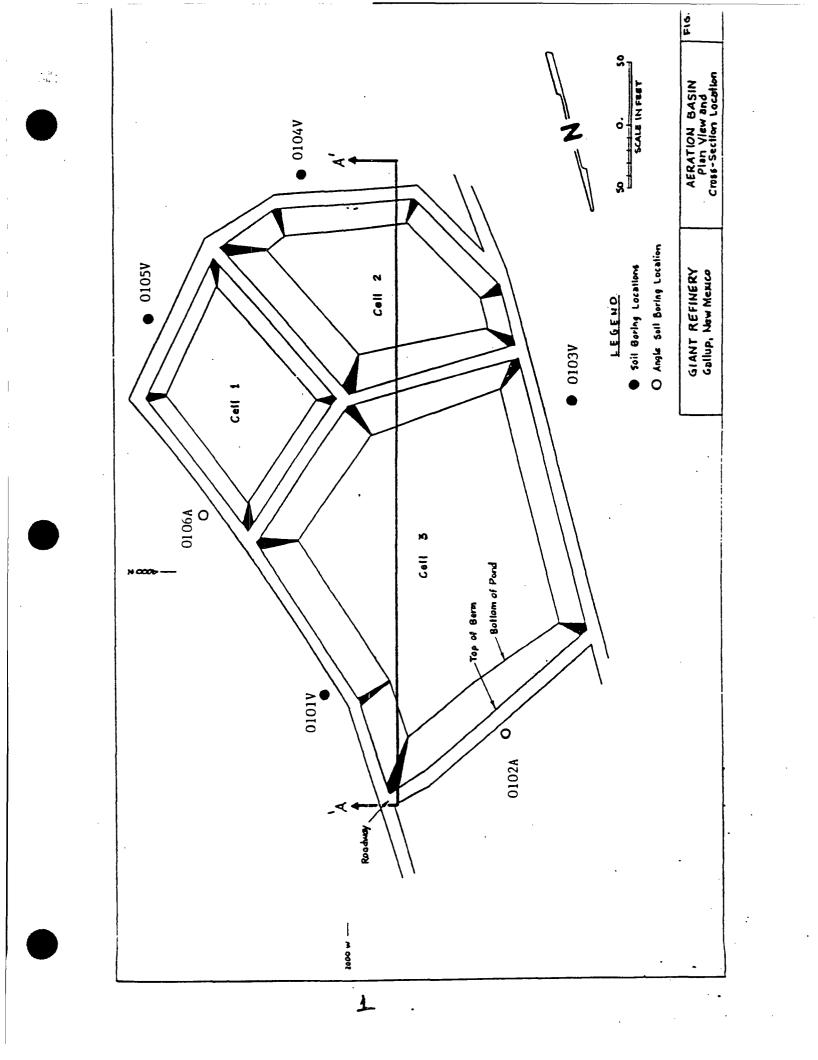
SWMU #12, Contact Waste Water Collection System (CWWCS): Giant shall perform an inspection of the CWWCS every five years (the next inspection will be in 1996) and shall be identical to the one performed in the RFI (if better technological equipment is developed, then Giant may request that an alternative method be used). Results shall be included in the appropriate Annual Monitoring Report.

SWMU 10 SWMU 17, Sludge Pits: Giant shall take soil borings as close as possible to sampling points (numbers are from previous RFI sampling points, done 5/6 & 5/7/91) 6 and 7. Sampling intervals shall be at 18-19'and 24-25'. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by June 1, 1994. Z. West patonly

Before <u>final closure of the West pit</u> under the CAP, all soil borings shall have samples taken at the 18-19' and 24-25' intervals. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Three soil borings shall also be taken (before closure) from the east pit using the same requirements specified for the West Pit borings. Results shall be included in the appropriate Annual Monitoring Report.

Soil Boring Logs: EPA has included an example of a soil boring log which they would like Giant to use in all future borings.





SWMU \$1

PHASE II, RFI 1991 GIANT REFINING CINIZA

METALS

SAMPLE POINT NUMBER SAMPLE POINT DEPTH		01 V4.0	01 V 9.0	01 V11.0	01 V14.0	02 A4.0	02 A9.0	02 A11.0	02 A14.0
PARAMETER	UNITS								
Arsenic	ng/kg	<3	<3	<3	<3	<3	<3	<3	<3
Barium	ng/kg	256	225	326	234	204	258	410	243
Beryllium	ng/kg	5.8	6.0	5.9	2.2	1.4	1.3	1.0	1.1
Cadmium	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<Ů.3	<0.3	<0.3
Cobalt	ng/kg	5.7	5.6	5.8	4.9	3.6	3.1	2.9	4.0
Chromium	mg/kg	7.3	6.4	7.4	6.1	4.2	3.0	3.3	4.4
Copper	∎g/kg	5.2	5.0	5.3	5.7	4.3	4.2	3.2	4.5
Nercury	∎g/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Potassium	ng/kg	1820	1780	2270	1620	1730	1100	624	1730
Nickel	mg/kg	10.9	9.8	10.4	9.0	6.5	4.6	5.1	4.6
Lead	∎g/kg	13	13	11	3	8	9	7	3
Antimony	ng/kg	<3	<3	<3	<3	<3	<3	<3	<3
Selenium	ng/kg	<0.3	<0.3	<0.3	<3	<3	<3	<3	<3
anadium	ng/kg	15.4	15.3	15.4	13.3	13.9	13.3	11.4	12.3
Zinc	ng/kg	15.0	14.2	15.6	13.2	10.5	8.0	12.0	11.9

SWMU #1			. :		, RFI T REFININ CINIZA	1991 IG			
SAMPLE POINT NUMBER		01	01	01	01	02	02	02	02
SAMPLE POINT DEPTH		V4.0	V9.0	V11.0	V14.0	A4.0	A9.0	A11.0	A14.0
PARAMETER	UNITS								
рН		7.78	7.75	7.56	7.54	7.54	7.53	8.14	7.44

PHASE II, RFI 1991 GIANT REFINING CINIZA

METALS

SWMU #1

I.

SAMPLE POINT NUMBER Sample point depth		03 V4.0	03 V9.0	03 V11.0	C3 V14.0	03 D14.0	04 V4.0	04 V9.0	04 E9.0 (mg/l)	04 V11.0	04 V14.0
PARAMETER	UNITS								(19/1/		
Arsenic	ng/kg	<3	<3	<3	<3	<3	<3	<3	<0.005	<\$	ز>
Barium	ng/kg	295	244	321	234	229	103	634	<0.010	249	275
Beryllium	∎g/kg	2.6	2.6	2.4	2.9	4.2	2.7	3.7	<0.005	4.Ú	4.9
Cadmium	ag/kg	0.3	0.4	0.4	0.4	0.4	<0.3	0.4	<0.005	0.5	0.4
Cobalt	mg/kg	3.1	3.4	3.0	3.4	4.3	3.9	3.9	<0.010	4.8	4.4
Chromium	mg/kg	2.5	4.0	2.6	3.1	4.2	3.8	5.1	<0.010	3.5	5.0
Copper	ng/kg	3.9	3.5	4.0	3.8	4.4	3.9	3.8	<0.010	3.4	3.9
Mercury	ng/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.0002	<0.02	<0.02
Potassium	∋g/kg	450	697	Sól	523	965	1030	1260	<1.0	738	1056
Nickel	mg/kg	4.9	5.3	5.0	5.5	7.2	6.3	6.8	<0.020	5.5	7.6
Lead	ag/kg	7	7	9	7	Э	õ	ż	<3.062	3	J
Antimony	ag/kg	<3	<3	<3	<3	<3	<3	<3	0.05	<3	<3
Selenium	∎g/kg	<0.3	<3	<0.3	<3	<3	<0.3	<3	<0.005	<0.3	<3
Vanadium	≊g/kg	12.3	14.2	10.0	10.6	12.2	10.3	12.4	<0.010	12.5	12.8
Zinc	ng/kg	5.2	8.5	7.2	ε.2	10.5	13.0	15.7	<0.010	9.0	14.2

SWNU #1

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PHASE II, RFI 1991 GIANT REFINING CINIZA

METALS

SAMPLE POINT NUMBER SAMPLE POINT DEPTH		05 V4.0	05 V9. 0	05 Vii.0	05 V14.0	05 D14.0	06 A4.0	05 A9.0	95 A11.9	05 A14.0	06 E14.0 (sg/1)
PARAMETER	UNITS										
Arsenic	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3	<0.005
Barium	ag/kg	206	168	767.	364	525	529	531	282	155	<0.010
Beryllium	ag/kg	3.5	2.7	4.7	3.1	6.5	3.4	3.9	3.5	4.3	<0.005
Cadmium	ng/kg	0.4	<0.3	<0.3	<0.3	0.3	<0.3	<0.3	0.3	0.4	<0.005
Cobalt	ng/kg	3.9	3.5	5.1	4.6	ó.9	3.9	2.9	3.1	2.9	<0.010
Chromium	ng/kg	52.1	3.3	5.8	4.4	8.2	4.8	14.5	3.3	2.5	<0.010
Copper	ag/kg	7.6	1.2	<0.5	0.9	<0.5	5.4	4.3	2.1	2.0	<0.010
Mercury	mg/kg	0.15	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.0002
Potassium	mg/kg	1500	571	2200	1440	2770	494	552	373	474	<1.0
Nickel	ag/kg	6.5	5.2	10.4	9.2	12.7	5.5	4.5	5.0	4.3	<0.020
Lead	ag/kg	9	5	7	<5	Ĥ.	5	7	ż	7	<0.002
Antimony	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3	<0.05
Selenium	ag∕kg	<0.3	<3	<3	<3	<3	<3	<0.3	<0.2	<3	<0.005
Vanadium	ag/kg	12.0	11.5	10.3	7.3	10.7	14.9	13.3	9.1	11.9	<0.010
Zinc	mg/kg	34.6	9.7	13.9	12.5	18.7	8.0	19.9	9.0	7.3	<0.010

SMWU #1

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PHASE II, RFI 1991 GIANT REFINING CINIZA

	SAMPLE POINT NUMBER		01	01	01	01	02 -	02	02	02	
	SAMPLE POINT DEPTH		V4.0	V9.0	V11.0	V14.0	A4.0	A9.0	A11.0	A14.0	
	PARAMETER	UNITS									
	Chloromethane	≊g/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Vinyl Chloride	ng/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
	Chloroethane	ng/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
	Methylene Chloride	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	
	Acetone	∎g/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Carbon Disulfide	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	1,1-Dichloroethene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	1,1-Dichlorcethane	∎g/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	1,2-Dichloroethene (Total)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Chloroform	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	1,2-Dichloroethane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	2-Butanone (MEK)	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	1,1,1-Trichloroethane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
)	Carbon Tetrachloride	∎g/kg	<9.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Vinyl Acetate	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Bromodichloromethane	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	1,1,2,2-Tetrachlorethane	∎g/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	1,2-Dichloropropane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Trans-1,3-Dichloropropene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Trichloroethene	∎g/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Dibromochloromethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	1,1,2-Trichloroethane	∍g/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Benzene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Cis-1,3-Dichloropropene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Bromoform	ag/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	
	2-Hexanone (MBK)	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	4-Methyl-2-Pentanone (MIBK)	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Tetrachlorethene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Toluene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Chlorobenzene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Ethylbenzene	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Styrene	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Total Xylenes	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Acrolein	ag/kg	<1	<1	<1	<1	<1	<1	<1	<1	
	Acrylonitrile	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Dibromomethane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Dichlorodiflouromethane	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Nethyl Iodide	ng/kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	
	Trans-1,4-Dichloro-2-Butene	ng/kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	
	Trichloromonoflouromethane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	1,2,3-Trichloropropane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
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PHASE II, RFI 1991 GIANT REFINING CINIZA

8240 VOLATILE ORGANICS

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SAMPLE POINT NUMBER		03	03	C3	03	03 D14.0	04 V4.0	04 V9.0	04 E9.0	04 V11.0	04 V14.0
SAMPLE POINT DEPTH		V4.0	V9.0	V11.0	V14.0	D14.0	¥4.0	V3.U	(ug/l)	V11.0	V14.0
PARAMETER	UNITS								19/1/		
Chloromethane	ng/kg	<0.5	<0.5	<0.5	<2.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Vinyl Chloride	ag∕kg	<0.05	<0.05	<0.05 .	<0.05	<0.05	<0.05	<0.05	<0.5	<0.05	<0.05
Chloroethane	ng/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<5.02	<0.05
Methylene Chloride	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<3	<0.3	<0.3
Acetone	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	33	<0.5	<0.5
Carbon Disulfide	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
1,1-Dichloroethene	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.3
1,1-Dichlorcethane	ng/kg	<0.5	<).5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
1,2-Dichloroethene (Total)	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 5	<0.5	<0.5
Chleroform	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<s< td=""><td><0.5</td><td><0.5</td></s<>	<0.5	<0.5
1,2-Dichlorcethane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
2-Butanone (MEK)	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
,1,1-Trichloroethane	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<\$	<0.5	<0.5
Jarbon Tetrachloride	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Vinyl Acetate	ag∕kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Bromodichloromethane	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
1,1,2,2-Tetrachlorethane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
1,2-Dichloropropane	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<٢	<0.5	<0.5
Trans-1,3-Dichloropropene	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Trichloroethene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Dibromochloromethane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
1,1,2-Trichloroethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<s< td=""><td><0.5</td><td><0.5</td></s<>	<0.5	<0.5
Benzene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Cis-1,3-Dichloropropene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Bromoform	ng/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	. <5	<0.3	<0.3
2-Hexanone (MBK)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<\$	<0.5	<0.5
4-Methyl-2-Pentanone (MIBK)	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<\$	<0.5	<0.5
Tetrachlorethene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Toluene	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1 J	<0.5	<0.5
Chlorobenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Ethylbenzene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Styrene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Total Xylenes	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Acrolein	ng/kg	<1	<1	<1	<1	4	<1	<1 -	<10	<1	<1
Acrylonitrile	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Dibromomethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Dichlorodiflouromethane	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Methyl Iodide	ag/kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5	<0.25	<0.25
.rans-1,4-Dichloro-2-Butene	ng/kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5	<0.25	<0.25
Trichloromonoflouromethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<٢	<0.5	<0.5
1,2,3-Trichloropropane	ng/xg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
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SMWU #1

PHASE II, RFI 1991 GIANT REFINING CINIZA

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SAMPLE POINT NUMBER SAMPLE POINT DEPTH		05 V4.0	05 V9.0	05 V11.0	05 V14.0	05 D14.0	06 A4.0	06 A9.0	06 A11.0	06 A14.0	05 E14.0
PARAHETER	UNITS										(ug/l)
Chloromethane	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Vinyl Chloride	mg/kg	<0.05	<0.05	<0,05.	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5
Chloroethane	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5
Methylene Chloride	ng/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<3
Acetone	∎g/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
Carbon Disulfide	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
1,1-Dichloroethene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
1,1-Dichloroethane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
1,2-Dichloroethene (Total)	∎g/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Chlorofors	∎g/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
1,2-Dichlorcethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
2-Butanone (MEK)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 5
1,1,1-Trichloroethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
.arbon Tetrachloride	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 5
Vinyl Acetate	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Bromodichloromethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
1,1,2,2-Tetrachlorethane	∎g/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
1,2-Dichloropropane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Trans-1,3-Dichloropropene	a⊈g/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Trichloroethene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Dibromochloromethane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	. <5
1,1,2-Trichloroethane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Cis-1,3-Dichloropropene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Brozoform	ng/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<5
2-Hexanone (MBK)	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
4-Methyl-2-Pentanone (MIBK)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Tetrachlorethene	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Toluene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Chlorobenzene	∎g/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Ethylbenzene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Styrene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Total Xylenes	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Acrolein	ng/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10
Acrylonitrile	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Dibromomethane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<\$
Dichlorodiflouromethane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Methyl Iodide	ng/kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5
rans-1,4-Dichloro-2-Butene	mg/kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5
Trichloromonoflouromethane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
1,2,3-Trichloropropane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
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PHASE II, RFI 1991 GIANT REFINING CINIZA

SAMPLE POINT NUMBER SAMPLE POINT DEPTH		01 ▼4.0	01 V9.0	01 V11.0	01 V14.0	02 A4.0	02 A9.0	-02 A11.0	01 A14.0
SAMPLE PUINI DEPIN		¥4.U	¥9.0	17710	¥14.0	A4.0	AJ.U	AII.0	N.7.J
PARAMETER	UNITS								
Ethyl Methacrylate	∍g/kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Ethanol	ng/kg	<10	<10	<10	<10	<10	<10	<10	<10
Brosomethane	ng/kg	<1	<1	<1	<1	<1	<1	<1	<u><1</u>
2-Chloroethylvinylether	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichloro-2-Butane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5







PHASE II, RFI 1991 GIANT REFINING CINIZA

SAMPLE POINT NUMBER		03	03	03	03	03	04	04	04	04	04
SAMPLE POINT DEPTH		V4.0	V9.0	V11.0	V14.0	D14.0	V4.0	V9.0	E9.0 (ug/l)	V11.0	V14.0
PARAMETER	UNITS								(ug/1/		
Ethyl Methacrylate	ag/kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5	<0.25	<0.25
Ethanol	ng/kg	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10
Bromomethane	∎g/kg	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1
2-Chloroethylvinylether	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<Ů.S	<0.5
1,4-Dichloro-2-Butane	eg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

SWNU #1

PHASE II, RFI 1991 GIANT REFINING CINIZA

8240 VOLATILE ORGANICS

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SAMPLE POINT NUMBER SAMPLE POINT DEPTH		05 V4.0	05 V9.0	05 V11.0	05 V14.0	05 D14.0	06 A4. 0	06 19.0	06 A:1.0	05 A14.0	05 E14.0 (ug/1)
PARAMETER	UNITS										
Ethyl Methacrylate Ethanol Bromomethane 2-Chloroethylvinylether 1,4-Dichloro-2-Butane	ng/kg ng/kg ng/kg ng/kg ng/kg	<0.25 <10 <1 <0.5 <0.5	<pre><0.25 <10 <1 <0.5 <0.5 <0.5</pre>	<0.35 <10 <1 <0.5 <0.5	<2.5 <100 <10 <5 <0.5						

PHASE II, RFI 1991 GIANT REFINING CINIZA

SAMPLE POINT NUMBER SAMPLE POINT DEPTH		01 V4.0	01 V9.0	01 V11.0	01 ¥14.0	02 A4.0.	02 A9.0	02 A11.0	02 A14.0
PARAMETER	UNITS								
Acetophenone	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
a,a-Dimethylphenethylamine	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
4-Aminobiphenyl	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2,6-Dichlorophenol	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
p-(Dimethylamino)Azobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
7,12-Dimethylbenzo(a)									
Anthracene	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Diphenylamine	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Ethyl Methanesulfonate	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
3-Methylcholanthrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Methyl Methanesulfonate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<9.17	<0.17
1-Naphthylamine	eg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2-Naphtylamine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
N-Nitroso-di-Butylamine	≊g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
A-Nitrosopiperidine	∎g/kg	<0.17	<0.17	<0.17	<0.17	<9.17	<0.17	<0.17	<0.17
Pentachlorobenzene	mg∕kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Pentachloronitrobenzene	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.35	<0.85	<0.85
Phenacetin	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2-Picoline	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Pronamide	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,2,4,5-Tetrachlorobenzene	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2,3,4,5-Tetrachlorophenol	ng/kg	<0.85	<0.85	<0.95	<0.85	<0.95	<0.85	<0.85	<0.85

SWNU #1

PHASE II, RFI 1991 GIANT REFINING CINIZA

SAMPLE POINT NUMBER		03	03	03	03	03 D14.0	04 V4.0	04 V9.0	04 E9.0	04 V11.0	04 V14.0
SANPLE POINT DEPTH		V4.0	V9. 0	V11.0	V14.0	914.0	4.7.0	49.0	(ug/1)	•11.0	111.0
PARAMETER	UNITS										
Acetophenone	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
a, a-Dimethylphenethylamine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
4-Aminobiphenyl	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
2,6-Dichlorophenol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
p-(Dimethylamino)Azobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
7,12-Dimethylbenzo(a)											
Anthracene	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Diphenylamine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Ethyl Methanesulfonate	sg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
3-Methylcholanthrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Nethyl Methanesulfonate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
1-Naphthylamine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
2-Naphtylamine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
N-Nitroso-di-Butylamine	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
A-Nitrosopiperidine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Pentachlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Pentachloronitrobenzene	⊒g/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85
Phenacetin	±g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
2-Picoline	∋g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Pronamide	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
1,2,4,5-Tetrachlorobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<9.17	<5	<0.17	<0.17
2,3,4,6-Tetrachlorophenol	ng/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85

PHASE II, RFI 1991 GIANT REFINING CINIZA

SAMPLE POINT NUMBER SAMPLE POINT DEPTH		05 V4.0	05 V9.0	05 Vii.0	05 V14.0	05 D14.0	06 A4.0	06 A9.0	06 A11.0	06 A14.0	06 E14.0
PARAMETER	UNITS										(ug/l)
Acetophenone	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
a,a-Dimethylphenethylamine	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
4-Aminobiphenyl	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2,6-Dichlorophenol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
p-(Dimethylamino)Azobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
7,12-Dimethylbenzo(a)											
Anthracene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Diphenylamine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Ethyl Methanesulfonate	eg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
3-Methylcholanthrene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Methyl Methanesulfonate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
1-Naphthylamine	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<s< td=""></s<>
2-Naphtylamine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Y-Nitroso-di-Butylamine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
A-Nitrosopiperidine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Pentachlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Pentachloronitrobenzene	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25
Phenacetin	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2-Picoline	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Pronamide	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<s< td=""></s<>
1,2,4,5-Tetrachlorobenzene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2,3,4,6-Tetrachlorophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25

SWMU \$1

PHASE II, RFI 1991 GIANT REFINING CINIZA

SAMPLE POINT NUMBER SAMPLE POINT DEPTH		01 V4.0	01 V9.0	01 V11.0	01 V14.0	02 A4.0	02 A9.0	02 All.0	02 A14.0
PARAMETER	UNITS								
Flourene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
4-Nitroaniline	ng/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
4,6-Dinitro-2-Methylphenol	ng/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.95	<0.85
N-Nitrosodiphenylamine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
4-'4-Bromophenyl-Phenylether	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Hexachlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Pentachlorophenol	ng/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.95	<0.85
Phenanthrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Di-n-Butylphthalate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Flouranthene	mg/kg	<0.17	<0.17	<0. <u>1</u> 7	<0.17	< 0. <u>1</u> 7	<0.17	<0.17	<0.17
Benzidine	zg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Pyrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Butylbenzylphthalate	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
,3'-Dichlorobenzidine	ng/kg	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
Benzo(a)Anthracene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
<pre>Bis(2-Ethylhexyl)Phthalate</pre>	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Chrysene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzo(b)Flouranthene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzo(k)Flouranthene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<9.17	<0.17	<0.17
Benzo(a)Pyrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Indeno(1,2,3-cd)Pyrene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Dibenzo(a,h)Anthracene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzo(g,h,i)Perylene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1-Chloronaphthane	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2-Chloronaphthane	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Dibenzo(a,j)Acridine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Di-n-Octylphthalate	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,2-Diphenylhydrazine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17

PHASE II, RFI 1991 GIANT REFINING CINIZA

SAMPLE POINT NUMBER SAMPLE POINT DEPTH		03 V4.0	03 V9.0	03 V11.0	03 V14.0	03 D14.0	04 V4.0	04 V9.0	04 E9.0 (ug/l)	04 V11.0	04 V14.0
PARAMETER	UNITS								(uy /2)		
Flourene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
4-Nitroaniline	∎g/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85
4,6-Dinitro-2-Methylphenol	ng/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85
N-Nitrosodiphenylamine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
4-'4-Bromophenyl-Phenylether	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	. <5	<0.17	<0.17
Hexachlorobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<s< td=""><td><0.17</td><td><0.17</td></s<>	<0.17	<0.17
Pentachlorophenol	∎g/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85
Phenanthrene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<\$	<0.17	<0.17
Anthracene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Di-n-Butylphthalate	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Flouranthene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<\$	<0.17	<0.17
Benzidine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<50	<0.17	<0.17
Pyrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Butylbenzylphthalate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
,,3'-Dichlorobenzidine	ag/kg	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<10	<0.34	<0.34
Benzo(a)Anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Bis(2-Ethylhexyl)Phthalate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Chrysene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Benzo(5)Flouranthene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5 .	<0.17	<0.17
Benzo(k)Flouranthene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<\$	<0.17	<0.17
Benzo(a)Pyrene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Indeno(1,2,3-cd)Pyrene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<\$	<0.17	<0.17
Dibenzo(a,h)Anthracene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Benzo(g,h,i)Perylene	sg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
1-Chloronaphthane	ng/kg	<0.17	<0.17	<0.17	<0.17 ·	<0.17	<0.17	<0.17	<5	<0.17	<0.17
2-Chloronaphthane	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Dibenzo(a,j)Acridine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Di-n-Octylphthalate	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
1,2-Diphenylhydrazine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17

PHASE II, RFI 1991 GIANT REFINING CINIZA

SAMPLE POINT NUMBER SAMPLE POINT DEPTH		C5 V4.0	05 V9. 0	05 V11.0	05 V14.0	05 D14.0	06 A4.0	06 A9.0	06 A11.0	06 A14.0	06 E14.0 (ug/1)
PARAMETER	UNITS										
Flourene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
4-Nitroaniline	ag/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25
4,6-Dinitro-2-Methylphenol	ng/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25
N-Nitrosodiphenylamine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	< S
4-'4-Bromophenyl-Phenylether	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Hexachlorobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Pentachlorophenol	ng/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25
Phenanthrene	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<s< td=""></s<>
Anthracene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Di-n-Butylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	0.26	<5
Flouranthene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Benzidine	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<50
Pyrene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Butylbenzylphthalate	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<\$
3,3'-Dichlorobenzidine	ng/kg	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<10
Benzo(a)Anthracene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Bis(2-Ethylhexyl)Phthalate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Chrysene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Benzo(b)Flouranthene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
<pre>Benzc(k)Flouranthene</pre>	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Benzo(a)Pyrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Indeno(1,2,3-cd)Pyrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Dibenzo(a,h)Anthracene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	< 5
Benzo(g,h,i)Perylene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
1-Chloronaphthane	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2-Chloronaphthane	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Dibenzo(a,j)Acridine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Di-n-Octylphthalate	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
1,2-Diphenylhydrazine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5

SWNU #1

PHASE II, RFI 1991 GIANT REFINING CINIZA

8270 SENI-VOLATILE ORGANICS

SAMPLE POINT NUMBER		01	01	01	01	02	02	02	02
SAMPLE POINT DEPTH		V4.0	V9.0	V11.0	V14.0	A4.0 .	A9.0	A11.0	A14.0
PARAMETER	UNITS								
N-Nitrosodimethylamine	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Phenol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Aniline	ng/kg	<0.17	<0.17	<0.17.	<0.17	<0.17	<0.17	<0.17	<0.17
Bis(2-Chloroethyl)Ether	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2-Chlorophenol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,3-Dichlorobenzene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,4-Dichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzyl Alcohol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,2-Dichlorobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2-Methylphenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
Bis(2-Chloroisopropyl)Ether	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
4-Methylphenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
N-Nitroso-di-n-Propylamine	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Yexachlorcethane	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
.iitrobenzene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Isophorene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2-Nitrophenol	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2,4-Dimethylphenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzoic Acid	ng/kg	<0.85	<0.85	<0.85	<0.95	<0.85	<0.95	<0.35	<0.35
Bis(2-Chlorcethoxy)Methane	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2,4-Dichlorophenol	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,2,4-Trichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Naphthalene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
4-Chloroaniline	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Hexachlorobutadiene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
4-Chloro-3-Methylphenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2-Methylnaphthalene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Hexachlorocyclopentadiene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2,4,6-Trichlorophenol	ag/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
2,4,5-Trichlorophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
2-Nitroaniline	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Dimethylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Acenaphthalene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
3-Nitroaniline	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
Acenaphthene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2,4-Dinitrophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.95	<0.85
4-Nitrophenol	ng/kg	<0.35	<0.85	<0.85	<0.85	<0.85	<0.35	<0.35	<0.85
2,4-Dinitrotoluene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2,6-Dinitrotoluene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
iethylphthalate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
4-Chlorophenyl-Phenylether	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17

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PHASE II, RFI 1991 GIANT REFINING CINIZA

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8270 SEMI-VOLATILE ORGANICS

	SAMPLE POINT NUMBER SAMPLE POINT DEPTH		03 V4.0	C3 V9.0	C3 V11.0	03 V14.0	03 D14.0	04 V4.0	04 V9.0	04 E9.0	04 V11.0	04 V14.0
	Salest Former Durin			* 3						(ug/1)		
	PARAMETER	UNITS								•		
	N-Nitrosodimethylamine	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	Phenol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	Aniline	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<\$	<0.17	<0.17
	Bis(2-Chloroethyl)Ether	n g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<\$	<0.17	<0.17
	2-Chlorophenol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	1,3-Dichlorobenzene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	1,4-Dichlorobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	Benzyl Alcohol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	1,2-Dichlorobenzene	eg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	2-Methylphenol	∎g/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<5	<0.85	<0.85
	Bis(2-Chloroisopropyl)Ether	ng/kg	<0.85	<0.85	<0.85	<0.85	<0.95	<0.95	<0.85	<5	<0.85	<0.85
	4-Methylphenol	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	N-Nitroso-di-n-Propylamine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	Yexachloroethane	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
)	Aitrobenzene	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	Isophorene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	2-Nitrophenol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	2,4-Dimethylphenol	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	Benzoic Acid	∎g/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85
	Bis(2-Chloroethoxy)Methane	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	2,4-Dichlorophenol	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	1,2,4-Trichlorobenzene	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	Naphthalene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	4-Chloroaniline	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<s< td=""><td><0.17</td><td><0.17</td></s<>	<0.17	<0.17
	Hexachlorobutadiene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<s< td=""><td><0.17</td><td><0.17</td></s<>	<0.17	<0.17
	4-Chloro-3-Methylphenol	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	2-Methylnaphthalene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	· <5	<0.17	<0.17
	Hexachlorocyclopentadiene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	2,4,6-Trichlorophenol	ag/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<5	<0.85	<0.85
	2,4,5-Trichlorophenol	ag/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85
	2-Nitroaniline	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<25	<0.17	<0.17
	Dimethylphthalate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	Acenaphthalene	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	3-Nitroaniline	ng/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85
	Acenaphthene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	2,4-Dinitrophenol	∎g/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85
	4-Nitrophenol	ng/kg	<0.85	<0.85	<0.85	<0.95	<0.85	<0.85	<0.85	<25	<0.85	<0.85
	2,4-Dinitrotoluene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	2,6-Dinitrotoluene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
	iethylphthalate	⊒g/kg	<0.17	<0.17	<0.17	<0.17	0.9	<0.17	<0.17	<5	<0.17	<0.17
	4-Chlorophenyl-Phenylether	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
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PHASE II, RFI 1991 GIANT REFINING CINIZA

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8270 SEMI-VOLATILE ORGANICS

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	SAMPLE POINT NUMBER		05	05	05	05	05	06	06	05	05	06
	SAMPLE POINT DEPTH		V4.0	V9. 0	V11.0	V14.0	D14.0	A4.0	A9.0	A11.0	A14.0	E14.0
						· .						(ug/l)
	PARAMETER	UNITS										
	N-Nitrosodimethylamine	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	Phenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	Aniline	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<\$
	Bis(2-Chloroethyl)Ether	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	2-Chlorophenol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	1,3-Dichlorobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	1,4-Dichlorobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	Benzyl Alcohol	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	1,2-Dichlorobenzene	eg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	2-Methylphenol	∎g/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.95	<0.85	<5
	Bis(2-Chloroisopropyl)Ether	∎g/kg	<0.35	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<5
	4-Methylphenol	ag/kg	<0.17	<0.17	<9.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	N-Nitroso-di-n-Propylamine	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	Hexachloroethane	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	Nitrobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	Isophorene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	2-Nitrophenol	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	2,4-Dimethylphenol	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	Benzoic Acid	ng/kg	<0.85	<0.85	<0.35	<0.85	<0.85	<0.85	<0.35	<0.95	<0.35	<25
	Bis(2-Chlorcethoxy)Methane	ng/kg	<0.17	<0.17	(0 .17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5 <5
	2,4-Dichlorophenol	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5 - C
	1,2,4-Trichlorobenzene	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	. <s< td=""></s<>
	Naphthalene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<\$ *5
	4-Chloroaniline	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<s< td=""></s<>
	Hexachlorobutadiene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5 <5
	4-Chloro-3-Methylphenol 2-Methylnaphthalene	∎g/kg	<0.17	<0.17	<0.17	<0.17 <0.17	<0.17 0.33	<0.17 <0.17	<0.17 <0.17	<0.17 <0.17	<0.17	<5 <5
	<pre>2-nethyinaphtnaiene Hexachlorocyclopentadiene</pre>	ag/kg ag/kg	<0.17 <0.17	<0.17 <0.17	0.21 <0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17 <0.17	<5 <5
	2,4,6-Trichlorophenol	ag/kg	<0.85	<0.85	<0.85	<0.95	<0.17	<0.35	<0.85	<0.55	<0.35	<5
	2,4,5-Trichlorophenol	ag/kg	<0.85	<0.85	<0.85	<0.35	<0.85	<0.85	<0.85	<0.85	<0.85	<25
	2-Nitroaniline	ag/kg	<0.17	<0.17	<0.17	<0.03 <0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<25
	Dimethylphthalate	≡g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	Acenaphthalene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	3-Nitroaniline	ng/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25
	Acenaphthene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	2,4-Dinitrophenol	ng/kg	<0.85	<0.95	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25
	4-Nitrophenol	ng/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25
	2,4-Dinitrotoluene	ng/kg	<0.17	10.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
	2,6-Dinitrotoluene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Ì	Diethylphthalate	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
/	4-Chlorophenyl-Phenylether	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5



GARY E. JOHNSON

COVERNOR

State of New Mexico ENVIRONMENT DEPARTMENT Hazardous & Radioactive Materials Bureau 525 Camino De Los Marquez P.O. Box 26110 Santa Fe, New Mexico 87502 (505) 827-4358 Fax (505) 827-4389

MARK E. WEIDLER SECRETARY

EDGAR T. THORNTON, III DEPUTY SECRETARY

CERTIFIED MAIL RETURN RECEIPT REQUESTED

July 13, 1995

John Stokes, Refinery Manager Giant Refining Company Ciniza Refinery Route 3, Box 7 Gallup, New Mexico 87301

Dear Mr. Stokes,

RE: Part A Permit Revision

On March 10, 1995, the New Mexico Environment Department (NMED) Hazardous and Radioactive Materials Bureau (HRMB) received a copy of the Giant Refining Company-Ciniza (Giant) Part A Permit Modification request dated March 6, 1995, and sent to the Environmental Protection Agency (EPA). Giant is hereby notified that because the Permit Modification request concerns RCRA units, NMED and not EPA has the lead. The modification requested is a 337% increase in both API tank treatment capacity (API) and benzere stripping capacity.

The API and benzene stripping units appear on Giant's Part A Permit. However, they should not have been included on the Part A Permit as they are part of the process wastewater treatment system and are exempt from RCRA regulation. Also, evidence shows that the API and benzene strippers are regulated by the Oil Conservation Division (OCD) of the New Mexico Energy, Minerals and Natural Resources Department (EMNRD). OCD's Groundwater Discharge Permit #32 (GW 32), covers all discharges by the facility, including the API, benzene strippers and the aeration lagoons into which they discharge.

Required by the OCD is biennial groundwater monitoring which includes all approved RCRA constituents, to the standards of the New Mexico Water Quality Control Commission. Also required 15 annual monitoring of the API, benzene stripper and aeration lagoan effluents. Although the API and benzene stripper effluents are not monitored for RCRA constituents, the aeration lagoon into which they discharge are monitored for RCRA metals, and volatile and semi-volatile organics.

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John Stokes July 13, 1995 Page 2 of 2

Further, Giant has submitted to OCD a modification request identical to the March 6, 1995 request for modification of their RCRA Part A Permit. As per OCD's March 15, 1995 letter to Giant, approval of this modification request is conditional upon Giant's submittal of a closure plan for the existing API. This is analogous to RCRA requirements and further demonstrates that OCD requirements for the API and benzene strippers are protective of human health and the environment.

Therefore, HRMB requests that Giant submit a request for removal of the aforementioned units from Giant's Part A Permit to the Director of NMED Water and Waste Management Division (WWD) for his approval. If the Director approves the request, Giant will be required to submit a revised Part A Permit which excludes the API oil/water separator and the benzene strippers.

If there are any questions on this matter, you may contact Mr. Michael Chacón at (505) 827-4308.

Sincerely, Benito J. Garc

Chief, Hazardous and Radioactive Materials Bureau

cc: Roger Anderson, OCD Ron Kern, HRMB Program Manager Michael Chacón, RCRA Permits David Neleigh, EPA File-Red 95 File-Reading



Route 3_Box 7 Gallup, New Mexico 87301

505 722-3833

July 24, 1995

Mr. Ed Kelley, Director Water and Waste Management Division New Maxico Environment Department 525 Camino De Los Marguez Santa Fe, New Mexico 87502

Dear Mr. Kelley,

Giant Refining recently requested a modification to its Part A RCRA Permit. In reviewing this modification request, the Hazardous & Radioactive Materials.Bureau (HRMB) staff determined that several items listed on Giant's Part A Permit (the API separator and benzene stripping units) should not have been included in the permit since they are part of a process wastewater treatment system and are regulated by the Oil Conservation Division.

Therefore, at the request of the HRMB, Giant hereby requests removal of the abovementioned API separator and benzene stripping units from its Part A Permit. Upon your approval of this request, Giant will submit to the NRMB a revised Part A Permit excluding these units.

Enclosed with this letter is a copy of HRMB Chief Benito Garcia's letter detailing the HRMB staff's findings and his request that Giant seek removal of these units from its Part A Permit.

Should you or your staff have any questions regarding the above, please do not hesitate to contact me or Mr. Lynn Shelton at (505) 722-3833. Thank you for your assistance in this matter.

Sincerely,

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David C. Paulich

David C. Pavlich Health, Safety, and Environmental Manager

cc w/enclosure:

Lynn Shelton, Giant

cc w/o enclosure:

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Roger Anderson, OCD Bureau Chief Michael Chacón, HRMB, RCRA Permits Ron Kern, HRMB Program Manager

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Route 3, Box 7 Gallup, New Mexico 87301

505 722-3833

July 28, 1995

Mr. Ed Kelley, Director Water and Waste Management Division New Mexico Environment Department 525 Camino De Los Marquez Santa Fe, New Mexico 87502

Dear Mr. Kelley:

Earlier this week, I sent you a letter (copy attached) at the direction of Benito Garcia of the Mazardous and Radioactive Materials Bureau (HRMB) requesting your approval to remove several listed items from Giant Refining's Part A RCRA permit. Those items are the API separator and the benzene stripping units. In subsequent discussions with HRMB staff, an additional item was identified as being a good candidate for removal from the Part A Permit. This item is a small hazardous waste drum storage area. Since this area was never constructed and Giant does not foresee a need for it in the near future, its removal from the Part A Permit is appropriate.

Therefore, in addition to the items listed in Giant's letter of July 24, 1995, Giant also requests approval for the removal of the hazardous waste container storage area from its Part A Permit. Upon receipt of your approval, Giant will submit an application for permit modification to the HRMB.

Thank you for your assistance in this matter.

Sincerely,

David C. Parlich.

David C. Pavlich Health, Safety, and Environmental Manager

cc:

Roger Anderson, OCD Michael Chacon, HRMB Ron Kern, HRMB Lynn Shelton, Giant

[SRP\WPDOCS\PAV\NMED.728]

A Division of Giant Industries, Inc.

HA IS '01 10:38AM GIANT REFINING CO.

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Route 3, Box 7 Gallup, New Mexico 87301

505 722-3833

July 24, 1995

Mr. Ed Kelley, Director Water and Waste Management Division New Mexico Environment Department 525 Camino De Los Marquez Santa Fe, New Mexico 87502

Dear Mr. Kelley,

Giant Refining recently requested a modification to its Part A RCRA Permit. In reviewing this modification request, the Hazardous & Radioactive Materials Bureau (HRMB) staff determined that several items listed on Giant's Part A Permit (the API separator and benzene stripping units) should not have been included in the permit since they are part of a process wastewater treatment system and are regulated by the Oil Conservation Division.

Therefore, at the request of the HRMB, Giant hereby requests removal of the abovementioned API separator and benzene stripping units from its Part A Permit. Upon your approval of this request, Giant will submit to the HRMB a revised Part A Permit excluding these units.

Enclosed with this letter is a copy of HRMB Chief Benito Garcia's letter detailing the HRMB staff's findings and his request that Giant seek removal of these units from its Part A Permit.

Should you or your staff have any questions regarding the above, please do not hesitate to contact me or Mr. Lynn Shelton at (505) 722-3833. Thank you for your assistance in this matter.

Sincerely,

Dowind C Paulick

David C. Pavlich Health, Safety, and Environmental Manager

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Route 3, Box 7 Gallup, New Mexico 87301

505 722-3833

August 25, 1995

Mr. Benito J. Garcia, Chief Hazardous & Radioactive Materials Bureau New Mexico Environment Department 525 Camino De Los Marquez Santa Fe, New Mexico 87502

Via: CERTIFIED MAIL RETURN RECEIPT REQUESTED

Re:

Giant Refining - Ciniza Refinery RCRA Operating Permit NMD000333211-2 Class I Permit Modification Request

Dear Mr. Garcia:

Giant Refining Company currently operates its Ciniza refinery under the RCRA Hazardous Waste Facility Permit referenced above (last revision approved via EPA correspondence dated August 16, 1991). During recent discussions with the staff members of the Hazardous & Radioactive Materials Bureau (HRMB), it was discovered that several items currently listed in this facility's RCRA Part A permit have either never been constructed or fall under the jurisdiction of the New Mexico Oil Conservation Division (OCD) and are regulated under this facility's OCD Discharge Plan (GW-032).

In subsequent correspondence, HRMB directed Giant to contact Mr. Ed Kelley, Director of the NMED's Water and Waste Management Division (WWD) to request approval for the removal of these inappropriately listed items from this facility's Part A permit. This request was complied with in correspondence submitted to Mr. Kelley's office on July 24 and July 28, 1995. On August 21, 1995, Giant received WWD's approval of this deletion request in a letter from Mr. Kelley dated August 14, 1995 (copy enclosed).

Therefore, Giant Refining hereby requests a Class I modification to its RCRA Part A Permit #NMD000333211-2 deleting the following items:

:

- the API separator
- the benzene strippers
- the hazardous waste drum storage area

The first two items are being requested for deletion from the permit due to the fact that they are already regulated under this facility's OCD discharge plan. The third item is being proposed for deletion because it was never constructed, and Giant has no plans for its construction in the future.

Enclosed with this letter are a completed Part A Hazardous Waste Permit Application reflecting the above modifications, a location map, a facility site plan, and a photocopy of an aerial view of the facility site.

Should you or your staff have any questions regarding the above, please do not hesitate to contact me or Lynn Shelton at (505) 722-3833.

25 **7** -

Sincerely,

David C. Parlich

David C. Pavlich Health, Safety, and Environmental Manager

cc: Kim Bullerdick, Corporate Counsel Giant Industries Arizona, Inc.

> Lynn Shelton, Senior Environmental Coordinator Giant Refining Company

WWT File

RCRA Permit Binder





GARY E. JOHNSON GOVERNOR State of New Mexico

ENVIRONMENT DEPARTMENT Hazardous & Radioactive Materials Bureau 525 Camino De Los Marquez P.O. Box 26110 Santa Fe, New Mexico 87502 (505) 827-4358 Fax (505) 827-4389

MARK E. WEIDLER SECRETARY

EDGAR T. THORNTON, III DEPUTY SECRETARY

CERTIFIED MAIL RETURN RECEIPT REQUESTED

August 14, 1995

Mr. David Pavlich Health, Safety and Environmental Manager Giant Refinery-Ciniza Route 3, Box 7 Gallup, New Mexico 87301

Dear Mr. Pavlich,

RE: Request to amend Giant's Part A Permit.

The New Mexico Environment Department (NMED) Hazardous and Radioactive Materials Bureau (HRMB) is in receipt of the Giant Refining Company (Giant) letters to HRMB dated July 24 and 28, 1995. In the July 24 letter Giant agrees to HRMB's request (dated July 13, 1995) for Giant to request removal from their RCRA Part A Permit of the following items;

- the API separator
- the benzene strippers.

In the July 28 letter Giant adds the hazardous waste drum storage area to the removal request.

The API separator and benzene strippers are part of the process wastewater treatment system and thus are exempt from RCRA permitting requirements. Further, these units are regulated by NMED Oil Conservation Division (OCD). The hazardous waste drum storage area has not been constructed, and Giant has no plans to construct it, thus there is no need for it to be on the Part A Permit.

HRMB hereby approves Giant's request for removal of the aforementioned items from their Part A Permit. Giant must now submit to HRMB within two (2) weeks of receipt of this letter a revised Part A excluding these units.

John Stokes July 13, 1995 Page 2 of 2

Further, Giant has submitted to OCD a modification request identical to the March 6, 1995 request for modification of their RCRA Part A Permit. As per OCD's March 15, 1995 letter to Giant, approval of this modification request is conditional upon Giant's submittal of a closure plan for the existing API. This is analogous to RCRA requirements and further demonstrates that OCD requirements for the API and benzene strippers are protective of human health and the environment.

Therefore, HRMB requests that Giant submit a request for removal of the aforementioned units from Giant's Part A Permit to the Director of NMED Water and Waste Management Division (WWD) for his approval. If the Director approves the request, Giant will be required to submit a revised Part A Permit which excludes the API oil/water separator and the benzene strippers.

If there are any questions on this matter, you may contact Mr. Michael Chacón at (505) 827-4308.

Sincerely, Benito J. Garcia

Chief, Hazardous and Radioactive Materials Bureau

cc: Roger Anderson, OCD Ron Kern, HRMB Program Manager Michael Chacón, RCRA Permits David Neleigh, EPA File-Red 95 File-Reading

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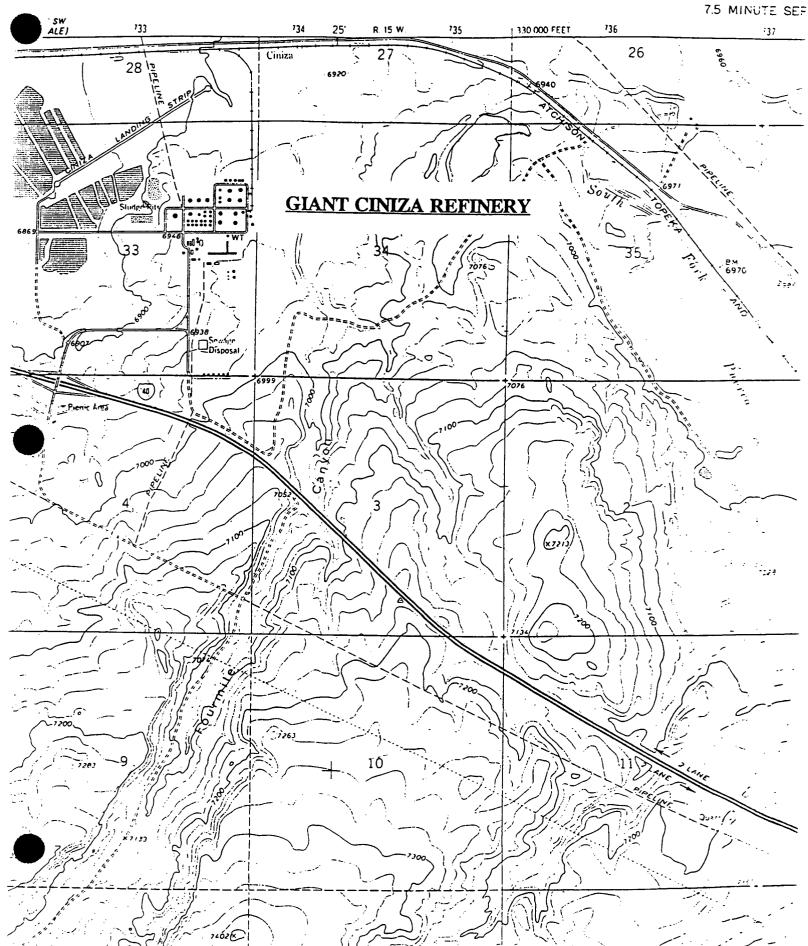
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XV. Map	
Attach to this application a topographic map, or other equivalent map, of the area extendi boundaries. The map must show the outline of the facility, the location of each of its exis structures, each of its hazardous waste treatment, storage, or disposal facilities, and each Include all springs, rivers and other surface water bodies in this map area. See instructio SER ATTACHMENT A	ting and proposed intake and discharge h well where it injects fluids underground. ns for precise requirements.
XVI. Facility Drawing	
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All existing facilities must include a scale drawing of the facility (see instructions for more SEE ATTACHMENT B	e detail).
XVII. Photographs	
All existing facilities must include photographs (aerial or ground-level) that clearly delined treatment and disposal areas; and sites of future storage, treatment or disposal areas (see SEE ATTACHMENT C	
XVIII. Certification(s)	
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ATTACHMENT A

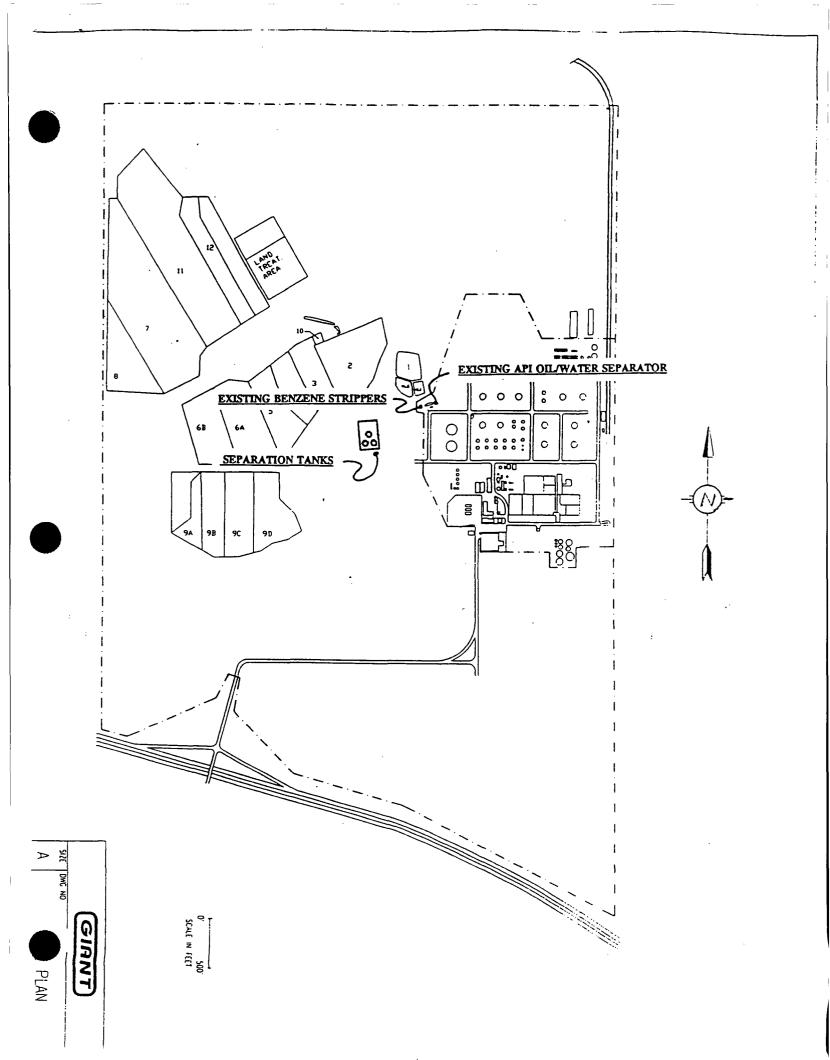
USGS Quadrangle

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ATTACHMENT B

Facility Plan

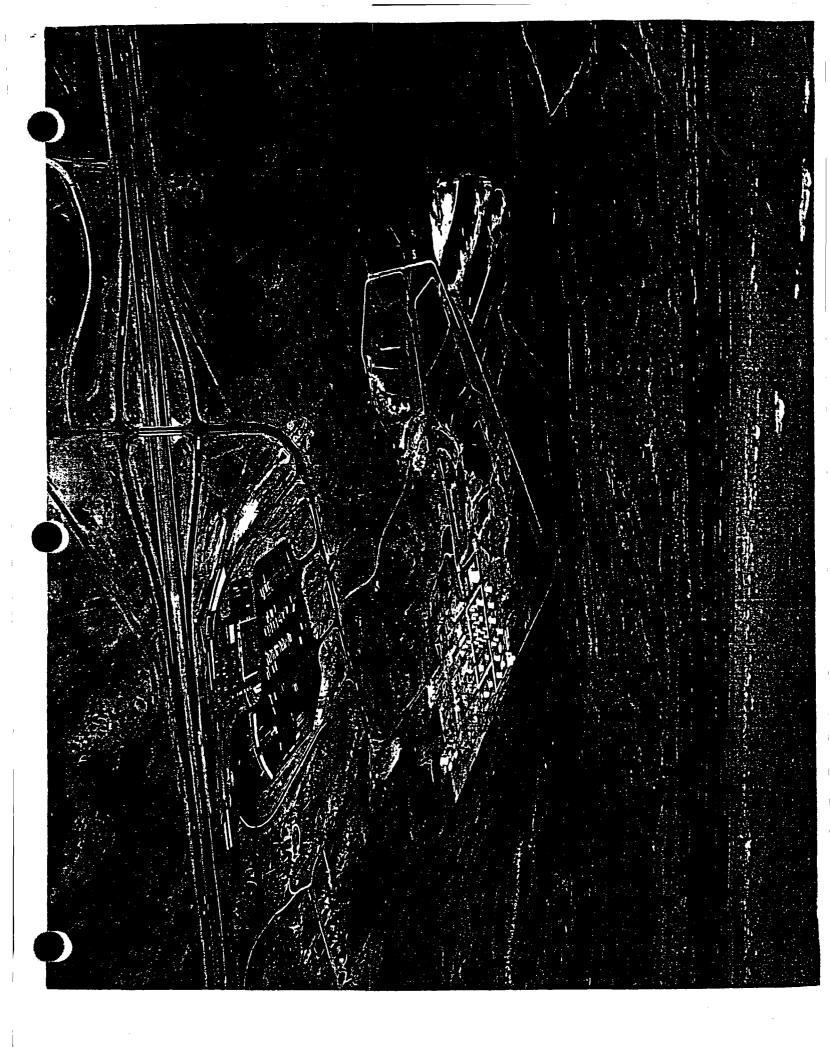


ATTACHMENT C

<u>Aerial Photograph</u>

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SWMU No. 2, Evaporation Ponds

The evaporation pond area was identified as a solid waste management unit (SWMU) and designated as 2 SWMU No. 2 during a Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) 3 4 conducted at the Giant Refining Company - Ciniza Refinery (Ciniza) in the early 1990s. This investigation included both soil and groundwater sampling and analysis. Samples were collected around 5 the perimeter of the ponds and were sampled for volatile organic compounds (VOCs), semivolatile 6 organic compounds (SVOCs), and metals. It was determined that no significant impact had occurred. 7 Based on this, Ciniza recommended no further action (NFA) for this SWMU. In 1994, the U.S. 8 Environmental Protection Agency (EPA) concurred with this finding and approved cessation of the 9 investigative process. However, EPA requested follow-up monitoring at seven groundwater wells 10 surrounding the ponds every five years. Ciniza initiated the five-year sampling schedule in 1996. The 11 survey plat, as required, was submitted to EPA in 1995. Correspondence from the New Mexico 12 Environment Department (NMED) to Ciniza Refinery clarifies that SWMU No. 2, Evaporation Ponds, 13 14 falls under the jurisdiction of New Mexico Oil Conservation Division (OCD) and is regulated pursuant to the facility OCD Discharge Plan (GW-032), pursuant to the Clean Water Act. 15

16 2.1 Site Description and Operational History

1

SWMU No. 2, Evaporation Ponds, (Figures 2-1, through 2-5) consists of a series of evaporation ponds located west and northwest of the Ciniza tank farm. The evaporation ponds are part of the refinery wastewater treatment system. Effluent water from the aeration basin is directed to these ponds and allowed to evaporate.

There are 15 ponds of varying size having a total surface area of approximately 110 acres. All are manmade earthen basins with bermed sidewalls. Water depth typically ranges from 2 to 4 feet, with an average of 3 feet. Total hydraulic holding capacity is approximately 100 million gallons. Some berms incorporate a perimeter road.

The initial evaporation ponds were constructed in the late 1950s. Additional ponds were constructed at various times thereafter. The evaporation ponds have been in continuous service since initial construction. Photographs of the evaporation ponds, taken during the 1998 site inspection performed by Practical Environmental Services, Inc. (PES), are provided in SWMU No. 2 Summary Report. 1 2.2 Land Use

2 The evaporation ponds are currently in active service evaporating wastewater at the Ciniza refinery. It is 3 expected that the evaporation ponds will continue functioning in this capacity into the future. The land 4 will remain under the ownership of the Ciniza refinery.

5 2.3 Investigation Activities

6 Applied Earth Sciences (AES) investigated the evaporation pond area during the early 1990s. Soil and 7 groundwater samples were collected and analyzed. No organic contaminants were detected in any 8 groundwater sample. Similarly, most soil samples indicated no detection of organics; however, trace 9 amounts of toluene were detected in a few samples. Trace metals were detected in both soil and 10 groundwater samples; a few of these samples indicated levels slightly above ambient background 11 concentration.

12 2.3.1 Investigation #1

During the initial site investigation, AES collected and analyzed soil samples from around the perimeter of the evaporation ponds. Samples were collected at multiple depths and at both upgradient and downgradient locations. Several borings were angled to collect samples from beneath the ponds.

The initial site investigation found no detection of VOCs or SVOCs in 46 of the 54 soil samples collected. Trace amounts of toluene were detected in eight samples: 5 mg/kg is the highest reported concentration detected; the remaining seven samples detected less than 0.5 mg/kg. Trace butylbenzylphthalate, which is not a refinery related waste and therefore may represent anomalous data, was also detected in one sample at a concentration of 0.3 mg/kg.

State of New Mexico corrective action levels for benzene, toluene, ethylbenzene, and xylenes (BTEX) in soil are 50 mg/kg total and 10 mg/kg of benzene. Eight of 54 samples indicated trace BTEX, the highest of which was 5 mg/kg total; well below the 50 mg/kg corrective action level.

Trace metals were also detected in all soil samples; of which, most tested within the range of normal background concentration. A few samples indicated slightly elevated levels of chromium and nickel.

Groundwater samples were collected from seven monitoring wells in the vicinity of the evaporation ponds. Sampling points included upgradient and downgradient locations. The initial site investigation found no detection of VOCs or SVOCs in any of the groundwater samples collected. Trace metals were detected in all groundwater samples; a few samples indicated slightly elevated levels of cadmium and
 selenium.

Trace detection of toluene and butylbenzylphthalate in various soil samples presents no logical or consistent pattern of release, is well below action levels, and may represent anomalous data. This low level of contaminant detection is indicative of no significant impact or migration. Trace detection of metals at levels slightly above ambient background concentration is likely due to normal soil variation. The absence of organic contaminants in underlying groundwater is confirmatory of the highly impermeable characteristic of the confining soil.

9 2.4 Site Conceptual Model

10 There is no impact on the environmental fate of the land.

11 2.5 Site Assessments

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- 12 During the week of March 23, 1998, PES performed an on-site inspection. Observations are as follows:
 - The evaporation ponds are in active service treating effluent wastewater from the aeration basins. All 15 ponds contained water. Freeboard space was evident on all ponds.
 - Containment berms and sidewalls are intact and stable. No erosion, damage, or sign of containment failure was observed.
 - No soil staining or distressed vegetation was observed at or in the vicinity of any pond.
 No discoloration or hydrocarbon sheen was evident on any of the ponds.
 - Local soil in the vicinity of the evaporation ponds is bentonitic clays and silts. Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than 10⁻⁷ cm/sec.
 - Perimeter roads are located on the berms surrounding several of the ponds. These roads are used for access and inspection.

PES did not perform any sampling or analysis during this site inspection. The inspection was limited only
to visual observations.

Based on this assessment, PES determined that the evaporation ponds are in active service and functioning normally. The evaporation ponds are properly designed and located in an appropriate geologic setting in which the underlying bentonitic soil has a very low hydraulic conductivity that effectively serves as an aquiclude.

2.6 NFA Proposal 1

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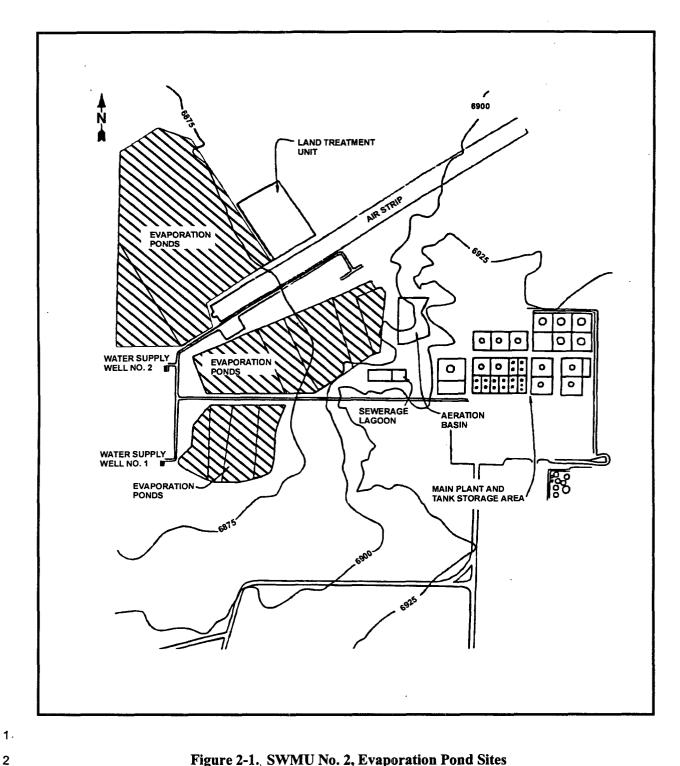
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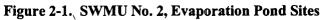
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- Ciniza is proposing that no further action is required for SWMU No. 2 based on the following criteria: 2
 - No release to the environment has occurred or is likely to occur in the future from the • evaporation ponds. (NFA Criterion 3)
 - The SWMU is characterized and managed under another authority, OCD, which adequately addresses RCRA corrective action. (NFA Criterion 4)
 - The SMWU has been characterized in accordance with current applicable state regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use. (NFA Criterion 5)

The rationale for the proposed NFA is based on the status of the evaporation ponds as part of the process 10 wastewater treatment system and the results of the investigation and assessment of the evaporation ponds. 11 12 These activities found no contamination requiring corrective action. The detection of trace levels of toluene and butylbenzylphthalate presents no logical or consistent pattern of release, is well below action 13 levels, and may represent anomalous data. This low level of contaminant detection is indicative of no 14 significant impact or migration. The detection of metals at levels slightly above ambient background 15 concentration is likely due to normal soil variation. The absence of organic contaminants in underlying 16 groundwater is confirmatory of the highly impermeable characteristic of the confining soil. 17





Ciniza Refinery NFA Report, Rev 0.0 August 2001

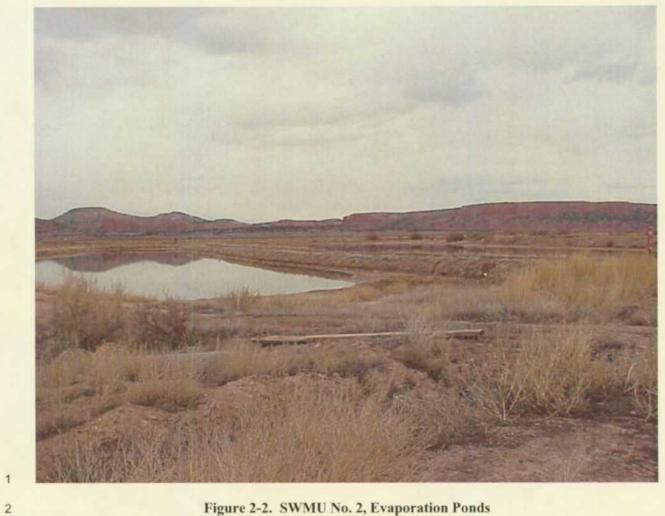


Figure 2-2. SWMU No. 2, Evaporation Ponds

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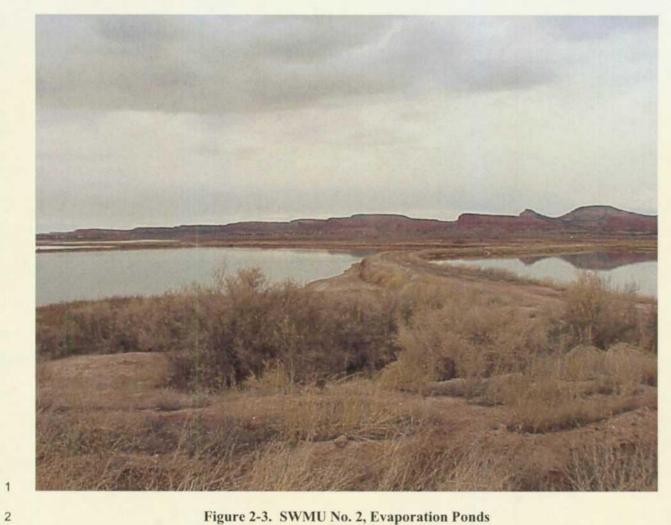


Figure 2-3. SWMU No. 2, Evaporation Ponds

Ciniza Refinery NFA Report, Rev 0.0 August 2001



Figure 2-4. SWMU No. 2, Evaporation Ponds

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Figure 2-5. SWMU No. 2, Evaporation Ponds

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SWMU #2 Summary Report

Evaporation Ponds Ciniza Refinery McKinley County, New Mexico



Prepared for:

Ciniza Refinery Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

Prepared by:

Practical Environmental Services, Inc. 1444 Wazee Street, Suite 225 Denver, Colorado 80202

Job No. 98-205-03

April 23, 1998

1.0 EXECUTIVE SUMMARY

Practical Environmental Services, Inc. (PES) has been retained by Giant-Ciniza Refinery (Ciniza) to perform a visual inspection, data evaluation, and status assessment for the evaporation ponds located within the Ciniza Refinery, in McKinley County, New Mexico.

The evaporation pond area was identified as a Solid Waste Management Unit (SWMU), and designated as SWMU #2, during a RCRA Facility Investigation (RFI) conducted at the refinery in the early 1990's. This investigation included both soil and groundwater sampling and analysis, determined that no significant impact had occurred, and recommended no further action (NFA).

In 1994, the Environmental Protection Agency Region VI Office (EPA) concurred in this finding, approved cessation of the investigative process, and requested follow-up monitoring at seven groundwater wells. Monitoring samples are scheduled to be collected and analyzed during May 1998.

This summary report for SWMU #2 has been prepared in conjunction with submittal of a Resource Conservation and Recovery Act (RCRA) Part B permit application covering post closure care of the Ciniza Refinery Land Treatment Unit. All investigative activities for SWMU #2 have been completed. This assessment is summarized as follows.

- ⇒ The evaporation ponds continue in active service evaporating wastewater at the refinery and are functioning normally.
- ⇒ Containment berms and basin sidewalls have been inspected and are intact and stable.
- ⇒ Local soil underlying the ponds predominantly consists of bentonitic clays and silts having a very low hydraulic conductivity.
- ⇒ Soil and groundwater sampling and analysis was conducted during an initial site investigation. Trace organic contaminants were detected below corrective action levels. The site was recommended for NFA and approved by the EPA.
- ⇒ SWMU #2 has been characterized in accordance with current applicable state and federal regulations, and the available data indicate that no significant environmental impact or migration has occurred.

2.0 BACKGROUND

During 1987, a RCRA Facility Assessment was conducted at the Ciniza Refinery. This assessment identified various "Solid Waste Management Units" and recommended further evaluation. A RCRA Facility Investigation was subsequently conducted and the evaporation ponds site was identified as SWMU #2.

Applied Earth Sciences (AES) investigated the evaporation pond area during the early 1990s. Soil and groundwater samples were collected and analyzed. No organic contaminants were detected in any groundwater sample. Similarly, most soil samples indicated no detection of organics; however, trace amounts of toluene were detected in a few samples.

Trace metals were detected in both soil and groundwater samples; of which, a few samples indicated levels slightly above ambient background concentration.

As a result of the investigation, AES recommended no further action for this SWMU. Results and recommendations were reported to the EPA in 1991. The EPA approved the NFA finding in 1994, with the provision that on-going groundwater monitoring be performed every five years.

3.0 SITE LOCATION AND DESCRIPTION

SWMU #2 is located within the Ciniza Refinery's property boundary. This refinery is located on the north side of Interstate 40, approximately 17 miles east of Gallup, New Mexico. Within the refinery, SWMU #2 is located to the west of the process unit and tankfarm area on a lower flat plain. See Figure No. 1 for location details.

The evaporation ponds are part of the refinery wastewater treatment system. Effluent water from the aeration basins is directed to these ponds and allowed to evaporate.

There are 15 ponds of varying size having a total surface area of approximately 110 acres. All are man-made earthen basins with bermed sidewalls. Water depth typically ranges from 2 to 4 feet, with an average of 3 feet. Total hydraulic holding capacity is approximately 100 million gallons. Some berms incorporate a perimeter road.

The initial evaporation ponds were constructed in the late 1950's. Additional ponds were constructed at various times thereafter. The evaporation ponds have been in continuous service since initial construction.

4.0 SITE INSPECTION

During the week of March 23, 1998, an on-site inspection was performed. Photographs are included in the appendix to this report. Observations are noted as follows:

- The evaporation ponds were observed in active service treating effluent wastewater from the aeration basins. All 15 ponds contained water. Freeboard space was evident on all ponds.
- Containment berms and sidewalls were visually inspected on all ponds. All were found to be intact and stable. No erosion, damage, or sign of containment failure was observed.

- No soil staining or distressed vegetation was observed at or in the vicinity of any pond. No discoloration or hydrocarbon sheen was evident on any of the ponds.
- Local soil in the vicinity of the evaporation ponds presents as bentonitic clays and silts. Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than 10⁻⁷ cm/sec.
- Perimeter roads are located on the berms surrounding several of the ponds. These roads are used for access and inspection.

5.0 DATA REVIEW

Soil samples from around the perimeter of the evaporation ponds were collected and analyzed during the initial site investigation. Samples were collected at multiple depths and at both upgradient and downgradient locations. Several borings were angled to collect samples from beneath the ponds.

The initial site investigation found no detection of VOCs or SVOCs in 46 of the 54 soil samples collected. Trace amounts of toluene were detected in eight samples; of which, 5 mg/kg is the highest reported detection and the remaining seven samples detected less than 0.5 mg/kg. Trace butylbenzylphthalate was also detected in one sample at a concentration of 0.3 mg/kg.

State of New Mexico corrective action levels for BTEX in soil is 50 mg/kg total and 10 mg/kg of benzene. Eight of 54 samples indicated trace BTEX, the highest of which was 5 mg/kg total; well below the 50 mg/kg action level.

Trace metals were also detected in all soil samples; of which, most tested within the range of normal background concentration. A few samples indicated slightly elevated levels of chromium and nickel.

Groundwater samples were collected from seven monitoring wells in the vicinity of the evaporation ponds. Sampling points included upgradient and downgradient locations.

The initial site investigation found no detection of VOCs or SVOCs in any of the groundwater samples collected.

Trace metals were detected in all groundwater samples. A few samples indicated slightly elevated levels of cadmium and selenium.

Per EPA request, groundwater monitoring samples are scheduled to be collected and analyzed during May 1998.

6.0 ASSESSMENT

Based on the site inspection and data review, the evaporation pond area is assessed as follows.

- The evaporation ponds are in active service, functioning normally, and performing the necessary task of evaporating wastewater.
- The evaporation ponds are properly designed and located in an appropriate geologic setting in which the underlying bentonitic soil has a very low hydraulic conductivity which effectively serves as an aquiclude.
- Trace detection of toluene and butylbenzylphthalate in various soil samples presents no logical or consistent pattern of release, is well is below action levels, and may represent anomalous data. This low level of contaminant detection is indicative of no significant impact or migration.
- Trace detection of metals at levels slightly above ambient background concentration is likely due to normal soil variation.
- The absence of organic contaminants in underlying groundwater is confirmatory of the highly impermeable characteristic of the confining soil.
- The no further action finding that was recommended by AES and approved by the EPA is appropriate for this site.
- The next groundwater monitoring event is scheduled for 2003. If this sampling and analysis confirms previous findings, further monitoring is unnecessary and should be discontinued.

7.0 PROFESSIONAL ENGINEER'S CERTIFICATION

This summary report for SWMU #2 has been prepared under the direct supervision and control of a Registered Professional Engineer.

Client: Ciniza Refinery Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

Job No.: 98-205-03

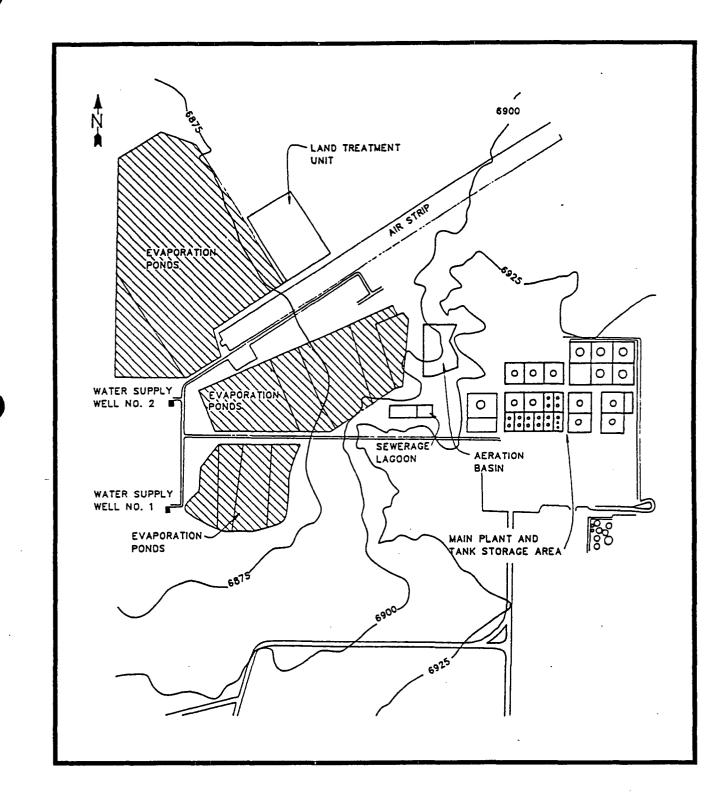
Date: April 23, 1998

Prepared and Certified by:

Thomas D. Atwood, P.E. Colorado Registration No. 22866

SWMU #2 Summary Report

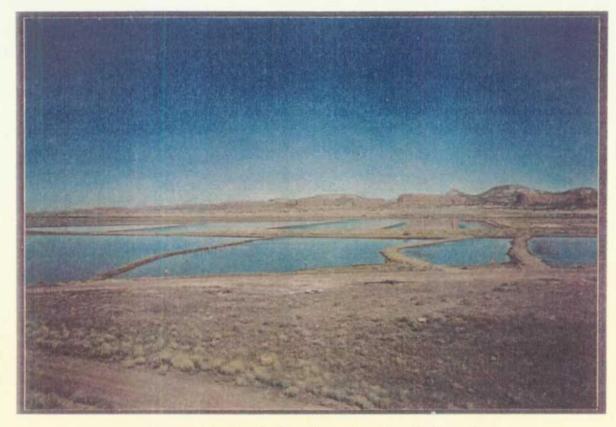
Figure No. 1 Evaporation ponds Site



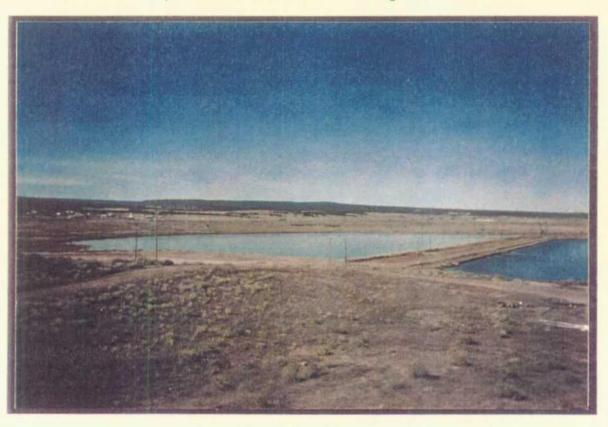
SWMU #2 Summary Report

Page 6

Site Inspection Photographs



Evaporation Ponds Overview - Looking Northwest

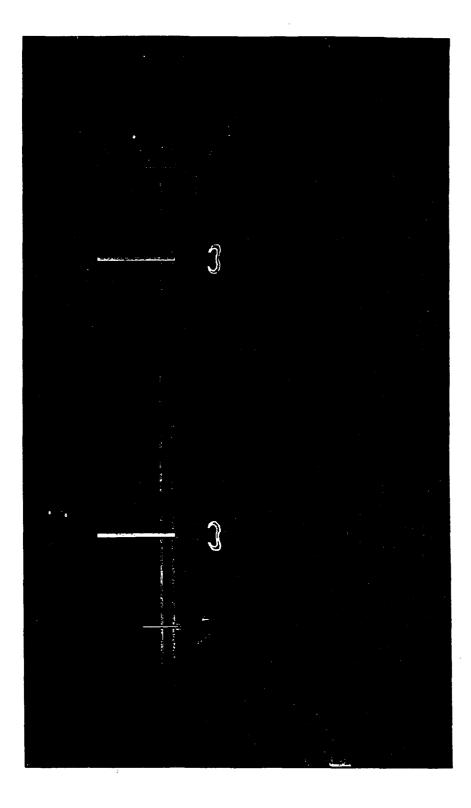


Evaporation Pond - South Section

SWMU #2 Summary Report

Appendix

SWMU-2 EVAPORATION PONDS



American Environmental Network, Inc.

AEN I.D. 805378

June 12, 1998

GIANT REFINING COMPANY ROUTE 3 BOX 7 GALLUP, NM 87301

Project Name (none) Project Number (none)

Attention: STEVE MORRIS

On 5/20/98 American Environmental Network (NM), Inc. (ADHS License No. AZ0015), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

EPA method 8260 was performed by American Environmental Network (NM) Inc., Albuquerque, NM.

All other parameters were performed by American Environmental Network (FL) Inc., Pensacola, FL.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

Kimberly D. McNeill Project Manager

MR: mt

Enclosure

H. Mitchell Rubenstein, Ph. D. General Manager

American Environmental Network, Inc.

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CLIENT	: GIANT REFINING COMPANY	AEN I.D.	: 805378
PROJECT #	: (none)	DATE RECEIVED	: 5/20/98
PROJECT NAME	: (none)	REPORT DATE	:
AEN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	OW-7-51898	AQUEOUS	5/18/98
02	OW-10-51898	AQUEOUS	5/18/98



Printed. 6/12/98, 12:13 PM

· American Environmental Network, Inc.

GC/MS RESULTS

TEST CLIENT PROJECT # PROJECT NAME	: VOLATILE ORG : GIANT REFINING : (none) : (none)		1OD 8260	AEN I.D DATE RECEIVED	805378 5/20/98	
SAMPLE	<u></u>		DATE	DATE	DATE	DIL.
ID #	CLIENT ID	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
805378-01	OW-7-51898	AQUEOUS	5/18/98	<u>N/A</u>	05/21/98	1
PARAMETER	DET. LIMIT		UNITS			
Benzene	1.0	< 1.0	ug/L			
Toluene	1.0	< 1.0	ug/L			
Ethylbenzene	1.0	< 1.0	ug/L			
m&p Xylenes	1.0	< 1.0	ug/L			
o-Xylene	1.0	< 1.0	ug/L			
SURROGATE % RECOVERY						
1,2-Dichloroethane-d4		110				
		(80 - 120)				
Toluene-d8		105				
		(88 - 110)				
Bromofluorobenzene		101				
		(86 - 115)				

· American Environmental Network, Inc.

GC/MS RESULTS

TEST CLIENT PROJECT # PROJECT NAME	: VOLATILE ORGA : GIANT REFINING : (none) : (none)		10D 8260	AEN I.D DATE RECEIVED	805378 5/20/98	
SAMPLE			DATE	DATE	DATE	DIL.
ID #	CLIENT ID	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
805378-02	OW-10-51898	AQUEOUS	5/18/98	N/A	05/21/98	1
PARAMETER	DET. LIMIT		UNITS		<u></u>	
Benzene	1.0	< 1.0	ug/L			
Toluene	1.0	< 1.0	ug/L			
Ethylbenzene	1.0	< 1.0	ug/L			
m&p Xylenes	1.0	< 1.0	ug/L			
o-Xylene	1.0	< 1.0	ug/L			
SURROGATE % RECOVERY						
1,2-Dichloroethane-d4		109				
		(80 - 120)				
Toluene-d8		104				
		(88 - 110)				
Bromofluorobenzene		103				
		(86 - 115)				





American Environmental Network, Inc.

GC/MS RESULTS

TEST CLIENT PROJECT # PROJECT NAME	: VOLATILE ORG : GIANT REFININ : (none) : (none)			AEN I.D	. :	805378	
SAMPLE	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			DATE	DATE	DIL.	
ID #	BATCH		MATRIX	EXTRACTED	ANALYZED	FACTOR	
REAGENT BLANK	052198	4	QUEOUS	<u> </u>	05/21/98	1	
PARAMETER	DET. LIMIT		UNITS				
1.1-Dichloroethene	1.0	< 1.0	ug/L				
Benzene	1.0	< 1.0	ug/L				
Trichloroethene	1.0	< 1.0	ug/L				
Toluene	1.0	< 1.0	ug/L				
Chlorobenzene	1.0	< 1.0	ug/L				
Ethylbenzene	1.0	< 1.0	ug/L				
m&p Xylenes	1.0	< 1.0	ug/L				
o-Xylene	1.0	< 1.0	ug/L				
SURROGATE % RECOVERY							
1,2-Dichloroethane-d4		105					
		(80 - 12	20)				
Toluene-d8		99	-				
		(88 - 1 ⁻	10)				
Bromofluorobenzene		94					
		(86 - 1 ⁻	15)				



[.] American Environmental Network, Inc.

Spike Recovery and RPD Summary Report - WATER

: C:\HPCHEM\1\METHODS\82600310.M (RTE Integrator) Method : AEN New Mexico GC/MS Title Last Update : Tue May 12 14:39:09 1998 Response via : Initial Calibration Non-Spiked Sample: 05219811.D Spike Spike Duplicate Sample Sample 052198S2.D File ID : 052198S1.D Sample : 805377-04 MS 805377-04 MS 21 May 98 5:32 pm Acq Time: 21 May 98 4:56 pm Sample Spike Spike Dup Spike Dup RPD Compound QC Limits Conc Added Res Res %Rec %Rec RPD % Rec 48 I 1,1-Dichloroethene 0.0 50 48 97 96 14 61-145 1 0.0 50 50 50 101 101 76-127 0 11 Benzene 50 0.0 50 50 101 99 14 71-120 Trichloroethene 1 96 Toluene 0.0 50 50 48 99 3 13 76-125 95 94 1 13 75-130 0.0 50 48 47 llorobenzene

- Fails Limit Check

82600310.M Fri May 29 12:04:59 1998



American Environmental Network

628 Route 10 • Whippany, NJ 07981 • (973) 428-8181 • Fax (973) 428-5222

REPORT TRANSMITTAL

JUNE 10, 1998

AEN-NEW MEXICO

Project: GIANT REFINING COMPANY/805378

PREPARED BY:

AMERICAN ENVIRONMENTAL NETWORK INC.

(CERTIFICATION NUMBER 14530)

AEN JOB No. 20980-82359

VOLUME 1 of 1

Analytical Services For The Environment

000001



20980-82359 AEN-NEW MEXICO 2709-D PAN AMERICAN FREEWAY, N.E. ALBUQUERQUE, NM 87107

ATTENTION: K.MCNEILL

The following samples were received for analysis by AEN-NJ (Cert.#14530). These samples were received on and labeled as follows:

AEN Sample No.:	Client ID:	Date Received
82359001	805378-01	05/21/98
82359002	805378-02	05/21/98

DATA RELEASE AUTHORIZED BY:

Kin- Woo

Brian W. Wood Director of Operations

American Environmental Network

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AEN-NJ Lab Certifications

AEN-NJ possesses the following regulatory certifications and is currently certified to perform analysis in accordance with regulations pertaining to these certifications. Certificates are on file at the laboratory.

State/Agency Certification	Lab ID Number	
CLP Organics Contract	68D50011	
Connecticut	PH0722	
Maryland	195	
New Jersey	14530	
New York	10997	
North Carolina	339	
Pennsylvania	68-355	
Rhode Island	178	
West Virginia	258	
USDA Permit	S-3295 Revised	
Delaware	NJ323	

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Last updated: 3/24/98

CHAIN OF CUSTODY

Interlab Cain of Custody	eta by TCLP (1311) cs GC/MS (624/8240) cs GC/MS (624/8240) 5/8150) 5/8150) 5 (608/8080) 5 (608/800) 5 (608/8080) 5 (608	AT - Zhais - TAL atals - PP Lis atals - PP L					RECEIPT SAMPLES SENT TO: RELINQUISHED BY: 1. RELINQUISHED BY: 2.	CONNECTICUT Signature:	ILLINOIS JUMCMC BUW I NO	MASSACHUSETTS MULLING TOTING 5/20/08	PORTLAND Abuquerque Company:	RECEIVED BY: 1. RECEIVED BY: (LAB)	Signature: Time: Signature: Time: Signature:	Printed Name: Date: Company: Company: A Company: A	
AMER A ENVIRONMENTAL NETWORK Albuque B. New Mexico NETWORK PROJECT MANAGER: KIMBERLY D. MCNEILL	COMPANY: AMERICAN ENVIRONMENTAL NETWORK ADDRESS: 2709-D Pan American Freeway, NE Albuquerque, NM 87107 ダンプン	a McNeill	W				PROJECT INFORMATION SAMPLE RECEIPT	PROJECT NUMBER: ROB378 TOTAL NUMBER OF CONTAINERS	PROJECT NAME: / AILINT POP NI WA CO CHAIN OF CUSTODY SEALS		1 🖫	STANDARD RUSH! LAB NUMBER		DUE DATE:	CLIENT DISCOUNT:

METHODOLOGY REVIEW

ANALYSES

SEMIVOLATILES

METHOD NUMBER

SW846 3510A/8270B



ORGANICS ANALYSIS DATA AND SAMPLE QUALIFIERS

DATA QUALIFIERS:

المحمد والمراجع والمحاج والمحمد والمراجع والمحمد والمراجع والمحمد والمراجع والمحمد والمحمد والمحمد والمحمد والم

- U Indicates that the compound was analyzed for but not detected.
- J This qualifier indicates an estimated concentration. This qualifier is used (1) when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the CRQL or PQL but greater than zero, and (3) when the retention time data indicate the presence of a compound that meets the Pesticide/Aroclor identification criteria, and the result is less than the CRQL or PQL but greater than zero.
- B This qualifier is used when the analyte is found in a method blank as well as the sample. It indicates possible sample contamination and warns the user to use caution when applying the results of this analyte.
- E Exceeds calibration curve
- A Indicates that a tentatively identified compound is a suspected Aldol-condensation product.
- N Indicates presumptive evidence of a compound. This qualifier is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all tentatively identified compound results. For generic classification of a tentatively identified compound, such as chlorinated hydrocarbon, the N code is not used.
- D This qualifier identifies all compounds identified in an analysis at a secondary dilution factor.
- P Indicates that the quantitative results from the two GC columns differed by more than 25 percent.

SAMPLE QUALIFIERS:

- DL Indicates that the analysis was performed at a secondary dilution.
- RE Rerun Indicates that the analysis is a reinjection or a reextraction and reanalysis, usually due to a failed QC element in the initial analysis.

1 American Fruironmental Network

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LABORATORY CHRONICLE

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AEN, Inc. - NEW JERSEY SAMPLE RECEIPT VERIFICATION FORM

• OF SAMPLES	JUMBER: 82359 CLIENT NM DATE RECEIVED: 5/21/58
COOLER TEMPS * CSCOOLER OUTSIDE 2.4 * CPRESERVED./CÉALLE/LEVIONE # OUTSIDE TEMP RANGE. WEEE SAMPLES RECEIVED LESS THAN & HOURS FROM COLLECTION 7YESNO CHAIN OF CUSTODY (**RESPITABLESH FRECEIVED LESS THAN & HOURS FROM COLLECTION 7YESNO CHAIN OF CUSTODY (**RESPITABLESH FRECEIVED LESS THAN & HOURS FROM COLLECTION 7YESNO CHAIN OF CUSTODY (**RESPITABLESH FRECEIVED LESS THAN & HOURS FROM COLLECTION 7YESNO CHAIN OF CUSTODY (**RESPITABLESH FRECEIVED BY: DRIVE SUBCONTRACTESH DOTTLES INTACT YESNO SAMPLES ADDIELS INTACT YESNO SAMPLES ADDIELS INTACT YESNO SAMPLES RECEIVED WITHIN HOLDING THE LESSNO SAMPLES RECEIVED WITHIN HOLDING THE LESSNO SAMPLES RECEIVED WITHIN HOLDING THE YESNO SUFFICIENT SAMPLE VOLWER RECEIVED 	# OF SAMPLES # OF COOLERS
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SAMPLE TAGS: PRESENT (ABSENT) RECEIVED BY: DRIVERIF SHIPPED AIRBILL PRESENT*	CHAIN OF CUSTODY PRESENT PROPERLY SIGNED, DATED, TIME : _YES _ NO
Image: Starting of the second start is the second start	SAMPLE TAGS : PRESENT ABSENT RECEIVED BY: DRIVERIF SHIPPED AIRBILL PRESENT#
Image: Source is a subject of the s	YES NO SAMPLE BOTTLES INTACT YES NO PROPER CONTAINERS PER ANALYSIS USED
Image: NO SAMPLES PROFERILY PRESERVED Image: NO SUBFLICENT SAMPLE VOLUME RECEIVED Image: NTIAL DATE - RUSH REPORT ISSUED BY NA Image: DATE - #I ANALYSIS PERFORMED BY NA NOTE AND ITEMIZE BY SAMPLE AFFECTED, DISCREPANCIES AND NONCONFORMANCES FOUND:	YFS NO LABELS COMPLETE AND LEGIBLE (ID, DATE, TIME, SIGNATURE, PRESERVATIVE)
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INTERNAL CHAIN OF CUSTODY INITIATED YESNO ALL SIGNATURES AND DATES COMPLETE YESNO VERIFICATION FORM COMPLETE & ACCURATE: SUPERVISOR	FINAL INSPECTION
Print name	INTERNAL CHAIN OF CUSTODY INITIATEDYESNO
NAME CLIENT REPRESENTATIVE INFORMED	
CORRECTIVE ACTION REQUESTED BY CLIENT:	CLIENT INFORMED OF DISCREPANCIES/NONCONFORMANCES BY PMDATE TIME
CORRECTIVE ACTION TAKEN:	NAME CLIENT REPRESENTATIVE INFORMED
JECT MANAGER APPROVED VERIFICATION FORM COMPLETE:	CORRECTIVE ACTION REQUESTED BY CLIENT:
JECT MANAGER APPROVED VERIFICATION FORM COMPLETE:	
	CORRECTIVE ACTION TAKEN:

JOB NUMBER : S		TERNAL CHAIN OF CUSTOD SAMPLE CONTRO DATE RECEIVED :)] /26/ 94	0000009 DATE TO DISPOSE : <u>7/20/</u> 9 ¥
PLE CONTROL TECH.		ANALYST		SAMPLE =/ BOTTLE #/DEPART./TEST
RET INOUISHED BY	DATE TIME 5/21/4/ 15:30	RECEIVED BY R, Hmm	DATE TIME 15-21-99	SAMPLE #SIDEPARTMENTIANALYSIS OUI - DOZ-OI O, BAR
RECEIVED BY	DATE TIME 5/21/82 (6:00	RELINOUISHED BY P, Am	DATE TIME 5-21-98 1600	SAMPLE STATUS DEPLETED RETURNED
<u>DFB</u>	DATE TIME	RECEIVED BY	DATE TIME	SAMPLE #S / DEPARTMENT / ANALYSIS
RELINOUISHED BY		· · · ·		
RECEIVED BY	DATE TIME	RELINOUISHED BY	DATE TIME	SAMPLE STATUS DEPLETED/RETURNED
				· · · · · · · · · · · · · · · · · · ·
**LINOLISHED BY	<u>DATE TIME</u>	RECEIVED BY	DATE TIME	SAMPLE #S / DEPARTMENT / ANALYSIS
RECEIVED BY	DATE TIME	RELINQUISHED BY		SAMPLE STATUS DEPLETED/RETURNED
RELINOLISHED BY	DATE TIME	RECEIVED BY	DATE TIME	STAPLE #S / DEPARTMENT / ANALYSIS
RECEIVED BY	DATE TIME	RELINOUISHED BY	DATE TIME	SAMPLE STATUS DEN ETED/RETURNED
· · · · · · · · · · · · · · · · · · ·	l	1	<u> </u>	L

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Samples Disposed by	Date:	Soil Drum #	Water Drum #	
Jther :	Returned to	client (Client Signati		Date

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AEN, INC. - NEW JERSEY INTERNAL CHAIN OF CUSTODY CHRONICLE

<u>BNA</u> JOB/CASE NUMBER: _ 82359

I confirm that I have performed the analysis below following SOP quidelines:

ANALYSIS:

Sample No(s) 002	Analyst Signature	Date 52247
REANALYSIS:	•••	
Sample No(s)	Analyst Signature	Date
PREPARATION:		
Sample No(s)	Extraction Tech. Signature	Date Consumed $5-2i-9i$
		·

I confirm that I have reviewed all associated data for this job:

REVIEWED BY:

Signature

Date

Data Release Authorized By:

AUTHORIZATION:

Group Leader/Lab Manager

6/11/98

Date

AEN - NEW JERSEY SIGNATURE PAGE

Employee Name	Signature	Initials
REPORTS PRODUCTION		
Berchak, Tina	Ana Berchak	TB .
Carman, Jennifer	HALLON Chippen	ac
Cignarella, Christine	Contraction Ula	P.P.
Powers, Robert	Robert Jamens	RA
Wood, Mary	Mary B. Waad	MBU
BOTTLE PREP		
Cajiao, Joaquin	A R	
D'Achille, Al	Xit Geotivico	100
Reynolds, Ed	Si Dolenna D	
Sander, James	Nin Storte	12-
	1 and the second	1
SYSTEMS	1	
Canada, Josh	_ lang	J.C.
PM		
Brack, Joe		
Coppola, Julianna	Alisiana (copola	J.C
Foschini, Mark	Willick Inching	MZ
Glenn, Dan	Tall	ne?
Hobart, Paul	Cul ifit	F4
		<u></u>
ADMINISTRATION		and
Gemma, Mike	Machael theme	MLS.
Nadzen, Al	al laga	
Petretti, Deana	Deuna Potsett	LAK
Williams, Kirsten	Kustafillic	1 KW

Page 1



AEN - NEW JERSEY SIGNATURE PAGE

Employee Name	Signature	- Initials
SAMPLE CONTROL		
Britton-Fedon, Wendy	Upartit the the	IND
Doeffinger, John	Mr. Acres	OND
Droz, Efrain	King and	50
		•
LAB DIRECTOR		
Wood, Brian	Mrs-Wood	PH.
LAB MANAGER		
Gorman, Kevin	He ghorn	676-
QA/QC MANAGER		
	Ko-9 Horner GATER. R) KJG
GC		
Carlone, John	12 Alte Calme	JJG
Herrman, Claus	ither kr	- 4
Lena, John		
Manlangit, Ferdie	-Craf	Allen
Scott, Gordon	- hand = had	GDS
Tako, Lisa	dusa Jalio	let
Waldron, Stacey	stacentuldion	Sc
GC/MS VOA		
Acierno, Mark		MIA
Klusey, Sylvanus	Suppressing Khisey	MIA Sil
Mauriello, Gregg	Supranis Khisey Ann m K	GM
· <u>····································</u>		

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AEN - NEW JERSEY SIGNATURE PAGE

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Employee Name	Signature	Initials
GC/MS SEMIVOA		
Gustavo, Mato	Spita Pitto	LARI
Hamernick, Richard	12 Aman	Rtf
O'Brien, Patrick	Patrick go	for
Pappas, Jerry	Lawy Fun	(\mathbb{A})
Stanton, Helen	A man Contra	- Etts
METALS		
Goudsward, Kevin) open	723
Chang, Grace	Cit	GC
Cousineau, Paul	hit can	R2
Lane, Lisa	- thank	ett
Nadzen, Tim	In Machan	J. 191
Patel, Darshana	Dushina Pritel	DP.
WET CHEMISTRY		
Bussard, Karen	Hurs M. Busard	K.M.B.
Florance, Gerard	isong Strom	25
Foti, Lisa	Ch. Z. FCh	K
Kenneweg, John	inthe Cimme	R
Piatt, Ernest	Curit first t	ELF
·		
FIELD SERVICES		
Knudsen, Troy	- Lipy Kingdo e-	L E
Morgan, Chris	· Little Maniput	Cn.
Murad, John	John Mend	0227
	U U	<i>U</i>
	· · · · · · · · · · · · · · · · · · ·	
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Page 3

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CONFORMANCE/NON-CONFORMANCE

Client: AEN - NEW MEXICO

Job No: 20980-82359

NONCONFORMANCE SUMMARY

SEMIVOLATILES

No problems were encountered.

SEMIVOLATILES

MATRIX: <u>Water</u>

JOB No.: 82359

SEMIVOLATILE ORGANIC ANALYSIS RESULTS

Quantitation_Factor (QF)	1.00	1.00	1.00			Method Practical
Method Blank I.D.	G4670	G4670	G4670			Quantitation Limits (PQL)*
Lab I.D.	SBLK15746	82359001	82359002			
<u>Client 1.D</u>	METHOD BLANK	805378-01	805378-02			
		OW-7-51898	OW-10-51898			
Phenol	U		ป			10.0
Bis(2-Chloroethyl)Ether	Ű	U	Ű			10.0
2-Chlorophenol	Ŭ	Ū Ū	U			10.0
1.3-Dichlorobenzene	U	Ū	Ū			10.0
1.4-Dichlorobenzene	U	U	U			10.0
1.2-Dichlorobenzene	Ú	··· U	U			10.0
2-Methylphenol	<u> </u>	U	U			10.0
2,2'-Oxybis(1-Chloropropane)	Ū	Ū	Ŭ			10.0
4-Methylphenol	Ŭ	U	U			10.0
N-Nitrosodi-n-Propylamine	U U	U	U			10.0
Hexachloroethane	U	U	U			10.0
Nitrobenzene	U	U	U			10.0
Isophorone	U	U	Û			10.0
2-Nitrophenol	U	U	U			10.0
2,4-Dimethylphenol	U	U	U			10.0
Bis(2-Chloroethoxy) Methane	U	U	U U			10.0
2,4-Dichlorophenol	ป ป	U	U			10.0
1,2,4-Trichlorobenzene	U	U	Ŭ			10.0
Naphthalene	บ	U	U			10.0
4-Chloroaniline	U	U	Ŭ			10.0
Hexachlorobutadiene	U	U	U			10.0
4-Chloro-3-Methylphenol	ື້	U	U	· · · · · · · · · · · · · · · · · · ·		10.0
2-Methylnaphthalene	U	U	Ŭ			10.0
Hexachlorocyclopentadiene	U	U	Ŭ	·		10.0
2,4,6-Trichlorophenol	U	U U	Ŭ			10.0
2,4,5-Trichlorophenol	Ŭ	Ū	Ŭ	j		50.0
2-Chloronaphthalene	U	<u> </u>	Ū			10.0
2-Nitroaniline	U	U	Ŭ			50.0
Dimethylphthalate	<u> </u>	Ū	Ū			10.0
Acenaphthylene	U U	Ű	Ū			10.0
2,6-Dinitrotoluene	Ű	U	Ū			10.0
3-Nitroaniline	<u> </u>	Ū Ū	Ŭ Ū	<u> </u>		50.0
Acenaphthene	Ū	Ū	Ū	1	j	10.0
2,4-Dinitrophenol	Ű	Ū	Ū	t		50.0
4-Nitrophenol	Ū.				· · · · · · · · · · · · · · · · · · ·	50.0

Units: ug/l

* Sample PQL (Practical Quantitation Limit) = Method PQL X QF



CLIENT : <u>AEN-New Mexico</u>

MATRIX: <u>Water</u>

JOB No.: <u>82359</u>

SEMIVOLATILE ORGANIC ANALYSIS RESULTS

:-

Quantitation Factor (QF)	1.00	1.00	1.00			Method Practical
Method Blank I.D.	G4670	G4670 ·	G4670			Quantitation Limits (PQL)*
Lab I.D.	SBLK15746	82359001	82359002			
<u>Client I.D</u>	METHOD BLANK	805378-01	805378-02			
		OW-7-51898	OW-10-51898			
Dibenzofuran	U	U	U			10.0
2.4-Dinitrotoluene	U	Ŭ	Ŭ	1		10.0
Diethylphthalate	Ū	Ŭ	Ű			10.0
4-Chlorophenyl-Phenyl Ether	Ū	U	U	<u> </u> -		10.0
Fluorene	Ū	Ū	Ū	tt	-	10.0
4-Nitroaniline	U U	··· U	U	·		50.0
4,6-Dinitro-2-Methylphenol	<u> </u>	Ű	U U			50.0
N-Nitrosodiphenylamine (1)	Ŭ	. Ü	U.			10.0
4-Bromophenyl-Phenylether	Ŭ	Ū	U		<u>, , , , , , , , , , , , , , , , , , , </u>	10.0
HexachLorobenzene	U	Ű	U			10.0
Pentachlorophenol	U	U	U			50.0
Phenanthrene	U	U	2J	1		10.0
Anthracene	U U	U	U			10.0
Carbazole	U	U	U			10.0
Di-n-Butylphthalate	U	2	U	·····		10.0
Fluoranthene	U	U	31			10.0
Pyrene	U	U	2J			10.0
Butylbenzylphthalate	U	U	<u>ປ</u>			10.0
3.3'-Dichlorobenzidine	U	U	U			10.0
Benzo(a)Anthracene	Ű	Ū	11			10.0
Chrysene	Ū	Ū	U	1		10.0
Bis(2-Ethylhexyl)Phthalate	Ŭ	Ū	Ū			10.0
Di-n-Octylphthalate	Ŭ	Ū	Ū			10.0
Benzo(b)Fluoranthene	Ū	Ū	13	<u> </u>		10.0
Benzo(k)Fluoranthene	Ū	Ū	Ū	11	· · · · · · · · · · · · · · · · · · ·	10.0
Benzo(a)Pyrene	U	Ū	U	1 1		10.0
Indeno(1,2,3-cd)Pyrene	Ū	Ū	Ū	1 1		10.0
Dibenz(a,h)Anthracene	t ŭ	Ŭ	Ū	tt		10.0
Benzo(g,h,i)Perylene	Ū	Ū	Ū	††		10.0
	t		······································		<u></u>	
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Units: ug/l

* Sample PQL (Practical Quantitation Limit) = Method PQL X QF

0000-9

SBLK15746

4B SEMIVOLATILE METHOD BLANK SUMMARY

Lab	Name:	<u>IEA-NJ</u>			
Job	No. :	82359			
Lab	File	ID:	<u>G46</u>	70	
Instrument ID: <u>MSG</u>					
Mati	cix: (soil/wate	er)	Water	

Level:(low/med) <u>low</u>

1

Lab Sample ID:	SBLK15746
Date Extracted	: <u>05/21/98</u>
Date Analyzed:	05/22/98
Time Analyzed:	10:16

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	805378-01	82359001	G4678	18:17
02	805378-02	82359002	G4679	19:05
03	MW-4-3MSMS	82290005MS	G4687	15:30
04	MW-4-3MSDMSD	82290006MSD	G4688	16:18
05	SBLK15746BS	SBLK15746BS	G4689	17:06
06				
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COMMENTS:

2C WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: <u>IEA-NJ</u>

Job No. : <u>82359</u>

1	EPA	S1	S2	S3	S4	S5	S6		S8	TOT
	SAMPLE NO.	(NBZ) #	(FBP)#	(TPH) #	(PHL)#	(2FP)#	(TBP)#	(2CP)#	(DCB) #	OUT
		(==== / //	(/ 1)	(= = ==)		、 / II	,		(= == / 11	001
01	SBLK15746	70	67	56	32	49	67			0
02	805378-01	91	104	66	38	59	74			0
03	805378-02	90	102	63	40	61	76			0
04	MW-4-3MSMS	74	89	61	32	49	105			0
05	MW-4-3MSDMSD	75	90	60	32	51	104			0
06	SBLK15746BS	72	86	59	30	47	97			0
07 08										
09										
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_9 20										
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S1 (NBZ) = Nitrobenzene-d5(S2 (FBP) = 2-Fluorobiphenyl(S3 (TPH) = Terphenyl-d14(S4 (PHL) = Phenol-d5(S5 (2FP) = 2-Fluorophenol(C LIMITS 35-114) 43-116) 33-141) 10-94) 21-100)
	21-100) 10-123)

Column to be used to flag recovery values
* Values outside of QC limits.
D System Monitoring Compound diluted out

Lage <u>1</u> of <u>1</u>

FORM II SV-1

ЗC

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: <u>IEA-NJ</u>

Job No. : <u>82359</u>_____

Matrix Spike - Client Sample No.: <u>MW-4-3MS</u>

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Phenol	75	0	24	32	12-89
2-Chlorophenol	75	0	54	72	27-123
1,4-Dichlorobenzene	50	0	30	60	36-97
N-Nitroso-di-N-Prop. (1)	50	0	40	80	41-116
1,2,4-Trichlorobenzene	50	0	36	72	39-98
4-Chloro-3-Methylphenol	75	0	61	81	23-97
Acenaphthene	50	0	46	92	46-118
4-Nitrophenol	75	0	30	40	10-80
2,4-Dinitrotoluene	50	0	52	104*	24-96
Pentachlorophenol	75	0	78	104*	9-103
Pyrene	50	0	29	58	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC L RPD	IMITS REC.
Phenol	75	24	32	0	42	12-89
2-Chlorophenol	75	55	73	1	40	27-123
1,4-Dichlorobenzene	50	31	62	3	28	36-97
N-Nitroso-di-N-Prop.(1)	50	39	78	2	38	41-116
1,2,4-Trichlorobenzene	50	36	72	0	28	39-98
4-Chloro-3-Methylphenol	75	62	83	2	42	23-97
Acenaphthene	50	46	92	0	31	46-118
4-Nitrophenol	75	30	40	0	50	10-80
2,4-Dinitrotoluene	50	52	104*	0	38	24-96
Pentachlorophenol	75	78	104*	0	50	9-103
Pyrene	50	28	56	4	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits. RPD:0_____ out of <u>11</u> outside limits Spike Recovery:<u>4</u> out of <u>22</u> outside limits COMMENTS: 3C WATER SEMIVOLATILE BLANK SPIKE RECOVERY

Lab Name: <u>IEA-NJ</u>

Job No. : <u>82359</u>_____

Matrix Spike - Client Sample No.: <u>SBLK15746BS</u>

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Phenol	75	0	22	29	12-89
2-Chlorophenol	75	0	52	69	27-123
1,4-Dichlorobenzene	50	0	26	52	36-97
N-Nitroso-di-N-Prop. (1)	50	0	36	72	41-116
1,2,4-Trichlorobenzene	50	0	31	62	39-98
4-Chloro-3-Methylphenol	75	0	58	77	23-97
Acenaphthene	50	0	44	88	46-118
4-Nitrophenol	75	0	26	35	10-80
2,4-Dinitrotoluene	50	0	48	96	24-96
Pentachlorophenol	75	0	64	85	9-103
Pyrene	50	0	27	54	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits.

Spike Recovery: 0_____ out of <u>11____</u> outside limits COMMENTS: _____

FORM III SV-1

5B SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: <u>IEA-NJ</u> Job No. : <u>82359</u> Lab File ID: <u>GG385</u> Instrument ID: MSG ____

DFTPP Injection Date: 05/18/98

DFTPP Injection Time: 09:45

m/e	ION ABUNDANCE CRITERIA	<pre>% RELATIVE ABUNDANCE</pre>
51	30.0 - 60.0% of mass 198	53.3
68	Less than 2.0% of mass 69	0.0(0.0)1
69	Mass 69 relative abundance	59.7
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	45.7
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	7.6
275	10.0 - 30.0 of mass 198	19.7
365	Greater than 1.0% of mass 198	2.3
441	Present, but less than mass 443	9.1
442	Greater than 40.0% of mass 198	63.6
443	17.0 - 23.0% of mass 442	12.2 (19.2)2

1-Value is % mass 69

2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	SSTD050	G4591	05/18/98	10:51
02	SSTD080	SSTD080	G4592	05/18/98	11:41
03	SSTD100	SSTD100	G4593	05/18/98	12:31
	SSTD120	SSTD120	G4594	05/18/98	13:21
	SSTD160	SSTD160	G4595	05/18/98	14:11
	SSTD010	SSTD010	G4596	05/18/98	15:02
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SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name	2: <u>IEA-NJ</u>				
Job No.	: 82359				
Lab File	e ID: <u>GG392</u>				
Instrument ID: <u>MSG</u>					

DFTPP Injection Date: 05/22/98

DFTPP Injection Time: 08:24

m/e	ION ABUNDANCE CRITERIA	<pre>% RELATIVE ABUNDANCE</pre>
51	30.0 - 60.0% of mass 198	56.1
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	61.7
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	48.1
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	7.4
275	10.0 - 30.0 of mass 198	26.1
365	Greater than 1.0% of mass 198	3.0
441	Present, but less than mass 443	11.2
442	Greater than 40.0% of mass 198	77.7
443	17.0 - 23.0% of mass 442	15.6 (20.2)2

1-Value is % mass 69

2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 02	SSTD080 SBLK15746	SSTD080 SBLK15746	G4668 G4670	05/22/98 05/22/98	08:41 10:16
03 04	805378-01 805378-02	82359001 82359002	G4678 G4679	05/22/98	18:17 19:05
05 06					
07 08					
09 10 11			· · · · · · · · · · · · · · · · · · ·		
12 13					
14 15					
16 17					
18 19					
20 21 22					

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5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab	Name:	IEA-NJ	
Job	No. :	82359	
Lab	File 1	D: <u>GG396</u>	
Inst	rument	ID: <u>MSG</u>	

DFTPP Injection Date: 05/26/98

DFTPP Injection Time: 12:33

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	52.6
68	Less than 2.0% of mass 69	0.0(0.0)1
69	Mass 69 relative abundance	58.9
70	Less than 2.0% of mass 69	0.4(0.6)1
127	40.0 - 60.0% of mass 198	48.6
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	7.0
275	10.0 - 30.0 of mass 198	21.1
365	Greater than 1.0% of mass 198	3.1
441	Present, but less than mass 443	10.1
442	Greater than 40.0% of mass 198	62.4
443	17.0 - 23.0% of mass 442	13.5 (21.7)2

1-Value is % mass 69

2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
00034567890123456789					
20 21					
22					

000026

Data File : C:\HPCHEM\1\DATA\ Acq On : 22 May 98 10:16 Sample : MSG;SBLK; Misc : SBLK15746;B;WG157 Quant Time: May 22 10:57 1998	Vial: 4 Operator: a Inst : 5 Multiplr: 1	aen/nj 5970-BNA1			
Method : C:\HPCHEM\1\ME		10518G	. M		
Title : BNA Calibratio Last Update : Fri May 22 09:		98			
Response via : Initial Calibr	ation				
Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	9.59	152	253501	40.00 ppb	0.00
20) Naphthalene-d8	12.76		989837	40.00 ppb	
35) Acenaphthene-d10	17.33		683367	40.00 ppb	-0.03
56) Phenanthrene-d10	21.24	188	1389539	40.00 ppb	
68) Chrysene-d12	28.24		1802840	40.00 ppb	
77) P <u>erylene-d12</u>	32.49		1633587	40.00 ppb	
86) 1,4-Dichlorobenzene-d4B	9.59		253501	40.00 ppb	
88) Perylene-d12B	32.49		1633587	40.00 ppb	
89) Acenaphthene-d10B	17.33		683367	40.00 ppb	
91) 1,4-Dichlorobenzene-d4C	9.95		122517	40.00 ppb	
94) Acenaphthene-d10C	17.33		683367	40.00 ppb	
96) Naphthalene-d8C	0.00			dqq 00.0	
98) Phenanthrene-d10C	21.24	188	1389539	40.00 ppb	-0.02
System Monitoring Compounds				%F	lecovery
4) 2-Fluorophenol	6.54	112	195991	36.58 ppb	-
5) Phenol-d5	8.69			24.14 ppb	
9) 2-Chlorophenol-d4	9.03	132	363806	53.37 ppb	
13) 1,2-Dichlorobenzene-d4	9.95	152	122517	26.60 ppb	
21) Nitrobenzene-d5	10.94	82	276283	35.17 ppb	70.34%
39) 2-Fluorobiphenyl	15.58			33.64 ppb	67.28%
59) 2,4,6-Tribromophenol	19.40	332	234325	50.03 ppb	
71) Terphenyl-d14	25.45	244	1159543	28.23 ppb	56.46%

Target Compounds

Qvalue

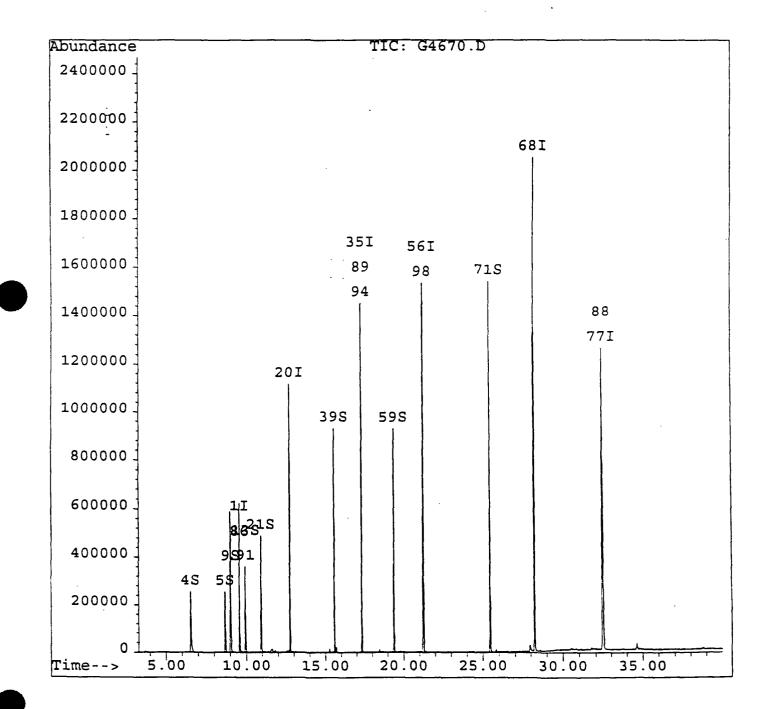
(#) = qualifier out of range (m) = manual integration G4670.D SW0518G.M Fri May 22 10:58:02 1998 BNACHEM1 Page 1

000027

		• • • •
Data File :	C:\HPCHEM\1\DATA\052298\G4670.D	Vial: 4
Acq On :	22 May 98 10:16 am	Operator: aen/nj
Sample :	MSG; SBLK;	Inst : 5970-BNA1
Misc :	SBLK15746;B;WG15746;AQ;;;;LOW;	Multiplr: 1.00
Quant Time:	May 22 10:57 1998	

Method	:	C:\HPCHEM\1\METHODS\SW0518G.M							
Title	:	BNA Calibration							
Last Update	:	Fri May 22 09:23:52 1998							
Response via	:	Multiple Level Calibration							

1



G4670.D SW0518G.M

Fri May 22 10:58:13 1998 BNACHEM1

Page 2

000028

Data File : C:\HPCHEM\1\DATA\ Acq On : 22 May 98 18:17 Sample : MSG;; Misc : 82359001;B;WG1574 Quant Time: May 22 18:58 1998	Vial: Operator: Inst : Multiplr:	aen/nj 5970-BNA1									
Method : C:\HPCHEM\1\METHODS\SW0518G.M Title : BNA Calibration Last Update : Fri May 22 09:23:52 1998 Response via : Initial Calibration											
Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)						
 1, 4-Dichlorobenzene-d4 Naphthalene-d8 Acenaphthene-d10 Phenanthrene-d10 Chrysene-d12 Chrysene-d12 1, 4-Dichlorobenzene-d4B Perylene-d12B Acenaphthene-d10B 1, 4-Dichlorobenzene-d4C Acenaphthene-d10C Naphthalene-d8C Phenanthrene-d10C 	$\begin{array}{r} 9.57\\ 12.76\\ 17.33\\ 21.24\\ 28.23\\ 32.46\\ 9.57\\ 32.46\\ 17.33\\ 9.95\\ 17.33\\ 0.00\\ 21.24 \end{array}$	136 164 188 240 264 152 264 164 152 164	676657 240093 676657	40.00 ppb 40.00 ppb	$\begin{array}{c} -0.02\\ -0.02\\ -0.03\\ -0.02\\ -0.06\\ -0.06\\ -0.02\\ -0.06\\ -0.02\\ -0.06\\ -0.03\\ -0.02\\ -0.03\\ -14.23\\ -0.02\end{array}$						
System Monitoring Compounds 4) 2-Fluorophenol 5) Phenol-d5 9) 2-Chlorophenol-d4 13) 1,2-Dichlorobenzene-d4 21) Nitrobenzene-d5 39) 2-Fluorobiphenyl 59) 2,4,6-Tribromophenol 71) Terphenyl-d14	6.54 8.67 9.02 9.95 10.94 15.58 19.40 25.45		246394 227627 457802 240093 368082 794900 258080 1244012	% 44.15 ppb 28.46 ppb 64.48 ppb 50.05 ppb 45.50 ppb 52.03 ppb 55.79 ppb 32.92 ppb	Recovery 58.87% 37.95% 85.97% 100.10% 91.01% 104.05% 74.38% 65.84%						

Target Compounds

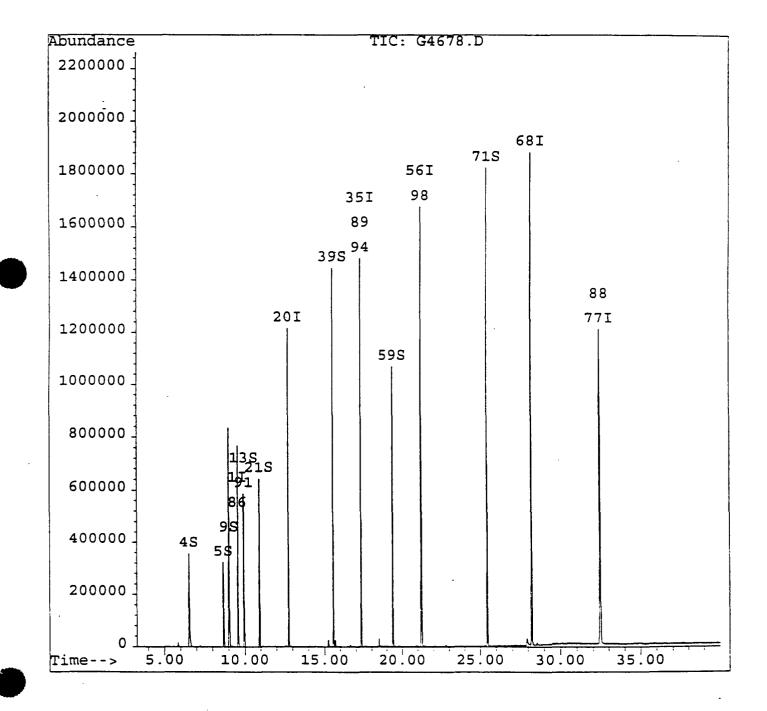
5-26-98

Qvalue

(#) = qualifier out of range (m) = manual integration G4678.D SW0518G.M Fri May 22 18:58:29 1998 BNACHEM1 Page 1

Acq On : Sample : Misc :	C:\HPCHEM\1\DATA\052298\G4678.D 22 May 98 18:17 pm MSG;; 82359001;B;WG15746;AQ;;;;LOW; May 22 18:58 1998	Opera	en/nj 5970-BNA1
Method	: C:\HPCHEM\1\METHODS\SW0518G.M		

Method	:	$C: \ \mathbb{N} $
Title	:	BNA Calibration
Last Update	:	Fri May 22 09:23:52 1998
Response via	:	Multiple Level Calibration



Quantitation Report

Data File : C:\HPCHEM\1\DATA\0 Acq On : 22 May 98 19:05 p Sample : MSG;; Misc : 82359002;B;WG15746 Quant Time: May 26 11:12 1998 Method : C:\HPCHEM\1\MET	Vial: Operator: Inst : Multiplr:	aen/nj 5970-BNA1			
Title : BNA Calibration		~~			
Last Update : Fri May 22 09:2 Response via : Initial Calibra					
Internal Standards	Response	Conc Unit	s Dev(Min)		
1) 1,4-Dichlorobenzene-d4	9.57		258689	40.00 ppb	
20) Naphthalene-d8	12.76		1010650	40.00 ppb	
35) Acenaphthene-d10 56) Phenanthrene-d10	17.33		688585 139 75 36	40.00 ppb	
68) Chrysene-d12	21.24		1547848	40.00 ppb 40.00 ppb	
77) Perylene-d12	32.47		1880840	40.00 ppb	
86) 1,4-Dichlorobenzene-d4B	9.57		258689	40.00 ppb	
88) Perylene-d12B	32.47		1880840	40.00 ppb	
89) Acenaphthene-d10B	17.33	164	688585	40.00 ppb	
91) 1,4-Dichlorobenzene-d4C	9.95			40.00 ppb	-0.02
94) Acenaphthene-d10C	17.33			40.00 ppb	
96) Naphthalene-d8C	0.00			0.00 ppb	
98) Phenanthrene-d10C	21.24	188	1397536	40.00 ppb	-0.02
System Monitoring Compounds				:	Recovery
4) 2-Fluorophenol	6.54	112	250910	45.89 ppb	61.19%
5) Phenol-d5	8.67	99	237974	30.37 ppb	
9) 2-Chlorophenol-d4	9.02	132	448891	64.53 ppb	
13) 1,2-Dichlorobenzene-d4	9.95		235096	50.02 ppb	
21) Nitrobenzene-d5 39) 2-Fluorobiphenyl	10.94 15.58		360196 794796	44.91 ppb 51.12 ppb	
59) 2,4,6-Tribromophenol	19.40	332	268700	57.04 ppb	
71) Terphenyl-d14				31.49 ppb	
Target Compounds					Qvalue
64) Phenanthrene	21.29	178	52963	1.81 ppb	<u>9</u> 6
67) Fluoranthene	24.42		126145	3.42 ppb	82
70) Pyrene	25.03		100030	1.97 ppb	
73) Benzo[a] anthracene	28.20		56912	1.16 ppb	
79) Benzo[b]fluoranthene	31.17		54481	1.23 ppb	

RA 5-26-98

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(#) = qualifier out of range (m) = manual integration G4679.D SW0518G.M Tue May 26 11:12:37 1998 BNACHEM1 Page 1

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Acq On : Sample : Misc :	C:\HPCHEM\1\DATA\052298\G4679.D 22 May 98 19:05 pm MSG;; 82359002;B;WG15746;AQ;;;;LOW; May 26 11:12 1998	Vial: Operator: Inst : Multiplr:	aen/nj 5970-BNA1
Last Update	: C:\HPCHEM\1\METHODS\SW0518G.M : BNA Calibration : Fri May 22 09:23:52 1998 a : Multiple Level Calibration		

Abundance	TIC: G4679.D
2200000	
2000000	64
1800000	56I 98 71S
1600000	35I 88
1400000	^{39S} 94 77I
1200000	201
1000000	59S
800000	ula s
600000	1121S 91 86
400000	95 4S 55 73
200000	70 2 67C
0 . Time>	5.00 10.00 15.00 20.00 25.00 30.00 35.00

None and None		SZZOSON Some USA Priority Pollutant Metals (13) Target Analyte List Metals (23) ACRA Metals (8) ACRA Metals by TCLP (Method 1311) ACRA Metals by TCLP (Method 1311) ACRA Metals by TCLP (Method 1311) ACRA Metals by TCLP (Method 1311)							BELLINOUISHED, EVIEW HE HERE A S	Signature. Time	Printed Name. Date.		Company.	ALCOVED EVELON	amore di no herze			DISTRIBUTION: White - AEN, Canary - Originator
ODY EXEMPT	Same ANDER STRUCT	8260 (TCL) Volatile Organics 8260 (Full) Volatile Organics 8260 (CUST) Volatile Organics 8260 (Landfill) Volatile Organics Pesticides /PCB (608/8081) Herbicides (615/8151) Base/Neural/Acid Compounds 6C/MS (625/8270) Polynuclear Aromatics (610/8310) General Chemistry:							A State of the second second second second second second second second second second second second second second	Signature. M. Time 0900	-	- Phris 5/19/98	te		Signature. Time.	Printed Name. Date.	Company	
CHA. OF CUSTODY		Petroleum Hydrocarbons (418.1) TRPH (MOD.8015) Diesel/Direct Inject (M8015) Gas/Purge & Trap 8021 (BTEX)/8015 (Gasoline) 8021 (BTEX)/8015 (Gasoline) 8021 (EDX) 8021 (TCL) 8021 (EDX) 8021 (CUST) 8021							Interunt state and the prover of skilling and the second s	11 WEEK (NORMAL) []	LISDWA []OTHER						under songly	eway, NE • Albuquerque, New Mexico 87107 • (505) 344-3777 • Fax (505) 344-4413
Vetwork (NM), Inc.		e fining Company Bex 17 2- 038.33 2- 0210 fining Co. Ciniza-	5/18/2 0945 H2 C	118/98/010 11					APRIOR AUTHORIZATIONS	(RUSH) 24hr .]48hr 72hr	CERTIFICATION REQUIRED: INM	METHANOL PRESERVATION []	COMMENTS: FIXED FEE ()				1998annales	ork (NM), Inc. • 2709-D Pan American Freewa
American Environmental Network (NM), Inc.	PROJECT MANAGER:	COMPANY Signal Pelloness Contest Rel ADDRESS Contest Rel PHONE: 505-722- FAX: 505-722- BILL TO: Samt Reli COMPANY Same	0W-7-51898	5 86815-01-MO			 		DEPENDENTION	ON FOR	PROJ NAME.	PO NO		K. KW. SAMPLE RE	NO. CONTAINERS (04)	D RECEIVED INTACT 2545 AL NOT 0 545	A BLUE ICENCE 素 法部分 の	1/5/98 AEN Inc.: American Environmental Network (NM), Inc. • 2709-D Pan American Fre

(TENTATIVE) OCD INSPECTION BAIL, PUMP + SAMPLE OW 16, 25, 26 4-29 MON -PUMP MW4,0W5,7 4-30 TUES -SAMPLE MW-4,0W5,7 PUMP OW 1, 2, 9, +10 5-1 WED -SAMPLE OWI, Z,9 + 10 INSPECT 5-2+3 THU + FRI OPEN (FINISH INSPECTION, SAMPLE 0w12,13,14,20) RFI PHASE I VII MON, MAY 6 - Swmu #8 - 2 samples 7-71/2' + DUPLICATE, I TRIP BEANK SWMU #6 - TANK #54, 453 11-11/2' #568 - 11-11/2 CUT DIKE ON #567 FOR TUESDAY (TUES) MAT 7 - SAMPLE #569-11-111/2' (-+ DOPLICATE) (1DUP) (EQPT RINSE) # 569 (2 sample points) 11-11/2' <.3: <1 (TRIP BLANK) #570- 11-11/2' # 571_ (WED) MAY 8- 500000 +0-2 SAMPLES C. (SLUDGE AIT) (I DUPLICATE VISUAL DIPL (STEAM BUCKET @ 12.13') I VISUAL ON 3rd Hous @ 15-15/2 VISUAL@ 18 (SEPARATE SAMPLE OF BLACK SLUDGE FOR INSITU REMEDIATION ~ /gt.

500m0 #13 -Port #10 mAt9 4 pales 2.7/2 + 4-4/2 1-DUPLICATE 8 samples 1- TRYP BLANK 1_EQUIPMENT MAY 10/3,15 START SWMU # Z -TAKE PROBABLY THREE DAYS 12 VERTICAL, 6 ANGle - 31/2-4, 5-51/2, 61/2-7 (54 SAmples) (3 DUPLICATES, ZEQUIP BLANKS, 3 TRIP BLANKS KRAMER AIR SAMPLING MAY-14 MAY 16- 5 MWU #1 AERAMON LALOONS f vertical z Angle (3 DAYS) 4-41/2 , 9-91/2 , 11-111/2 , 14-141/2 24 SAMPles 2EQU BLANKS , 3 TRIP BLANKS 2 OUPLICATES

SENT BY:

3-15-96 ; 3:36PM ;	
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Reg 6 Haz Waste→

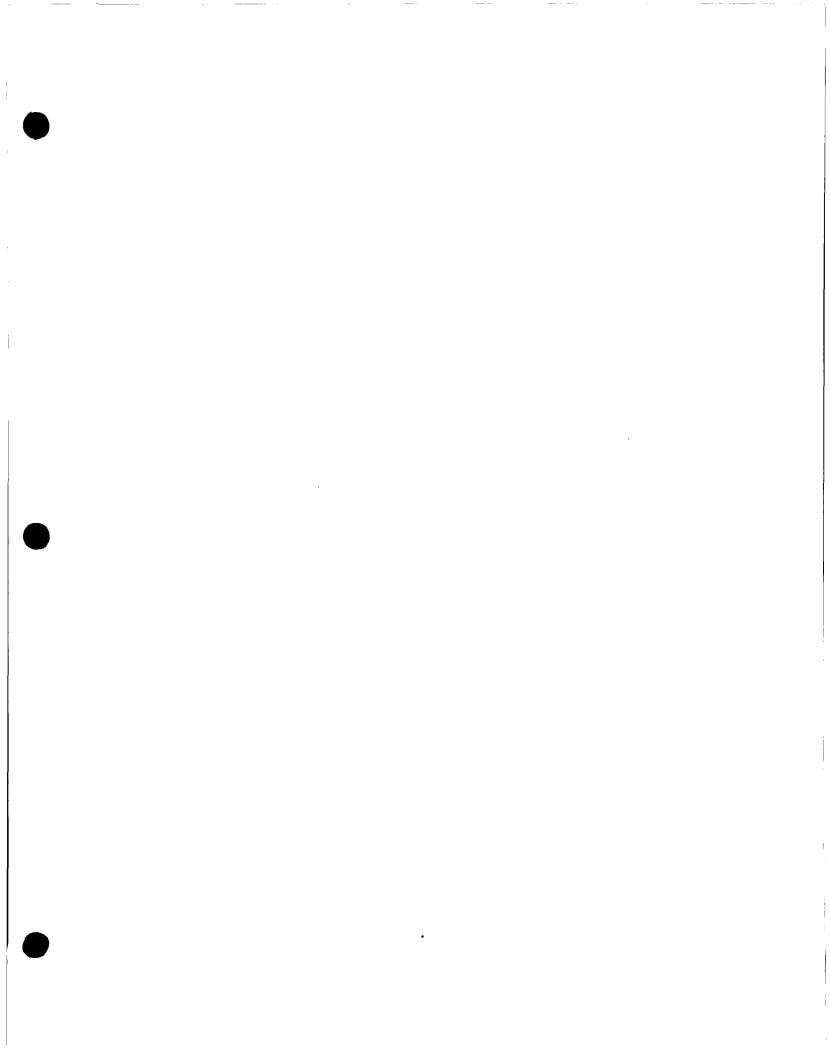
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FACSIMILE TRANSMITTAL											
UNITED S	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 6 1445 BOSS AVENUE DALLAS, TEXAS 75202-2733 MULTIMEDIA PERMITTING AND PLANNING DIVISION NEW MEXICO AND PEDERAL FACILITIES SECTION										
PLEASE PRINT IN BLACK INK ONLY											
TO: Ed Horst, Environmental Manager - Giant Refining Company, Ciniza											
MACHINE NUMBER: Ses.722.0210	ACTION NUMBER: 505.722.0210 VERIFICATION NUMBER: 505.722.0227										
FROM: James A. Harris, Jr., RCRA Facility Manager/Geologist											
PHONE: (214) 665-8302	Mail Codet 6PD-N										
OFFICE: New Maxics/Federal Facilities S	PAGES, INCLUDING COVER SHEET										
ATE: March 15, 1996		3									
	PLEASE NUMBER ALL PAGES										
INFORM	MATION FOR SENDING FACSIMILE MESSAGE	8									
KQUIPMENT:	FACSIMILE NUMBER	VERIFICATION NUMBER:									
PANAFAX UF-766	(214) 665-6762	(214) 665-6768									
COMMENTS											
Ed.											
Here's what I have been asing to track Ginnt, Ciniza's corrective action progress. Please review and let's discuss it next week. Have a good one.											
Thame. AATUES											

11:	12	U1 **	4:	3:	13:	12:	2:	1:
11: Secondary Oil Skimmer (11)	ning Area (4)	Landfill Areas (7)	Old Burn Pit (8)	Empty Container Storage Area (5)	The Drainage Ditch between APIs Evaporation Ponds and the Neutralization Tank Evaporation Ponds (14)	Contact Waste Water Collection System (CWWCS)	The Evaporation Ponds (2)	The Aeration Basin (1)
3	3	=	3	Phase III	2	3	3	Phase II
Under VCA		a Voluntary Corrective Action (VCA) Plan to cap the "Landfill Areas" was submitted in March 1993.			soil and groundwater sampling every five years	Inspection every 5 years beginning 1996	2	soil and groundwater sampling every five years
discolored soil is the natural color; there is no hydrocarbon staining or odors detected; reference to "black fill" sand is actually "back fill"		EPA approved the VCA Plan on January 5, 1994 but required that additional soll borings be completed prior to Glant proceeding with the capping activities		2	Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process		Survey and closure certification must be submitted prior to initiating Class III Permit Mod process	RFI PHII RPT APP 1/94 W/modifications; Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process

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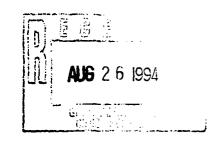


UNITED STATES ENVIRONMENTAL PROTECTION AGENCY



REGION 6 1445 ROSS AVENUE, SUITE 1200 DALLAS, TX 75202-2733

Augüst 24, 1994



Mr. Lynn Shelton Senior Environmental Coordinator Giant Refining Company Route 3, Box 7 Gallup, NM 87301

Dear Mr. Shelton:

The Environmental Protection Agency (EPA) has reviewed your letter dated August 2, 1994, concerning additional RFI sampling requirements at solid waste management unit (SWMU) #1, the Aeration Basin; #2, the Evaporation Pond; and #13, the Drainage Ditch. In your letter, you propose to conduct soil and groundwater sampling every five years as opposed to the biennial sampling requirement detailed in the EPA's January 7, 1994 letter.

The EPA has reassessed your Phase II RFI Report and hereby approves your request to sample SWMUs 1, 2, and 13 every five years. Sampling shall begin in 1995 and reports shall be submitted to the EPA by December 31 of each sample year. As a reminder, a survey plat must be completed for SWMUs 1, 2, and 13 and submitted to the EPA for review and approval. Giant shall also initiate a Class 3 permit modification to terminate the RFI/Corrective Measures Study process for these SWMUs within three months of receipt of this letter.

Please contact Nancy R. Morlock of my staff at (214) 665-6650 if you have any questions or require additional information.

Sincerely yours,

William K. Honker, P.E., Chief RCRA Permits Branch

cc: Ms. Kathleen Sisneros, Director Water and Waste Management Division New Mexico Environment Department



Route 3, Box 7 Gallup, New Mexico 87301

505 722-3833

August 2, 1994

Allyn M. Davis United States Environmental Protection Agency Region VI 1445 Ross Avenue Suite 1200 Dallas, Texas 75202-2733

Re: Additional RFI Sampling

Dear Mr. Davis:

In the letter from you dated January 7, 1994 (copy enclosed), Giant Refining Company - Ciniza (Giant) received EPA's approval of Giant's recommendation of "No Further Action" on SWMU #1, the Aeration Basin; SWMU #2, the Evaporation Pond; and SWMU #13, the Drainage Ditch. The agency's approval of the "No Further Action" recommendations was accompanied with several additional requirements.

The additional requirements were to repeat the sampling protocol set forth in the approved RFI Sampling Plan (May, 1990) biennially. This additional sampling is intended to monitor potential migration of hazardous constituents from these SWMUs during the duration of their active service.

Giant understands the logic of continued sampling to document potential migration but has some reservations about the frequency of sampling and the true potential for migration of hazardous constituents.

It was determined in the RFI sampling (1990-1992) that migration of hazardous constituents had not occurred in any of the previously mentioned SWMUs and that water saturation had not occurred below five feet. This observation, coupled with the fact that hazardous constituents are not released to the three SWMUs, indicates that future contamination due to migration of hazardous constituents is virtually impossible.

Based on this knowledge, Giant proposes to sample SWMUs #1, #2, and #13, using the protocol set forth in the approved RFI Sampling Plan, every five years, beginning in 1995, with annual reports due on December 31 of the sample year. This sampling will adequately demonstrate migration, if any, of hazardous constituents. Giant appreciates your prompt attention to this proposal, as this will expedite completion of any responsibilities of Giant to fully characterize and monitor SWMUs #1, #2, and #13.

If you require additional information, please contact me at (505) 722-0227.

Sincerely,

Lynn Shelton Senior Environmental Coordinator Giant Refining Company

TLS:sp

cc w/attachment: David C. Pavlich, Giant Kim Bullerdick, Giant Rich Mayer, USEPA Kathleen Cisneros, NMED



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY



REGION 6 1445 ROSS AVENUE, SUITE 1200 DALLAS, TX 75202-2733

JAN 0 7 1994



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CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Mr. John J. Stokes, Manager Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

RE: RFI Phase I and Phase II Supplemental Reports and Voluntary Corrective Action Plan Giant Refining Co. <u>NMD000333211</u>

Dear Mr. Stokes:

The Environmental Protection Agency (EPA) hereby approves your RCRA Facility Investigation (RFI) Phase I Supplemental Report, dated October 21, 1991, with the enclosed list of modifications. Your Corrective Action Plans (CAPs) for the Sludge Pits and the Railroad Rack Lagoon, submitted in November and December, 1992, respectfully, are also approved with the enclosed list of modifications.

The EPA is requiring that additional monitoring be completed at several sites. An annual report detailing the monitoring results shall be submitted to the EPA by December 31, 1994, and each year thereafter. The EPA is also requiring that additional soil sampling be completed at the Sludge Pits and the Tank Farm. Sampling results shall be submitted to the EPA by October 1, 1994. Further information concerning the additional monitoring and sampling requirements may be found in the attached list of modifications.

If you have any further questions or need additional information, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

allyn m Dava

Allyn M. Davis, Director Hazardous Waste Management Division (6H)

Enclosure

cc: Kathleen Sisneros, NMED

APPROVAL WITH MODIFICATIONS RFI PHASE I SUPPLEMENTARY REPORT RFI PHASE II REPORT AND THE VOLUNTARY CORRECTIVE ACTION PLANS

The Environmental Protection Agency (EPA) has completed a technical review of Giant Refining's RCRA Facility Investigation (RFI) Phase I Supplementary Report; RFI Phase II Report; and voluntary Corrective Action Plan (CAP) for the Sludge Pits and Railroad Rack Lagoon. The subject reports are hereby approved with the following comments and modifications.

GENERAL COMMENTS

SWHU 1, The Aeration Basin; SWHU 2, The Evaporation Pond; and SWHU 13, The Drainage Ditch

The EPA agrees with the finding of no further action for Solid Waste Management Units (SWMUs) 1, 2 and 13. The EPA is, however, requiring periodic monitoring of these SWMUs (see below under Modifications). However, this approval is contingent upon the completion of a survey plat for these SWMUs. The survey plats shall be completed in accordance with the requirements set forth in 40 CFR 264.116. Giant shall submit copies of the completed survey plats to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for these SWMUs.

SWMU 6, The Tank Farm

The EPA disagrees with Giant on their recommendation of no further action. Sampling results indicate that 9 of the 13 samples taken at the 11 foot interval (the deepest interval sampled) contained elevated levels of BTEX constituents. One sample at the 16 foot interval also contained elevated BTEX levels. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 8, The Railroad Rack Lagoon, Overflow Ditch and Fan Out Area The EPA agrees with the finding of no further action for this SWMU. The EPA understands that Giant has elected to perform voluntary corrective measures at this unit which will include bioremediation of the wastes with periodic soil and waste monitoring. Giant's voluntary bioremediation should reduce the volume and toxicity of the wastes while continuing to periodically monitor the SWMU. The EPA will, however, require that additional monitoring be completed (see below under Modifications). The EPA is also requiring that a survey plat be completed for this SWMU. The survey plat shall be completed in accordance with the requirements set forth in 40 CFR 264.116. Giant shall submit a copy of the completed survey plat to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for this SWMU.

SWMU 6, The Railroad Rack Lagoon

Giant shall take 5 soil borings within the lagoon after it has ceased receiving wastes. Three (3) of the five (5) borings must be sampled at the 0-1 foot interval. All borings must be sampled at the 5-6 foot interval, the 10-11 foot interval, and the 14-15 foot interval. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Sampling results shall be included in the 1994 Annual Monitoring Report.

Additionally, all six (6) borings required under the CAP closure (Section 5.0) must be sampled at the 5-6, 10-11, and 14-15 foot interval. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Sampling results shall be included in the appropriate Annual Monitoring Report.

Monitoring requirements under the voluntary CAP shall be submitted to EPA in the appropriate quarterly progress report. Giant shall notify the EPA when final closure of the Railroad Rack Lagoon has been initiated.

Continuation of SWMU 6, The Overflow Ditch

Giant shall complete three (3) soil borings in the Overflow Ditch after closing the Railroad Rack Lagoon. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. All results shall be included in the 1994 Annual Monitoring Report.

Continuation of SWMU 6, The Fan Out Area

Giant shall complete four (4) soil borings in the Fan Out Area after closure of the Railroad Rack Lagoon has been completed. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. Results shall be included in the 1994 Annual Monitoring Report.

<u>SWMU #12, Contact Waste Water Collection System (CWWCS)</u>

Giant shall perform an inspection of the CWWCS every five years beginning in calendar year 1996. The inspection shall be identical to the one performed in the previous RFI. If better technological equipment is developed, Giant may request that an alternative method be used. Results shall be included in the appropriate Annual Monitoring Report.

SWMU 9, The Sludge Pits

Giant shall complete soil borings as close as possible to sampling points 6 and 7 (numbers correspond to previous RFI sampling points, completed in May, 1991). Sampling intervals shall be at 18.0 -19.0 foot and 24.0 - 25.0 foot. Sampling procedures and analytical constituents shall be identical to those required in the previous

Approval with Modificatioms, 1/5/94 Giant's CAP and RFI Phase I & II Reports

SWMU 9, The Sludge Pits

The EPA is unable to approve Giant's finding of no further action for this SWMU. Two (2) soil samples collected at the 15 foot interval (the deepest interval sampled) contained semivolatile contaminants. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications). Giant may begin the voluntary bioremediation (see SWMU #8 voluntary corrective action) under the CAP after the deeper soil samples have been completed.

MODIFICATIONS

SWMU 1, The Aeration Basin

Giant shall take soil samples around the Aeration Basin every two (2) years beginning in calendar year 1994. Sampling requirements shall be identical to those performed during the previous RFI, except that all soil borings shall be angled and an additional sample shall be collected at the 20-21 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

SWMU 6, The Tank Farm

Giant shall complete additional soil borings as close as possible to the following sample points (numbers correspond to previous RFI sampling points completed in May, 1991): 21, 22, 23, 25, 26, 27, 30, and 31. The sampling interval shall be at 16 feet, with the exception of sample point 31 which shall be sampled at 20 feet. Samples shall be analyzed for BTEX constituents. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to EPA by October 1, 1994.

SWMU 2, Evaporation Ponds

Giant shall monitor the seven (7) groundwater wells around the evaporation ponds biannually for the same constituents monitored for in the original RFI. Results shall be included in the Annual Monitoring Report.

SWMU 13, Drainage Ditch between APIs Rvaporation Ponds and <u>Neutralization_Tank_Bvaporation_Ponds</u>

Giant shall conduct soil sampling around the Drainage Ditch every two (2) years, with sampling beginning in calendar year 1994. Sampling procedures and analytical constituents shall be identical to those required in the RFI, except that all soil borings shall be angled and an additional interval shall be sampled at from 6.0-6.5 feet. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

Approval with Modificatioms, 1/5/94 Giant's CAP and RFI Phase I & II Reports RFI. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to the EPA by October 1, 1994.

Before final closure of the West Pit under the CAP, all soil borings shall be sampled at the 18.0 - 19.0 and 24.0 - 25.0 foot intervals. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Four (4) soil borings shall also be completed (before closure) in the East Pit using the same requirements specified for the West Pit borings. Results shall be included in the appropriate Annual Monitoring Report.

Monitoring requirements under the voluntary CAP shall be submitted to EPA in the appropriate quarterly progress report. Giant shall notify the EPA when final closure of the Sludge Pits has been initiated.

Soil Boring Logs: The EPA has included an example of a soil boring log to be used for all future borings.

Approval with Modificatioms, 1/5/94 Giant's CAP and RFI Phase I & II Reports It is reasonable to expect that EPA will require a survey plat of this SWMU after closure.

SWMU #11 - Secondary Oil Skimmer

EPA does not approve Giant's proposal for "No Further Action" and is requiring additional sampling to ten feet (two borings). This is a reasonable request.

<u>SWMU #12</u> - Contact Wastewater System

Although onerous, the requirement to inspect the wastewater system every five years is acceptable in that we were not sure if we could get any kind of "Buy In" from EPA. Costs of monitoring this SWMU are therefore significantly less than anticipated.

<u>SWMU 13</u> - Drainage Ditch

Although EPA approves Giant's proposal of "No Further Action", additional requirements have been added. Complete resampling is required biennially. This is redundant and expensive. Even though this SWMU continues to be exposed to wastewater, Giant does not believe there is a significant possibility of migration. Giant should propose a five year sampling schedule or a "Phased-In" rotation of sampling.

A survey plat will be required for this SWMU.

III. Estimation of Expenses

Not normally a consideration of the regulatory community, expense is an indicator to industry of the scope and complexity of regulatory requirements. In providing a cost estimate, we are able to judge the economic impact for our company and determine the extent to which we are willing to contest the requirements issued to us.

The following tables (Tables 3, 4, and 5) illustrate the estimated costs per SWMU (for 1994 and biennially).

Table 3

1994 Analytical Costs

<u>SWMU #</u>	SAMPLES <u>REQUIRED</u>	ANALYSIS	COST
1	30	8240 8270 Metals	\$ 9,000 14,850 6,900
2	7	8240 8270 Metals pH	1,750 2,765 1,435 70
4	6	8240 8270 Metals pH	1,800 2,970 2,250 60
5	21	8240 8270 Metals	6,300 10,395 4,830
6	8	BTEX	1,000
7	4	TPH Oil & Grease	200 200
8	50	8240 8270	15,000 24,750
10	18	8240 8270 Metals	5,400 8,910 4,140
11	4	8240 8270	1,200 1,980
13	12	8240 8270	3,600 5,940

Total Analytical Cost 1994 Only <u>\$119,245</u>

TABLE 4

BIENNIAL ANALYTICAL COST

<u>swmu</u>	SAMPLES REQUIRED	ANALYSIS	COST
1	30	8240 8270 Metals	\$ 9,000 14,850 6,900
2	7	8240 8270 Metals pH	1,750 2,765 1,435 70
13	12	8240 8270	8,600 5,940

Total Biennial Analytical Cost <u>\$46,310</u>

TABLE 5

TOTAL COST OF 1994 SAMPLING (ESTIMATE)

SWMU #	ANALYTICAL COST	LABOR *	COST
1	\$ 30,750	\$12,600	\$ 43,350
2	6,020	1,100	7,120
4	7,080	3,000	10,080
5	21,525	14,000	35,525
6	1,000	13,200	14,200
7	400	2,200	2,600
8	39,750	21,400	61,160
10	18,450	22,500	40,950
11	3,180	2,000	5,180
13	9,540	2,600	12,140
	<u>\$119,245</u>	<u>\$94,600</u>	<u>\$213,845</u>

* Including Drilling Rig

IV. Conclusions

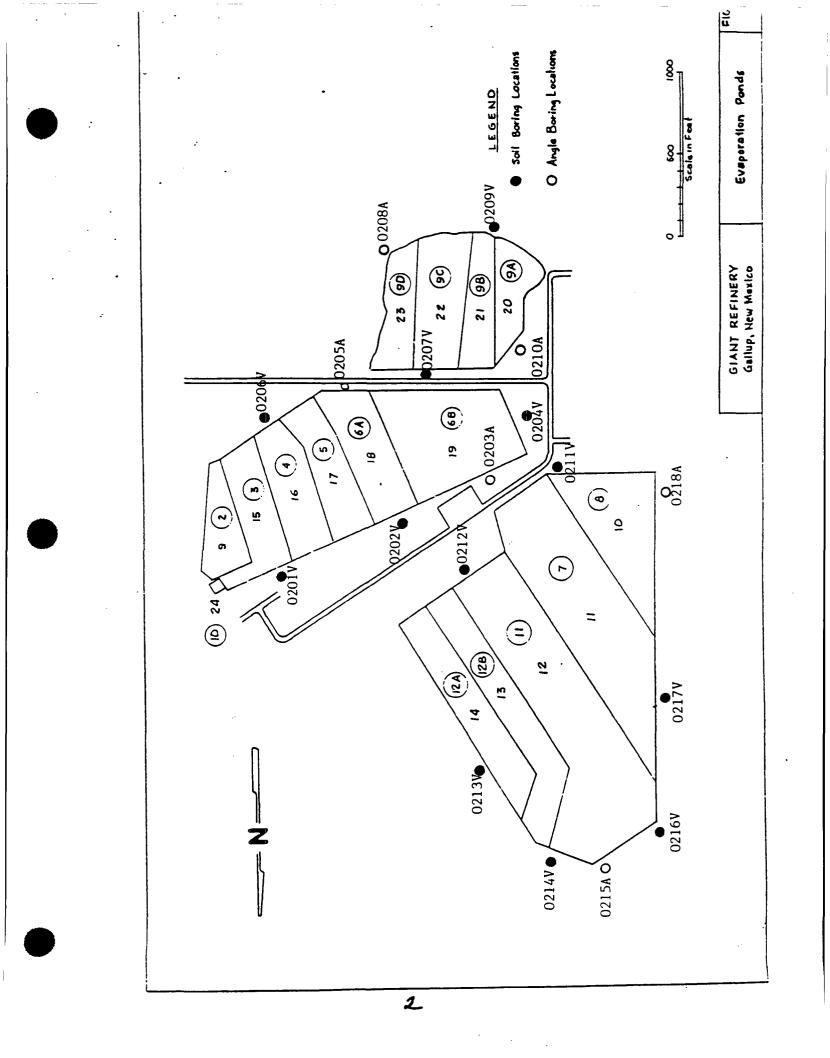
The additional requirements to fully characterize SWMUs #4, 5, 6, 7, 8, 10 and 11 are reasonable. Although expensive, full characterization of potential pollution is the thrust of an RFI project and is Giant's objective.

The biennial sampling requirements for SWMUS #1, 2, and 13 are, in effect, a repeat of the original RFI project every two years. This is redundant, expensive and, in my opinion, unwarranted. In completing the original RFI work, it was demonstrated that SWMUS #1, 2, and 13 pose no threat to human health or the environment. Additional sampling is probably justified, because these SWMUS continue to handle wastewater, but on a smaller scale. I recommend that we propose to do additional sampling every five years on one-third of the sample points, or something of that magnitude. This should be enough sampling to document that there is no contamination.

It is important that we act now to minimize sampling requirements in that we can reasonably assume that as other SWMUs are characterized, additional long term sampling requirements for those SWMUs will be requested. This could be an expensive task that provides minimal protection to the environment.

The actual sampling process should be fairly straight forward. Sampling protocol will be identical to past projects and can be accomplished by refinery personnel. The sampling process needs to be modified to using a drilling rig to take core samples in place of backhoe and hand auger. This change is due to the increased depths of samples, the sheer number of samples to be collected, analyzed and reported during 1994, and the requirement to use more appropriate soil boring logs. Using a drilling contractor will provide the necessary speed of sampling and the lithologic observations necessary to complete this project in a timely and efficient manner.

It is in the best interest of Giant that we develop the proper response to these new requirements. I recommend that we carefully analyze our options in this matter and schedule a meeting with the RCRA staff at EPA to discuss this issue.



INTEROFFICE MEMORANDUM

DATE: February 3, 1994

- TO: David Pavlich Kim Bullerdick
- FROM: Lynn Shelton JJS

SUBJECT: RCRA Facility Investigation - Additional Requirements

I. Introduction

Giant Refining Company - Ciniza (Giant) performed a RCRA Facility Investigation (RFI) in three phases (I, II, and III) over three years (1990, 1991, and 1992).

Using the analytical results of those three sampling events, Giant submitted four corrective action plans and eight "No Further Action" proposals to Region VI, United States Environmental Protection Agency (EPA).

Correspondence from the EPA (1-7-94) indicated approval of the corrective action plans (with additional requirements) for three Solid Waste Management Units (SWMUs), for RFI reports Phase I, II, and III and assigns a deadline for submittals of additional data.

The additional sampling and reporting requirements, some of which are redundant and unnecessary, are the focus of this correspondence. In the following pages, the scope and cost of the additional sampling requirements will be presented.

Some explanation of a potential problem is in order. The SWMU identification numbering sequence is inconsistent. In discussing the draft letters with Rich Mayer, of Region VI EPA, the discrepancy in reference to the SWMU numbers was mentioned. Mr. Mayer responded that the correct SWMU numbers were taken from the HSWA Permit (Section C, Corrective Actions for Continuing Releases, 5.(a)(1)). Giant had used the numbering sequence from the approved RFI Workplan (revised May 17, 1990). As shown in Table 1, there are discrepancies in all three sequences. Giant should propose to use the numbering sequence identified in the revised RFI Workplan to avoid confusion with the numbering sequence of SWMUs and sample numbers already reported.

Table 2 presents an overview of the status of the SWMUs.

TABLE 1

SWMU IDENTIFICATION

RFI	WORKPLAN	hswa	EPA	LETTER	SWMU
	1	1		1	Aeration Basin
	2	2		2	Evaporation Ponds
	3	5		5	Empty Container Storage
	4	8		8	Burn Pit
	5	7		7	Four Landfills
	6	3		6	Tank Farm
	7	4		4	Fire Training Area
	8	6		8	Railroad Rack Lagoon
	9	10 & 13		-	Inactive Land Treatment
	10	9		9	Two Sludge Pits
	11	11	1	.1	Secondary Oil Skimmer
	12	14	1	.3	Wastewater Collection
	13	14	1	.3	Drainage Ditch

TABLE 2

STATUS - INDIVIDUAL SWMU

<u>Caps</u>:

- * Railrack Lagoon
- * Sludge Pits
- Fire Training Area
- * Landfills

No Further Action:

- ****** Aeration Basin
- ****** Evaporation Ponds
- ** Drainage Ditch Tank Farm
- ** Empty Container Storage Old Burn Pit Secondary Oil Skimmer
- Secondary Oil Skimmer *** Inactive Land Treatment

* Accepted by EPA with Additional Requirements
 ** "No Further Action" Approved by USEPA
 *** Not Addressed in Correspondence

II. Discussion

A discussion of additional requirements, by SWMU, follows. Included, as Figures 1 to 12, are drawings of the SWMUs with individual sample points.

<u>SWMU #1</u> - Aeration Lagoon

EPA approved Giant's proposal for "No Further Action". Although Giant demonstrated that no significant migration of hazardous constituents had taken place, EPA requires biennial sampling that duplicates the original RFI sampling. This is redundant and expensive. Giant should propose either a five year sampling rotation or a phased-in plan (of six sample locations, sample two biennially until all samples are taken, then start again). These sampling plans will diminish the costs considerably and still provide documentation that migration has not occurred.

EPA also requires a survey plat of the SWMU. Giant agrees that this is a reasonable requirement.

<u>SWMU #2</u> - Evaporation Ponds

EPA has also approved Giant's proposal for "No Further Action" of this SWMU. EPA requires that Giant sample the seven groundwater wells (MW-4, OW-1, OW-2, OW-5, OW-7, OW-9 and OW-10) biennially for the same constituents as monitored for in the RFI sampling event. Giant may wish to propose a five year sampling rotation.

<u>SWMU #3</u> - Empty Container Storage Area

EPA approved Giant's proposal for "No Further Action" for the SWMU, requiring only that Giant provide a survey plat.

SWMU #4 - Old Burn Pit

EPA does not approve Giant's proposal for "No Further Action". Three borings at six and ten feet will be required to characterize constituent migration in this SWMU.

<u>SWMU #5</u> - Landfill Areas

EPA requires that additional borings, at eleven, sixteen and twenty feet to fully characterize contamination.

<u>SWMU #6</u> - Tank Farm

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. EPA requires seven additional borings to sixteen feet and one additional boring to twenty feet to fully characterize contamination. When Giant performed supplemental sampling of this SWMU in 1991, it was anticipated that further sampling would be required.

<u>SWMU #7</u> - Fire Training

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. Two additional angle borings to seven and eleven vertical feet are required. Additional sampling was anticipated when this SWMU was sampled in 1992, although I question why we now have to analyze for the Skinner List constituents. Samples from this SWMU were originally analyzed for TPH and oil & grease only.

SWMU #8 - Railroad Rack Lagoon

EPA has approved Giant's corrective action plan for this SWMU, with additional requirements. After piping modifications at the railroad loading rack are complete and the railroad rack lagoon no longer receives waste, sampling is required within the footprint of the lagoon (five borings) and around the periphery of the lagoon (six borings). Sampling is also required in the overflow ditch (three borings to seven feet) and the fan out area (four borings to seven feet). Some sampling will be required during remediation of the lagoon to document completion of the corrective action plan.

A survey plat of the SWMU, after remediation, must be submitted to the EPA.

<u>SWMU #9</u> - Inactive Land Treatment Area

Although Giant had provided data and proposed no further action, this SWMU was not addressed in the correspondence with the EPA. It needs to be determined if EPA accepts our proposal or has additional requirements.

<u>SWMU 10</u> - Sludge Pits

EPA is requiring additional sampling to 25' in this SWMU (seven borings) to fully characterize any contamination. Monitoring will be required during remediation to document completion of the corrective action plan. 120 11-1993 08-48

CERTIFIED NAIL: RETURN RECEIPT REQUESTED

Mr. John J. Stokes, Manager Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

RE: RFI Phase I Supplemental and RFI Phase II Reports - Giant Refining Co. - NMD000333211

Dear Mr. Stokes:

We hereby approve your Phase I Supplemental Report dated August 21, 1991 and the RFI Phase II Report dated October 21, 1991, with the enclosed modifications. The Corrective Action Plans (CAPs) for the Sludge Pits and the Railroad Rack Lagoon (submitted November and December 1992, respectfully) are also approved, with the enclosed modifications.

The Annual Monitoring (see enclosure for SWMUs requiring monitoring) Report is due to EPA by December 31, 1994, and each year thereafter. The additional soil sampling results for the Sludge Pits and the Tank Farm are due to EPA by June 1, 1994. If you have any further questions pertaining to the above discussed items, please contact Nancy Morlock or Richard Mayer of my staff at (214) 655-6650.

Sincerely yours,

Allyn M. Davis, Director Hazardous Waste Management Division

Enclosure

cc: Kathleen Sisneros, NMED

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APPROVAL OF THE RFI PHASE I SUPPLEMENTARY REPORT, RFI PHASE II REPORT AND THE VOLUNTARY CORRECTIVE ACTION PLANS (CAP), WITH MODIFICATIONS, FOR GIANT REFINING COMPANY

Below are EPA's general comments and modifications pertaining to Giant's RFI Reports and the voluntary CAP for the Sludge Pits and the Railroad Rack Lagoon. Under general comments, there is a discussion describing the RFI status of each SWMU and the remaining RFI process/requirements for each SWMU. The modifications consist of SWMU specific monitoring or investigations required by EPA.

General Comment: EPA agrees with the finding of no further action for the following SWMUs: SWMU #1, the Aeration Basin; SWMU #2, the Evaporation Ponds; and, SWMU #13, the Drainage Ditch. Even though EPA is not requiring further investigations/remediation (no further action determination), periodic monitoring of the above mentioned SWMUs will be required (see below under modifications).

On SWMU #6, the Tank Farm, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, 9 out of 13 samples taken at the 11 foot interval (the deepest interval sampled) contained elevated levels of BTEX constituents. One sample at the 16 foot interval also contained elevated BTEX levels. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #9, the Sludge Pits, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, two samples at the 15'interval (the deepest interval sampled) contained semivolatiles. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

EPA agrees with the finding of no further action for SWMU #6, the Railroad Rack Lagoon, Overflow Ditch and Fan Out Area. Even though EPA is not requiring further investigations/remediation (no further action determination), periodic monitoring of the above mentioned SWMU will be required. Giant has decided to perform voluntary corrective measures (bioremediation of the wastes) on the above mention SWMU and will perform periodic monitoring on the SWMU while bioremediation is occurring. Giant's voluntary bioremediation should reduce the volume and toxicity of the waste contained in the SWMUs while continuing periodic monitoring of the SWMUs (which satisfies EPA's monitoring requirements). Also, EPA included some additional monitoring requirements besides those included by Giant in the CAP (see below under modifications).

Also, EPA will require one administrative control for all SWMUs which EPA has tententively approved a no further action determination. It is the following: A survey plat of each SWMU, according to the procedures required in 40 CFR 264.116. Once Giant has sent documentation to EPA verifying completion of the administrative control (for each SWMU), then Giant can submit a Class III permit modification to terminate the RFI/CMS process for a particular SWMU.

Modifications

SWMU #1, the Aeration Basin: Giant shall take soil samples around the Aeration Basin every 2 years, with sampling beginning in calender year 1994. Sampling requirements shall be identical to what was performed in the previous RFI, except, that all soil borings shall be angled and that an additional interval be sampled at the 20-21 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.). SWMU #6, the Tank Farm: Giant shall take soil borings as close as possible to the following sample points (numbers are from previous RFI sampling points, done 5/6 & 5/7/91): number's 21, 22, 23, 25, 26, 27, 30, and 31. Sampling intervals shall be at 16', except for #31, which shall be taken at 20'. Samples shall be analyzed for BIEX Constituents. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by June 1, 1994.

swhu #2, Evaporation Ponds: Giant shall monitor the seven groundwater wells around the evaporation ponds biannually for the same constituents monitored for in the original RFI. Results shall WHICH WELLS be included in the Annual Monitoring Report.

SWMU #13, Drainage Ditch between APIs Evaporation Ponds and Neutralization Tank Evaporation Fonds: Giant shall take soil samples around the Drainage Ditch every 2 years, with sampling beginning in calendar year 1994. Sampling procedures and constituents to be analyzed shall be identical to those required in the RFI, except, that all soil borings shall be angled and that an additional interval be sampled at the 6-6.5 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

swhu 🛵, Railroad Rack Lagoon: Giant shall take 5 soil borings within the lagoon after it has stopped receiving wastes and it is practicable to sample. Three of the five borings must be sampled at the 0-1 foot interval. All borings must be sampled at the 5-6 foot interval, the 10-11 foot interval, and the 14-15 foot Sampling procedures and constituents to be analyzed interval. shall be identical to those required in the previous RFI. Sampling results shall be included in the 1994 Annual Monitoring Report.

Also, all six borings required under the CAP closure (Section 5.0) must be sampled at the 5-6', the 10-11' interval, and the 14-15'. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Sampling results shall be included in the appropriate Annual Monitoring Report.

Continuation of SWMU #6, the Overflow Ditch: Giant shall take 3 soil borings in the Overflow Ditch after closure (stop receiving liquid wastes) of the Railroad Rack Lagoon. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Soil borings shall be taken at the 3-4' interval and at the 6.5-7' interval. Results shall be included in the 1994 Annual Monitoring Report.

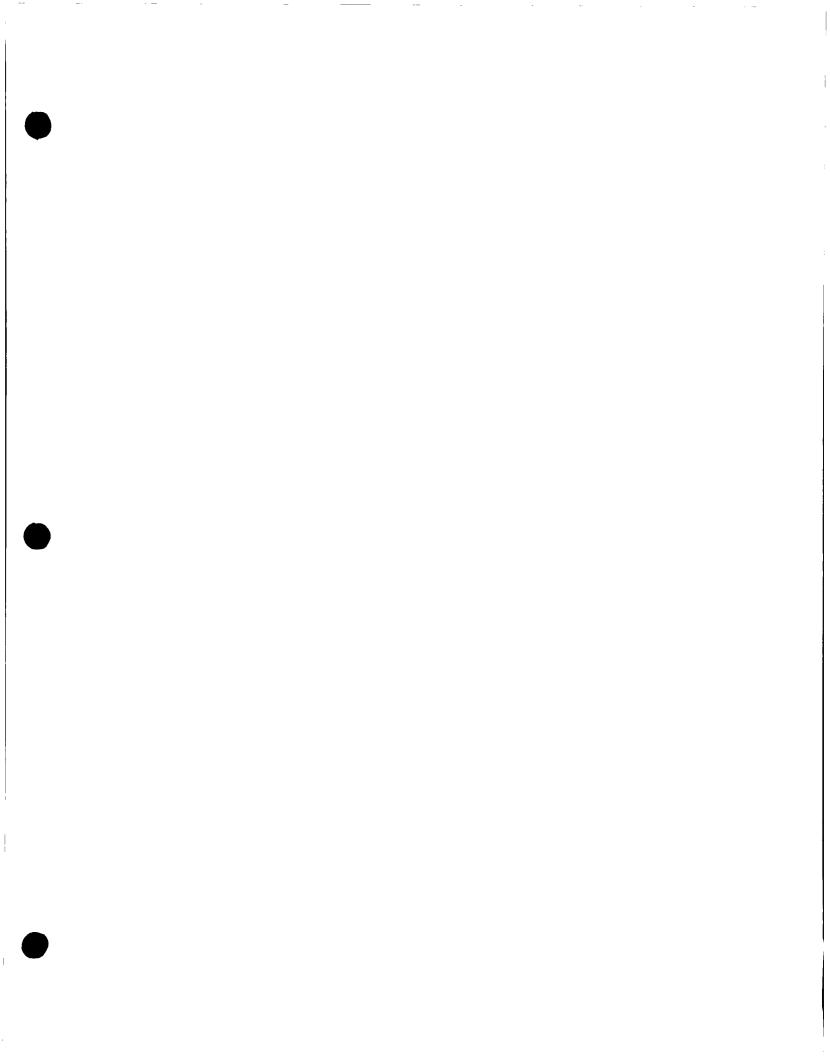
Continuation of SWMU #6, the Fan Out Area: Giant shall take 4 soil borings in the Fan Out Area after closure (stop receiving liquid wastes) of the Railroad Rack Lagoon. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Soil samples shall be taken at the 3-4' interval and at the 6.5' to 7' interval. Results shall be included in the 1994 Annual Monitoring Report.

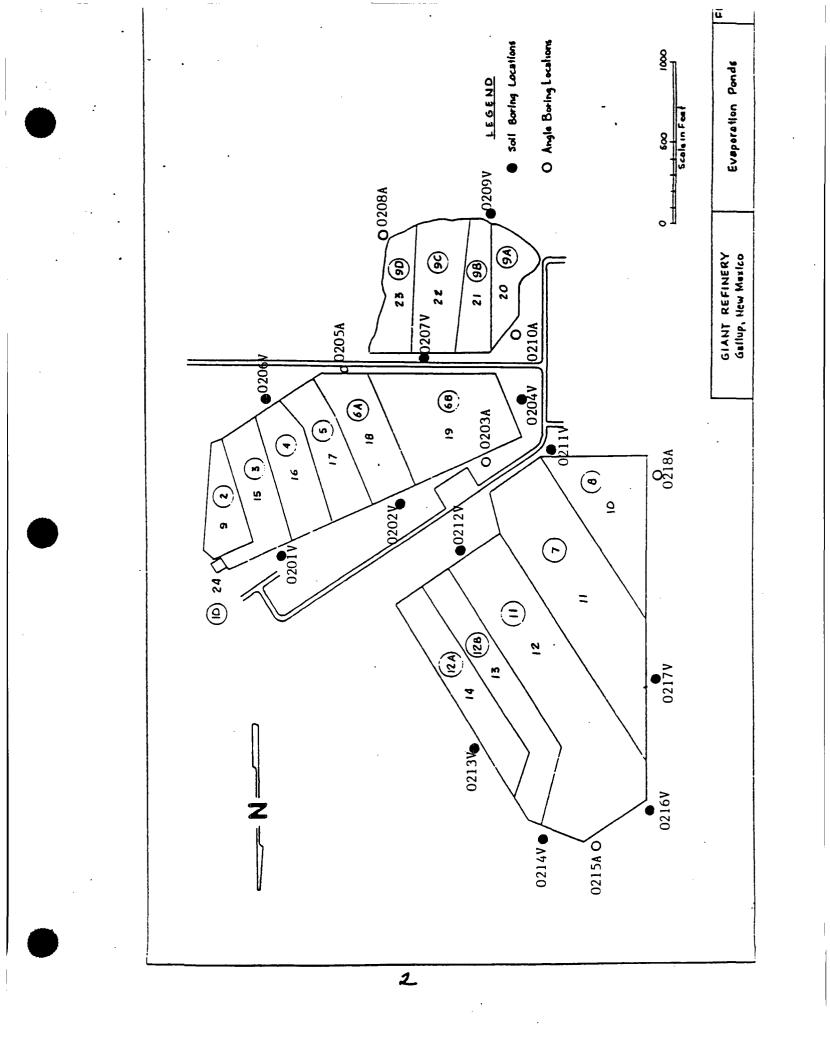
SWMD #12, Contact Waste Water Collection System (CWWCS): Giant shall perform an inspection of the CWWCS every five years (the next inspection will be in 1996) and shall be identical to the one performed in the RFI (if better technological equipment is developed, then Giant may request that an alternative method be used). Results shall be included in the appropriate Annual Monitoring Report.

Swhit 79, Sludge Pits: Giant shall take soil borings as close as possible to sampling points (numbers are from previous RFI sampling points, done 5/6 & 5/7/91) 6 and 7. Sampling intervals shall be at 18-19'and 24-25'. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by June 1, 1994.

Before <u>final closure of the West pit</u> under the CAP, all soil borings shall have samples taken at the 18-19' and 24-25' intervals. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Three soil borings shall also be taken (before closure) from the east pit using the same requirements specified for the West Pit borings. Results shall be included in the appropriate Annual Monitoring Report.

Soil Boring Logs: EPA has included an example of a soil boring log which they would like Giant to use in all future borings.





					CINIZA					
METALS		·								
SAMPLE POINT NUMBER SAMPLE POINT DEPTH		01 V3.5	01 V5.0	01 V6.5	02 V3.5	02 V5.0	02 V6.5	03 A3.5	03 A5.0	03 Å6.5
PARAMETER	UNITS									
Arsenic — Barium — Beryllium — Cadmium Cobalt — Chromium — Copper — Mercury Potassium —	ag/kg ag/kg ag/kg ag/kg ag/kg ag/kg ag/kg ag/kg	<3 256 5.8 0.3 5.7 7.3 5.2 <0.02 1820	<3 225 6.0 <0.3 5.6 6.4 5.0 <0.02 1780	<3 326 5.9 <0.3 5.8 7.4 5.3 <0.02 2270	<3 234 2.2 <0.3 4.9 6.1 5.7 <0.02 1620	<3 204 1.4 <0.3 3.6 4.2 4.3 <0.02 1730	<3 268 1.3 <0.3 3.1 3.0 4.2 <0.92 1100	<3 410 1.0 <0.3 2.9 3.3 3.2 <0.02 624	<3 243 1.1 <0.3 4.0 4.4 4.5 <0.02 1730	<3 296 1.4 <0.3 4.4 4.4 5.9 <0.02 1470
Nickel — Lead — Antimony Selenium Vanadium — Zinc —	ng/kg ng/kg ng/kg ng/kg ng/kg ng/kg	10.9 13 <3 <0.3 15.4 15.0	9.8 13 <3 <0.3 15.3 14.2	10.4 11 <3 <0.3 15.4 15.6	9.0 9 <3 <3 13.3 13.2	6.5 8 <3 <3 13.9 10.6	4.6 9 <3 13.3 8.0	5.1 7 <3 <3 11.4 12.0	4.6 8 <3 <3 12.3 11.9	6.3 10 <3 <3 15.0 11.3

SWMU #2 SAMPLE POINT NUMBER SAMPLE POINT DEPTH		PHASE II, RFI 1991 GIANT REFINING CINIZA									
		01 V3.5	01 V5.0	01 V6.5	02 V3.5	02 ₹5.0	02 ⊽6.5	03 A3.5	03 A5.0	03 A6.5	
PARAMETER pH	UNITS	7.78	7.76	7.66	7.54	7.54	7.53	8.14	7.44	7.63	



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PHASE II, RFI 1991 GIANT REFINING CINIZA



SWNU #2

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PHASE II, RFI 1991 GIANT REFINING CINIZA

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METALS

SAMPLE POINT NUMBER SAMPLE POINT DEPTH		04 V3.5	04 V5.0	04 V6.5	04 D6.5	05 A3.5	05 A5.0	05 A6.5	06 V3.5	05 V5.0	08 V6.5	06 E6.5 (mg/1)
PARAMETER	UNITS										•	·
Arsenic	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3	3	<3	<0.005
Barium	ag/kg	216	245	296	236	191	525	237	327	158	176	<0.010
Beryllium	ng/kg	1.6	2.1	1.5	1.6	1.1	0.5	0.9	0.9	0.5	0.5	<0.005
Cadmium	ng/kg	<0.3	0.4	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.005
Cobalt	ag/kg	4.5	5.4	4.4	4.9	3.7	1.8	3.4	2.5	2.2	1.7	<0.010
Chromium	ng/kg	6.4	10.1	4.3	5.4	4.4	1.2	3.8	3.3	2.6	1.7	<0.010
Copper	ng/kg	4.7	4.9	5.7	6.0	4.2	2.9	3.6	3.0	3.4	2.4	<0.010
Mercury	ag/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.000
Potassium	ag/kg	2210	3490	1350	1220	1690	327	1420	685	531	338	<1.0
Nickel	ag/kg	8.9	12.4	7.5	6.0	7.0	3.1	5.4	4.3	3.9	2.6	<0.020
Lead	ng/kg	10	9	9	11	7	<5	6	6	7	<5	<0.002
Antizony	ng/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<0.05
Selenium	ng/kg	<3	<3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.005
Vanadium	ag/kg	16.6	20.0	10.6	15.0	13.2	8.4	12.6	12.6	10.9	6. 7	<0.010
Zinc	mg/kg	14.1	19.2	12.2	12.5	11.7	4.3	3.3	8.3	7.1	5.2	0.020
SWNU #2			Pi		REFINING	991						
				C1.	NIZA							
SAMPLE POINT NUMBER SAMPLE POINT DEPTH		04 ¥3.5	04 V5.0	04 V5.5	04 D6.5	05 A3.5	05 A5.0	05 A6.5	06 V3.5	06 VS.0	06 V6.5	06 E6.5
PARAMETER pH	UNITS	7.48	7.60	7.93	7.83	7.49	7.63	7.78	8.20	8.12	8.23	5.29

PHASE II, RFI 1991 GIANT REFINING CINIZA

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METALS

SWMU #2

SAMPLE POINT NUMBER SAMPLE POINT DEPTH		07 V3.5	07 V5.0	07 V6.5	08 A3.5	08 A5.0	08 A6.5	08 E6.5 (mg/1)	09 V3.5	09 V5.0	09 V6.5	09 D6.5
PARAMETER	UNITS							(m3)1)				
Arsenic	mg/kg	<3	<3	<3	<3	<3	<3	<0.005	<3	<3	<3	<3
Barium	mg/kg	235	172	284	395	590	344	<0.010	220	226	269	350
Beryllium	mg/kg	7.7	7.8	7.4	18.2	9.3	6.1	<0.005	9.5	7.8	9.3	8.3
Cadmium	mg/kg	0.5	0.3	0.3	<0.6	<0.3	<0.3	<0.005	0.3	<0.3	<0.3	<0.3
Cobalt	mg/kg	6.7	6.9	6.9	7.8	7.1	4.5	<0.010	8.3	5.9	6.9	5.2
Chromium	∎g/kg	11.4	10.9	9.5	13.4	9.9	5.7	<0.010	14.1	8.9	11.5	9.1
Copper	mag/kg	5.5	5.4	7.5	7.3	5.8	3.4	<0.010	4.5	5.1	5.5	5.4
Mercury	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.000		<0.02	<0.02	<0.02
Potassium	∎g/kg	3770	3620	2190	5360	3150	1390	<1.0	4260	2920	4110	3260
Nickel	∎g/kg	12.5	12.4	12.1	12.0	11.2	7.6	<0.020	15.6	11.2	12.4	11.4
Lead	∎g/kg	12	11	10	10	12	10	<0.002	12	10	11	10
Antimony	mg/kg	<3	<3	<3	<6	<3	<3	<0.05	<3	<3	<3	<3
Selenium	∎g/kg	<0.3	<0.3	<0.3	<3	<3	<0.3	<0.010	<3	<3	<3	<3
Vanadium	∎g/kg	20.0	17.5	17.1	22.6	15.9	12.0	<0.010	21.7	15.0	18.0	14.8
Zinc	∎g/kg	25.3	20.9	17.9	28.3	20.2	13.5	0.012	21.0	19.2	21.1	19.6
SWMU #2					057 1/	991						
3#00 +2			E.		REFINING NIZA	<u>, , , , , , , , , , , , , , , , , , , </u>						
SAMPLE POINT NUMBER		07	07	07	08	08	08	08	09	09	09	09
SAMPLE POINT DEPTH		V3.5	V5.0	V6.5	A3.5	Å5.0	A6.5	E6.5	V3.5	V5.0	V6.5	D6.5
PARAMETER	UNITS											
На		7.51	7.71	7.85	8.09	8.31	8.50	5.69	7.62	7.73	7.90	7.88

PHASE II, RFI 1991 GIANT REFINING CINIZA

METALS

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SANPLE POINT NUNBER SANPLE POINT DEPTH		10 A3.5	10 A5.0	10 A6.5	11 V3.5	11 V5.0	11 V6.5	12 V3.5	12 V5.0	12 V6.5
PARAMETER	UNITS									
Arsenic	ng/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3
Barium	ng/kg	260	267	285	256	203	199	251	216	254
Beryllium	ng/kg	8.3	5.6	9.5	3.6	3.0	3.6	3.2	2.2	3.0
Cadmium	ng/kg	<0.3	0.3	<0.3	0.4	0.4	0.4	0.4	<0.3	0.3
Cobalt	ag/kg	7.0	5.1	7.5	6.4	6.3	5.9	5.9	5.3	5.6
Chromium	ng/kg	11.9	8.1	12.0	9.6	9.2	8.8	8.7	7.3	7.4
Copper	ng/kg	5.4	5.2	6.0	3.2	3.6	4.7	2.7	4.2	2.8
Mercury	∎g/kg	<0.02	<0.02	·<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Potassium	ag/kg	3790	2090	3460	3290	3110	2760	2780	2880	2650
Nickel	ag/kg	13.2	9.2	12.9	13.2	13.4	12.6	12.1	11.1	10.0
Lead	ng/kg	10	10	11	6	8	9	7	7	7
Antimony	ag/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3
Selenium	ag/kg	<3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Vanadium	mg/kg	17.3	12.4	18.1	16.4	15.6	15.5	15.7	15.4	13.3
Zinc	ag/kg	19.9	16.4	21.1	19.4	19.2	18.0	18.2	16.5	15.8

SWMU #2 SAMPLE POINT NUMBER SAMPLE POINT DEPTH			PH		RFI 19 REFINING NIZA	991				
		10 A3.5	10 A5.0	10 A6.5	11 V3.5	11 V5.0	11 V6.5	12 V3.5	12 V5.0	12 V6.5
PARAMETER pH	UNITS	7.47	7.39	7.82	7.60	7.89	8.06	7.47	7.56	7.30

PHASE II, RFI 1991 GIANT REFINING CINIZA

METALS

SAMPLE POINT NUMBER SAMPLE POINT DEPTH		13 V3.5	13 V5.0	13 V6.5	14 A3.5	14 A5.0	14 A6.5	14 D6.5	15 A3.5	15 A5.0	15 Aŭ.s
PARAMETER	UNITS										
Arsenic	ng/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Barium	ng/kg	204	281	305	276	223	280	278	231	327	260
Beryllium	ng/kg	2.9	2.8	3.2	2.1	1.9	3.2	2.6	3.7	4.0	3.8
Cadmium	mg/kg	<0.3	<0.3	0.3	0.3	<0.3	0.3	0.3	0.3	<0.3	0.4
Cobalt	ng/kg	5.8	5.3	5.9	3.9	3.6	6.0	5.2	6.0	6.5	6.0
Chromium	mg/kg	8.1	7.6	8.2	5.5	4.0	9.0	7.2	9.6	10.0	9.4
Copper	∎g/kg	3.1	2.9	3.4	2.1	3.2	3.0	2.9	3.2	3.7	3.4
Mercury	∎g/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Potassium	±g/kg	2560	2530	1980	1620	947	3300	2500	3100	3220	3020
Nickel	mg/kg	11.8	10.7	11.0	7.6	6.9	12.6	10.5	11.5	13.1	11.3
Lead	ng/kg	9	9	8	6	7	8	6	7	ĝ	9
Antimony	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Selenium	ng/kg	<0.3	<0.3	<0.3	<3	<0.3	<3	<3	<0.3	<3	<3
Vanadium	∎g/kg	15.7	10.7	14.4	11.7	10.9	15.3	17.3	16.9	17.3	16.1
Zinc	ng/kg	17.6	17.3	16.3	12.0	9.2	19.0	16.0	18.7	20.2	19.1

SWMU #2			PF		RFI 19 EFINING HZA	991					
SAMPLE POINT NUMBER SAMPLE POINT DEPTH		13 V3.5	13 V5.0	13 V6.5	14 A3.5	14 A5.0	14 A6.5	14 D6.5	15 A3.5	15 A5.0	15 A6.5
PARAMETER PH	UNITS	7.96	7.91	8.27	8.08	8.55	8.57	8.54	8.03	8.43	7.87

PHASE II, RFI 1991 GIANT REFINING CINIZA

METALS

SAMPLE POINT NUMBER SAMPLE POINT DEPTH PARAMETER	UNITS	16 V3.5	16 V5.0	16 V6.5	17 V3.5	17 V5.0	17 ¥6.5	18 A3.5	18 A5.0	19 A6.5
Arsenic Barium Beryllium Cadmium Cobalt Chromium Copper Mercury Potassium Nickel Lead Antimony Selenium Vanadium Zinc	ag/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	<3 138 1,5 <0.3 2.5 2.8 2.0 <0.02 930 5.3 11 <3 <3 7.2 7.9	<3 249 4.5 0.4 7.0 11.8 3.9 <0.02 4050 13.9 9 <3 <3 21.6 21.3	<3 302 2.0 0.3 4.1 4.8 2.9 <0.02 1460 8.0 10 <3 <0.3 9.8 11.5	<3 260 3.1 0.5 6.4 10.8 3.9 <0.02 3170 12.3 9 <3 <3 18.4 19.3	<3 333 2.9 0.5 7.0 11.5 3.2 <0.02 3770 14.2 6 <3 <3 17.6 22.5	<3 250 3.7 <0.3 6.2 8.5 3.5 <0.92 2920 12.4 9 <3 <3 16.4 19.6	<3 228 4.3 0.3 6.3 11.1 3.6 <0.02 3440 12.8 7 <3 <3 <3 16.8 19.2	<3 241 4.6 0.6 6.8 12.9 3.1 <0.02 4250 14.0 8 <3 <3 19.3 21.4	<3 281 4.3 0.5 6.5 11.1 4.0 <0.02 3320 3.1 8 <3 <0.3 17.4 21.0

SWMU #2

	PHASE II, RFI 1991 GIANT REFINING CINIZA										
SAMPLE POINT NUMBER SAMPLE POINT DEPTH PARAMETER	UNITS		16 V5.0	16 V6.5	17 V3.5	17 V5.0	17 V6.5	18 A3.5	18 A5.0	18 A6.5	
рН		8.20	8.51	8.59	7.61	7.93	8.35	7.72	7.75	7.92	

PHASE II, RFI 1991 GIANT REFINING CINIZA

SAMPLE POINT NUMBER SAMPLE POINT DEPTH		01 V3.6	01 V5.0	01 V6.5	02 V3.5	02 V5.0	02 V6.5	03 V3.5	03 V5.0	03 V6.5
PARAMETER	UNITS									
Carbon Disulfide	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorethane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-Butanone (MEK)	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinylether	∎g/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	ng/kg	<0.5	<0.5	5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethybenzene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	∎g/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dioxane	ng/kg	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5
1,2-Dibromoethane (EDB)	ng/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0





SWHU #2

PHASE II, RFI 1991 GIANT REFINING CINIZA

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SAMPLE POINT NUMBER SAMPLE POINT DEPTH		04 V3.5	04 V5.0	04 V6.5	04 D6.5	05 73.5	05 V5.0	05 V6.5	06 V3.5	06 V5.0	06 Võ.5	06 E6.5 (ug/1)
PARAMETER	UNITS											
Carbon Disulfide	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
1,2-Dichlorethane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
2-Butanone (MEK)	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.3	<0.5	<5
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
2-Chloroethylvinylether	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Toluene	≊g/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Chlorobenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Ethybenzene	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<s< td=""></s<>
Styrene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Total Xylenes	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
-	ng/kg	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<10
1,4-Dioxane 1,2-Dibromoethane (EDB)	ng/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5

PHASE II, RFI 1991 GIANT REFINING CINIZA

SAMPLE POINT NUMBER SAMPLE POINT DEPTH		07 V3.5	07 V5.0	07 ₩6.5	08 A3.5	08 A5.0	08 A6.5	08 E6.5 (ug/l)	09 V3.5	09 V5.0	09 V6.5	09 D6.5
PARAMETER	UNITS											
Carbon Disulfide	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorethane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5
2-Butanone (MEK)	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5
Benzene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinylether	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5
Toluene	ng/kg	<0.5	<0.5	0.011	0.009	0.013	<0.5	<5	<0.5	<0.5	0.007	<0.5
Chlorobenzene	∎g/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5
Ethybenzene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<s< td=""><td><0.5</td><td><0.5</td><td><0.5</td><td><0.5</td></s<>	<0.5	<0.5	<0.5	<0.5
Styrene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5
1,4-Dioxane	ng/kg	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<10	<7.5	<7.5	<7.5	<7.5
1,2-Dibromoethane (EDB)	ng/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0





PHASE II, RFI 1991 GIANT REFINING CINIZA

SAMPLE POINT NUMBER SAMPLE POINT DEPTH		10 A3.5	10 A5.0	10 A6.5	11 V3.5	11 V5.0	11 V6.5	12 V3.5	12 V5.0	12 V6.5
PARAMETER	UNITS									
Carbon Disulfide	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-Butanone (MEK)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinylether	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	0.005	0.005	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	∎g/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethybenzene	∎g/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dioxane	ng/kg	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5
1,2-Dibromoethane (EDB)	ng/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

PHASE II, RFI 1991 GIANT REFINING CINIZA

SAMPLE POINT NUMBER		13	13	13	14	14	14	14	15	15	15
SAMPLE POINT DEPTH		V3.5	V5.0	V6.5	A3.5	A5.0	A6.5	D6.5	A3.5	A5.0	A6.5
PARAMETER	UNITS										
Carbon Disulfide 1,2-Dichlorethane	ng/kg ng/kg	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5 <0.5
2-Butanone (MEK)	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzene	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinylether	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene Chlorobenzene	ng/kg ng/kg	<0.5 <0.5	<0.5 <0.5	0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5 <0.5
Ethybenzene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dioxane	ng/kg	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5
1,2-Dibromoethane (EDB)		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0





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PHASE II, RFI 1991 GIANT REFINING CINIZA

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SAMPLE POINT NUMBER SAMPLE POINT DEPTH		16 V3.5	16 ¥5.0	16 V6.5	17 V3.5	17 V5.0	17 V6.5	18 A3.5	18 A5.0	19 A6.5
PARAMETER	UNITS									
Carbon Disulfide	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorethane	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-Butanone (MEK)	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinylether	ag/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethybenzene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	ng/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dioxane	ag/kg	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5
1,2-Dibromoethane (EDB)	ng/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0







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PHASE II, RFI 1991 GIANT REFINING CINIZA

8270 SEMI-VOLATILE ORGANICS

SAMPLE POINT NUMBER		01	01	01	02	02	02	03	03	03
SAMPLE POINT DEPTH		V3.5	V5.0	V6.5	V3.5	V5.0	V6.5	A3.5	A5.0	A6.5
PARAMETER	UNITS									
Phenol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,3-Dichlorobenzene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,4-Dichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,2-Dichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0,17	<0.17	<0.17	<0.17	<0.17	<0.17
2-Methylphenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
4-Methylphenol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2,4-Dimethylphenol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Naphthalene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Dimethylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2,4-Dinitrophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
4-Nitrophenol	ag/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
Diethylphthalate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Phenanthrene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Di-n-butylphthalate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Flouranthene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Pyrene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Butylbenzylphthalate	mg/kg	0.3	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzo(a)anthracene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Bis(2-ethylhexyl)phthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Chrysene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Di-n-octylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzo(b)flouranthene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzo(k)flouranthene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzo(a)pyrene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Dibenzo(a,h)anthracene	ag/kg	<0.17	<0.17	<9.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzenethiol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Dibenzo(a,j)acridine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
7,12-Dimethylbenz(a)anthracene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Indene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Methylchrysene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1-Methylnaphthalene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
3-Methylphenol	ng/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pyridine	ng/kg	<5	<\$	<5	<5	<\$	<5	<5	<5	<5
Quinoline	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.95	<0.85	<0.95	<0.85	<0.95

SVMU #2

PHASE II, RFI 1991 GIANT REFINING CINIZA

8270 SEMI-VOLATILE ORGANICS

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SAMPLE POINT NUMBER		04	04	04	04	05	05	û5	06	96	05	ΰa
SAMPLE POINT DEPTH		V3.5	V5.0	V6.5	D6.5	A3.5	A5.0	A6.5	V3.5	V5.0	V6.5	£6.5
												(ug/1)
PARAMETER	UNITS											
												-
Phenol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
1,3-Dichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
1,4-Dichlorobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
1,2-Dichlorobenzene	a g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2-Methylphenol	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
4-Methylphenol	mg∕kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2,4-Dimethylphenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Naphthalene	≣g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Dimethylphthalate	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<\$
2,4-Dinitrophenol	ag/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25
4-Nitrophenol	∎g/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.35	<0.85	<25
Diethylphthalate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Phenanthrene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Anthracene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Di-n-butylphthalate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Flouranthene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Pyrene	mq/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Butylbenzylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Benzo(a)anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Bis(2-ethylhexyl)phthalate	mg/kg	<0,17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Chrysene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	< 5
Di-n-octylphthalate	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Benzo(b)flouranthene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Benzo(k)flouranthene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Benzo(a)pyrene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Dibenzo(a, h)anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<\$
Benzenethiol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Dibenzo(a,j)acridine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
7,12-Dimethylbenz(a)anthracene		<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	< <u>\$</u> •
Indene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Methylchrysene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
1-Methylnaphthalene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
3-Nethylphenol	ng/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pyridine	mg/kg	<5	<s< td=""><td><<u>5</u></td><td><<u>5</u></td><td><5</td><td><5</td><td><5</td><td><5</td><td><5</td><td><5</td><td><5</td></s<>	< <u>5</u>	< <u>5</u>	<5	<5	<5	<5	<5	<5	<5
Quinoline	ag/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.35	<25
AATHATTIC	жу/ку	10.03	·••0	NU.0J	10.01	-0.05	••••	······································	-0.00	-9.00	-0.00	-23

SWMU #2

PHASE II, RFI 1991 GIANT REFINING CINIZA

8270 SEMI-VOLATILE ORGANICS

SAMPLE POINT NUMBER		07 V3.5	07 ¥5.0	07 ¥6.5	08 A3.5	08 A5.0	08 A6.5	08 E6.5	09 V3.5	09 V5.0	09 V6.5	09 D6.5
SAMPLE POINT DEPTH		12.2	42.0	40.3	NJ.J	N3.0	NG . 7	(ug/l)	•3.5	13.0		20.5
PARAMETER	UNITS							. uy i z i				
Phenol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.1 7	<0.17
1,3-Dichlorobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
1,4-Dichlorobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
1,2-Dichlorobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
2-Methylphenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<9.17	<0.17
4-Methylphenol	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
2,4-Dimethylphenol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Naphthalene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Dimethylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
2,4-Dinitrophenol	ag/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.35	<25	<0.85	<0.95	<0.85	<0.35
4-Nitrophenol	ag/kg	<0.85	<0.85	<0.35	<0.85	<0.85	<0.85	<25	<0.85	<0.85	<0.35	<0.85
Diethylphthalate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Phenanthrene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Anthracene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<s< td=""><td><0.17</td><td><0.17</td><td><0.17</td><td><0.17</td></s<>	<0.17	<0.17	<0.17	<0.17
Di-n-butylphthalate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Flouranthene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Pyrene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Butylbenzylphthalate	mg/kg	<0.17	<0.17	<9.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Benzo(a)anthracene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Bis(2-ethylhexyl)phthalate	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<\$	<0.17	<0.17	<0.17	<0.17
Chrysene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<٢	<0.17	<0.17	<0.17	<0.17
Di-n-octylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<c.17< td=""><td><0.17</td><td><0.17</td><td><0.17</td></c.17<>	<0.17	<0.17	<0.17
Benzo(b)flouranthene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
<pre>Benzo(k)flouranthene</pre>	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Benzo(a)pyrene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Dibenzo(a,h)anthracene	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Benzenethiol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Dibenzo(a,j)acridine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<\$	<0.17	<0.17	<0.17	<0.17
7,12-Dimethylbenz(a)anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Indene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Methylchrysene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<\$	<0.17	<0.17	<0.17	<0.17
1-Methylnaphthalene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<\$	<0.17	<0.17	<0.17	<0.17
3-Methylphenol	ng/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pyridine	mg/kg	<5	<5	<5	<5	· <s< td=""><td><5</td><td><5</td><td><5</td><td><5</td><td><5</td><td><5</td></s<>	<5	<5	<5	<5	<5	<5
Quinoline	ng/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.35	<25	<9.85	<0.95	<0.85	<0.85

SWMU #2

PHASE II, RFI 1991 GIANT REFINING CINIZA

8270 SEMI-VOLATILE ORGANICS

SAMPLE POINT NUMBER SAMPLE POINT DEPTH		10 A3.5	10 A5.0	10 A6.5	11 V3.5	11 V5.0	11 V6.5	12 V3.5	12 V5.0	12 V6.5
PARAMETER	UNITS									
Phenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,3-Dichlorobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,4-Dichlorobenzene	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,2-Dichlorobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2-Methylphenol	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
4-Methylphenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2,4-Dimethylphenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Naphthalene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Dimethylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2,4-Dinitrophenol	mg/kg	<0.85	<0.85	<0.35	<0.85	<0.55	<0.85	<0.85	<0.85	<0.85
4-Nitrophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
Diethylphthalate	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Phenanthrene	ma/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Di-n-butylphthalate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Flouranthene	zg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Pyrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	$\odot.17$	<0.17	<0.17
Butylbenzylphthalate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzo(a)anthracene	mç/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	\$9.17
Bis(2-ethylhexyl)phthalate	mg∕kg	<0.17	<9.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Chrysene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Di-n-octylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
<pre>Benzo(b)flouranthene</pre>	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	(0.17
Benzo(k)flouranthene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzo(a)pyrene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Dibenzo(a,h)anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzenethiol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Dibenzo(a,j)acridine	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
7,12-Dimethylbenz(a)anthracene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Indene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Methylchrysene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1-Methylnaphthalene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
3-Methylphenol	mg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pyridine	mg/kg	<5	<5	<5	<5	<5	<5	<5	<\$	<5 .
Quinoline	ag/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
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SWMU #2

PHASE II, RFI 1991 GIANT REFINING CINIZA

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8270 SEMI-VOLATILE ORGANICS

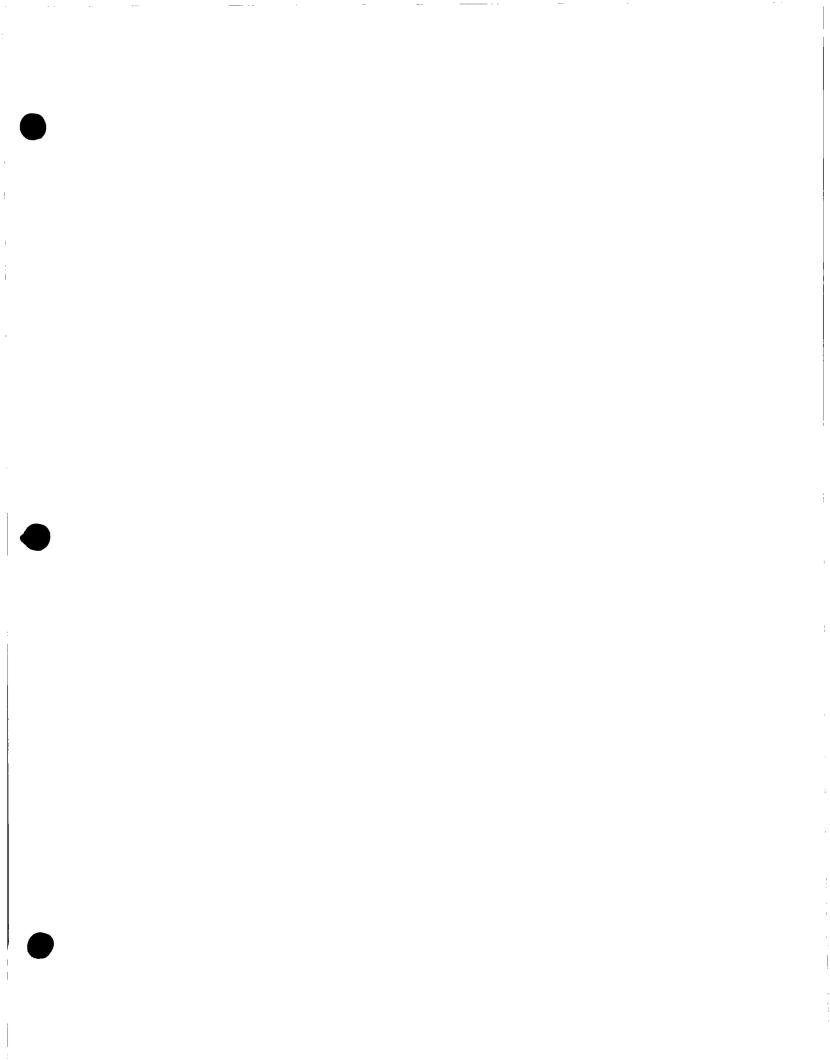
	SAMPLE POINT NUMBER SAMPLE POINT DEPTH		13 V3.5	13 V5.0	13 V6.5	14 A3.5	14 A5.0	14 A6.5	14 06.5	15 A3.5	15 A5.0	15 A6.5
	PARAMETER	UNITS										
	Phenol	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	1,3-Dichlorobenzene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	1,4-Dichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	1,2-Dichlorobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	2-Methylphenol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	4-Methylphenol	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	2,4-Dimethylphenol	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	Naphthalene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	Dimethylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	2,4-Dinitrophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.35	<0.95	<0.85	<0.85	<0.85	<0.95
	4-Nitrophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.95	<0.95	<0.95	<0.35	<0.85
	Diethylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	Phenanthrene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
ł	Anthracene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
r	Di-n-butylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	.<0.17	<0.17	<0.17	<0.17	<0.17
	Flouranthene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	Pyrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<9.17	<0.17	<0.17	<0.17	<0.17
	Butylbenzylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	Benzo(a)anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	Bis(2-ethylhexyl)phthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	Chrysene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	Di-n-octylphthalate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	Benzo(b)flouranthene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	Benzo(k)flouranthene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	Benzo(a)pyrene	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	Dibenzo(a,h)anthracene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	Benzenethiol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	Dibenzo(a,j)acridine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	7,12-Dimethylbenz(a)anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	Indene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	Methylchrysene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	1-Methylnaphthalene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
	3-Methylphenol	mg/kg	<5	<5	<5	<5	.< \$	<5	<5	<5	<5	<\$
	Pyridine	ng/kg	<5	<5	<5	<5	·<5	<5	< S	<\$	<5	<5
	Quinoline	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.35	<0.35	<0.85	<0.85	<0.85	<0.95

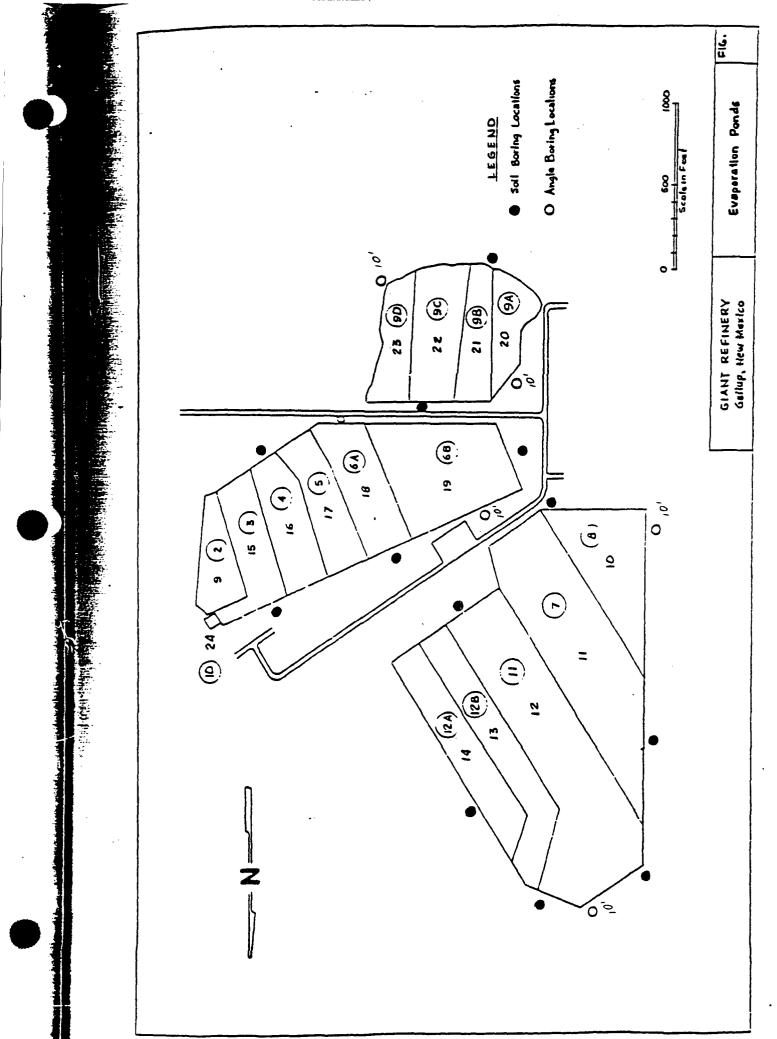
SWNU #2

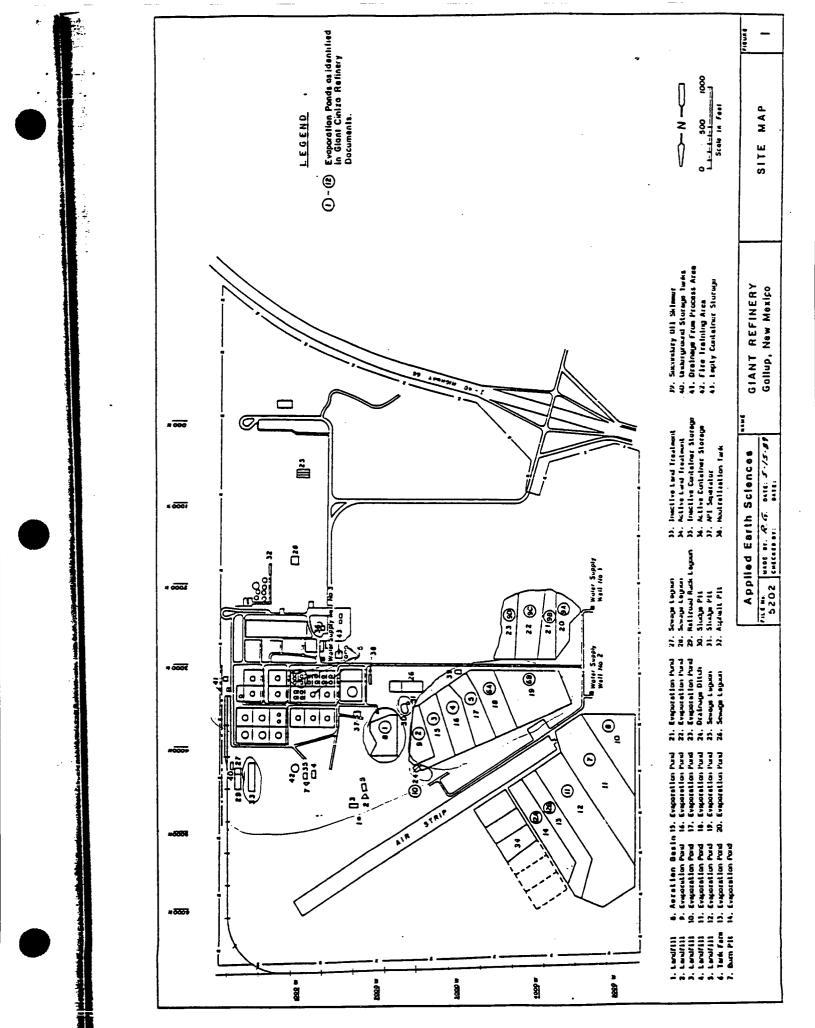
PHASE II, RFI 1991 GIANT REFINING CINIZA

8270 SENI-VOLATILE ORGANICS

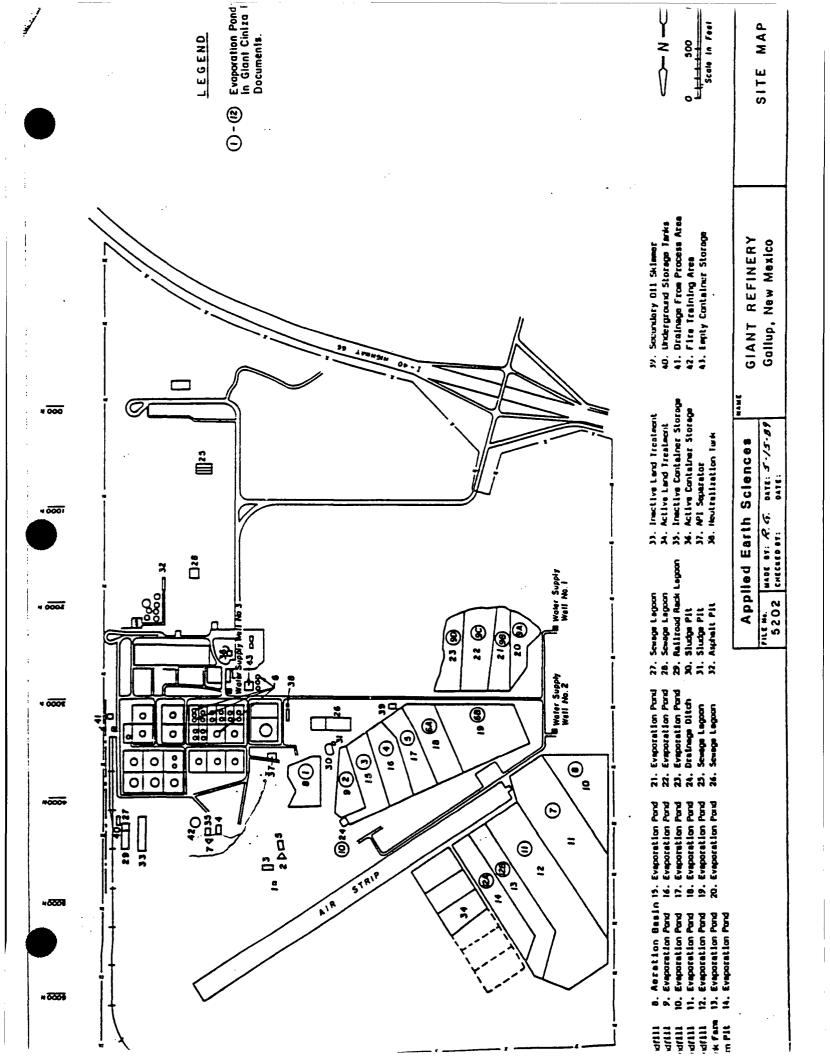
SAMPLE POINT NUMBER		15	16	15	17	17	17	19	13	:9
SAMPLE POINT DEPTH		V3.5	V5.0	V6.5	V3.5	V5.0	V6.5	A3.5	A5.0	A6.5
PARAMETER	UNITS									
									_	_
Phenol	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,3-Dichlorobenzene	ng/kg	<0.17	<0.17		<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,4-Dichlorobenzene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,2-Dichlorobenzene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2-Methylphenol	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0,17
4-Methylphenol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2,4-Dimethylphenol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Naphthalene	∎g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Dimethylphthalate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<9.17	<0.17	<9.17	<0.17
2,4-Dinitrophenol	ag/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.35
4-Nitrophenol	aq/kg	<0.85	<0.85	<0.85	<0.85	<0.95	<0.95	<0.35	<0.95	<0.85
Diethylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Phenanthrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Anthracene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Di-n-butylphthalate	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Flouranthene	aç/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Pyrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<9.17	<0.17	<0.17	< 9.17	<0.17
Butylbenzylphthalate	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzo(a)anthracene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Bis(2-ethylhexyl)phthalate	mg/kg	<0.17	<0.17 :-	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Chrysene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	< 0.17	<0.17	<0.17	<0.17
Di-n-octylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzo(b)flouranthene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzo(k)flouranthene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzo(a)pyrene	⊒g/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Dibenzo(a,h)anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzenethiol	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Dibenzo(a,j)acridine	ng/kg	<0.17	<0.17	<0.17	<9.17	<0.17	<0.17	<0.17	<0.17	<0.17
7,12-Dimethylbenz(a)anthracene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Indene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Methylchrysene	ng/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1-Methylnaphthalene	ag/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
3-Nethylphenol	ag/kg	<5	<5	<5	<5	<5	<5	<5	<5	<٢
Pyridine	ng/kg	<5	< <u>s</u>	<\$	<5	<5	<5	<5	<5	<5
Quinoline	ng/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
	-7								-	







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GARY E. JOHNSON

GOVERNOR

State of New Mexico ENVIRONMENT DEPARTMENT -Hazardous & Radioactive Materials Bureau 525 Camino De Los Marquez P.O. Box 26110 Santa Fe, New Mexico 87502 (505) 827-4358 Fax (505) 827-4389

MARK E. WEIDLER SECRETARY

EDGAR T. THORNTON, III DEPUTY SECRETARY

CERTIFIED MAIL RETURN RECEIPT REQUESTED

July 13, 1995

John Stokes, Refinery Manager Giant Refining Company Ciniza Refinery Route 3, Box 7 Gallup, New Mexico 87301

Dear Mr. Stokes,

RE: Part A Permit Revision

On March 10, 1995, the New Mexico Environment Department (NMED) Hazardous and Radioactive Materials Bureau (HRMB) received a copy of the Giant Refining Company-Ciniza (Giant) Part A Permit Modification request dated March 6, 1995, and sent to the Environmental Protection Agency (EPA). Giant is hereby notified that because the Permit Modification request concerns RCRA units, NMED and not EPA has the lead. The modification requested is a 337% increase in both API tank treatment capacity (API) and benzene stripping capacity.

The API and benzene stripping units appear on Giant's Part A Permit. However, they should not have been included on the Part A Permit as they are part of the process wastewater treatment system and are exempt from RCRA regulation. Also, evidence shows that the API and benzene strippers are regulated by the Oil Conservation Division (OCD) of the New Mexico Energy, Minerals and Natural Resources Department (EMNRD). OCD's Groundwater Discharge Permit #32 (GW 32), covers all discharges by the facility, including the API, benzene strippers and the aeration lagoons into which they discharge.

Required by the OCD is biennial groundwater monitoring which includes all approved RCRA constituents, to the standards of the New Mexico Water Quality Control Commission. Also required is annual monitoring of the API, benzene stripper and aeration lagorn effluents. Although the API and benzene stripper effluents are not monitored for RCRA constituents, the aeration lagoon into which they discharge are monitored for RCRA metals, and volatile and semi-volatile organics.

John Scokes July 13, 1995 Page 2 of 2

Further, Giant has submitted to OCD a modification request identical to the March 6, 1995 request for modification of their RCRA Part A Permit. As per OCD's March 15, 1995 letter to Giant, approval of this modification request is conditional upon Giant's submittal of a closure plan for the existing API. This is analogous to RCRA requirements and further demonstrates that OCD requirements for the API and benzene strippers are protective of human health and the environment.

Therefore, HRMB requests that Giant submit a request for removal of the aforementioned units from Giant's Part A Permit to the Director of NMED Water and Waste Management Division (WWD) for his approval. If the Director approves the request, Giant will be required to submit a revised Part A Permit which excludes the API oil/water separator and the benzene strippers.

If there are any questions on this matter, you may contact Mr. Michael Chacón at (505) 827-4308.

Sincerely,

Benito J. Garcie

Chief, Hazardous and Radioactive Materials Bureau

Roger Anderson, OCD CC: Ron Kern, HRMB Program Manager Michael Chacón, RCRA Permits David Neleigh, EPA File-Red 95 File-Reading



Route 3, Box 7 Gallup, New Mexico 87301

505 722-3833

July 24, 1995

Mr. Ed Kelley, Director Water and Waste Management Division New Mexico Environment Department 525 Camino De Los Marquez Santa Fe, New Mexico 87502

Dear Mr. Kelley,

Giant Refining recently requested a modification to its Part A RCRA Permit. In reviewing this modification request, the Hazardous & Radioactive Materials Bureau (HRMB) staff determined that several items listed on Giant's Part A Permit (the API separator and benzene stripping units) should not have been included in the permit since they are part of a process wastewater treatment system and are regulated by the Oil Conservation Division.

Therefore, at the request of the HRMB, Giant hereby requests removal of the abovementioned API separator and benzene stripping units from its Part A Permit. Upon your approval of this request, Giant will submit to the HRMB a revised Part A Permit excluding these units.

Enclosed with this letter is a copy of HRMB Chief Benito Garcia's letter detailing the HRMB staff's findings and his request that Giant seek removal of these units from its Part A Permit.

Should you or your staff have any questions regarding the above, please do not hesitate to contact me or Mr. Lynn Shelton at (505) 722-3833. Thank you for your assistance in this matter.

Sincerely,

David C. Paulick

David C. Pavlich Health, Safety, and Environmental Manager

A Division of Grant Incustries, Inc.

cc w/enclosure:

Lynn Shelton, Giant

cc w/o enclosure:

Roger Anderson, OCD Bureau Chief Michael Chacón, HRMB, RCRA Permits Ron Kern, HRMB Program Manager





Route 3, Box 7 Gallup, New Mexico 87301

505 722-3833

July 28, 1995

Mr. Ed Kelley, Director Water and Waste Management Division New Mexico Environment Department 525 Camino De Los Marquez Santa Fe, New Mexico 87502

Dear Mr. Kelley:

Earlier this week, I sent you a letter (copy attached) at the direction of Benito Garcia of the Hazardous and Radioactive Materials Bureau (HRMB) requesting your approval to remove several listed items from Giant Refining's Part A RCRA permit. Those items are the API separator and the benzene stripping units. In subsequent discussions with HRMB staff, an additional item was identified as being a good candidate for removal from the Part A Permit. This item is a small hazardous waste drum storage area. Since this area was never constructed and Giant does not foresee a need for it in the near future, its removal from the Part A Permit is appropriate.

Therefore, in addition to the items listed in Giant's letter of July 24, 1995, Giant also requests approval for the removal of the hazardous waste container storage area from its Part A Permit. Upon receipt of your approval, Giant will submit an application for permit modification to the HRMB.

Thank you for your assistance in this matter.

Sincerely,

David C. Parlich.

David C. Pavlich Health, Safety, and Environmental Manager

cc:

Roger Anderson, OCD Michael Chacon, HRMB Ron Kern, HRMB Lynn Shelton, Giant

[SRP\WPDOCS\PAV\NKED.728]

A Division of Giant Industries, Inc

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Route 3, Box 7 Gallup, New Mexico 87301

505 722-3833

August 25, 1995

Mr. Benito J. Garcia, Chief Hazardous & Radioactive Materials Bureau New Mexico Environment Department 525 Camino De Los Marquez Santa Fe, New Mexico 87502

Via: CERTIFIED MAIL RETURN RECEIPT REQUESTED

Re:

Giant Refining - Ciniza Refinery RCRA Operating Permit NMD000333211-2 Class I Permit Modification Request

Dear Mr. Garcia:

Giant Refining Company currently operates its Ciniza refinery under the RCRA Hazardous Waste Facility Permit referenced above (last revision approved via EPA correspondence dated August 16, 1991). During recent discussions with the staff members of the Hazardous & Radioactive Materials Bureau (HRMB), it was discovered that several items currently listed in this facility's RCRA Part A permit have either never been constructed or fall under the jurisdiction of the New Mexico Oil Conservation Division (OCD) and are regulated under this facility's OCD Discharge Plan (GW-032).

In subsequent correspondence, HRMB directed Giant to contact Mr. Ed Kelley, Director of the NMED's Water and Waste Management Division (WWD) to request approval for the removal of these inappropriately listed items from this facility's Part A permit. This request was complied with in correspondence submitted to Mr. Kelley's office on July 24 and July 28, 1995. On August 21, 1995, Giant received WWD's approval of this deletion request in a letter from Mr. Kelley dated August 14, 1995 (copy enclosed).

Therefore, Giant Refining hereby requests a Class I modification to its RCRA Part A Permit #NMD000333211-2 deleting the following items:

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- the API separator
- the benzene strippers
- the hazardous waste drum storage area

The first two items are being requested for deletion from the permit due to the fact that they are already regulated under this facility's OCD discharge plan. The third item is being proposed for deletion because it was never constructed, and Giant has no plans for its construction in the future.

Enclosed with this letter are a completed Part A Hazardous Waste Permit Application reflecting the above modifications, a location map, a facility site plan, and a photocopy of an aerial view of the facility site.

Should you or your staff have any questions regarding the above, please do not hesitate to contact me or Lynn Shelton at (505) 722-3833.

Sincerely,

David C. Parlich

David C. Pavlich Health, Safety, and Environmental Manager

cc: Kim Bullerdick, Corporate Counsel Giant Industries Arizona, Inc.

> Lynn Shelton, Senior Environmental Coordinator Giant Refining Company

WWT File

RCRA Permit Binder

[SRP\WPDOCS\PAV\BGNMED.825]



GARY E. JOHNSON GOVERNOR State of New Mexico ENVIRONMENT DEPARTMENT Hazardous & Radioactive Materials Bureau 525 Camino De Los Marquez

> P.O. Box 26110 Santa Fe, New Mexico 87502 (505) 827-4358 Fax (505) 827-4389

MARK E. WEIDLER SECRETARY

EDGAR T. THORNTON, III DEPUTY SECRETARY

CERTIFIED MAIL RETURN RECEIPT REQUESTED

August 14, 1995

Mr. David Pavlich Health, Safety and Environmental Manager Giant Refinery-Ciniza Route 3, Box 7 Gallup, New Mexico 87301

Dear Mr. Pavlich,

RE: Request to amend Giant's Part A Permit.

The New Mexico Environment Department (NMED) Hazardous and Radioactive Materials Bureau (HRMB) is in receipt of the Giant Refining Company (Giant) letters to HRMB dated July 24 and 28, 1995. In the July 24 letter Giant agrees to HRMB's request (dated July 13, 1995) for Giant to request removal from their RCRA Part A Permit of the following items;

- the API separator
- the benzene strippers.

In the July 28 letter Giant adds the hazardous waste drum storage area to the removal request.

The API separator and benzene strippers are part of the process wastewater treatment system and thus are exempt from RCRA permitting requirements. Further, these units are regulated by NMED Oil Conservation Division (OCD). The hazardous waste drum storage area has not been constructed, and Giant has no plans to construct it, thus there is no need for it to be on the Part A Permit.

HRMB hereby approves Giant's request for removal of the aforementioned items from their Part A Permit. Giant must now submit to HRMB within two (2) weeks of receipt of this letter a revised Part A excluding these units.

John Stokes July 13, 1995 Page 2 of 2

Further, Giant has submitted to OCD a modification request identical to the March 6, 1995 request for modification of their RCRA Part A Permit. As per OCD's March 15, 1995 letter to Giant, approval of this modification request is conditional upon Giant's submittal of a closure plan for the existing API. This is analogous to RCRA requirements and further demonstrates that OCD requirements for the API and benzene strippers are protective of human health and the environment.

Therefore, HRMB requests that Giant submit a request for removal of the aforementioned units from Giant's Part A Permit to the Director of NMED Water and Waste Management Division (WWD) for his approval. If the Director approves the request, Giant will be required to submit a revised Part A Permit which excludes the API oil/water separator and the benzene strippers.

If there are any questions on this matter, you may contact Mr. Michael Chacón at (505) 827-4308.

Sincerely, Benito J. Garciá

Chief, Hazardous and Radioactive Materials Bureau

cc: Roger Anderson, OCD Ron Kern, HRMB Program Manager Michael Chacón, RCRA Permits David Neleigh, EPA File-Red 95 File-Reading

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	United States Environmental Protection Agency	
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D. PROCESSES 1. PROCESSES 1. PROCESS CODES: For listed hazardous wasts: For each listed hazardous wasts attend in column A select the code(s) from the list of process codes contained in item XIA on page 3 to indicate have the wasts will be stored, breated, and/or disposed of at the facility. For non-listed hazardous waste: For each characteristic or totic containinant entered in dolumn A, select the code(s) from the list of process codes contained in item XIA on page 3 to indicate all the processes that will be used to store, breat, and or dispose of all the non-listed hazardous waste: that possess that the processes that will be used to store, breat, and or dispose of all the non-listed hazardous wastes that possess that the processes that will be used to store, breat, and or dispose of all the non-listed hazardous wastes that possess that the processes that will be used to store, breat, and or dispose of all the non-listed hazardous wastes that possess that the processes that will be used. 2. Enter 'boo' in the extreme right box of tem XIV-2 (the file number and the additional code(s). 3. Enter 'boo' in the extreme right box of tem XIV-2 (the file number and the additional code(s). 4. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, described the process is in the space provided on the form (D.2). NOTE HAZARDOUS WASTES DESCRIPED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - Hazardous Waste Numbers and etter. It in column A. On the same line concluse of stores. 1. Select one of the EPA hazardous Waste Numbers and etter. It in column A. On the same line concluse of stores. 2. and D by estimating the tobial amould conter EPA HAZARDOUS WASTE NUMBER - Haz		L	in contract															يو وي					
0. PROCESSES 1. PROCESS CODES: For listed bazardous wasts. For each listed bazardous west estand in column A select the code(s) from the list of process codes contained in tem XI A on page 3 to indicate that the stored threaded, and/or disposed of at the facility. For non-listed bazardous waste: For each characteristic of tools contained and will be subset to store. Insta default and or dispose of all the non-listed bazardous waste for each characteristic of tools contained in tem tools of the insta doug and or dispose of all the non-listed bazardous waste that possess flat duracteristic of roles contained. NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. F. MORE ARE NEEDED: 1. Enter the first two as described above. 2. Enter '1000' in the extreme right box of item XI-0(1). 3. Enter '1000' in the extreme right box of item XI-0(1). 4. Enter '1000' in the extreme right box of them XI-0(1). 9. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on face 7. Hem XIVE & the number and the additional code(s). 9. PROCESS DESCRIPTION: If a code is not listed for a process that will be used. describe the process in the space provided on the form (0,2)). NOTE: HAZARDOUS WASTES DESCRIPED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - Hazardous waste stat can be described for more than one EPA Hazardous Waste Number and the static and be cased to describe the waste. 9. Select one of the EPA Hazardous Waste Numbers and enter it in column A of the next line column by of the maximul quantify of the waste and describe of the waste. <tr< td=""><td></td><td>of mea</td><td>isure</td><td>oras takinj</td><td>g into accou</td><td>er unit i mit the</td><td>of measur appropria</td><td>e for te de</td><td>quan</td><td>dity,</td><td>the</td><td>units o Hic an</td><td>f mei</td><td>asure</td><td>mus</td><td>be co</td><td>rverted</td><td>into c</td><td>one of t</td><td>he requ</td><td>lred u</td><td>nts</td></tr<>		of mea	isure	oras takinj	g into accou	er unit i mit the	of measur appropria	e for te de	quan	dity,	the	units o Hic an	f mei	asure	mus	be co	rverted	into c	one of t	he requ	lred u	nts	
For field hazardous wask: For each listed hazardous wasks entired in column A select the code(s) from the list of process codes contained in term XII A: on page 3 to indicate how the waste will be stored, treated, and/or disposed of at the facility. For non-listed hazardous waste: For each characteristic or toxic contaminant entered in column A, select the code(s) from the list of process codes contained in mor XII A: on page 3 to indicate all the processes that will be used to store, ineat, and/or of dispose of all the non-listed hazardous waste: That pages sets that characteristic or toxic contaminant. NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED: 1. Enter the first two as described above: 2. Enter for the experient right box if the XIV-2(1) 3. Enter for the space provided on page 7, them XIV-2 the fire number and the additional code(s). PROCESS DESCRIPTION. If a code is not listed for a process that will be used describe the process in the space provided on the form (D (2)). NOTE: HAZARDOUS WASTES DESCRIPED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - Hazardous Assets that can be described by more than one EPA Hazardous Waste And describing all the processes to be used to transition the other and the waste. 1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns 8, C and D by estimating the total annual quantity of the waste and describing all the processes to be used to transit and adopted on the torm as tohow: a maximum and make no other entries on that line. 2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste and dispose of an	a secondo a como a	61 A A A A A A A A A A A A A A A A A A A		(* 12. 20. C.)																			
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For non-listed hazardous waste: For each characteristic or toxic contaminant entered in odum A, select the code(s) from the list of process codes contained in them XII. A on page 2 bindicate all the processes that will be used to store, treat, and or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant. NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED: 1. Enter the first two as described above. 2. Enter "000" in the extreme right box of tem XIV-0(1). 3. Enter "000" in the extreme right box of tem XIV-0(1). 3. Enter the first two as described above. 2. Enter "000" in the extreme right box of tem XIV-0(1). 3. Enter find the apace provided on page 7, them XIV-2 the fine number and the additional code(s). 2. PROCESS DESCRIPTION. If a code is not listed for a process that will be used. describe the process in the space provided on the form (D (2)). NOTE: HAZARDOUS WASTES DESCRIPED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - fistrardous wastes that can be described by more than one EPA Hazardous Waste with the processes to be used to treat. 1. Select one of the EPA fistrardous Waste Numbers and enter th noolumn A. On the same line complete columns 8, C and D by estimating the totia annual quantity of the waste Number that can be used to describe the waste. 2. In column A of the read line enter the other EPA Hazardous Waste Number that can be used to describe the waste. 3. In column A of the read line enter the other EPA Hazardous Waste Number that can be used to describe the waste.			2630	i Ma												SAS.						•	
For non-listed hazardous waster. For each characteristic or kolic contaminant entered in column A, select the code(s) from the list of process codes contactioned in term XI A, an page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that processes that disc contaminant. NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED: 1. Enter the first her as described above. 2. Enter in the asses provided on page 7. Hem XIV-2 (1). 3. Enter in the aspace provided on page 7. Hem XIV-2 the fine number and the additional code(s). 7 PROCESS DESCRIPTION: If a code is not licited for a process that will be used, describe the process in the space provided on the form (D/2)). MOTE: HAZARDOUS WASTES DESCRIPED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - Hazardous wastes that one is described by more than one EPA Hazardous Waste humber shall be described on the form (S/2)). MOTE: HAZARDOUS WASTES DESCRIPED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - Hazardous wastes that one is described by more than one EPA Hazardous Waste humber shall be described on the form as follows: 2. 1. Select one of the EPA Hazardous Waste Number and describing all the processes to be used to treat, store, and/or dispose of the wasta. 2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column A of lone enter line coder Waste Stand describing all below! A dateline waste. Treatment will be an estimated 200 pounds per year of chrome shallings form listing operation. In addition, the useling will treat and dispose of the waste. 1	à.	co	des o	ontal	ned in item)	W: FOF	each liste In page 3 (id ha to inc	izardo dicate	tus u	vasi 7 fb	e ente	red ir Mili	1 colu he e	rmn A	selec	the co	de(s)	from th	e list o	proc	835	
or dispose of all the non-listed hazardous whates that possess that characteristic of totic contaminant. NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED: 1. Enter the first two as described above. 2. Enter "000" in the extreme right box of item XIV-D(1). 3. Enter in the space provided on page 7, hem XIV-E the line number and the additional code(s). 2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form (D(2)). NOTE: HAZARDOUS WASTES DESCRIED BY MORE THAN ONE EPA HAZARDOUS WASTE MIMBER Hazardous wastes that can be described by more than one EPA Hazardous Hase Number atail be described on the form as follows: 1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns, B, C and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, in column A of the next line enter the other EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns, B, C and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, in column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. 2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the hazardous waste. <td a="" be="" can="" column="" describe="" enter="" epa="" hazardous="" line="" next="" number="" of="" other="" td="" that="" the="" to="" used="" waste="" waste.<<=""><td></td><td>Fa</td><td>r non</td><td>-liste</td><td>d hazardous</td><td>waste</td><td>: For each</td><td>1 cha</td><td></td><td>rie Ho</td><td>Ċ.</td><td></td><td></td><td>9. 9 1</td><td><u> </u></td><td></td><td></td><td></td><td></td><td></td><td>acui.</td><td>ıy.</td></td>	<td></td> <td>Fa</td> <td>r non</td> <td>-liste</td> <td>d hazardous</td> <td>waste</td> <td>: For each</td> <td>1 cha</td> <td></td> <td>rie Ho</td> <td>Ċ.</td> <td></td> <td></td> <td>9. 9 1</td> <td><u> </u></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>acui.</td> <td>ıy.</td>		Fa	r non	-liste	d hazardous	waste	: For each	1 cha		rie Ho	Ċ.			9. 9 1	<u> </u>						acui.	ıy.
NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED: 1. Enter the first two as described above. 2. Enter '000' in the extreme right box of item XIV-0(1). 3. Enter in the apace provided on page 7, item XIV-5, the line number and the additional code(s). 2. PROCESS DESCRIPTION: if a code is not listed for a process that will be used, describe the process in the space provided on the form (D.(2)). WOTE: HAZARDOUS WASTES DESCRIPED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - iterations wastes that can be described by more than one EPA iterations waste humber and the additional code(s). 1. Select one of the EPA Hazardous Waste Number and enter it in column A. On the same line complete columns B, C and D by estimating the total annual quantity of the waste and describel all the forms stockness at the space in column A. On the same line complete columns B, C and D by estimating the total annual quantity of the waste and describe in the stock to be used to test. 2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. 3. Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the waste. EXAMPLE FOR COMPLETING ITEM XIV (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and diagoes of an estimated 300 pounds per year of each waste. Incident waste is corrosive and ignitiable and there will be an estimated 300 pounds per year of each waste. Incident A diagoes and ignitiable and there will be an estimated 300 pounds per year of each waste. Incolumn A of the next	• 							п хн.	A. DN	080	e 31	indu	cate i	ell fha			that will	1 60 11	cad ta	re code store, ti	(s) fro reat. a	nd/	
Enter the first two as described above. Enter 100° in the extreme right box of kem XIV-D(1). Enter in the space provided on page 7, hem XIV-E the line number and the additional code(s). PROCESS DESCRIPTION: If a code is not listed for a process that will be used describe the process in the space provided on the form (D(2)). NOTE: HAZARDOUS WASTES DESCRIPED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form (D(2)). NOTE: HAZARDOUS WASTES DESCRIPED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:			aispu	30 01		nsieu /	wzaroous	i was	iles II	nat br	0 6 50	ess the	n cha	aracti	erístic	or tox	le cont	amina	nt 🔍				
Enter '000' in the extreme right box of hem XIV-D(1) Enter in the expect provided on page 7, item XIV-E, the line number and the additional code(s). PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form (D.2)): MOTE: HAZARDOUS WASTES DESCRIPED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - iterations is wastes that can be described by more than one EPA iterations waste humber shall be described on the form (D.2)): MOTE: HAZARDOUS WASTES DESCRIPED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - iterations wastes that can be described by more than one EPA iterations waste humber shall be described on the form as follows: a state is the described of the term as follows: a state is a defected by enter than one EPA iterations waste humber shall be described on the form as follows: a store, and/or dispose of the waste. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column A of the next line enter the other EPA Hazardous waste no other entries on that line. In column D(2) on that line enter: "included with above and make no other entries on that line. In column D(2) on that line enter: "included with above and make no other entries on that line. Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the waste. EXAMPLE FOR COMPLETING ITEM XIV (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 300 pounds per year of throw eater will be an estimated in the tweste. Treatment will be in an inclinerator and dispose of three non-listed wastes. The other waste is corrosive and states are corrosive only and there will be an estimated 200 pounds per year of each waste inclinerator and dispose of three non-listed wastes. The difference will be an estimated 100 pounds per year of each waste. The other waste is corrosive and states are corrosive only and th									ENTE	ERIN	G P	ROCE	55 A	ODE:	1. JF J	WORE	ARE N	EEDE	D:				
 3. Enter In the space provided on page 7, them XIV-E the line number and the additional code(s). 2. PROCESS DESCRIPTION: if a code is not listed for a process that will be used, describe the process in the space provided on the form (D.(2)). NOTE: HAZARDOUS WASTES DESCRIPED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows: a set of the error of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B, C and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste. 2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste in column D(2) on that line enter 'included with above' and make no other entries on that line. 3. Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the waste. EXAMPLE FOR COMPLETING ITEM XIV (shown in line numbers X-1; X-2; X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will be an estimated 100 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of each waste. The other waste is corrosive and ginalable. D is a stand there will be an estimated 100 pounds per year of the target on each waste. The other waste is corrosive and ginalable. D is a stand there will be an estimated 100 pounds per year of each waste. The other waste is corrosive and ginalable. D is a standard pound per transmit will be in a landtill. The there waste is corrosive and ginglinable and there will be an estimated 10			Ent	er the er "Ol	hirst two as	i descri dreme	ibed abov right box	e. of He						è. È									
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XV. Map		
Attach to this application a topographic map, or other equivalent map, of the boundaries. The map must show the outline of the facility, the location of each structures, each of its hazardous waste treatment, storage, or disposal facility include all springs, rivers and other surface water bodies in this map area. Set SEE ATTACHMENT A	ch of its existing and pr ies, and each well when	oposed intake and discharge e it injects fluids undergroun
XVI. Facility Drawing		and the second second second second second second second second second second second second second second second
All existing facilities must include a scale drawing of the facility (see instructi * SEE ATTACHMENT B	ions for more detail).	
XVII. Photographs		
All existing facilities must include photographs (aerial or ground-level) that contractment and disposal areas; and sites of future storage, treatment or dispose SEE ATTACHMENT C		
XVIII. Certification(s)		
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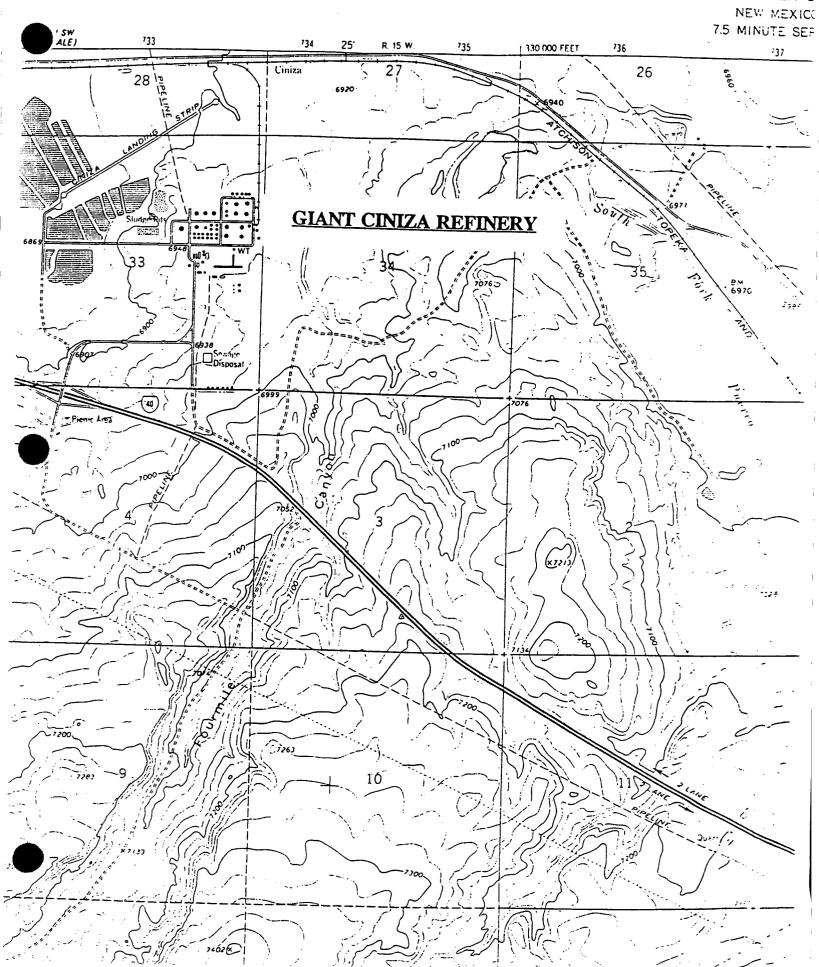
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ATTACHMENT A

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USGS Quadrangle

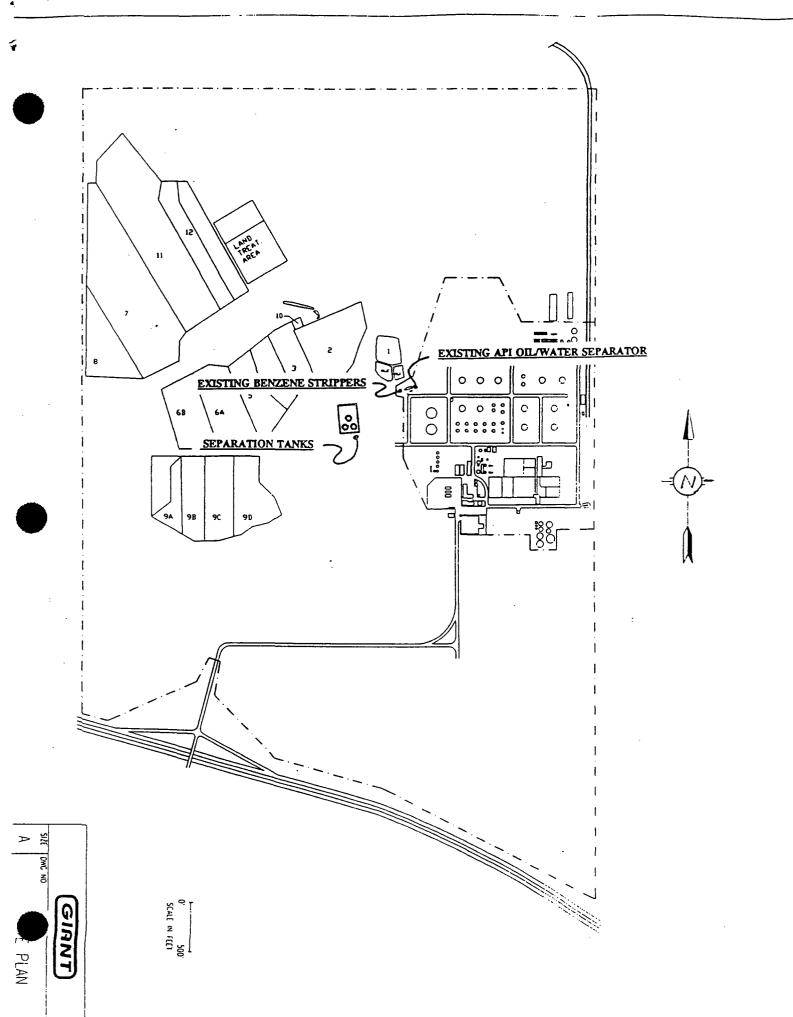


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ATTACHMENT B

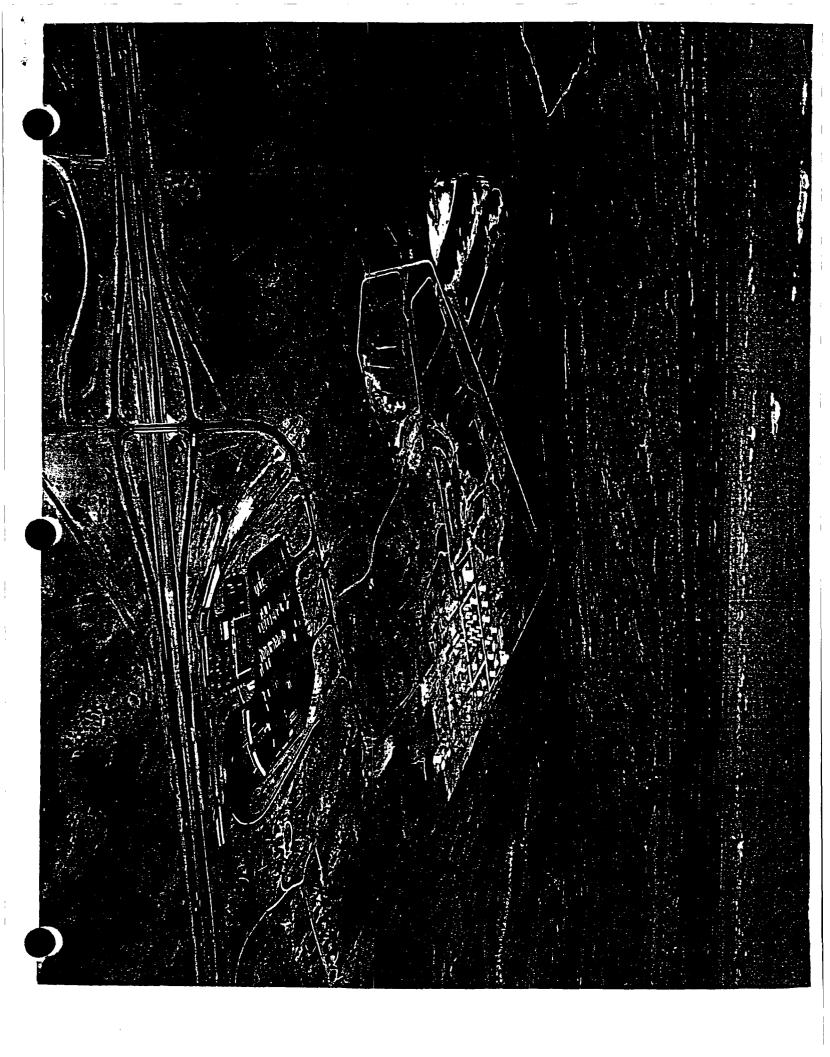
Facility Plan

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ATTACHMENT C

Aerial Photograph



SWMU No. 3, Empty Container Storage Area .

The empty container storage area (ECSA) was identified as a solid waste management unit (SWMU) and 2 designated as SWMU No. 3 during a Resource Conservation and Recovery Act (RCRA) facility 3 investigation (RFI) conducted at the Giant Refining Company - Ciniza Refinery (Ciniza) in the early 4 1990s. This investigation focused on soil sampling and analysis. Soil borings were drilled to a depth of 5 6 4.5 ft, within the perimeter of the ECSA. Samples were collected from each boring in accordance with 7 procedures specified in the Ciniza Sampling and Analysis Plan. Samples were analyzed for priority volatile organic compounds (VOCs) using methods approved by the U.S. Environmental Protection 8 Agency (EPA). It was determined that no significant impact had occurred. Based on this, Ciniza 9 recommended no further action (NFA) for this SWMU. In 1994, the EPA concurred with this finding and 10 approved cessation of the investigative process. The survey plat, as required, was submitted to EPA in 11 1995. 12

13 3.1 Site Description and Operational History

14 SWMU No. 3, *Empty Container Storage Area*, (Figure 3-1) consists of the ECSA that was located 15 approximately 100 feet north of the maintenance buildings. The area was used for storing empty 16 55-gallon drums awaiting recycle.

The ECSA was a rectangular flat site measuring approximately 50 feet by 80 feet. When previously in service, it was reportedly surfaced with gravel. Photographs of the ECSA, taken during the 1998 site inspection performed by Practical Environmental Services, Inc. (PES), are provided in the SWMU No. 3 Summary Report.

21 3.2 Land Use

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The area previously used as the ECSA is no longer being used to store empty drums. The area has been closed, a new concrete containment pad has been installed, and the site is now occupied by a heat exchanger cleaning pad. Clean, triple-rinsed drums are now stored in an area that is adjacent to and west of the concrete containment pad.

26 3.3 Investigation Activities

Applied Earth Sciences (AES) investigated the ECSA during the early 1990s. Soil samples were
collected and analyzed. Trace organic contaminants were found in three surface samples, but were not
detected in all subsurface samples.

3.3.1 Investigation #1 1

During the initial site investigation, AES collected and analyzed soil samples from within the ECSA. 2 3 Samples were collected at four locations and three depths: surface, 3 feet, and 4.5 feet below ground surface. 4

Three of four surface samples detected trace hydrocarbon and solvent constituents; of which, xylenes at 5 8.6 mg/kg was the highest detection. Most of the remaining constituents were detected in much lower 6 concentrations, typically less than 1 mg/kg. All subsurface samples found no detection of VOCs and 7 semivolatile organic compounds (SVOCs). 8

State of New Mexico corrective action levels for benzene, toluene, ethylbenzene, and xylenes (BTEX) in 9 soil are 50 mg/kg total and 10 mg/kg of benzene. Three of 12 samples indicated trace BTEX, the highest 10 of which was less than 10 mg/kg total; well below the 50 mg/kg action level. 11

12 Trace detection of hydrocarbon and solvent constituents in surface samples at the old site is common for storage areas of this type and era. The absence of subsurface contaminants is confirmatory of the highly 13 impermeable characteristic of the underlying soil. The low level of contaminant detection is indicative of 14 15 no significant impact.

- 3.4 Site Conceptual Model 16
- There is no impact on the environmental fate of the land. 17
- 3.5 Site Assessments 18

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- 19 During the week of March 23, 1998, PES performed an on-site inspection. Observations are as follows:
- 20 The ECSA identified in the RFI has been closed. It is reported that all drums formerly located on this site were removed and recycled in the early 1990s. A new ECSA is now in service at an adjoining location.
- 23 The ECSA site has been cleared and a new concrete containment pad has been installed. The new pad is used for cleaning heat exchanger bundles. This pad overlays the SWMU No. 3 24 25 site.
 - Local soil in the vicinity of the ECSA presents as bentonitic clays and silts. Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than 10^{-7} cm/sec.
 - No soil staining or distressed vegetation is present at the ECSA site. Most of this site is now covered by the new heat exchanger cleaning pad.

• Rainwater run-off from the new ECSA and surrounding vicinity drains to the refinery wastewater treatment system.

PES did not perform any sampling or analysis during this site inspection. The inspection was limited only
to visual observations.

Based on this assessment, PES determined that SWMU No. 3, the former ECSA, is closed and the site is now occupied by a heat exchanger cleaning pad. A new container storage area is now in service, drums are triple rinsed before being placed in the new storage area. The soil underlying SWMU No. 3 has a very low hydraulic conductivity, which effectively inhibits downward migration of contaminants. As such, any spill, either past or present, is likely to be confined near the surface. A rainwater collection system has been installed to serve this area. Run-off is now directed to the refinery wastewater treatment system.

11 3.6 NFA Proposal

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12 Ciniza is proposing that no further action is required for SWMU No. 3 based on the following criteria:

- The SWMU does not exist. (NFA Criterion 1)
- No release to the environment has occurred or is likely to occur in the future from the SWMU. (NFA Criterion 3)
- The SWMU has been characterized and remediated in accordance with current applicable state regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use. (NFA Criterion 5)

The rationale for the proposed NFA is based on the results of the investigation and assessment of the old storage area. These activities found no contamination requiring corrective action. Trace detection of hydrocarbon and solvent constituents in surface samples at the old site is common for storage areas of this type and era. The absence of subsurface contaminants is confirmatory of the highly impermeable characteristic of the underlying soil. The low level of contaminant detection is indicative of no significant impact. The container storage area has been closed, and a new concrete pad has been installed and is being used for cleaning heat exchangers.

Ciniza Refinery NFA Report, Rev 0.0 August 2001

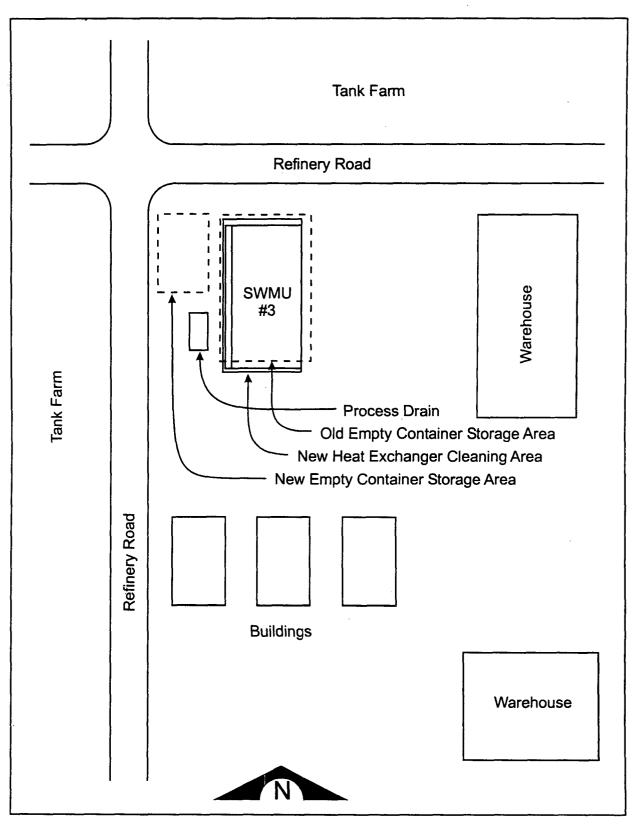


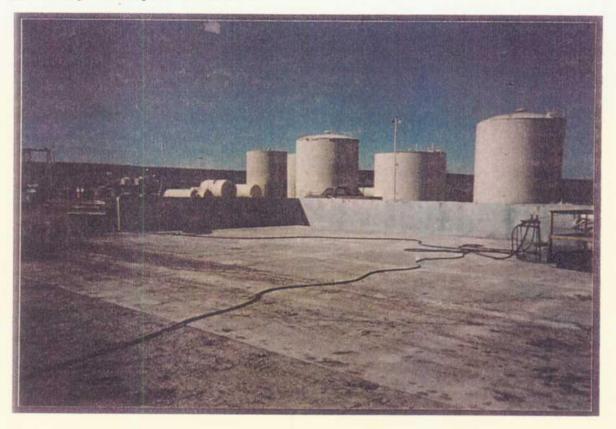


Figure 3-1. SWMU No. 3, Empty Container Storage Area Site

3-4

SWMU #3 Summary Report

Empty Container Storage Area Ciniza Refinery McKinley County, New Mexico



Prepared for:

Ciniza Refinery Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

Prepared by:

Practical Environmental Services, Inc. 1444 Wazee Street, Suite 225 Denver, Colorado 80202

Job No. 98-205-03

April 23, 1998

1.0 EXECUTIVE SUMMARY

Practical Environmental Services, Inc. (PES) has been retained by Giant-Ciniza Refinery (Ciniza) to perform a visual inspection, data evaluation, and status assessment for the empty container storage area located within the Ciniza Refinery, in McKinley County, New Mexico.

The empty container storage area was identified as a Solid Waste Management Unit (SWMU), and designated as SWMU #3, during a RCRA Facility Investigation (RFI) conducted at the refinery in the early 1990's. This investigation included soil sampling and analysis, determined that no significant impact had occurred, and recommended no further action (NFA).

In 1994, the Environmental Protection Agency Region VI Office (EPA) concurred in this finding and approved cessation of the investigative process.

This summary report for SWMU #3 has been prepared in conjunction with submittal of a Resource Conservation and Recovery Act (RCRA) Part B permit application covering post closure care of the Ciniza Refinery Land Treatment Unit. All investigative activities for SWMU #3 have been completed. This assessment is summarized as follows.

- ⇒ The empty container storage area identified in the RFI has been closed. A new empty container storage area is now in service at an adjoining location.
- ⇒ All drums were removed from the old site in the early 1990's. The site was then cleared and a new concrete containment pad was installed. The new pad is used for cleaning heat exchanger bundles.
- ⇒ Local soil underlying both the old and new empty container storage areas predominantly consists of bentonitic clays and silts having a very low hydraulic conductivity.
- ⇒ Soil sampling and analysis was conducted during the initial site investigation. Trace organic contaminants were detected below corrective action levels. The site was recommended for NFA and approved by the EPA.
- ⇒ SWMU #3 has been characterized in accordance with current applicable state and federal regulations, and the available data indicate that no significant environmental impact or migration has occurred.

2.0 BACKGROUND

During 1987, a RCRA Facility Assessment was conducted at the Ciniza Refinery. This assessment identified various "units of concern" and recommended further evaluation. A RCRA Facility Investigation was subsequently conducted and the empty container storage area was identified as SWMU #3.

Applied Earth Sciences (AES) investigated the empty container storage area during the early 1990s. Soil samples were collected and analyzed. Trace organic contaminants were found in three surface samples and non detect in all subsurface samples.

As a result of the investigation, AES recommended no further action for this SWMU. Results and recommendations were reported to the EPA in 1992. The EPA approved the NFA finding in 1994.

3.0 SITE LOCATION AND DESCRIPTION

SWMU #3 is located within the Ciniza Refinery's property boundary. This refinery is located on the north side of Interstate 40, approximately 17 miles east of Gallup, New Mexico. Within the refinery, SWMU #3 is located approximately 100 feet west of the maintenance shop. See Figure No. 1 for location details.

The old empty container storage area is a rectangular flat site measuring approximately 50 feet by 80 feet. When previously in service, it was reportedly surfaced with gravel. The site was used for storing empty 55 gallon drums prior to recycling.

The new empty container storage area is located adjacent to and west of the old site. Drums are emptied and triple rinsed prior to being placed in this new storage area.

4.0 SITE INSPECTION

During the week of March 23, 1998, an on-site inspection was performed. Photographs are included in the appendix to this report. Observations are noted as follows:

- The empty container storage area identified in the RFI has been closed. It is reported that all drums formerly located on this site were removed and recycled in the early 1990's. A new empty container storage area is now in service at an adjoining location.
- The old empty container storage area site has been cleared and a new concrete containment pad has been installed. The new pad is used for cleaning heat exchanger bundles. This pad overlays the SWMU #3 site.
- Local soil in the vicinity of the empty container storage area presents as bentonitic clays and silts. Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than 10⁻⁷ cm/sec.
- No soil staining or distressed vegetation is present at the old empty container storage area site. Most of this site is now covered by the new heat exchanger cleaning pad.



• Rainwater run-off from the old empty container storage area is now collected within the new heat exchanger cleaning pad and directed to the refinery wastewater treatment system. Rainwater run-off from the new empty container storage area and surronding vicinity is similarly collected and directed to the refinery wastewater treatment system.

5.0 DATA REVIEW

Soil samples from within the empty container storage area were collected and analyzed during the initial site investigation. Samples were collected at four locations and three depths; surface, 3 feet, and 4.5 feet below ground surface.

Three of four surface samples detected trace hydrocarbon and solvent constituents; of which, xylenes at 8.6 mg/kg was the highest detection. Most of the remaining constituents were detected in much lower concentrations, typically less than 1 mg/kg. All subsurface samples found no detection of VOCs and SVOCs.

State of New Mexico corrective action levels for BTEX in soil is 50 mg/kg total and 10 mg/kg of benzene. Three of 12 samples indicated trace BTEX, the highest of which was less than 10 mg/kg total; well below the 50 mg/kg action level.

6.0 ASSESSMENT

Based on the site inspection and data review, the empty container storage area is assessed as follows.

- The old empty container storage area (SWMU #3) is closed and the site is now occupied by a heat exchanger cleaning pad. A new empty container storage area is now in service and drums are triple rinsed prior to being placed in the new storage area. The probability of a new contaminant release in this area is very low.
- The soil underlying this former SWMU has a very low hydraulic conductivity which effectively inhibits downward migration of contaminants. As such, any spill, either past or present, is likely to be confined near the surface.
- Trace detection of hydrocarbon and solvent constituents in surface samples at the old site is common for storage areas of this type and era. The absence of subsurface contaminants is confirmatory of the highly impermeable characteristic of the underlying soil. The low level of contaminant detection is indicative of no significant impact.
- A rainwater collection system has been installed to serve this area. Run-off is now directed to the refinery wastewater treatment system.

• The no further action finding that was recommended by AES and approved by the EPA is appropriate for this site.

7.0 PROFESSIONAL ENGINEER'S CERTIFICATION

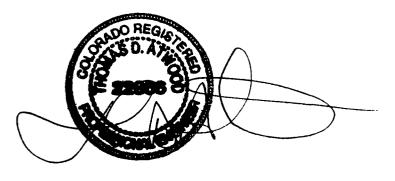
This summary report for SWMU #3 has been prepared under the direct supervision and control of a Registered Professional Engineer.

Client: Ciniza Refinery Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

Job No.: 98-205-03

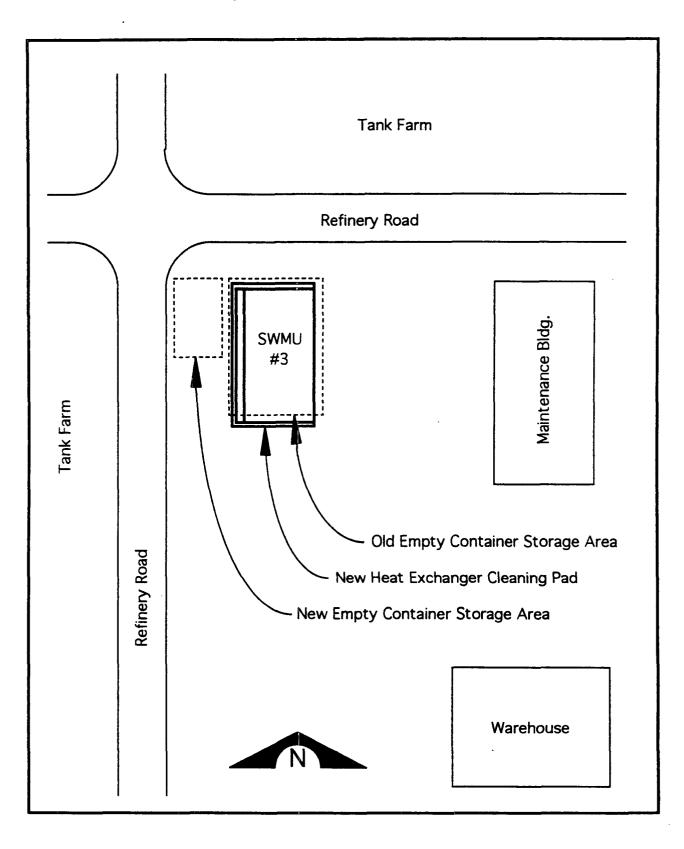
Date: April 23, 1998

Prepared and Certified by:



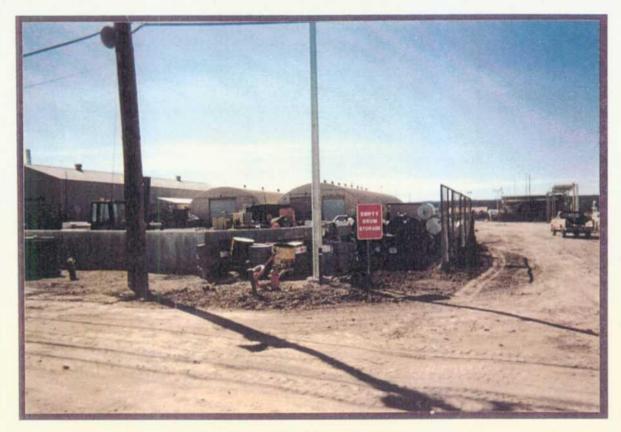
Thomas D. Atwood, P.E. Colorado Registration No. 22866

Figure No. 1 Empty Container Storage Area Site

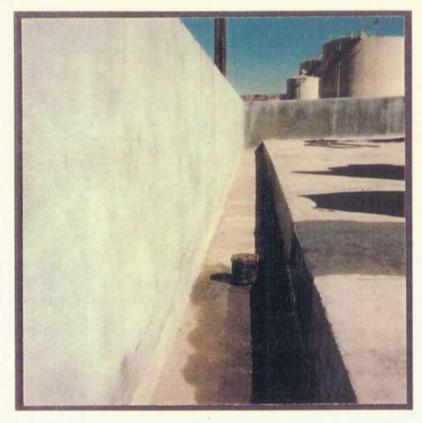


SWMU #3 Summary Report

Site Inspection Photographs



New Empty Container Storage Area



Run-off Collection Trough - New Heat Exchanger Cleaning Pad

SWMU #3 Summary Report

Appendix

CONTAINER STORAGE SWMU-3 EMPTY AREA

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SUMU = 3 - EMPTH CONTAINER STORAGE AREA DELEMETERS - JES DROBERT PULLUTAUTS IZ SAMPLES

SWMU # 4- BURN PIT

9 SAMPLES

BUMU = 5- FOUR LANG FILLS PARAMETERS - 8240 PRIORITY POLLUTANTS PARKCROUNS METALS

ρH

- I SAMPLES ZUMU #7 - EXEL TRANNG AREA PREFERS - - PH

OIL & GREASE

12 SAMPLES

SNAND # 11- SECONDARY OIL SKIMMER + ASSEL BITCH PARAMETERS - SKINNER LIST (CONSTITUENTS) 4 SAMPLES

55 INDIVIDUAL SAMPLES

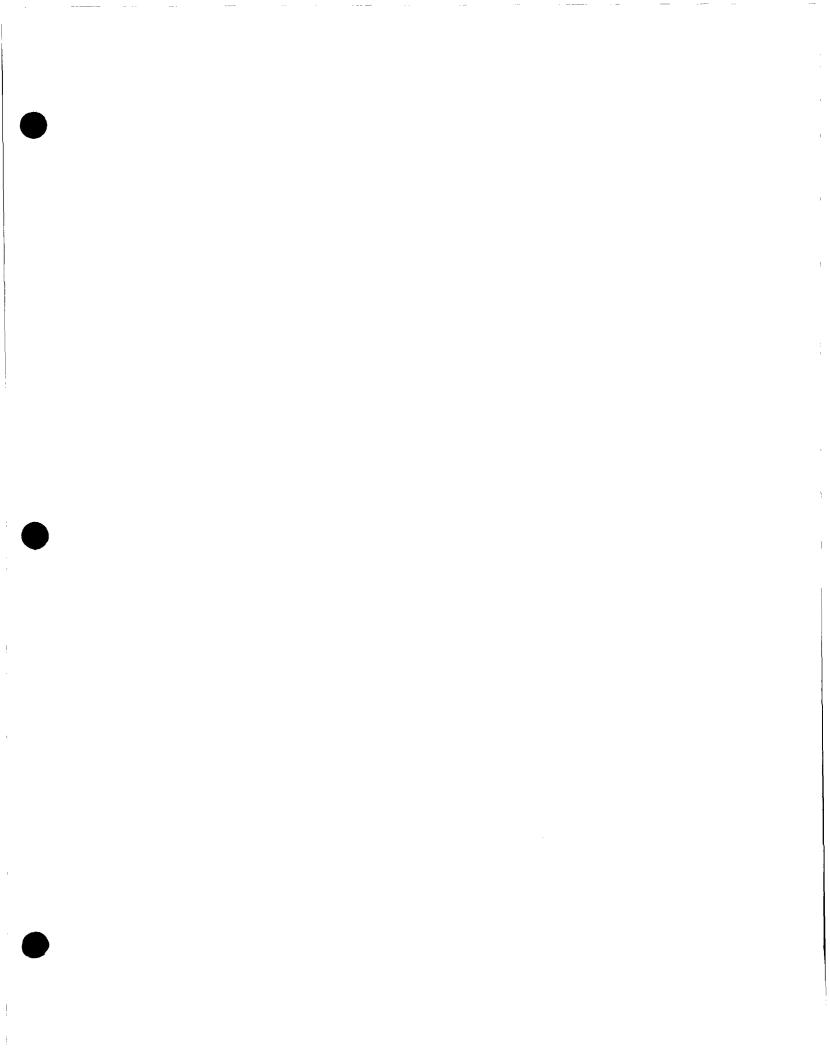
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	PLEASE PRINT IN BLACK INK ONI.	r
TO: Ed Horst, En	virunmental Manager - Ciant Refin	ing Company, Ciniza
MACHINE NUMBER: 505.722.0210	VERIFICATION NUMBER: 505.722	0227
FROM: James A. Harris, Jr., RCRA F	cility Manager/Geologist	
PHONE: (214) 665-8302	Mail Coder 6PD-N	
OFFICE: New Mexice/Federal Facilit	les Section	PAGES, INCLUDING COVER SHEET
DATE: March 15, 1996		
	PLEASE NUMBER ALL PAGES	
101	URMATION FOR SENDING PACSIMILE	MESSAGES
EQUIPMENT:	FACSIMILE NUMBER:	VERIFICATION NUMBER:
PANAFAX UF-766	(214) 665-6762	(214) 665-6760
COMMENTS Ed. Here's what I have been using to track Ginnt, C Thanx, JAPAES	luiza's corrective action progress. Plusae res	iew and lat's discuss it work wook. Have a good one.

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epared	11:	7:	5 :-	4:	а ••	13:	12:	2:	1
Prepared by: James A. Marris, Jr.\6MPN as at March 13, 19	5	Fire Training Area (4)	Landfill Areas (7)	Old Burn Pit (8)	Empty Container Storage Area (5)	The Drainage Ditch between APIs Evaporation Ponds and the Neutralization Tank Evaporation Ponds (14)	Contact Waste Water Collection System (CWWCS)	The Evaporation Ponds (2)	The Aeration Basin (1)
9991	2	I	2	3	Phase III	2	=	*	Phase II
	Under VCA	Under VCA	a Voluntary Corrective Action (VCA) Plan to cap the "Landfill Areas" was submitted in March 1993.			soil and groundwater sampling every five years	Inspection every 5 years beginning 1996	2	soil and groundwater sampling every five years
	discolored soil is the natural color; there is no hydrocarbon staining or odors detected; reference to "black fill" sand is actually "back fill"		EPA approved the VCA Plan on January 5, 1994 but required that additional soll borings be completed prior to Glant proceeding with the capping activities		Ξ	Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process		Survey and closure certification must be submitted prior to initiating Class III Permit Mod process	RFI PHII RPT APP 1/94 w/modifications; Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process

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SENT BY:



June 28, 1994

Rich Mayer U.S. Environmental Protection Agency Region VI 1445 Ross Avenue, Suite 1200 Dallas, Texas 75202-2733

Re: Quarterly Progress Report

Dear Mr. Mayer:

Pursuant to requirements of the HSWA Permit, Condition C.4., Page 11 and the May 31, 1990 RFI Workplan approval, Giant Refining Company - Ciniza (Giant) submits the <u>Quarterly Progress Report</u> for the second quarter of 1994.

Giant has completed piping modifications to the "Railroad Rack Lagoon" (SWMU #8) system and is presently evacuating the remaining water from the lagoon and disposing of it in the process wastewater system. As soon as it is feasible, Giant will sample the SWMU as required and begin bioremediation activities.

Giant is soliciting proposals for the survey requirement of SWMUs #1, 3, 8, 9 and 13.

Giant is also developing a scope and estimate of expense to further characterize SWMUs #4, 5, 6, 7, 10, and 11 and expects to complete that sampling during the third quarter of 1994.

If you require additional information, please contact Lynn Shelton, of my staff, at (505) 722-0227.

"I certify under penalty of law that this document and all attachments were prepared under my direction to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false

REFINING C

Route 3, Box 7 Gallup, New Mexico

87301 505 722-3833 information, including the possibility of fine and imprisonment for knowing violations."

Sincerely, John Stokes

Refinery Manager

JJS/TLS:sp

cc: Kim Bullerdick, Corporate Counsel Giant Industries Arizona, Inc.

> David Pavlich, Health/Safety and Environmental Manger Giant Refining Company



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6 1445 ROSS AVENUE, SUITE 1200 DALLAS, TX 75202-2733

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CINIZA REFINEDY		GIANT CINIZ	REFINING CO	

CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Mr. John J. Stokes, Manager Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

RE: RCRA Facility Investigation (RFI) Phase III Report and Voluntary Corrective Action Plan Giant Refining Co. NMD000333211

Dear Mr. Stokes:

The Environmental Protection Agency (EPA) hereby approves your RCRA Facility Investigation Phase III Report dated November 3, 1992, with the enclosed modifications. The EPA is requiring that additional soil sampling be completed at several sites, including the Landfill Areas, the Old Burn Pit, the Secondary Skimmer, and the Fire Training Area. A supplementary report detailing the results of these sampling activities shall be submitted to the EPA by December 31, 1994.

Additionally, the EPA is approving the voluntary Corrective Action Plan for the Landfill Areas, submitted in March, 1993.

If you have any further questions or need additional information, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

ack Dinta

Allyn M. Davis, Director
 Hazardous Waste Management Division (6H)

Enclosure

cc: Kathleen Sisneros, NMED

APPROVAL WITH MODIFICATIONS GIANT REFINING COMPANY RCRA FACILITY INVESTIGATION PHASE III REPORT AND THE CORRECTIVE ACTION PLAN FOR THE LANDFILL AREAS

The Environmental Protection Agency (EPA) has completed a technical review of your RCRA Facility Investigation (RFI) Phase III Report, dated October, 1992, and your voluntary Corrective Action Plan for the Landfill Area, dated February, 1993. The subject reports are hereby approved with the following comments and modifications.

GENERAL COMMENTS

SWMU 5. The Empty Container Storage Area. The EPA hereby approves the finding of No Further Action (NFA) for Solid Waste Management Unit (SWMU) number three (3), the Empty Container Storage Area. However, this approval is contingent upon the completion of a survey plat for the unit. The survey plat shall be completed in accordance with the procedures outlined in 40 CFR 264.116. Giant shall submit a copy of the survey plat to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for the Empty Container Storage Area.

SWMU 8, The Old Burn Pit

Due to the presence of elevated levels of volatile and semivolatile contaminants in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. All three (3) soil samples taken at the 4.5 foot interval (the deepest interval sampled) contained elevated levels of heavy molecular weight semivolatiles. Additionally, one of the three (3) samples at the 4.5 foot interval also contained elevated BTEX levels. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 11, The Secondary Oil Skimmer

Due to the presence of elevated levels of volatile and semivolatile contaminants in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. One of the two (2) samples taken at the 3.0 foot interval (the deepest interval sampled) contained volatile and semivolatile contaminants. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 4, The Fire Training Area

Due to the presence of elevated levels of oil and grease in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. Two (2) of the four (4) samples

Approval with Modifications, 1/5/93 Giant's RFI Phase III & CAP Reports taken at the 4.5 foot interval (the deepest interval sampled) contained oil and grease above 2,000 ppm. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 7, The Landfill Areas

Because soil borings completed in this unit indicate the presence of waste and metal contamination at depths up to 9.5 feet, the EPA is requiring that additional soil borings be completed at greater depths. These additional soil borings will be installed in order to:

- 1) Verify that saturated zones found in three (3) of the 12 deepest soil boring intervals are isolated and are not connected to the groundwater;
- 2) Ensure that the vertical extent of waste emplacement has been defined;
- 3) Confirm that the vertical extent of metal contamination has been delineated.

Following the completion of the additional soil borings in the Landfill Areas, Giant may proceed with the capping of the landfills as per their voluntary Corrective Action Plan.

MODIFICATIONS

Note:

e: All referenced sampling points correspond to the previous RFI sampling points completed in May, 1992. Soil boring logs included in future report submittals shall follow the attached example.

SWMU #8, The Old Burn Pit

Giant shall complete soil borings as close as possible to sample points one (1), two (2) and three (3). Sampling intervals shall be at six (6) and (10) feet and must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. Sampling procedures and analytical requirements are identical to those required in the previous RFI. The results of this sampling event shall be submitted to the EPA by December 31, 1994.

SWMU #11, The Secondary Oil Skimmer

Giant shall complete two (2) soil borings within the area occupied by the former Skimmer. All borings must be sampled at the 5-6 foot and 9-10 foot interval. Sampling shall extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures and analytical requirements are identical to those required in the previous RFI. The results of this sampling event shall be due to EPA by December 31, 1994.

Approval with Modifications, 1/5/94 Giant's RFI Phase III & CAP Reports

SWMU #4, The Fire Training Area

Giant shall complete <u>angled</u> soil borings as close as possible to sample points one (1) and two (2). Sampling intervals shall be at 7 and 11 feet. Sampling must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures shall be identical to those required in the previous RFI. Analytical constituents shall include the Skinner constituents. The results of this sampling event shall be submitted to the EPA by December 31, 1994.

SWMU #7. The Landfill Areas

Giant shall take soil borings as close as possible to sample points two (2) through seven (7), and nine (9). Sampling intervals shall be at 11 feet, 16 feet and 20 feet. Sampling must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures shall be identical to those required in the previous RFI. Giant shall analyze all samples for metals. If volatile or semivolatile contamination is encountered when sampling, then those constituents shall be analyzed also. The results of this sampling event shall be due to EPA by December 31, 1994.

Approval with Modifications, 1/5/94 Giant's RFI Phase III & CAP Reports

		BORING LOG	-				
PROJECT: 6220 CLIENT: BORING NUME EXCAVATED PO FIRST ENCOUN DATE COMPLE	BER: TE DND:N/ NTERED	/A WATER: N/A	DRILL LOGG SURF	T: 1 o ED B ED B ED B ELE L DEP	Y: Pre Y: PW V: N//	C A	En
	DE	ESCRIPTION		DEPTH (fl.)	SYMBOL	SAMPLE	WELL
0-3.0'	hydroce	CLAY mixed with OILY SLUDGE, stained black by arbon products, maist, sticky, strong hydrocarbon ecreasing slightly with depth. PID 25 ppm.		 - 1 - - 2 		X	
3.05.0'		CLAY, brown, dry, crumbly, slight hydrocarbon ecreasing with depth. No visual contamination, PID	35 ррм.				
5.0-6.0'		SAND, ton to white, dry, crumbly, foint hydrocorb No visual contamination, PID 2.0ppm.	non	 - 5 -		\checkmark	
	TD = 6	j.0'		- 6 -	777	$ \bigtriangleup $	
	NOTE:	Drill crew excavated the first foot by shovel, then pressed a 5.0' split recovery barel from 1.0-6.0'.			i.		
		Bentonite pellets were placed in the boring to within a foot of the surface and hydrated.					
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مار مار مرجع

INTEROFFICE MEMORANDUM

DATE: February 3, 1994

TO: David Pavlich Kim Bullerdick

FROM: Lynn Shelton 778

SUBJECT: RCRA Facility Investigation - Additional Requirements

I. Introduction

Giant Refining Company - Ciniza (Giant) performed a RCRA Facility Investigation (RFI) in three phases (I, II, and III) over three years (1990, 1991, and 1992).

Using the analytical results of those three sampling events, Giant submitted four corrective action plans and eight "No Further Action" proposals to Region VI, United States Environmental Protection Agency (EPA).

Correspondence from the EPA (1-7-94) indicated approval of the corrective action plans (with additional requirements) for three Solid Waste Management Units (SWMUs), for RFI reports Phase I, II, and III and assigns a deadline for submittals of additional data.

The additional sampling and reporting requirements, some of which are redundant and unnecessary, are the focus of this correspondence. In the following pages, the scope and cost of the additional sampling requirements will be presented.

Some explanation of a potential problem is in order. The SWMU identification numbering sequence is inconsistent. In discussing the draft letters with Rich Mayer, of Region VI EPA, the discrepancy in reference to the SWMU numbers was mentioned. Mr. Mayer responded that the correct SWMU numbers were taken from the HSWA Permit (Section C, Corrective Actions for Continuing Releases, 5.(a)(1)). Giant had used the numbering sequence from the approved RFI Workplan (revised May 17, 1990). As shown in Table 1, there are discrepancies in all three sequences. Giant should propose to use the numbering sequence identified in the revised RFI Workplan to avoid confusion with the numbering sequence of SWMUs and sample numbers already reported.

Table 2 presents an overview of the status of the SWMUs.

TABLE 1

SWMU IDENTIFICATION

RFI	WORKPLAN	hswa	EPA	LETTER	R SWMU
	1	1		1	Aeration Basin
	2	2		2	Evaporation Ponds
	3	5		5	Empty Container Storage
	4	8		8	Burn Pit
	5	7		7	Four Landfills
	6	3		6	Tank Farm
	7	4		4	Fire Training Area
	8	6		8	Railroad Rack Lagoon
	9	10 & 13		-	Inactive Land Treatment
	10	9		9	Two Sludge Pits
	11	11		11	Secondary Oil Skimmer
	12	14	-	13	Wastewater Collection
	13	14		13	Drainage Ditch

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TABLE 2

STATUS - INDIVIDUAL SWMU

Caps:

- * Railrack Lagoon
- * Sludge Pits
- Fire Training Area
- * Landfills

No Further Action:

- ****** Aeration Basin
- ****** Evaporation Ponds
- ** Drainage Ditch Tank Farm
- ** Empty Container Storage Old Burn Pit Secondary Oil Skimmer
- *** Inactive Land Treatment

* Accepted by EPA with Additional Requirements
** "No Further Action" Approved by USEPA
*** Not Addressed in Correspondence



Discussion

A discussion of additional requirements, by SWMU, follows. Included, as Figures 1 to 12, are drawings of the SWMUs with individual sample points.

<u>SWMU #1</u> - Aeration Lagoon

EPA approved Giant's proposal for "No Further Action". Although Giant demonstrated that no significant migration of hazardous constituents had taken place, EPA requires biennial sampling that duplicates the original RFI sampling. This is redundant and expensive. Giant should propose either a five year sampling rotation or a phased-in plan (of six sample locations, sample two biennially until all samples are taken, then start again). These sampling plans will diminish the costs considerably and still provide documentation that migration has not occurred.

EPA also requires a survey plat of the SWMU. Giant agrees that this is a reasonable requirement.

<u>SWMU #2</u> - Evaporation Ponds

EPA has also approved Giant's proposal for "No Further Action" of this SWMU. EPA requires that Giant sample the seven groundwater wells (MW-4, OW-1, OW-2, OW-5, OW-7, OW-9 and OW-10) biennially for the same constituents as monitored for in the RFI sampling event. Giant may wish to propose a five year sampling rotation.

<u>SWMU #3</u> - Empty Container Storage Area

EPA approved Giant's proposal for "No Further Action" for the SWMU, requiring only that Giant provide a survey plat.

SWMU #4 - Old Burn Pit

EPA does not approve Giant's proposal for "No Further Action". Three borings at six and ten feet will be required to characterize constituent migration in this SWMU.

<u>SWMU #5</u> - Landfill Areas

EPA requires that additional borings, at eleven, sixteen and twenty feet to fully characterize contamination.

<u>SWMU ‡6</u> - Tank Farm

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. EPA requires seven additional borings to sixteen feet and one additional boring to twenty feet to fully characterize contamination. When Giant performed supplemental sampling of this SWMU in 1991, it was anticipated that further sampling would be required.

<u>SWMU 17</u> - Fire Training

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. Two additional angle borings to seven and eleven vertical feet are required. Additional sampling was anticipated when this SWMU was sampled in 1992, although I question why we now have to analyze for the Skinner List constituents. Samples from this SWMU were originally analyzed for TPH and oil & grease only.

<u>SWMU #8</u> - Railroad Rack Lagoon

EPA has approved Giant's corrective action plan for this SWMU, with additional requirements. After piping modifications at the railroad loading rack are complete and the railroad rack lagoon no longer receives waste, sampling is required within the footprint of the lagoon (five borings) and around the periphery of the lagoon (six borings). Sampling is also required in the overflow ditch (three borings to seven feet) and the fan out area (four borings to seven feet). Some sampling will be required during remediation of the lagoon to document completion of the corrective action plan.

A survey plat of the SWMU, after remediation, must be submitted to the EPA.

<u>SWMU #9</u> - Inactive Land Treatment Area

Although Giant had provided data and proposed no further action, this SWMU was not addressed in the correspondence with the EPA. It needs to be determined if EPA accepts our proposal or has additional requirements.

<u>SWMU #10</u> - Sludge Pits

EPA is requiring additional sampling to 25' in this SWMU (seven borings) to fully characterize any contamination. Monitoring will be required during remediation to document completion of the corrective action plan.

It is reasonable to expect that EPA will require a survey plat of this SWMU after closure.

<u>SWMU #11</u> - Secondary Oil Skimmer

EPA does not approve Giant's proposal for "No Further Action" and is requiring additional sampling to ten feet (two borings). This is a reasonable request.

<u>SWMU #12</u> - Contact Wastewater System

Although onerous, the requirement to inspect the wastewater system every five years is acceptable in that we were not sure if we could get any kind of "Buy In" from EPA. Costs of monitoring this SWMU are therefore significantly less than anticipated.

<u>SWMU #13</u> - Drainage Ditch

Although EPA approves Giant's proposal of "No Further Action", additional requirements have been added. Complete resampling is required biennially. This is redundant and expensive. Even though this SWMU continues to be exposed to wastewater, Giant does not believe there is a significant possibility of migration. Giant should propose a five year sampling schedule or a "Phased-In" rotation of sampling.

A survey plat will be required for this SWMU.

III. Estimation of Expenses

Not normally a consideration of the regulatory community, expense is an indicator to industry of the scope and complexity of regulatory requirements. In providing a cost estimate, we are able to judge the economic impact for our company and determine the extent to which we are willing to contest the requirements issued to us.

The following tables (Tables 3, 4, and 5) illustrate the estimated costs per SWMU (for 1994 and biennially).

Table 3

SWMU #	SAMPLES REQUIRED	ANALYSIS	COST
1	30	8240 8270 Metals	\$ 9,000 14,850 6,900
2	7	8240 8270 Metals pH	1,750 2,765 1,435 70
4	6	8240 8270 Metals pH	1,800 2,970 2,250 60
5	21	8240 8270 Metals	6,300 10,395 4,830
6	8	BTEX	1,000
7	4	TPH Oil & Grease	200 200
8	50	8240 8270	15,000 24,750
10	18	8240 8270 Metals	5,400 8,910 4,140
11	4	8240 8270	1,200 1,980
13	12	8240 8270	3,600 5,940

Total Analytical Cost 1994 Only

<u>\$119,245</u>

TABLE 4

BIENNIAL ANALYTICAL COST

SWMU #	SAMPLES REQUIRED	ANALYSIS	COST
1	30	8240 8270 Metals	\$ 9,000 14,850 6,900
2	7	8240 8270 Metals pH	1,750 2,765 1,435 70
13	12	8240 8270	8,600 5,940
	Total Bioppial B.		• • • • • •

Total Biennial Analytical Cost <u>\$46,310</u>

TABLE 5

TOTAL COST OF 1994 SAMPLING (ESTIMATE)

SWMU #	ANALYTICAL COST	LABOR *	COST
1	\$ 30,750	\$12,600	\$ 43,350
2	6,020	1,100	7,120
4	7,080	3,000	10,080
5	21,525	14,000	35,525
6	1,000	13,200	14,200
7	400	2,200	2,600
8	39,750	21,400	61,160
10	18,450	22,500	40,950
11	3,180	2,000	5,180
13	9,540	2,600	12,140
	<u>\$119,245</u>	<u>\$94,600</u>	<u>\$213,845</u>

Including Drilling Rig

*

IV. Conclusions

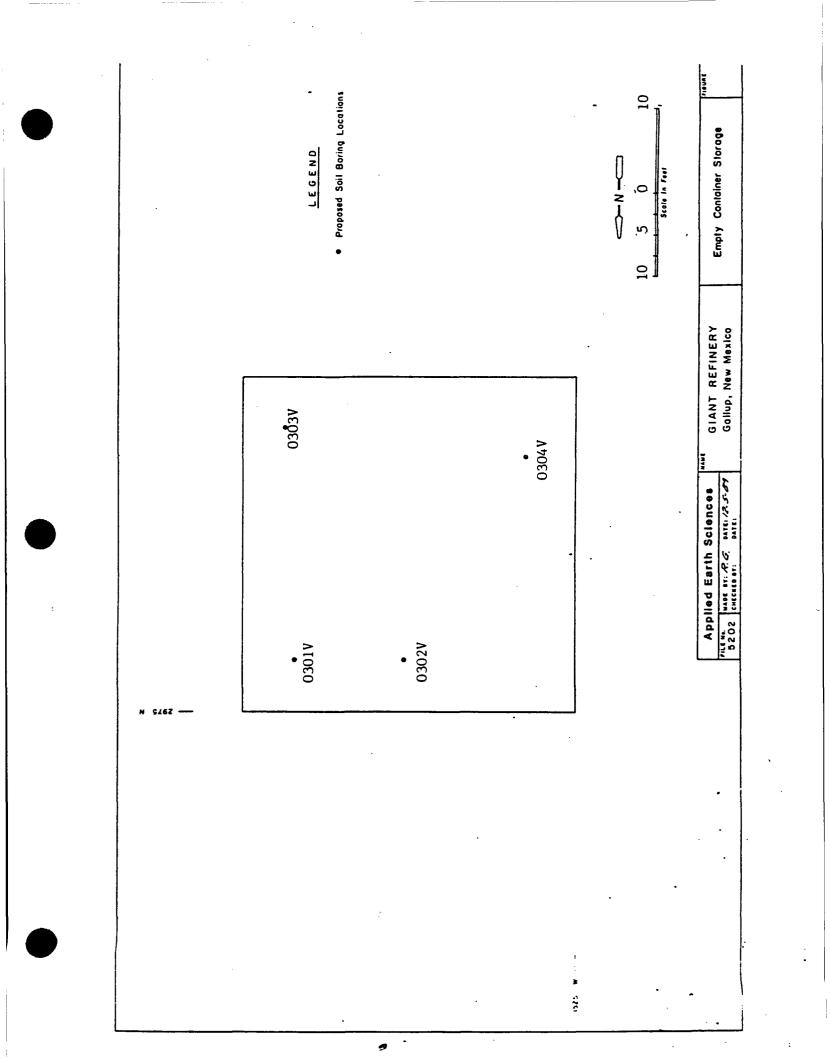
The additional requirements to fully characterize SWMUs #4, 5, 6, 7, 8, 10 and 11 are reasonable. Although expensive, full characterization of potential pollution is the thrust of an RFI project and is Giant's objective.

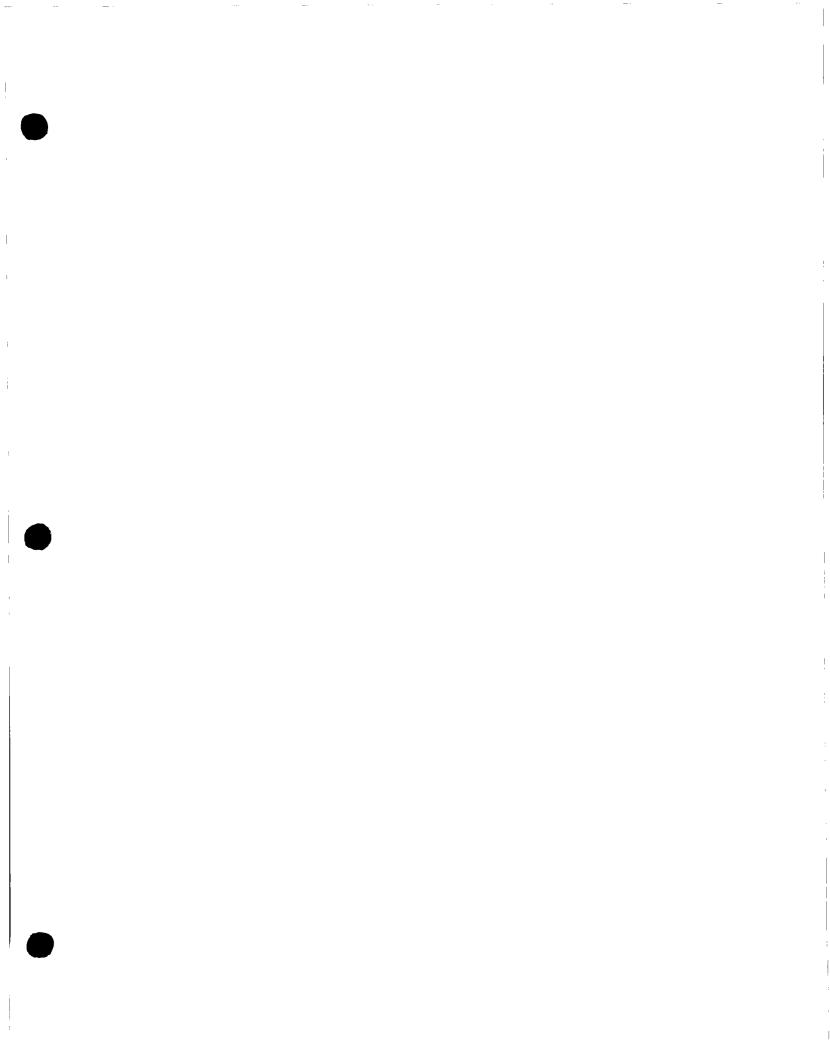
The biennial sampling requirements for SWMUs #1, 2, and 13 are, in effect, a repeat of the original RFI project every two years. This is redundant, expensive and, in my opinion, unwarranted. In completing the original RFI work, it was demonstrated that SWMUs #1, 2, and 13 pose no threat to human health or the environment. Additional sampling is probably justified, because these SWMUs continue to handle wastewater, but on a smaller scale. I recommend that we propose to do additional sampling every five years on one-third of the sample points, or something of that magnitude. This should be enough sampling to document that there is no contamination.

It is important that we act now to minimize sampling requirements in that we can reasonably assume that as other SWMUs are characterized, additional long term sampling requirements for those SWMUs will be requested. This could be an expensive task that provides minimal protection to the environment.

The actual sampling process should be fairly straight forward. Sampling protocol will be identical to past projects and can be accomplished by refinery personnel. The sampling process needs to be modified to using a drilling rig to take core samples in place of backhoe and hand auger. This change is due to the increased depths of samples, the sheer number of samples to be collected, analyzed and reported during 1994, and the requirement to use more appropriate soil boring logs. Using a drilling contractor will provide the necessary speed of sampling and the lithologic observations necessary to complete this project in a timely and efficient manner.

It is in the best interest of Giant that we develop the proper response to these new requirements. I recommend that we carefully analyze our options in this matter and schedule a meeting with the RCRA staff at EPA to discuss this issue.





PHASE III, RFI 1992 GIANT REFINING CINIZA

SOLID WASTE MANAGEMENT UNIT #3- "Barrel Storage Area"

8240-PRIORITY POLLUTANT VOLATILES

SANPLE POINT		01	01	01	02	02	02
SAMPLE DEPTH (feet)		V0.0'	V3.0'	¥4.5′	V0.0'	V3.0'	V4.5
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESUL
1,1,1-Trichloroethane	ug/kg	160	ND	ND	1800	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND	ND	ND
Tetrechloroethene (PCE)	ug/kg	340	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ug/kg	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	70	ND	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	RD	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	ug/kg	ND -	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND	ND	ND
2-Hexanone	ug/kg	ND	ND	ND	ND	ND	ND
Acetone	ug/kg	ND	ND	ND	980	ND	ND
ßenzene	ug/kg	340	ND	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND	ND	ND
Bronoform	ug/kg	ND	ND	ND	ND	ND	ND
Bromomethane	ug/kg	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	ug/kg	ND	ND	ND	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND
Chloroethane	ug/kg	ND	ND	ND	ND	ND	ND
Chloroform	ug/kg	ND	ND	ND	ND	ND	ND
Chloromethane	ug/kg	ND	ND	ND	ND	ND	ND
Dibromochloromethane	ug/kg	ND	ND	ND	ND	ND	ND
Dibromomethane	ug/kg	ND	ND	ND	ND	ND	ND
Dichlorodiflouromethane	ug/kg	ND	ND	ND	ND	ND	ND
Dichloromethane	ug/kg	ND	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	490	ND	ND	ND	ND	ND
Methyl ethyl ketone	ug/kg	ND	ND	ND	ND	ND	ND
Methyl isobutyl ketone	ug/kg	ND	ND	ND	ND	ND	ND
Styrene	ug/kg	170	ND	ND	ND	ND	ND
Toluene	ug/kg	ND	ND	ND	ND	ND	ND
Chloroethylvinyl Ether	ug/kg	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND	ND	ND
Trichloroethene	ug/kg	71	ND	ND	ND	ND	ND
Trichloroflouromethane	ug/kg	ND	ND	ND	ND	ND	ND
Vinyl chloride	ug/kg	ND	ND	ND	ND	ND	ND
Cis-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND	ND	ND
Trans-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND	ND	ND
Total xylenes	ug/kg	8600	ND	ND	ND	ND	ND
Acrolein	ug/kg	ND	ND	ND	ND	ND	ND
Acrylonitrile	ug/kg	ND	ND	ND	ND	ND	ND
Carbon disulfide	ug/kg	ND	ND	ND	ND	ND	ND
Cis-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND	ND
Trans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND	ND
Ethanol	ug/kg	ND	ND	ND	ND	ND	ND
Ethylmethacrylate	ug/kg	ND	ND	ND	ND	ND	ND
Iodomethane (Methyliodide)	ug/kg	ND	ND	ND	NÐ	ND	DK
Vinyl acetate	ug/kg	ND	ND	ND	ND	ND	ND



PHASE III, RFI 1992 GIANT REFINING CINIZA

SOLID WASTE MANAGEMENT UNIT #3- "Barrel Storage Area"

8240-PRIORITY POLLUTANT VOLATILES

SAMPLE POINT		03	03	03	04	04	04 V4.5
SANPLE DEPTH (feet)		¥0.0'	V3.0'	V4.5'	V0.0'	V3.0'	۷4.5
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESUL
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND	DM	ND
Tetrechloroethene (PCE)	ug/kg	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ug/kg	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	ND .	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	ug/kg	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND	ND	ND
2-Hexanone	ug/kg	ND	ND	ND	ND	ND	ND
Acetone	ug/kg	ND	ND	ND	ND	ND	ND
Benzene	ug/kg	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND	ND	CR
Bromoform	ug/kg	ND	ND	ND	ND	ND	ND
Bromomethane	ug/kg	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	ug/kg	ND	ND	ND	ND	ND	. ND
Chlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND
Chloroethane	ug/kg	ND	ND	ND	. ND	ND	ND
Chloroform	ug/kg	ND	ND	ND	ND	ND	ND
Chloromethane	ug/kg	ND	ND	ND	ND	ND	ND
Dibromochloromethane	ug/kg	ND	ND	ND	ND	ND	ND
Dibromomethane	ug/kg	ND	ND	ND	ND	ND	ND
Dichlorodiflouromethane	ug/kg	ND	ND	ND	DK	ND	ND
Dichloromethane	ug/kg	ND	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone	ug/kg	ND	ND	ND	ND	ND	ND
Methyl isobutyl ketone	ug/kg	ND	ND	ND	ND	ND	ND
Styrene	ug/kg	ND	ND	ND	ND	ND	ND
Toluene	ug/kg	ND	ND	ND	ND	ND	ND
Chloroethylvinyl Ether	ug/kg	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND	ND	ND
Trichloroethene	ug/kg	ND	ND	ND	ND	ND	ND
Trichloroflouromethane	ug/kg	ND	ND	ND	ND	ND	ND
Vinyl chloride	ug/kg	ND	ND	ND	ND	ND	ND
Cis-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND	ND	ND
Trans-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND	ND	ND
Total xylenes	ug/kg	ND	ND	ND	210	ND	ND
Acrolein	ug/kg	ND	ND	ND	ND	ND	ND
Acrylonitrile	ug/kg	ND	ND	ND	ND	ND	ND
Carbon disulfide	ug/kg	ND	ND	ND	ND	ND	ND
Cis-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND	ND
Trans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND	ND
Ethanol	ug/kg	ND	ND	ND	ND	ND	ND
Ethylmethacrylate	ug/kg	· ND	ND	ND	ND	ND	ND
Iodomethane (Hethyliodide)	ug/kg	ND	ND	ND	ND	ND	ND
Vinyl acetate	ug/kg	ND	ND	ND	ND	ND	ND



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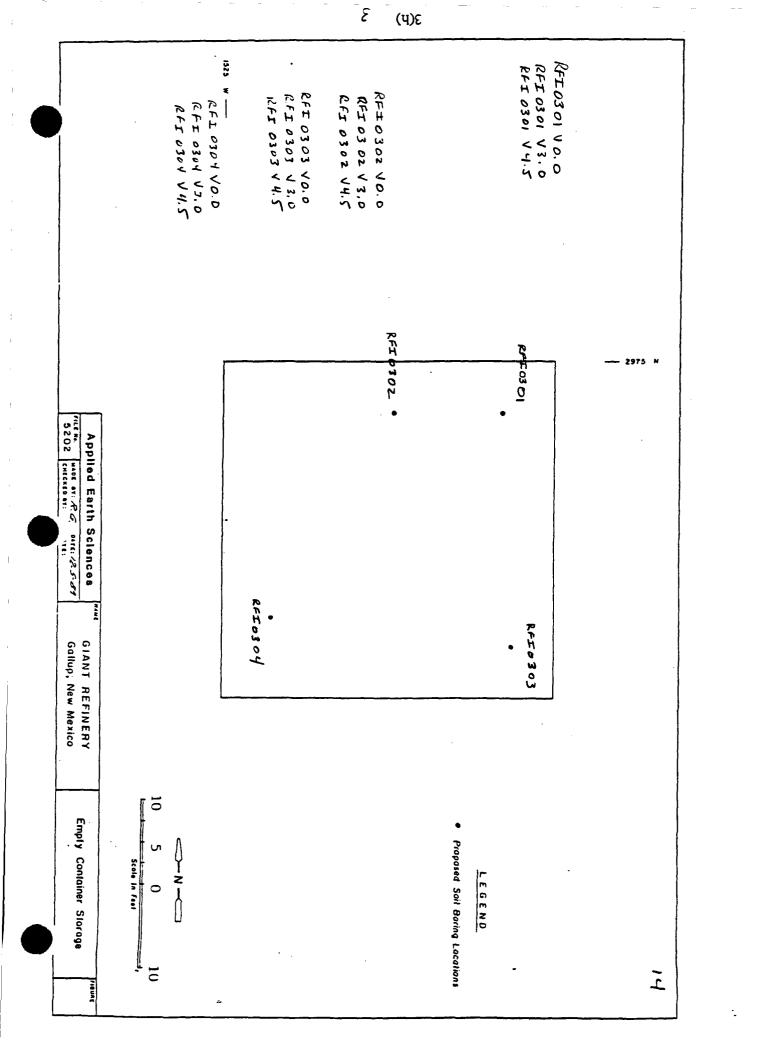
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	PROJECT PHASE TIL	2 4			94	35 • (915) 592-3591 • fax 592-35	Flagstaff • 2400 E. Huntington Dr. • AZ 86004 • (602) 774-8708 • fax 774-6469 El Paso • 10737 Cateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594
1301	\hat{c}			CIN.		• (602) 437-1080 • fax 437-8706	Phoenix • 3737 E. Broadway Rd. • A7 85040 • (602) 437.1080 • (5× 437.8206
	ADDRESS R+ 3 13 0x 7			CLIENT			Inc.
	ODY RECORD	CHAIN OF CUST	NN C	СНА		ries /9 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Westech Laboratories

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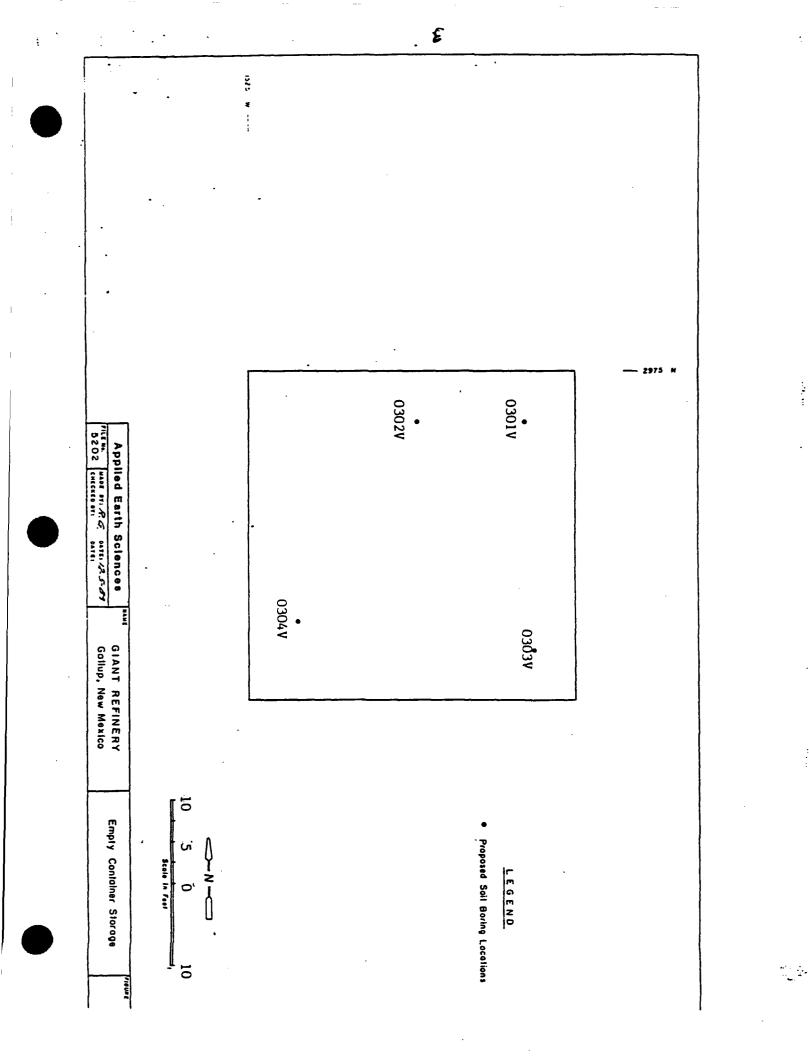


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SWMU # 3 - EMPTY CONTAINER STORAGE AREA PARAMETERS - 5240 PRIORITY POLLUTANTS IZ SAMPLES

SWMU # 4- BURN PIT PARAMETERS - PH SILINNER LIST ORGANICS BACK GROUND METALS 9 SAMPLES

SUMU #5- FOUR LANDFILLS PARAMETERS - 8240 PRIORITY POLLUTANTS BACKGROUND METALS

ρH

48 SAMPLES

SWMU #7 - FIRE TRAINING AREA

PARAMETERS - TPH

OIL V GREASE

12 SAMPLES

SWMU # 11 - SECONDARY OIL SKIMMER + ASSC. DITCH PARAMETERS - SKINNER LIST (CONSTITUENTS) 4 SAMPLES

S5 I, VO, VIDUAL SAMPLES



Route 3, Box 7 Gallup, New Mexico 87301

505 722-3833

August 11, 1992

Barbara Driscoll U.S. Environmental Protection Agency Region VI 1445 Ross Avenue, Suite 1200 Dallas, Texas 75202-2733

Re: Quarterly Progress Report

Dear Mr. Driscoll:

Giant Refining Company - Ciniza (GRC) is submitting this quarterly progress report as required by the May 31, 1990 RFI Workplan approval letter and HSWA Permit Condition C.4., Page 11.

GRC finished soil sampling of SWMU's #3, 4, 5, 7, and 11 on May 15, 1992. All samples were sent to Westech Laboratories for analysis. Hard copy of analytical results has been received and tabulated and is currently having statistical analysis done by Mr. Mark Wilson of the University of New Mexico.

The inspection of the remaining process wastewater system (that part not inspected in 1990) is being organized. Please refer to the attached drawings for lines that may be inspected. The lines were identified using the drawings included in the approved RFI Workplan and by using a corrected drawing from a hydroblasting project completed in 1988. Only lines marked in blue may be inspected and will represent what GRC believes will reasonably demonstrate the integrity of the process wastewater system. Some lines may not be inspected due to safety or process considerations.

This inspection is tentatively scheduled to take place in late August, 1992.

If you require additional information, please contact Lynn Shelton, of my staff, at (505) 722-0227.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sincerely, John Stokes

John Stokes Refinery Manager Ciniza Refinery

JJS/TLS:sp

cc: Kim Bullerdick - Corporate Counsel Giant Industries Arizona, Inc. RFI WORKPLAN PHASE III 1992

May	4.	1	99	7 2

Training 8:00 - 4:15 Load Equipment SWMU Site Tour

May 5, 1992

SWMU #4

Burn Pit 9 Samples

May 6, 1992

SWMU #3 Empty Container Storage 12 Samples

<u>May 7, 1992</u>

SWMU #7	Fire Training	Area	12	Samples
SWMU #11	Secondary Oil	Skimmer	4	Samples

May 8, 1992

SWMU	#5	Land	Fill	Area	48	Samples
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<u>May 11, 1992</u>

Continue SWMU #5 48 Samples

<u>May 12, 1992</u>

Continue S	SWMU	#5	48	Samples
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<u>May 13, 1992</u>

Begin set-up for sewer line inspection Expect one week to complete

Sample Location: <u>SWMU #3</u> Sample Date: <u>5-6-72</u>
Sample Type:Soll
Team Leader: <u>LISHELTON</u>
Sample Personnel: <u>M. BARNEY</u> , <u>T. ROGERS</u>
· · · ·
Sampling Method:AUGER
Sample No. <u>RF10301V0</u> .oSample Time/Description: <u>8:20.7-M</u> <u>301L</u> PID - 3.2
Sample No. <u>RFI0301V3</u> .0Sample Time/Description: <u><u>\$'45Am</u></u> <u>Soll</u>
Sample No. <u>Reformed Sample Time/Description</u> : <u>9:00 Am</u> <u>soil</u>
Sample No Sample Time/Description:
Sample No Sample Time/Description:
Surface Terrain: <u>FLAT</u> GRAVEL + SOIL, BARREN
Weather Conditions: <u>DARTLY SUNNÍ</u> , 50°F, ESEWIND (~ 5m)
General Field Observations: <u>AUGERING VERY DIFFICULT FOR FIRST</u> 14"
Boring Lithology: <u>D-1" - UNIONSOLIDATED SOIL SAND; V GRAVE</u> 7 DARK BROWN WISOME LIGHTER MIXTURE 1"FO 14"- DISCULORED - SOL. 14" TO 31" LIGHTER MIXED OR STRINED SUIL, 31" TO 51 _ RED CLAY WISOME WITH TRE SPECIES

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Sample Location:	Sample Date: <u>5-6-92</u>
Sample Type:	
Team Leader:	
Sample Personnel:M. BARNEY, T. ROG	ERS
Semiling Nothed:	
Sampling Method: <u>AVGER</u>	
Sample No. <u>Prodoctor</u> Sample Time/Description:	- \$ 1.2 (0-200 SCME
Sample No. <u>RFI0302V3</u> OSample Time/Description:	•
Sample No. <u>RFI0302V4</u> 5Sample Time/Description: 9	
Sample No Sample Time/Description:	30Am
Sample No Sample Time/Description:	
Surface Terrain: FLAT, LRAVEL + SOIL	BARRES
Weather Conditions: MOSTRY CLOUDY, 60°F	ESE WIND @ SmpH.

General Field Observations: <u>AUCERING VER</u> THE FIRST 14".	Y DIFFICULT FOR
Boring Lithology: <u>D-1' - DISCOLORED MIXE</u> <u>FOR FIRST 8", I' TO 20" DISCOLOR</u> <u>MOIST. 20" TO 3' - MOIST RED / ORAN</u> <u>OC SPOTTINGI 25 TO SAND. 3' TO T' - R</u> <u>25 TO SAND</u>	ED SAIL, SLIGHTLY CLAY, UN VERIGATION

Sample Type:
· ·
Sample Personnel: <u>M. BARNEY</u> , <u>T. ROGERS</u>
•
Sampling Method:AVGER
Sample No. <u>LFL0303V0.0</u> Sample Time/Description: <u> Diff) fm</u> <u>Def</u> Soil PiD- Ø
Sample No.2 <u>FI0303V3.0</u> Sample Time/Description: <u>10:50 Am</u> <u>MOIST SOIL</u> PID-63
Sample No. <u><i>RFI0303V1.5</i></u> Sample Time/Description: <u><i>It:05</i> AM</u> <u>MOIST SOIL</u> <u>PID-</u>
Sample No Sample Time/Description:
Sample No Sample Time/Description:
Surface Terrain: FLAT, GRAVEL & SOIL, BARREN
Weather Conditions: <u>CLOUDY</u> , <u>SPRINKLES</u> , 60°F, ESE WIND C-5-10 MPH
General Field Observations: <u>VERY DIFFICULT</u> TO AUGER TO 12",
Boring Lithology: <u>D-1' - CRAVEL SOIL MIX, DISLOLORED</u> <u>SOIL, 1'TO 2' - DISCOLORED (LAY! SAND MIX, 2'-3.5'</u> <u>REDICLAY MIX, 3.5 TO 5.0' REDIGRAY CLAY WISOME ROCK +</u> <u>SAND(570)</u>

1

Sample Location:
Sample Type:
Team Leader:
Sample Personnel: <u>M. BARNEN</u> , T. ROLERS
•
Sampling Method:AUGER
Sample No. <u>RFF0304VD.</u> o Sample Time/Description: <u>12:35 PM</u> DR 4 Soll PID - O
Sample No. <u>RFC0304V3.</u> 0 Sample Time/Description: <u>12;55P.n moist soil</u> PID- Ø
Sample No. <u>REF0304 V4.5</u> Sample Time/Description: <u>1:20 Pm</u> <u>MOIST SOIL</u> PID-Ø
Sample No Sample Time/Description:
Sample No Sample Time/Description:
Surface Terrain: <u>FLAT, GRAVEL J SOIL, BARZEN</u>
Weather Conditions: <u>PARTLY CLOUDY, 60°F, E WIND AT</u> 5-10 MPH,
General Field Observations:
Boring Lithology: 0-L" - CRAVEL / SOIL 6"-1' DISLOLORE SAM / SOIL, 1'-1,5'- SLIGHTLY DISCOLUZED SOIL, 1.5-50' RED CIAY WISCOME CREY SPECKS.

Revision Date 12/15/89

TABLE 2

Field Equipment Checklist Soil and Sludge Sampling

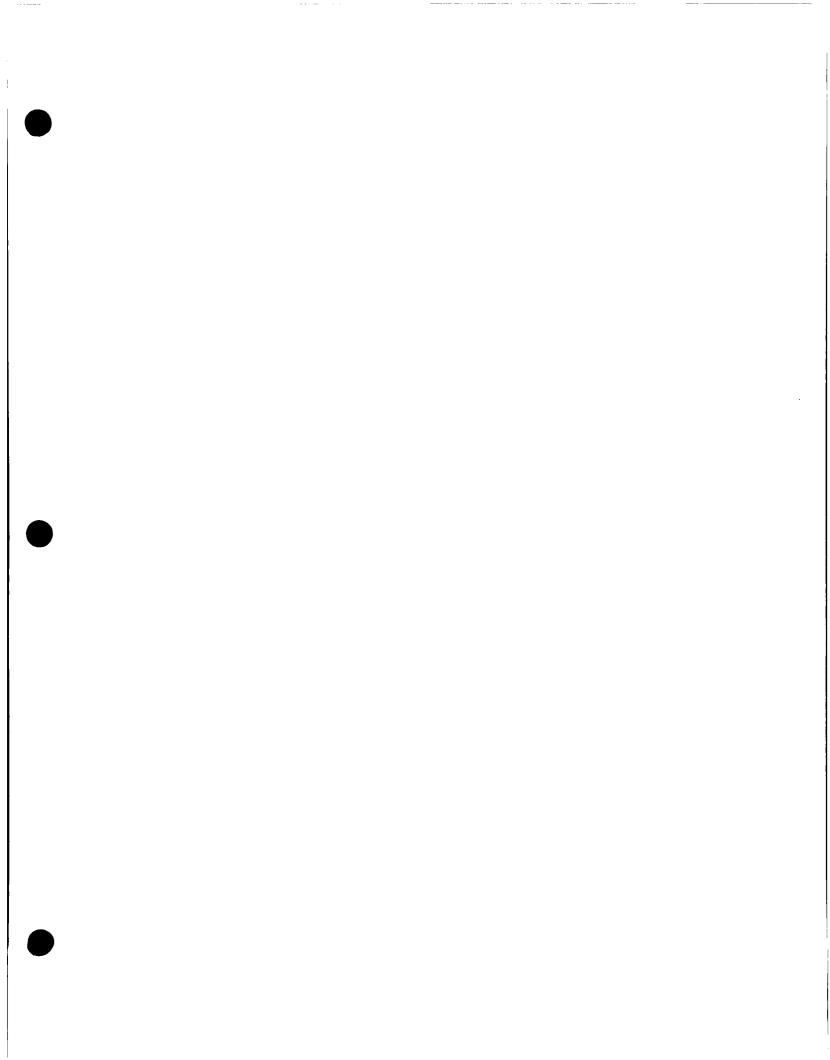
ITEM

REMARKS

Calibrated

PID Meter Site Specific SWMU Work Plan Generic Sampling Plan Site Map With Sample Locations Sample Bottles 🧹 Ice Chests 🧹 Trip Blanks Methanol PROPANOL Deionized Water Squeeze Bottles Personal Protective Equipment Chain of Custody and Sample Record Forms -Plastic Bags (To provide clean surfaces) Disposable Gloves Paper Towels Tape (For labels and dispenser) Sharpie, Pens, Pencils _ Blue Ice or Ice Zip-Lock Bags, 1 Gallon ____

5-6-92 JLS



APPLIED EARTH SCIENCES

Sept. 14, 1989

RELEASE VERIFICATION

SWMU: Empty Container Storage Area

LOCATION: Figure 1, No. 43

Release verification was accomplished by a complete review of the facility records to determine if a release has occurred. In addition, plant personnel were interviewed and the area was inspected to check for a release.

At the Empty Container Storage area no known release has occurred.

APPLIED EARTH SCIENCES

UNIT AREA CHARACTERISTICS

TYPE OF UNIT: Empty Container Storage Area

LOCATION OF UNIT: Figure 1, No. 43

DESIGN FEATURES: 80 feet x 50 feet

OPERATING PRACTICES (PAST AND PRESENT):

Empty drums were stored on the bare earth.

PERIOD OF OPERATION: 1979 - Present

AGE OF UNIT:

>10 Years

GENERAL PHYSICAL CONDITIONS:

Empty drums placed on bare earth prior to reuse or reclamation.

METHOD USED TO CLOSE THE UNIT:

Would like to excavate the soil and sample to confirm no contamination, then pour a concrete slab that drains to API.

APPLIED EARTH SCIENCES

WASTE CHARACTERIZATION

TYPE OF UNIT: Empty Container Storage Area

LOCATION OF UNIT: Figure 1, No. 43

TYPE OF WASTE PLACED IN UNIT:

Empty drums with residual chemicals, VSI reported carbon tetrachloride and antifreeze drums present.

APPROXIMATE QUANTITY MANAGED:

No data area available on the number of drums which may have been in storage in the past.

PHYSICAL AND CHEMICAL CHARACTERISTICS:

Solvents and organics.

MIGRATION AND DISPERSAL CHARACTERISTICS:

The drums were stored on bare earth. The potential for contamination exists in the soil.

SWMU No. 4, Old Burn Pit

The old burn pit area was identified as a solid waste management unit (SWMU) and designated as 2 SWMU No. 4 during a Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) 3 conducted at the Giant Refining Company - Ciniza Refinery (Ciniza) in the early 1990s. This 4 investigation included soil sampling and analysis, which indicated the presence of trace organics and 5 metals. Based on this investigation, tilling and capping the site was recommended. In 1994, the U.S. 6 Environmental Protection Agency (EPA) requested additional sampling at greater depth. The results 7 confirmed the previous findings. The old burn area was capped in 1997 in conjunction with the closure of 8 SWMU No. 5. 9

10 4.1 Site Description and Operational History

SWMU No. 4, Old Burn Pit, (Figures 4-1, 4-2, 4-3) consists of the old burn pit located approximately 700 feet north of the Ciniza tank farm and west of the fire training area. The old burn pit area is a triangular site measuring approximately 20 feet by 40 feet and was used to burn acid-soluble oils (ASOs). ASOs are heavy-molecular-weight, asphalt-type, cross-polymerized hydrocarbons. Photographs of the old burn pit, taken during the 1998 site inspection performed by Practical Environmental Services, Inc. (PES), is provided in SWMU No. 4 Summary Report.

17 4.2 Land Use

1

The old burn pit area has been covered with an earthen cap using methods and materials consistent with the New Mexico Environment Department (NMED) requirements and regulations as set forth in 20 NMAC 9.1 Section 502. The capped area is not currently being used for any purpose. The land will continue under the ownership of the Ciniza refinery.

22 4.3 Investigation Activities

Applied Earth Sciences (AES) investigated the old burn pit area during the early 1990s. Soil samples were collected and analyzed. Trace volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and metals were detected in several of the samples.

26 4.3.1 Investigation #1

During the initial site investigation, AES collected and analyzed soil samples from within the old burn pit
area. Samples were collected at three locations and three depths: surface and 3 and 4.5 feet below ground
surface.

All samples detected trace VOCs and SVOCs, of which dimethylphthalate, at 18 mg/kg, was the highest
 detection. The remaining constituents were detected in much lower concentrations, typically less than
 3 mg/kg.

Per EPA request, a second round of sampling and analysis was conducted at depths of 6 and 10 feet below
ground surface. Methyl ethyl ketone, a typical laboratory contaminant, was detected at a concentration of
1.2 mg/kg in a sample taken at a depth of 6 feet. All other samples found no detection of VOCs or
SVOCs, including all samples collected at 10 feet below ground surface.

8 All samples detected trace metals, of which chromium and nickel were detected at levels slightly above
9 ambient background concentration.

The investigation concluded that residual organic contaminants are present in very low concentrations, confined to a 6-foot soil layer within the SWMU, and substantially consist of heavy-molecular-weight compounds with low mobility. Residual metal contaminants are also present at very low levels; most of which fall within the range of ambient background concentration; however, chromium and nickel are present at slightly elevated levels.

- As a result of the investigation, AES recommended tilling the site to promote natural attenuation of organics, followed by capping to contain residual metal contaminants. Results and recommendations were reported to the EPA in 1992. The EPA requested additional sampling at greater depth. Follow-up sampling and analysis confirmed the original findings. In 1997, SWMU No. 4 was capped in conjunction with similar work being performed at SWMU No. 5.
- 20 4.4 Site Conceptual Model
- 21 There is no impact on the environmental fate of the land.
- 22 4.5 Site Assessments
- 23 During the week of March 23, 1998, PES performed an on-site inspection. Observations are as follows:
- 24 25

26

27

- The old burn pit area has been capped utilizing methods and materials as described in the Closure Certification Report for SWMU No. 5. Cap thickness is estimated at greater than 3 feet.
- Final installed surface contours and side slopes are adequate to inhibit ponding and erosion.

- Local soil in the vicinity of the old burn pit area consists of bentonitic clays and silts. Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than 10⁷ cm/sec.
- 4 5

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No soil staining or distressed vegetation was present at or in the vicinity of the old burn pit site.

PES did not perform any sampling or analysis during this site inspection. The inspection was limited only
to visual observations.

8 Based on this site assessment, PES determined that containment is the preferred remedy to natural 9 attenuation via tilling and aeration. The detected contaminants are resistant to biodegradation. Therefore, 10 tilling and aeration would expose soil metals to oxidation and precipitation, thereby, mobilizing these 11 contaminants and promoting migration. Isolation and containment are also the preferred remedy for the 12 high levels of chromium and nickel detected. Local soil underlying this site has a very low hydraulic 13 conductivity, which effectively inhibits outward migration of contaminants. Similar low hydraulic 14 conductivity soil has been used to cap the site and inhibit the infiltration of precipitation.

The old burn pit area has been covered with an earthen cap using methods and materials consistent with (NMED) requirements and regulations as set forth in 20 NMAC 9.1 Section 502. The installation of the soil cap represents an appropriate remedy for the site.

18 4.6 NFA Proposal

19 Ciniza is proposing that no further action is required for SWMU No. 4 based on the following criterion:

- The burn pit area has been characterized and remediated (capped) in accordance with current applicable state regulations.
 - The available data indicate that no significant environmental impact or migration has occurred (i.e., the contaminants pose an acceptable level of risk under current and projected future land use).
- 25

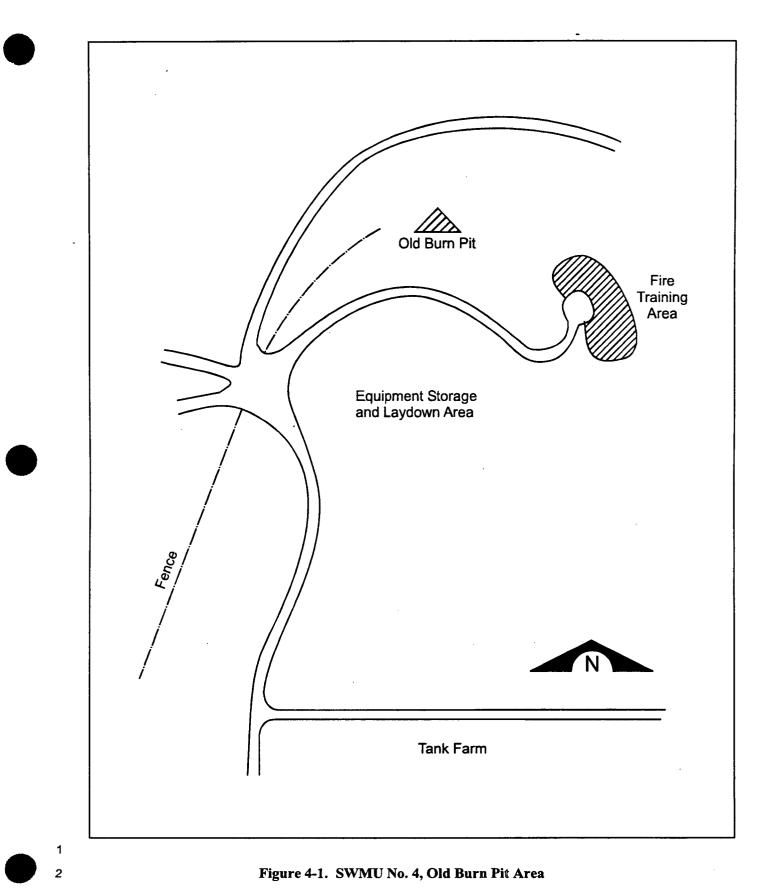
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• The implemented remedy (soil cap) is appropriate for this site. (NFA Criterion 5).

The closure of the burn pit area consists of a soil cap, which effectively isolates and contains the contaminants found in the soil. The soil cap and the surrounding soil demonstrate low hydraulic conductivity; thereby, inhibiting the infiltration of precipitation and the migration of contaminants. Native soil has been installed over the site and the surface has been crowned to prevent ponding and gradually sloped to inhibit erosion. Native manure, amendments, and a revegetation seed mix have been applied, tilled into the surface, and watered.



SWMU No. 4 Old Burn Pit

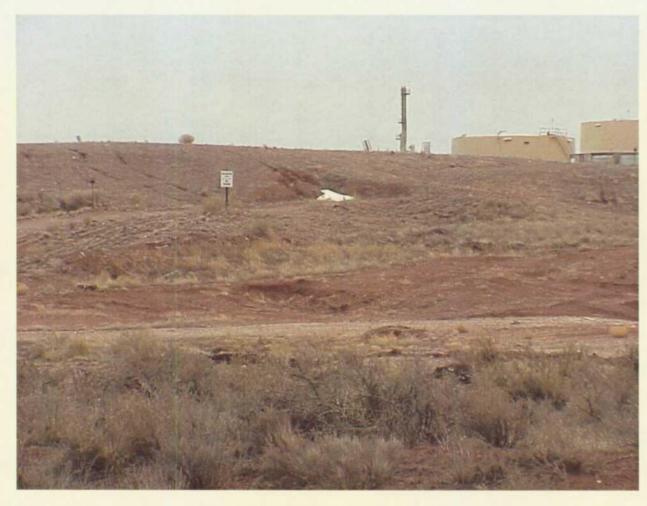
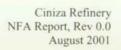


Figure 4-2. SWMU No. 4, Old Burn Pit

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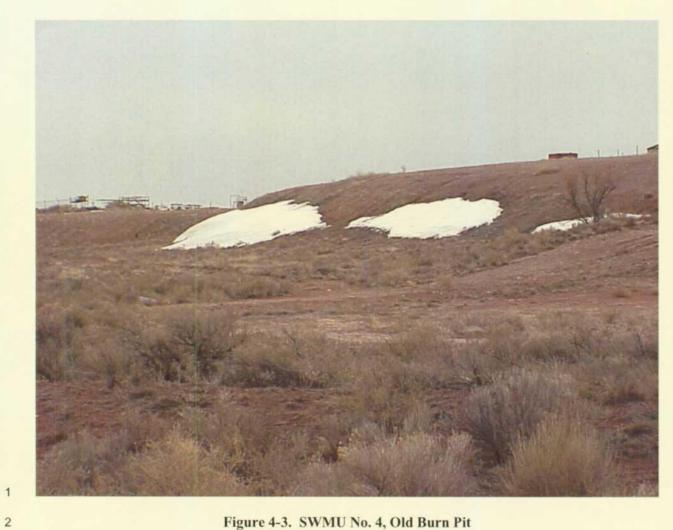
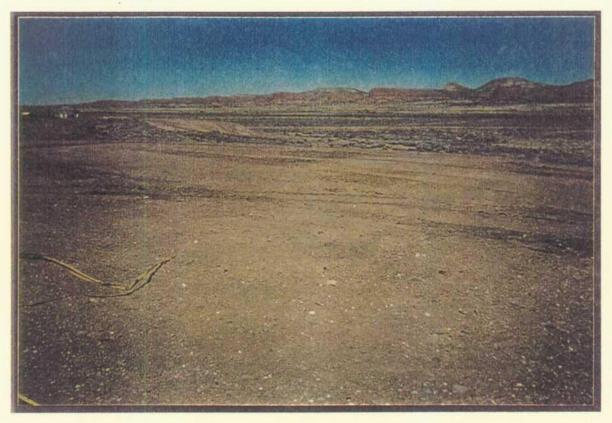


Figure 4-3. SWMU No. 4, Old Burn Pit

SWMU #4 Summary Report

Old Burn Pit Area Ciniza Refinery McKinley County, New Mexico



Prepared for:

Ciniza Refinery Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

Prepared by:

Practical Environmental Services, Inc. 1444 Wazee Street, Suite 225 Denver, Colorado 80202

Job No. 98-205-03

April 23, 1998

1.0 EXECUTIVE SUMMARY

Practical Environmental Services, Inc. (PES) has been retained by Giant-Ciniza Refinery (Ciniza) to perform a visual inspection, data evaluation, and status assessment for the old burn pit located within the Ciniza Refinery, in McKinley County, New Mexico.

The old burn pit area was identified as a Solid Waste Management Unit (SWMU), and designated as SWMU #4, during a RCRA Facility Investigation (RFI) conducted at the refinery in the early 1990's. This investigation included soil sampling and analysis, detected trace organics and metals, and recommended tilling and capping the site.

In 1994, the Environmental Protection Agency Region VI Office (EPA) requested additional sampling at greater depth. Results confirmed previous findings. The site was capped in 1997 in conjunction with the closure of SWMU #5.

This summary report for SWMU #4 has been prepared in conjunction with submittal of a Resource Conservation and Recovery Act (RCRA) Part B permit application covering post closure care of the Ciniza Refinery Land Treatment Unit. All investigative activities for SWMU #4 have been completed. This assessment is summarized as follows.

- ⇒ An engineered earthen cap composed of low hydraulic conductivity, native soil has been installed over the site. The surface has been crowned to prevent ponding and gradually sloped to inhibit erosion. Native manure, amendments, and a revegetation seed mix have been applied, tilled into the surface, and watered.
- ⇒ Soil underlying the old burn pit area predominantly consists of bentonitic clays and silts having a very low hydraulic conductivity.
- ⇒ Soil sampling and analysis was conducted during an initial site investigation and subsequent re-investigation at greater depth. Trace organic contaminants were detected below corrective action levels. The site was recommended for remedial action and capping.
- ⇒ SWMU #4 has been characterized in accordance with current applicable state and federal regulations, and the available data indicate that no significant environmental impact or migration has occurred.
- \Rightarrow The implemented remedy is appropriate for this site.

2.0 BACKGROUND

During 1987, a RCRA Facility Assessment was conducted at the Ciniza Refinery. This assessment identified various "Solid Waste Management Units" and recommended further evaluation. A RCRA Facility Investigation was subsequently conducted and the old burn pit area was identified as SWMU #4.

Applied Earth Sciences (AES) investigated the old burn pit area during the early 1990s. Soil samples were collected and analyzed. Trace VOCs, SVOCs, and metals were detected in several of the samples.

As a result of the investigation, AES recommended tilling the site to promote natural attenuation of organics, followed by capping to contain residual metal contaminants. Results and recommendations were reported to the EPA in 1992. The EPA requested additional sampling at greater depth. Follow-up sampling and analysis confirmed the original findings. In 1997, SWMU #4 was capped in conjunction with similar work being performed at SWMU #5.

3.0 SITE LOCATION AND DESCRIPTION

SWMU #4 is located within the Ciniza Refinery's property boundary. This refinery is located on the north side of Interstate 40, approximately 17 miles east of Gallup, New Mexico. Within the refinery, SWMU #4 is located approximately 700 feet north of the tank farm and west of the fire training area. See Figure No. 1 for location details.

The old burn pit area is a triangular site measuring approximately 20 feet by 40 feet. Within this area, an earthen pit was used as a safe location for combusting waste oil.

4.0 SITE INSPECTION

During the week of March 23, 1998, an on-site inspection was performed. Observations are noted as follows:

- The old burn pit area has been capped utilizing methods and materials as described in the Closure Certification Report for SWMU #5. Cap thickness is estimated at greater than three feet.
- Final installed surface contours and side slopes are adequate to inhibit ponding and erosion.
- Local soil in the vicinity of the old burn pit area presents as bentonitic clays and silts. Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than 10⁻⁷ cm/sec.
- No soil staining or distressed vegetation was present at or in the vicinity of the old burn pit site.

5.0 DATA REVIEW

Soil samples from within the old burn pit area were collected and analyzed during the initial site investigation. Samples were collected at three locations and three depths; surface, 3 feet, and 4.5 feet below ground surface.

All samples detected trace VOCs and SVOCs; of which, di methyl phthalate at 18 mg/kg was the highest detection. Most of the remaining constituents were-detected in much lower concentrations, typically less than 3 mg/kg.

Per EPA request, a second round of sampling and analysis was conducted at depths of 6 and 10 feet below ground surface. Methyl ethyl ketone was detected in one sample at 1.2 mg/kg and at a depth of 6 feet. All other samples found no detection of VOCs or SVOCs; including all samples collected at 10 feet below ground surface.

All samples detected trace metals; of which, chromium and nickel were detected at levels slightly above ambient background concentration.

6.0 ASSESSMENT

Based on the site inspection and data review, the old burn pit area is assessed as follows.

- The old burn pit area has been covered with an earthen cap using methods and materials consistent with State of New Mexico Environment Department requirements and regulations as set forth in 20 NMAC 9.1 Section 502.
- Residual organic contaminants are present in very low concentrations, confined to a 6 foot soil layer within the SWMU, and substantially consist of heavy molecular weight compounds with low mobility. These compounds are resistant to biodegradation and, as a result, containment is a preferred remedy to natural attenuation via tilling and aeration. The latter technique will expose soil metals to oxidation and precipitation; thereby mobilizing these contaminants and promoting migration.
- Residual metal contaminants are also present at very low levels; most of which fall within the range of ambient background concentration. However, chromium and nickel are present at slightly elevated levels and, as a result, isolation and containment is the preferred remedy.
- Local soil underlying this site has a very low hydraulic conductivity which effectively inhibits outward migration of contaminants. Similar low hydraulic conductivity soil has been used to cap the site and inhibit the infiltration of precipitation.
- The installation of the soil cap represents an appropriate remedy for the site.

7.0 PROFESSIONAL ENGINEER'S CERTIFICATION

This summary report for SWMU #4 has been prepared under the direct supervision and control of a Registered Professional Engineer.

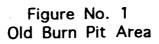
Client: Ciniza Refinery Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

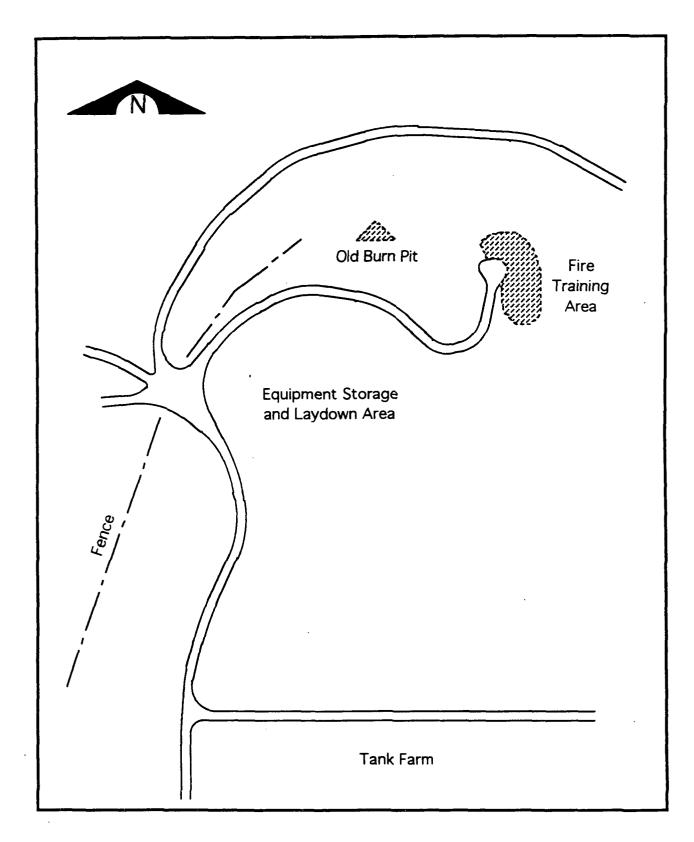
Job No.: 98-205-03

Date: April 23, 1998

Prepared and Certified by:

Thomas D. Atwood, P.E. Colorado Registration No. 22866





SWMU #4 Summary Report

SWMU-4 OLD BURN PIT



SWMU # 3 - EMPTY CONTAINER STORAGE AREA PARAMETERS - 5240 PRIORITY POLLUTANTS IZ SAMPLES

SWMU # 4. BURN PIT PARAMETERS - pH THE SILINNER LIST ORGANICS BACK GROUND METALS 9 SAMPLES

SWMU #5- FOUR LAND FILLS PARAMETERS - 8240 PRIORITY POLLUTANTS BACKGROUND METALS

ρH

48 SAMPLES

SWMU #7 - FIRE TRAINING AREA

PARAMETERS - TPH

OIL V GREASE

12 SAMPLES

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SWMV # 11 - SECONDARY OIL SKIMMER & ASSE DITCH PARAMETERS - SKINNER LIST (CONSTITUENTS) 4 SAMPLES

S5 INDIVIDUAL SAMPLES

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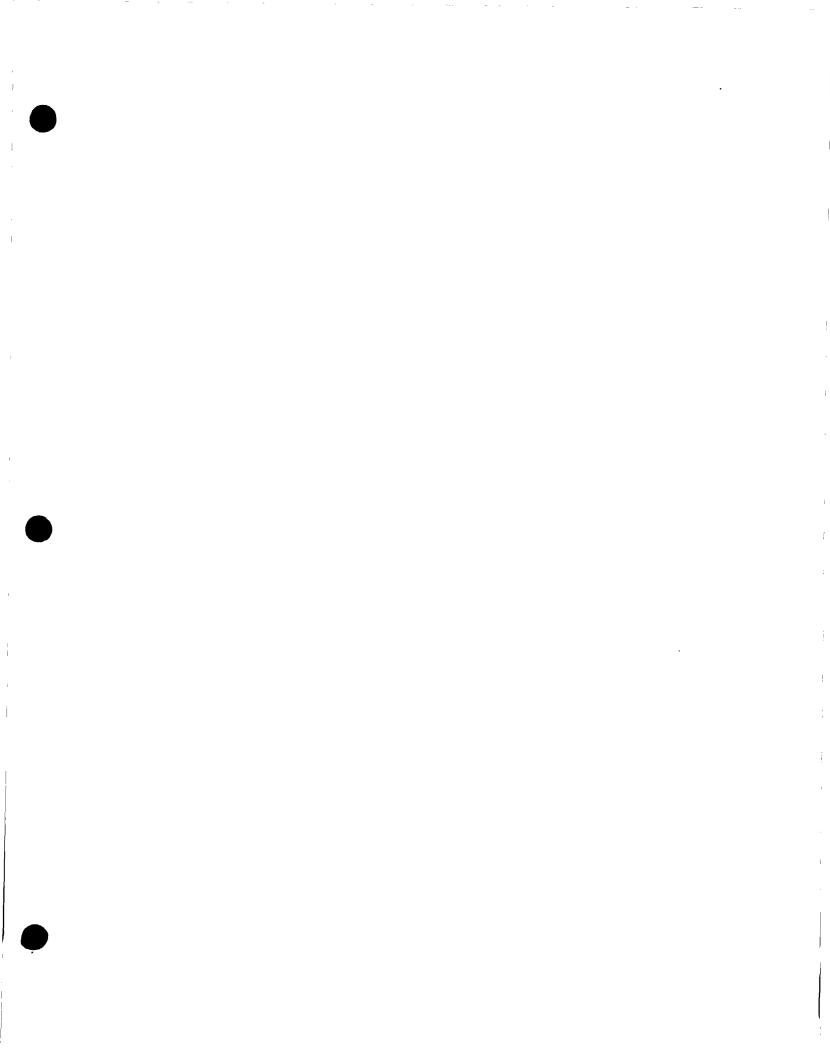
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	PLEASE PRINT IN BLACK INK ONL							
TO: Ed Horst, E	evironmental Manager - Ciant Refia	ing Company, Ciniza						
MACHINE NUMBER: 505.722.0210	VERIFICATION NUMBER: 506.722.	227						
FROM: James A. Harris, Jr., RCRA	Facility Manager/Geologist							
PHONE: (214) 665-8302	Maii Codet SPD-N							
OFFICE: New Master/Federal Faci	ties Socilas	PAGES, INCLUDING COVER SHEET						
DATE: March 15, 1996		3						
	PLEASE NUMBER ALL PAGES							
1	FURMATION FOR SENDING PACSIMILE	MESSAGES						
EQUIPMENT:	FACSIBILE NUMBER:	VERIFICATION NUMBER:						
PANAFAX UF-766	(214) 665-6762	(214) 655-6768						
COMMENTS								
E4.								
Here's what I have been using to track Ginat,	Ciniza's corrective action progress. Plants by	jow and lat's discuss it next weak. Have a good one.						
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Prepe	11:	7:	UI ••	4:	3:	13:	12:	2:	:
Prepared by: James A. Herris, Jr. VomPN as at March 13, 1996	Secondary Oil Skimmer (11)	Fire Training Area (4)	Landfill Areas (7)	Old Burn Pit (8)	Empty Container Storage Area (5)	The Drainage Ditch between APIs Evaporation Ponds and the Neutralization Tank Evaporation Ponds (14)	Contact Waste Water Collection System (CWWCS)	The Evaporation Ponds (2)	The Aeration Basin (1)
999	3	2	. 8	3	Phase III	2	3	3	Phase II
	Under VCA	Under VCA	a Voluntary Corrective Action (VCA) Plan to cap the "Landfill Areas" was submitted in March 1993.			soll and groundwater sampling every five years	Inspection every 5 years beginning 1996	2	soil and groundwater sampling every five years
	discolored soil is the natural color; there is no hydrocarbon staining or odors detected; reference to "black fill" sand is actually "back fill"		EPA approved the VCA Plan on January 5, 1994 but required that additional soil borings be completed prior to Giant proceeding with the capping activities		2	Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process		Survey and closure certification must be submitted prior to initiating Class III Permit Mod process	RFI PHII RPT APP 1/94 W/modifications; Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process

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SENT BY:



INTEROFFICE MEMORANDUM

DATE: June 28, 1994

TO: David Pavlich

Lynn Shelton 725 FROM:

SUBJECT: Required RFI Sampling

In its January 7, 1994 letter, EPA required additional sampling and conditions of the RCRA Facility Investigation.

Although some of the requirements are considered redundant and are therefore subject to challenge, certain additional sampling requirements are acceptable and should be completed in a timely manner regardless of the protest of other, less productive sampling.

A list of the additional sampling sites, depths, and estimated costs are presented below.

I. SWUM #4 Old Burn Pit

 Borings
 Depths
 Sampling
 Analysis

 3
 6.0', 10.0'
 \$475
 \$7,026

II. SWMU #5 Landfill Areas

		Cos	sts
<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	<u>Analysis</u>
9	11.0', 16.0,	\$2,848	\$21,525
	20.0'		

III. SWMU #6 Tank Farm

V.

		Costs	
<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	<u>Analysis</u>
8	16.0', [.] 20.0'	\$2,531	\$1,000

IV. SWMU #7 Fire Training Area

		CUSES	
<u>Borings</u>	Depths	Sampling	Analysis
2	7.0', 11.0'	\$348	\$400

Coste

SWMU #10Sludge PitsCostsBoringsDepthsSamplingAnalysis1819.0', 25.0'\$7,119\$18,450

VI. SWMU #11 Secondary Oil Skimmer

		Costs	
<u>Borings</u>	Depths	Sampling	<u>Analysis</u>
2	6.0', 10.0'	\$316	\$3,180

Total costs for this initial sampling project are estimated to be \$65,218.

It is my recommendation that Giant complete an RFE and implement the sampling and analysis by July 15, 1994.

TLS:sp



June 28, 1994

Rich Mayer U.S. Environmental Protection Agency Region VI 1445 Ross Avenue, Suite 1200 Dallas, Texas 75202-2733

Re: Quarterly Progress Report

Dear Mr. Mayer:

Pursuant to requirements of the HSWA Permit, Condition C.4., Page 11 and the May 31, 1990 RFI Workplan approval, Giant Refining Company - Ciniza (Giant) submits the <u>Quarterly Progress Report</u> for the second quarter of 1994.

Giant has completed piping modifications to the "Railroad Rack Lagoon" (SWMU #8) system and is presently evacuating the remaining water from the lagoon and disposing of it in the process wastewater system. As soon as it is feasible, Giant will sample the SWMU as required and begin bioremediation activities.

Giant is soliciting proposals for the survey requirement of SWMUs #1, 3, 8, 9 and 13.

Giant is also developing a scope and estimate of expense to further characterize SWMUs #4, 5, 6, 7, 10, and 11 and expects to complete that sampling during the third quarter of 1994.

If you require additional information, please contact Lynn Shelton, of my staff, at (505) 722-0227.

"I certify under penalty of law that this document and all attachments were prepared under my direction to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false

REFINING CO.

Route 3, Box 7 Gallup, New Mexico

87301 505 722-3833 information, including the possibility of fine and imprisonment for knowing violations."

Sincerely; John Stokes

Refinery Manager

JJS/TLS:sp

cc: Kim Bullerdick, Corporate Counsel Giant Industries Arizona, Inc.

> David Pavlich, Health/Safety and Environmental Manger Giant Refining Company

INTEROFFICE MEMORANDUM

\$

DATE: February 3, 1994

TO: David Pavlich Kim Bullerdick

FROM: Lynn Shelton 748

SUBJECT: RCRA Facility Investigation - Additional Requirements

I. Introduction

Giant Refining Company - Ciniza (Giant) performed a RCRA Facility Investigation (RFI) in three phases (I, II, and III) over three years (1990, 1991, and 1992).

Using the analytical results of those three sampling events, Giant submitted four corrective action plans and eight "No Further Action" proposals to Region VI, United States Environmental Protection Agency (EPA).

Correspondence from the EPA (1-7-94) indicated approval of the corrective action plans (with additional requirements) for three Solid Waste Management Units (SWMUs), for RFI reports Phase I, II, and III and assigns a deadline for submittals of additional data.

The additional sampling and reporting requirements, some of which are redundant and unnecessary, are the focus of this correspondence. In the following pages, the scope and cost of the additional sampling requirements will be presented.

Some explanation of a potential problem is in order. The SWMU identification numbering sequence is inconsistent. In discussing the draft letters with Rich Mayer, of Region VI EPA, the discrepancy in reference to the SWMU numbers was mentioned. Mr. Mayer responded that the correct SWMU numbers were taken from the HSWA Permit (Section C, Corrective Actions for Continuing Releases, 5.(a)(1)). Giant had used the numbering sequence from the approved RFI Workplan (revised May 17, 1990). As shown in Table 1, there are discrepancies in all three sequences. Giant should propose to use the numbering sequence identified in the revised RFI Workplan to avoid confusion with the numbering sequence of SWMUs and sample numbers already reported.

Table 2 presents an overview of the status of the SWMUs.

TABLE 1

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SWMU IDENTIFICATION

RFI	WORKPLAN	hswa	EPA	LETTER	SWMU
	1	1		1	Aeration Basin
	2	2		2	Evaporation Ponds
	3	5		5	Empty Container Storage
	4	8		8	Burn Pit
	5	7	-	7	Four Landfills
	6	3		6	Tank Farm
	7	4		4	Fire Training Area
:	8	6		8	Railroad Rack Lagoon
	9	10 & 13		-	Inactive Land Treatment
	10	9		9	Two Sludge Pits
	11	11	1	.1	Secondary Oil Skimmer
	12	14	1	.3	Wastewater Collection
	13	14	1	.3	Drainage Ditch

TABLE 2

STATUS - INDIVIDUAL SWMU

Caps:

- × Railrack Lagoon
- Sludge Pits *
- Fire Training Area Landfills
- ×

No Further Action:

- ** Aeration Basin
- ** Evaporation Ponds
- ** Drainage Ditch Tank Farm ** Empty Container Storage
- Old Burn Pit Secondary Oil Skimmer Inactive Land Treatment ***

* Accepted by EPA with Additional Requirements ** "No Further Action" Approved by USEPA

*** Not Addressed in Correspondence

II. Discussion

A discussion of additional requirements, by SWMU, follows. Included, as Figures 1 to 12, are drawings of the SWMUs with individual sample points.

<u>SWMU #1</u> - Aeration Lagoon

EPA approved Giant's proposal for "No Further Action". Although Giant demonstrated that no significant migration of hazardous constituents had taken place, EPA requires biennial sampling that duplicates the original RFI sampling. This is redundant and expensive. Giant should propose either a five year sampling rotation or a phased-in plan (of six sample locations, sample two biennially until all samples are taken, then start again). These sampling plans will diminish the costs considerably and still provide documentation that migration has not occurred.

EPA also requires a survey plat of the SWMU. Giant agrees that this is a reasonable requirement.

<u>SWMU 2</u> - Evaporation Ponds

EPA has also approved Giant's proposal for "No Further Action" of this SWMU. EPA requires that Giant sample the seven groundwater wells (MW-4, OW-1, OW-2, OW-5, OW-7, OW-9 and OW-10) biennially for the same constituents as monitored for in the RFI sampling event. Giant may wish to propose a five year sampling rotation.

<u>SWMU 13</u> - Empty Container Storage Area

EPA approved Giant's proposal for "No Further Action" for the SWMU, requiring only that Giant provide a survey plat.

SWMU #4 - Old Burn Pit

EPA does not approve Giant's proposal for "No Further Action". Three borings at six and ten feet will be required to characterize constituent migration in this SWMU.

<u>SWMU #5</u> - Landfill Areas

EPA requires that additional borings, at eleven, sixteen and twenty feet to fully characterize contamination.

<u>SWMU #6</u> - Tank Farm

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. EPA requires seven additional borings to sixteen feet and one additional boring to twenty feet to fully characterize contamination. When Giant performed supplemental sampling of this SWMU in 1991, it was anticipated that further sampling would be required.

<u>SWMU #7</u> - Fire Training

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. Two additional angle borings to seven and eleven vertical feet are required. Additional sampling was anticipated when this SWMU was sampled in 1992, although I question why we now have to analyze for the Skinner List constituents. Samples from this SWMU were originally analyzed for TPH and oil & grease only.

SWMU #8 - Railroad Rack Lagoon

EPA has approved Giant's corrective action plan for this SWMU, with additional requirements. After piping modifications at the railroad loading rack are complete and the railroad rack lagoon no longer receives waste, sampling is required within the footprint of the lagoon (five borings) and around the periphery of the lagoon (six borings). Sampling is also required in the overflow ditch (three borings to seven feet) and the fan out area (four borings to seven feet). Some sampling will be required during remediation of the lagoon to document completion of the corrective action plan.

A survey plat of the SWMU, after remediation, must be submitted to the EPA.

<u>SWMU #9</u> - Inactive Land Treatment Area

Although Giant had provided data and proposed no further action, this SWMU was not addressed in the correspondence with the EPA. It needs to be determined if EPA accepts our proposal or has additional requirements.

<u>SWMU #10</u> - Sludge Pits

EPA is requiring additional sampling to 25' in this SWMU (seven borings) to fully characterize any contamination. Monitoring will be required during remediation to document completion of the corrective action plan.

It is reasonable to expect that EPA will require a survey plat of this SWMU after closure.

<u>SWMU #11</u> - Secondary Oil Skimmer

EPA does not approve Giant's proposal for "No Further Action" and is requiring additional sampling to ten feet (two borings). This is a reasonable request.

<u>SWMU #12</u> - Contact Wastewater System

Although onerous, the requirement to inspect the wastewater system every five years is acceptable in that we were not sure if we could get any kind of "Buy In" from EPA. Costs of monitoring this SWMU are therefore significantly less than anticipated.

<u>SWMU #13</u> - Drainage Ditch

Although EPA approves Giant's proposal of "No Further Action", additional requirements have been added. Complete resampling is required biennially. This is redundant and expensive. Even though this SWMU continues to be exposed to wastewater, Giant does not believe there is a significant possibility of migration. Giant should propose a five year sampling schedule or a "Phased-In" rotation of sampling.

A survey plat will be required for this SWMU.

III. Estimation of Expenses

Not normally a consideration of the regulatory community, expense is an indicator to industry of the scope and complexity of regulatory requirements. In providing a cost estimate, we are able to judge the economic impact for our company and determine the extent to which we are willing to contest the requirements issued to us.

The following tables (Tables 3, 4, and 5) illustrate the estimated costs per SWMU (for 1994 and biennially).

Table 3

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1

1994 Analytical Costs

<u>swmu</u>	SAMPLES <u>REQUIRED</u>	ANALYSIS	COST
1	30	8240 8270 Metals	\$ 9,000 14,850 6,900
2	7	8240 8270 Metals pH	1,750 2,765 1,435 70
4	6	8240 8270 Metals pH	1,800 2,970 2,250 60
5	21	8240 8270 Metals	6,300 10,395 4,830
6	8	BTEX	1,000
7	4	TPH Oil & Grease	200 200
8	50	8240 8270	15,000 24,750
10	18	8240 8270 Metals	5,400 8,910 4,140
11	4	8240 8270	1,200 1,980
13	12	8240 8270	3,600 5,940
	Metal	Analytical Cost	

Total Analytical Cost 1994 Only

<u>\$119,245</u>

.

TABLE 4

BIENNIAL ANALYTICAL COST

PLES <u>JIRED</u>	ANALYSIS	COST
80	8240 8270 Metals	\$ 9,000 14,850 6,900
7	8240 8270 Metals pH	1,750 2,765 1,435 70
.2	8240 8270	8,600 5,940
	.2	Metals pH 2 8240 8270

Total Biennial Analytical Cost <u>\$46,310</u>

TABLE 5

TOTAL COST OF 1994 SAMPLING (ESTIMATE)

SWMU #	ANALYTICAL COST	LABOR *	COST
1	\$ 30,750	\$12,600	\$ 43,350
2	6,020	1,100	7,120
4	7,080	3,000	10,080
5	21,525	14,000	35,525
6	1,000	13,200	14,200
7	400	2,200	2,600
8	39,750	21,400	61,160
10	18,450	22,500	40,950
11	3,180	2,000	5,180
13	9,540	2,600	12,140
	\$119,245	<u>\$94,600</u>	<u>\$213,845</u>

* Including Drilling Rig

IV. Conclusions

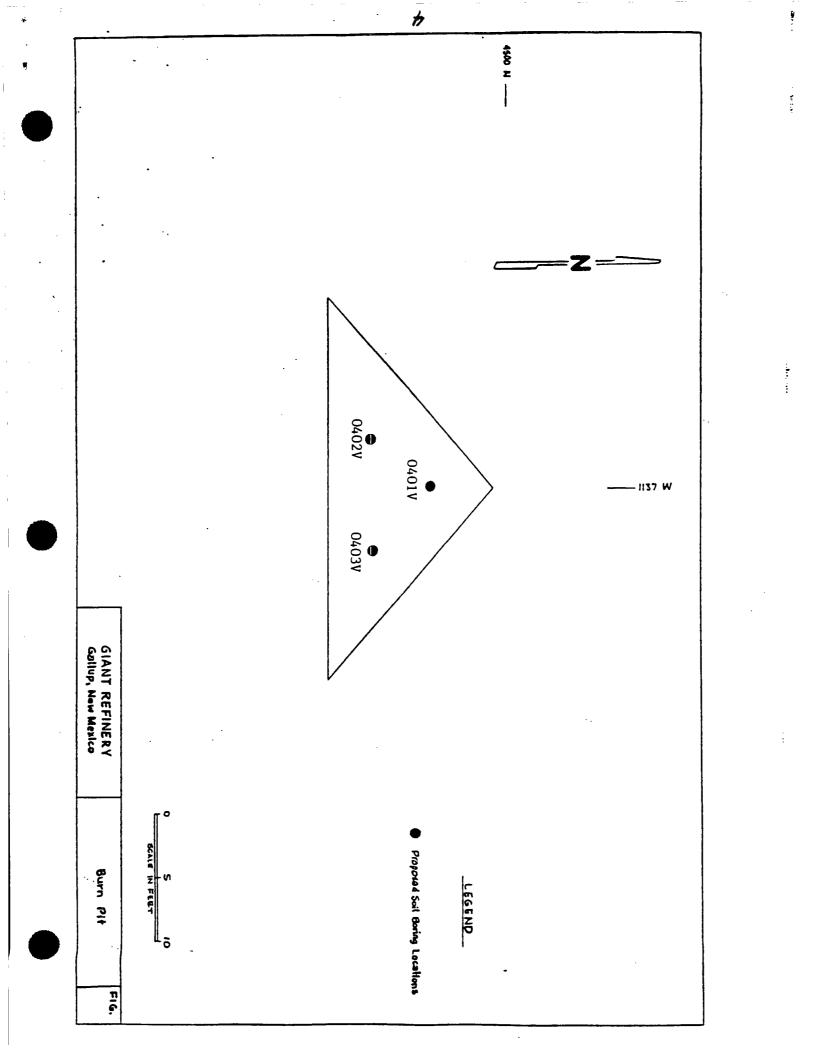
The additional requirements to fully characterize SWMUs #4, 5, 6, 7, 8, 10 and 11 are reasonable. Although expensive, full characterization of potential pollution is the thrust of an RFI project and is Giant's objective.

The biennial sampling requirements for SWMUs #1, 2, and 13 are, in effect, a repeat of the original RFI project every two years. This is redundant, expensive and, in my opinion, unwarranted. In completing the original RFI work, it was demonstrated that SWMUs #1, 2, and 13 pose no threat to human health or the environment. Additional sampling is probably justified, because these SWMUs continue to handle wastewater, but on a smaller scale. I recommend that we propose to do additional sampling every five years on one-third of the sample points, or something of that magnitude. This should be enough sampling to document that there is no contamination.

It is important that we act now to minimize sampling requirements in that we can reasonably assume that as other SWMUs are characterized, additional long term sampling requirements for those SWMUs will be requested. This could be an expensive task that provides minimal protection to the environment.

The actual sampling process should be fairly straight forward. Sampling protocol will be identical to past projects and can be accomplished by refinery personnel. The sampling process needs to be modified to using a drilling rig to take core samples in place of backhoe and hand auger. This change is due to the increased depths of samples, the sheer number of samples to be collected, analyzed and reported during 1994, and the requirement to use more appropriate soil boring logs. Using a drilling contractor will provide the necessary speed of sampling and the lithologic observations necessary to complete this project in a timely and efficient manner.

It is in the best interest of Giant that we develop the proper response to these new requirements. I recommend that we carefully analyze our options in this matter and schedule a meeting with the RCRA staff at EPA to discuss this issue.



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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY



- REGION 6 1445 ROSS AVENUE, SUITE 1200 DALLAS, TX 75202-2733

JAN 7 1994

G JAN 1 2 1994 GIANT REFINING CO. **CINIZA REFINERY**

CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Mr. John J. Stokes, Manager Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

RE: RCRA Facility Investigation (RFI) Phase III Report and Voluntary Corrective Action Plan Giant Refining Co. <u>NMD000333211</u>

Dear Mr. Stokes:

The Environmental Protection Agency (EPA) hereby approves your RCRA Facility Investigation Phase III Report dated November 3, 1992, with the enclosed modifications. The EPA is requiring that additional soil sampling be completed at several sites, including the Landfill Areas, the Old Burn Pit, the Secondary Skimmer, and the Fire Training Area. A supplementary report detailing the results of these sampling activities shall be submitted to the EPA by December 31, 1994.

Additionally, the EPA is approving the voluntary Corrective Action Plan for the Landfill Areas, submitted in March, 1993.

If you have any further questions or need additional information, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

lack Denta

Allyn M. Davis, Director Hazardous Waste Management Division (6H)

Enclosure

cc: Kathleen Sisneros, NMED

APPROVAL WITH MODIFICATIONS GIANT REFINING COMPANY RCRA FACILITY INVESTIGATION PHASE III REPORT AND THE CORRECTIVE ACTION PLAN FOR THE LANDFILL AREAS

The Environmental Protection Agency (EPA) has completed a technical review of your RCRA Facility Investigation (RFI) Phase III Report, dated October, 1992, and your voluntary Corrective Action Plan for the Landfill Area, dated February, 1993. The subject reports are hereby approved with the following comments and modifications.

GENERAL COMMENTS

SWMU 5, The Empty Container Storage Area

The EPA hereby approves the finding of No Further Action (NFA) for Solid Waste Management Unit (SWMU) number three (3), the Empty Container Storage Area. However, this approval is contingent upon the completion of a survey plat for the unit. The survey plat shall be completed in accordance with the procedures outlined in 40 CFR 264.116. Giant shall submit a copy of the survey plat to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for the Empty Container Storage Area.

SWMU 8, The Old Burn Pit

Due to the presence of elevated levels of volatile and semivolatile contaminants in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. All three (3) soil samples taken at the 4.5 foot interval (the deepest interval sampled) contained elevated levels of heavy molecular weight semivolatiles. Additionally, one of the three (3) samples at the 4.5 foot interval also contained elevated BTEX levels. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 11, The Secondary Oil Skimmer

Due to the presence of elevated levels of volatile and semivolatile contaminants in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. One of the two (2) samples taken at the 3.0 foot interval (the deepest interval sampled) contained volatile and semivolatile contaminants. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 4, The Fire Training Area

Due to the presence of elevated levels of oil and grease in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. Two (2) of the four (4) samples

Approval with Modifications, 1/5/93 Giant's RFI Phase III & CAP Reports taken at the 4.5 foot interval (the deepest interval sampled) contained oil and grease above 2,000 ppm. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 7, The Landfill Areas

Because soil borings completed in this unit indicate the presence of waste and metal contamination at depths up to 9.5 feet, the EPA is requiring that additional soil borings be completed at greater depths. These additional soil borings will be installed in order to:

- 1) Verify that saturated zones found in three (3) of the 12 deepest soil boring intervals are isolated and are not connected to the groundwater;
- 2) Ensure that the vertical extent of waste emplacement has been defined;
- 3) Confirm that the vertical extent of metal contamination has been delineated.

Following the completion of the additional soil borings in the Landfill Areas, Giant may proceed with the capping of the landfills as per their voluntary Corrective Action Plan.

MODIFICATIONS

Note:

All referenced sampling points correspond to the previous RFI sampling points completed in May, 1992. Soil boring logs included in future report submittals shall follow the attached example.

SWMU #8, The Old Burn Pit

Giant shall complete soil borings as close as possible to sample points one (1), two (2) and three (3). Sampling intervals shall be at six (6) and (10) feet and must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. Sampling procedures and analytical requirements are identical to those required in the previous RFI. The results of this sampling event shall be submitted to the EPA by December 31, 1994.

SWMU #11, The Secondary Oil Skimmer

Giant shall complete two (2) soil borings within the area occupied by the former Skimmer. All borings must be sampled at the 5-6 foot and 9-10 foot interval. Sampling shall extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures and analytical requirements are identical to those required in the previous RFI. The results of this sampling event shall be due to EPA by December 31, 1994.

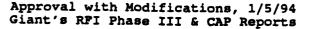
oproval with Modifications, 1/5/94 Giant's RFI Phase III & CAP Reports

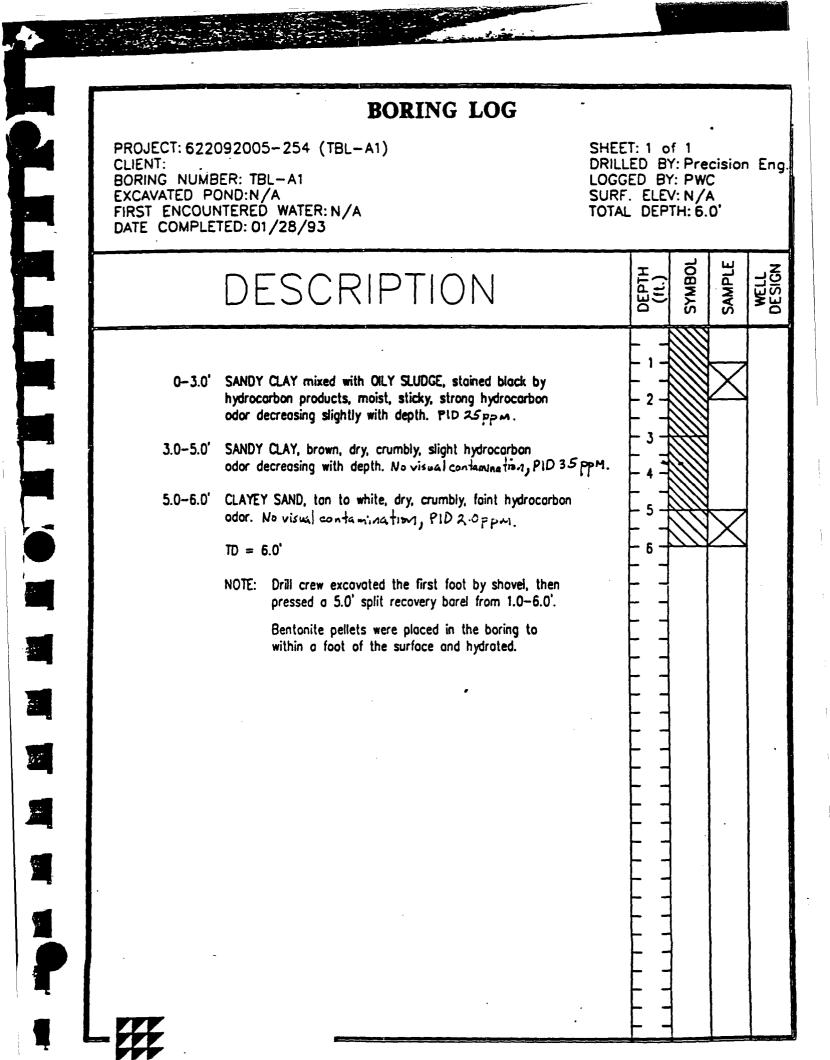
SWMU #4, The Fire Training Area

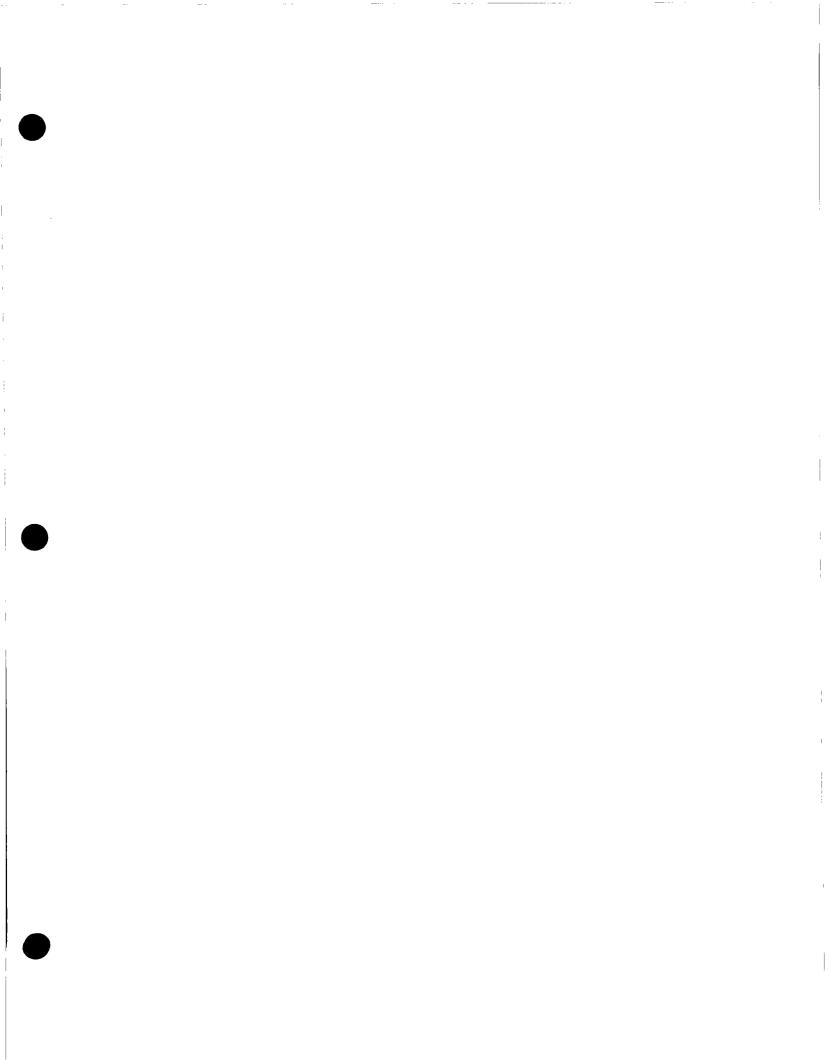
Giant shall complete <u>angled</u> soil borings as close as possible to sample points one (1) and two (2). Sampling intervals shall be at 7 and 11 feet. Sampling must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures shall be identical to those required in the previous RFI. Analytical constituents shall include the Skinner constituents. The results of this sampling event shall be submitted to the EPA by December 31, 1994.

SWMU #7, The Landfill Areas

Giant shall take soil borings as close as possible to sample points two (2) through seven (7), and nine (9). Sampling intervals shall be at 11 feet, 16 feet and 20 feet. Sampling must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures shall be identical to those required in the previous RFI. Giant shall analyze all samples for metals. If volatile or semivolatile contamination is encountered when sampling, then those constituents shall be analyzed also. The results of this sampling event shall be due to EPA by December 31, 1994.







CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Mr. John J. Stokes, Manager Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

RE: RCRA Facility Investigation (RFI) Phase III Report and Voluntary Corrective Action Plan - Giant Refining Co. -NMD000333211

Dear Mr. Stokes:

We hereby approve your Phase III RFI Report dated November 3, 1992, with the enclosed modifications. The voluntary Corrective Action Plan (CAP) for the Landfill Areas (submitted in March of 1993) is also approved.

The Phase III Supplementary Report (additional soil sampling for the Landfill Areas, the Old Burn Pit, the Secondary Skimmer and the Fire Training Area) is due to the Environmental Protection Agency (EPA) by December 31, 1994. If you have any further questions pertaining to the above mentioned items, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

Allyn M. Davis, Director Hazardous Waste Management Division

Enclosure

cc: Kathleen Sisneros, NMED

6h-pn:RM:7442:12/3/93:promo disk:A:rfiIIIG:file

in technical

6h-pn 6h-p 6h Neleigh Honker Morisato

APPROVAL OF THE RFI PHASE III REPORT, WITH MODIFICATIONS, AND APPROVAL OF THE VOLUNTARY CORRECTIVE ACTION PLAN (CAP) FOR THE LANDFILL AREAS FOR GIANT REFINING COMPANY

Below are EPA's general comments and modifications pertaining to Giant's RFI Report and the voluntary CAP for the Landfill Areas. Under general comments, there is a discussion describing the RFI status of each SWMU and the remaining RFI process/requirements for each SWMU. The modifications consist of SWMU specific monitoring or investigations required by EPA.

General Comment: EPA agrees with the finding of no further action for the SWMU #3, the Empty Container Storage Area. Even though EPA is tentatively agreeing with the no further action determination, EPA will require one administrative control for the Empty Container Storage Area. The administrative control shall consist of: a survey plat of the SWMU, according to the procedures required in 40 CFR 264.116. Once Giant has sent documentation to EPA verifying completion of the administrative control, Giant may submit a Class III permit modification to terminate the RFI/CMS process for the Empty Container Storage Area.

On SWMU #4; the Old Burn Pit, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, all 3 samples taken at the 4.5 foot interval (the deepest interval sampled) contained elevated levels of heavy molecular weight semivolatiles. One of the three samples at the 4.5 foot interval also contained elevated BTEX levels. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #11, the Secondary Oil Skimmer, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, one of the two samples taken at the 3 foot interval (the deepest interval sampled) contained volatiles and semivolatiles. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #7, the Fire Training Area, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, 2 of the 4 samples taken at the 4.5 foot interval (the deepest interval sampled) contained oil and grease above 2000 ppm (detection limit is <10 ppm). Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #5, the Landfill Areas, EPA believes that additional deeper borings are needed to: 1) verify that saturated zones found in 3 of the 12 deepest soil boring intervals are isolated and are not connected to the groundwater; 2) ensure that the vertical delineation of waste emplacement has been identified (soil boring logs indicate waste at the 8-9'zone, the deepest samples were taken at 9.5'); and, 3) ensure that the vertical extent of metal contamination has been identified (some of 9.5' samples had elevated metal levels. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

After Giant has completed the additional sampling requirements for the Landfill Areas, they then may proceed with the capping of the landfills under the voluntary Corrective Action Plan.

Modifications

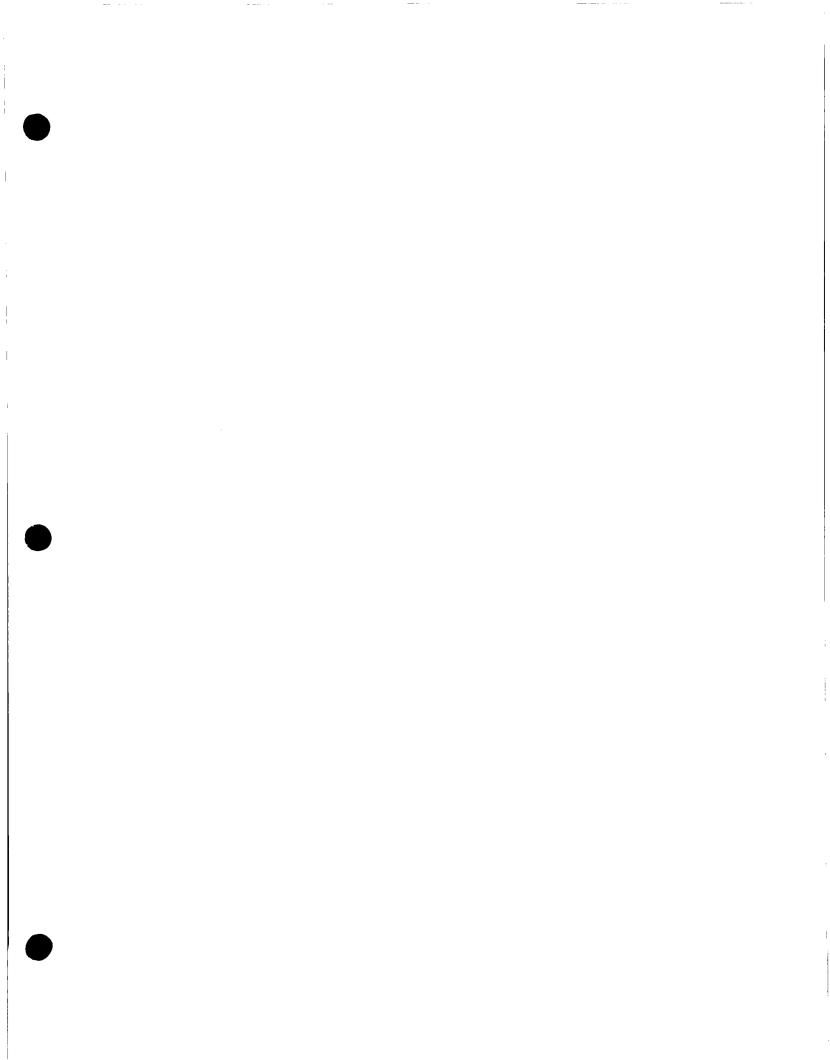
SWMU #4, the Old Burn Pit: Giant shall take soil borings as close as possible to the following sample points (numbers are from previous RFI sampling points, done May of 1992): number's 1, 2, and 3. Sampling intervals shall be at 6 and 10 feet. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by December 31, 1994.

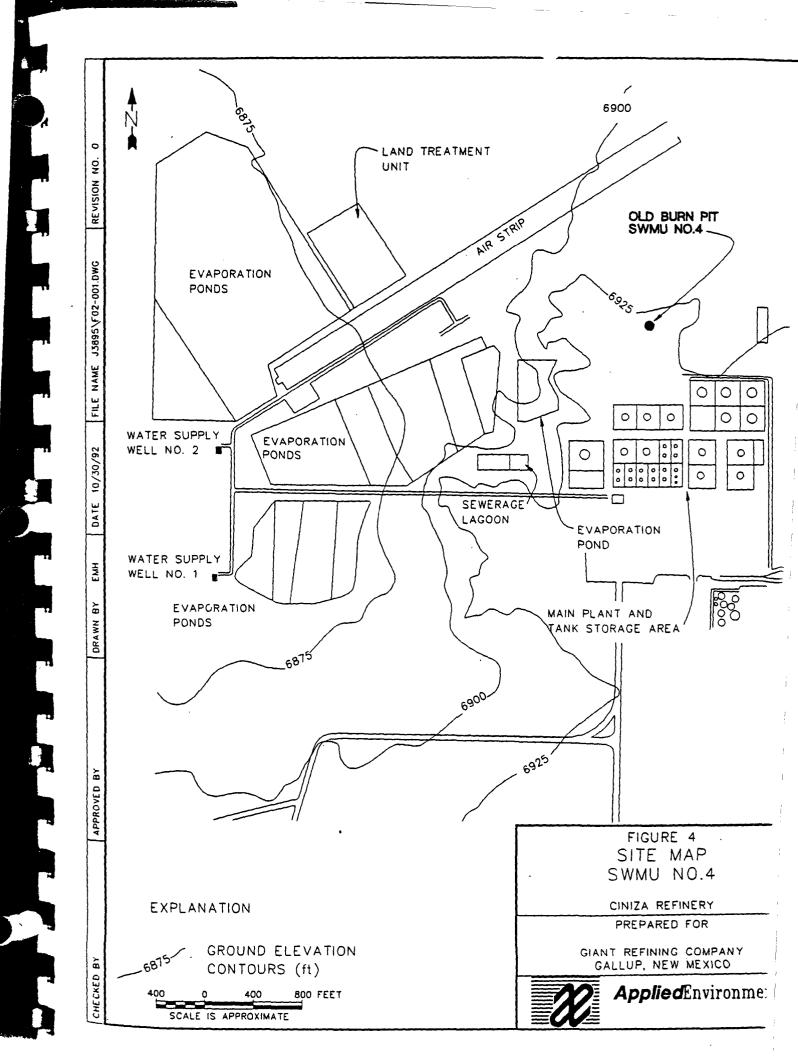
SWMU #11, the Secondary Oil Skimmer: Giant shall take 2 soil borings within the area occupied by the former Skimmer. All borings must be sampled at the 5-6 foot and 9-10 foot interval. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. The results of this sampling event shall be due to EPA by December 31, 1994.

SWMU #7, the Fire Training Area: Giant shall take soil borings as close as possible to sample points number 1 and 2 (numbers are from previous RFI sampling points, done in May of 1992). Sampling intervals shall be at 7' and at 11'. Sampling procedures shall be identical to those required in the previous RFI, except, that all soil borings shall be angled. Constituents to be analyzed shall include the Skinner constituents. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by December 31, 1994.

SWMU \$5, the Landfill Areas: Giant shall take soil borings as close as possible to the following sample points (numbers are from previous RFI sampling points, done in May of 1992): number's 2, 3, 4, 5, 6, 7, and 9. Sampling intervals shall be at 11', 16' and 20'. Sampling procedures shall be identical to those required in the previous RFI. Giant shall analyzed the samples for metals. If volatile or semivolatile contamination is encountered when sampling, then those constituents shall be analyzed also. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by December 31, 1994.

soil Boring Logs: EPA has included an example of a soil boring log which they would like Giant to use in all future borings.





APPLIED EARTH SCIENCES

RELEASE VERIFICATION

SWMU: Burn Pit

LOCATION: Figure 1, No. 2

Release verification was accomplished by a complete review of the facility records to determine if a release has occurred. In addition, plan personnel were interviewed and the area was inspected to check for a release.

At the Burn Pit area no known release has occurred.

APPLIED EARTH SCIENCES

UNIT AREA CHARACTERISTICS

TYPE OF UNIT: Burn Pit

LOCATION OF UNIT: Figure 1, No. 7

DESIGN FEATURES: 20 feet x 40 x 20 feet (triangular) 10 - 12 feet deep

OPERATING PRACTICES (PAST AND PRESENT):

An old metal box uphill from the pit was used in the past to feet oil through a metal pipe in the burn pit. The area was then covered with soil.

PERIOD OF OPERATION: 1958 - 1976

AGE OF UNIT: 18 Years

GENERAL PHYSICAL CONDITIONS:

The soil was not discolored and no vegetation was growing in the area.

METHOD USED TO CLOSE THE UNIT:

Closure procedures are not completely documented. Some soil was placed in the pit after 1976. **Applied Earth Sciences**

WASTE CHARACTERIZATION

TYPE OF UNIT: Burn Pit

LOCATION OF UNIT: Figure 1, No. 7

TYPE OF WASTE PLACED IN UNIT:

Acid soluble oils from the alkylation unit; possibly spent silicon oxide catalysts

APPROXIMATE QUANTITY MANAGED:

- Acid Soluble Oils: 500 barrels/year

PHYSICAL AND CHEMICAL CHARACTERISTICS:

Organics and heavy metals.

MIGRATION AND DISPERSAL CHARACTERISTICS:

The potential for contamination exists in the soil where the wastes were burned.

SWMU # 3 - EMPTY CONTAINER STORAGE AREA PARAMETERS - \$240 PRIORITY POLLUTANTS IZ SAMPLES

SWMU # 4 - BURN PIT

92

9 SAMPLES

SUMU #5- FOUR LAND FILLS PARAMETERS - 8240 PRIORITY POLLUTANTS BACKGROUND METALS

ρH

48 SAMPLES

SWMU #7 - FIRE TRAINING AREA

PARAMETERS - TPH

OIL & GREASE

12 SAMPLES

SWMU # 11 - SECONDARY OIL SKIMMER & ASSE DITCH PARAMETERS - SKINNER LIST (CONSTITUENTS) 4 SAMPLES

S5 INDIVIDUAL SAMPLES



fam

THIS COPY OF MY LETTER TO KAREN LISTS THE SPECIFIC ANALYSIS 13Y SWMU.

January 15, 1992

Karen Lofquist Westech Laboratories 3737 East Broadway R Phoenix, Arizona 8

Dear Karen:

In anticipation of the May, 1992 RCRA Facility Investigation (RFI) at Giant's Ciniza Refinery, I am requesting a cost proposal for the following analytical work:

SWMU #3 8240 Priority Pollutants

SWMU #4 pH Skinner List Organics Background Metals

SWMU #5 pH 8240 Priority Pollutants Background Metals

SWMU #7 Total Petroleum Hydrocarbon (TPH) Oil and Grease

SWMU #11 Skinner List Organics 12 Samples 1 Duplicate 1 Trip Blank

9 Samples 1 Duplicate 1 Trip Blank ~1 Equipment Wash

48 Samples

- 3 Duplicates
- 2 Trip Blanks
- 2 Equipment Washes
- 12 Samples 1 Duplicate
- 1 Trip Blank

4 Samples

1 Duplicate

1 Equipment Wash

Giant will require ice chests, bottles, labels and seals, chain of custody and a copy of your quality assurance/quality control documentation.

Please submit your proposals to my office no later than February 29, 1992. If you have any questions, please contact me at (505) 722-0227.

Sincerely,

Lynn Shelton

Lynn Shelton Environmental Assistant Ciniza Refinery

TLS:sp

KAREN-

I'VE ATTACHED LISTS OF SPECIFIC CONSTITUENTS FOR THE SKINNER LIST, PRIORITY POLLUTANTS, AND BACK GROUND METTALS.

TAANKS-Lym



Route 3. Box 7 Gallup, New Mexico 87301

505 722-3833

June 9, 1992

Barbara Rutten Marketing Director Westech Laboratories 3737 East Broadway Road Phoenix, Arizona 85040

Re: RFI Phase III Background Metals

Dear Barbara:

With our submittals of soils for analysis, Giant requested analysis of only four of the listed metals for SWMU's #4 and #5 pending approval from the U.S. EPA Region VI.

Giant has received permission to analyze for an abbreviated list of background metals to include:

Arsenic Barium Beryllium Cadmium Chromium Lead Nickel Vanadium

* Mercury

* Indicates metals already analyzed

Giant requests that Westech Laboratories analyze the soil samples you are holding in cold storage (SWMU #4 and #5) for the balance of the metals on this abbreviated list.

Specific sample numbers to be analyzed are:

RFI0401V0.0	RFI0503D9.5	RFI0590V0.0
RFI0401V3.0	RFI0504V0.0	RFI0509V3.0
RFI0401V4.5	RF10504V3.0	RFI0509V7.0
RFI0402V0.0	RFI0504V7.0	RFI0509V9.5
RFI0402V3.0	RFI0504V9.5	RFI0510VO.O
RFI0402V4.5	RFI0505V0.0	RF10510V3.0

A Division of Giant Industries, Inc.



RFI0403V0.0	RFI0505V3.0	RFI0510V7.0
RFI0403V3.0	RFI0505V7.0	RFI0510V9.5
RFI0403V4.5	RFI0505V9.5	RFI0511VO.0
RFI0501V0.0	RF10506V0.0	RFI0511V3.0
RFI0501V3.0	RFI0506V3.0	RFI0511V7.0
RFI0501V7.0	RF10506V7.0	RFI0511V9.5
RFI0501V9.5	RFI0506V9.5	RFI0512VO.0
RFI0501D9.5	RFI0507V0.0	RFI0512V3.0
RFI0502V0.0	RFIOSO7V3.0	RFI0512V7.0
RFI0502V3.0	RFI0507V7.0	RFI0512V9.5
RFI0502V7.0	RFI0507V9.5	RFI0512D9.5
RFI0502V9.5	RFI0507D9.5	
RFI0503V0.0	RFI0508V0.0	
RFI0503V3.0	RFI0508V3.0	
RFI0503V7.0	RFI0508V7.0	
RFI0503V9.5	RFI0508V9.5	
	RFI0508D9.5	

If you require additional information about this analysis, please contact mat at (505) 722-0227.

Sincerely,

Lyn Shelto

Lynn Shelton Environmental Assistant Ciniza Refinery

TLS:sp

RFI WORKPLAN PHASE III 1992

May 4, 1992	av 4, 1992
-------------	------------

Training 8:00 - 4:15 Load Equipment SWMU Site Tour

May 5, 1992

SWMU #4 Burn Pit 9 Samples

May 6, 1992

SWMU #3 Empty Container Storage 12 Samples

May 7, 1992

SWMU #	7	Fire Train	ning	Area	12	Samples
SWMU #	11	Secondary	Oil	Skimmer	4	Samples

<u>May 8, 1992</u>

SWMU #5	Land Fill Area	. •	48 Samples
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May 11, 1992

Continue SWMU #5 48 Samples

May 12, 1992

Continue SWMU #5

48 Samples

May 13, 1992

Begin set-up for sewer line inspection Expect one week to complete

DATA MANAGEMENT

Sample Location:	Sample Date: 5-5-92
Sample Type: <u>SOIL</u>	
Team Leader: <u>L. SHELTON</u>	
Sample Personnel: <u>M BACNET, T, R</u>	DUERS
Sampling Method:AVGE1	
Sample No. <u>Produito</u> Sample Time/Description: <u>j</u>	20Pm CLAY
Sample No. <u>REIONOLVI</u> O Sample Time/Description:	1;35?m
Sample No <i>LF LotolV 1.5</i> Sample Time/Description:	
Sample No Sample Time/Description:	
Sample No Sample Time/Description:	
Surface Terrain: <u>SLOPED</u> BAREN G	ROUNS
Weather Conditions: <u>OVERCAST</u> , OCCA <u>65°F</u> ENE WIND COSTOMPH	SIONAL SPRIJKLAS,
General Field Observations: <u>SMOKE FROM</u> <u>AREA HIT AROUT 9:49 F</u> <u>4 NA LASTES FOR IZ MINU</u> <u>WENT UP DN DUTSIDE AIR</u>	MINHUE AVGERING
Boring Lithology: <u>O-1' 5.4NOY CLAY TU</u>	
RED CLAY. 1-2' VERILATED LLAY. 2-2 ROCK T BAKED CLAY. 2.5'-4.5 DED	

DATA MANAGEMENT

1

Sample Location: <u>SWMU</u> S	ample Date: <u>5-5-97</u>
Sample Type:	
Team Leader: <u>L. SHELTUN</u>	
Sample Personnel: M. BAENEY T. ROL	ERS
Sampling Method:AVYER	
Sample No. <u>RFF0407</u> VoSample Time/Description: _/C;)	DAM DRY SOIL PID-Q
Sample No. <i>LF_04c1V3</i> , Sample Time/Description: _//// 	OAM BLACKLAYER
Sample No.RFT0401445Sample Time/Description: 1"0 PID-4 007	D S.Y. SAMPLE
Sample No Sample Time/Description:	
Sample No Sample Time/Description:	
Surface Terrain: <u>STEEP SLOPE</u> MOSTL Choult TO 15 ft	Y RAKE OCCASIONAL
Weather Conditions: <u>DARTEY</u> SUNAY, 70°F WIND	+ 10-15 MpH EAST
General Field Observations: <u>STRICT ATTENTION</u> <u>DECONTAMINATION</u> , ALL PIO READINGS	PAID TO PROFER CO-200 RANGE
BLACK LAYER REQUIRED STEAMING, SO AND THEN REGULAR WASHING AND DEC	WENT, STEAMANG AGAIN
Boring Lithology: <u>D-1' - LODSE SAME</u> REDDISH BROWN TURNING TO RED LI	
LOLOR VERIGATION FROM LOCKS. 6 SEMI-BRITTLE SOLID WISOME TAR LIKE M	LACK LAYER @ 20". MATERIAL TO 29", 39"
MOIST (LAY WISOME GRAY COLOR &	Spme SAND

DATA MANAGEMENT

Sample Location:	Sample Date: 5-5-92.
Sample Type:	
Team Leader:	-
Sample Personnel: M. BARNEY T. ROG.	ERS
	,
	<u></u>
Sampling Method:AVGER	
Sample No. <u><i>PFD</i>403VD</u> .0Sample Time/Description:	2:05 PM SUIL 21D 0
Sample No. <u>A. H. O. Y.</u> OSample Time/Description:	
Sample No. <u><i>LEI0103 W</i>/</u> Sample Time/Description:	
Sample No Sample Time/Description:	
Sample No Sample Time/Description:	
Surface Terrain: <u>BRUKEN TERRAIN, 50</u>	PARSE VEGETATION
Weather Conditions: <u>OVERCAST, OCCAS</u> <u>E WIND & 5.10 mpH. 60°E</u>	SIONAL SPRINKLES,
General Field Observations: <u>SPENT FCC CA</u> <u>THE LOWLYING AREA AND WAS</u> <u>REVEAL ORIGINAL SURFACE FOR</u> <u>THE BLACK LAVER REQUIRED STEAM</u> <u>AND THEN REGULAR WASHING TO C</u> <u>EQUIRMENT CLEAN</u>	SCRAPED BACK TO SAMPLING, MING, SCLVENT, STEAMING,
Boring Lithology: <u>0-1' REDYGRAY</u> <u>SPENT CATALYST FROM DISPOSAL ALL</u> <u>JITH CAMPLE, 1'-2' VERICATED</u> <u>ORANGE-RUSTY CLAY</u> , 2.5'-2,25' <u>TAL LIKE MATERIAL</u> , MIXED BLACK <u>SDLID SANDSTONE</u>	EA BLANN IN AND MIXED LED SOIL . 2-2,5' BLACK LAYER WISOME

Revision Date 12/15/89

REMARKS

TABLE 2

Field Equipment Checklist Soil and Sludge Sampling

5-5-92

ITEM

PID Meter Site Specific SWMU Work Plan Generic Sampling Plan Site Map With Sample Locations Sample Bottles Ice Chests Trip Blanks Methanol ProvPANOL Deionized Water Squeeze Bottles Personal Protective Equipment Chain of Custody and Sample Record Forms Plastic Bags (To provide clean surfaces)

Personal Protective Equipment Chain of Custody and Sample Record Forms Plastic Bags (To provide clean surfaces) Disposable Gloves Paper Towels Tape (For labels and dispenser) Sharpie, Pens, Pencils Blue Ice or Ice

Zip-Lock Bags, 1 Gallon

JIS

PHASE III, RFI 1992 GIANT REFINING CINIZA

.

SOLID WASTE MANAGEMENT UNIT #4- "Old Burn Pit"

Total Metals

SAMPLE POINT SAMPLE DEPTH (feet)		01 V0.0'	01 V3.0'	01 V4.5′	02 ¥0.0'	02 V3.0'	02 V4.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Arsenic	ng/kg	ND	MD	ND	ND	ND	ND
Barium	mg/kg	380	1300	900	480	360	160
Beryllium	mg/kg	ND	ND	ND	ND	ND	ND
ladmium	ag/kg	ND	ND	ND	ND	ND	ND
Chromium	ng/kg	9.8	15	6.2	10.0	3.2	17
Lead	mg/kg	9.5	12	10	13.0	16.0	11
lercury	ng/kg	ND	ND	ND	ND	ND	ND
lickel	ag/kg	11	12.0	9.1	11	6.3	17
Vanadium	mg/kg	7.9	9.0	6.8	11	ND	5.7

Total Metals

SAMPLE POINT		03	03	03
SAMPLE DEPTH (feet)		V0.0'	¥3.0'	¥4.5
PARAMETER	UNITS	RESULT	RESULT	RESUL
Arsenic	ng/kg	ND	ND	ND
Barium	mg/kg	120	290	110
Beryllium	ng/kg	ND	ND	ND
Cadmium	ng/kg	ND	ND	ND
Chromium	mg/kg	19	15	20
Lead	mg/kg	30	27	. 18
Hercury	mg/kg	ND	ND	ND
Nickel	ng/kg	20	21	36
Vanadium	ng/kg	58	SЮ	29

PHASE III, RFI 1992 GIANT REFINING CINIZA

SOLID WASTE MANAGEMENT UNIT #4- "Old Burn Pit"

8240-Volatile Organics

SAMPLE POINT		01 V0.0'	01 V3.0'	01 V4.5'	02 V0.07	02 V3.0'	02 ¥4.5′
SAMPLE DEPTH (feet)							
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND	ND	NO
2-Chloroethylvinyl Ether	ug/kg	ND	ND	ND	ND	ND	ND
Benzene	ug/kg	ND	ND	ND	ND	ND	ND
foluene	ug/kg	ND	ND	ND	ND	70	ND
Ethyl Benzene	ug/kg	ND	ND	ND	ND	1000	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND
Total Xylenes	ug/kg	ND	ND	ND	ND	2100	ND
lethyl Ethyl Ketone	ug/kg	ND	ND	ND	ND	ND	ND
,2-Dibromoethane	ug/kg	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ug/kg	ND	ND	ND	ND	ND	ND
,4-Dioxane	ug/kg	ND	ND	ND	ND	ND	ND
tyrene .	ug/kg	ND	ND	ND	ND	420	ND



SAMPLE POINT		03	03	03	
SAMPLE DEPTH (feet)		V0.0'	¥3.0'	V4.5'	
PARAMETER	UNITS	RESULT	RESULT	RESULI	
1,2-Dichloroethane	ug/kg	ND	ND	ND	
2-Chloroethylvinyl Ether	ug/kg	ND	ND	ND	
Benzene	ug/kg	ND	ND	ND	
Toluene	ug/kg	ND	67	87	
Ethyl Benzene	ug/kg	ND	910	510	
Chlorobenzene	ug/kg	ND	ND	50	
Total Xylenes	ug/kg	ND	2200	1100	
Methyl Ethyl Ketone	ug/kg	ND	ND	ND	
1,2-Dibromoethane	ug/kg	ND	ND	ND	
Carbon Disulfide	ug/kg	ND	ND	ND	
L,4-Dioxane	ug/kg	ND	ND	ND	
Styrene	ug/kg	ND	ND	ND	

SOLID WASTE MANAGEMENT UNIT #4- "Old Burn Pit"

8270-Semi-Volatiles

SAMPLE POINT SAMPLE DEPTH (feet)		01 V0.0'	01 V3.0'	01 V4.5'	02 V0.0'	02 V3.0'	02 V4.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Phenol	ug/kg	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND
2-Methylphenol	ug/kg	ND	ND	ND	ND	ND	ND
3-Methylphenol	ug/kg	ND	ND	ND	ND	ND	ND
4-Methylphenol	ug/kg	ND	ND	СИ	ND	ND	ND
2,4-Dimethylphenol	ug/kg	ND	ND	ND	ND	ND	ND
Naphthalene	ug/kg	ND	ND	ND	ND	520	DK
Dimethyl phthalate	ug/kg	ND	NÐ	ND	ND	ND	890
2,4-Dinitrophenol	ug/kg	ND	ND	ND	ND	ND	ND
4-Nitrophenol	ug/kg	ND	ND	ND	ND	ND	ND
Diethyl phthalate	ug/kg	ND	ND	ND	300	ND	ND
Phenanthrene	ug/kg	ND	ND	ND	ND	670	ND
Anthracene	ug/kg	ND	ND	ND	ND	ND	ND
Di-n-butyl Phthalate	ug/kg	1500	2700	1300	3000	ND	1800
Flouranthene	ug/kg	ND	ND	ND	ND	ND	ND
Pyrene	ug/kg	ND	ND	ND	ND	ND	ND
Butyl benzo phthalate	ug/kg	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	ug/kg	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	ug/kg	ND	ND	ND	400	ND	ND
Chrysene	ug/kg	ND	ND	ND	ND	ND	ND
Di-n-octyl phthalate	ug/kg	ND	ND	ND	ND	ND	ND
Benzo(b)flouranthene	ug/kg	ND	ND	ND	ND	ND	ND
Benzo(k)flouranthene	ug/kg	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	ug/kg	ND	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	ug/kg	ND	ND	ND	ND	ND	ND
Dibenzo(a,j)acridine	ug/kg	ND	ND	ND	ND	ND	ND
7,12-Dimethylbenz(a)anthracene	ug/kg	ND	ND	ND	ND	ND	ND
Indene	ug/kg	ND	ND	ND	ND	ND	ND
Methylchrysene	ug/kg	ND	ND	ND	ND	ND	ND
Pyridine	ug/kg	ND	ND	ND	ND	ND	ND
Quinoline	ug/kg	ND	ND	ND	ND	ND	ND
Benzenethiol	ug/kg	ND	ND	ND	ND	ND	ND
1-Methylnaphthalene	ug/kg	ND	ND	ND	ND	ND	ND





SOLID WASTE MANAGEMENT UNIT #4- "Old Burn Pit"

8270-Semi-Volatiles

SAMPLE POINT SAMPLE DEPTH (feet)		03 V0.0'	03 V3.0'	03 V4.5'
PARANETER	UNITS	RESULT	RESULT	RESULT
Phenol	ug/kg	ND	ND	ND
1,3-Dichlorobenzene	ug/kg	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	ND	ND	ND
1,2-Dichlorobenzene	ug/kg	ND	ND	ND
2-Methylphenol	ug/kg	ND	ND	ND
3-Methylphenol	ug/kg	ND	ND	ND
4-Methylphenol	ug/kg	ND	ND	ND
2,4-Dimethylphenol	ug/kg	ND	ND	ND
Naphthalene	ug/kg	ND	ND	ND
Dimethyl phthalate	ug/kg	ND	18000	18000
2,4-Dinitrophenol	ug/kg	ND	ND	ND
4-Nitrophenol	ug/kg	ND	ND	ND
Diethyl phthalate	ug/kg	ND	ND	ND
Phenanthrene	ug/kg	ND	ND	ND
Anthracene	ug/kg	ND	ND	ND
Di-n-butyl Phthalate	ug/kg	430	ND	ND
Flouranthene	ug/kg	ND	ND	ND
Pyrene	ug/kg	ND	ND	ND
Butyl benzo phthalate	ug/kg	ND	ND	ND
Benzo(a)anthracene	ug/kg	ND	ND	ND
Bis(2-ethylhexyl) phthalate	ug/kg	ND	ND	ND
Chrysene	ug/kg	ND	ND	ND
Di-n-octyl phthalate	ug/kg	ND	ND	ND
Benzo(b)flouranthene	ug/kg	ND	ND	ND
Benzo(k)flouranthene	ug/kg	ND	ND	DM
Benzo(a)pyrene	ug/kg	ND	ND	ND
Dibenzo(a,h)anthracene	ug/kg	ND	ND	ND
Dibenzo(a,j)acridine	ug/kg	ND	ND	ND
7,12-Dimethylbenz(a)anthracene	ug/kg	ND	ND	ND
Indene	ug/kg	ND	ND	ND
Methylchrysene	ug/kg	ND	ND	ND
Pyridine	ug/kg	ND	ND	ND
Quinoline	ug/kg	ND	ND	ND
Benzenethiol	ug/kg	ND	ND	ND
1-Nethylnaphthalene	ug/kg	ND	ND	ND

SOLID WASTE MANAGEMENT UNIT #4- "Old Burn Pit"

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SAMPLE POINT SAMPLE DEPTH (feet)		01 V0.0'	01 V3.0'	01 V4.5'	02 V0.0'	02 V3.0'	02 V4.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
рН	S.U.	7.5	7.2	7.8	8.1	2.2	7.3

pН

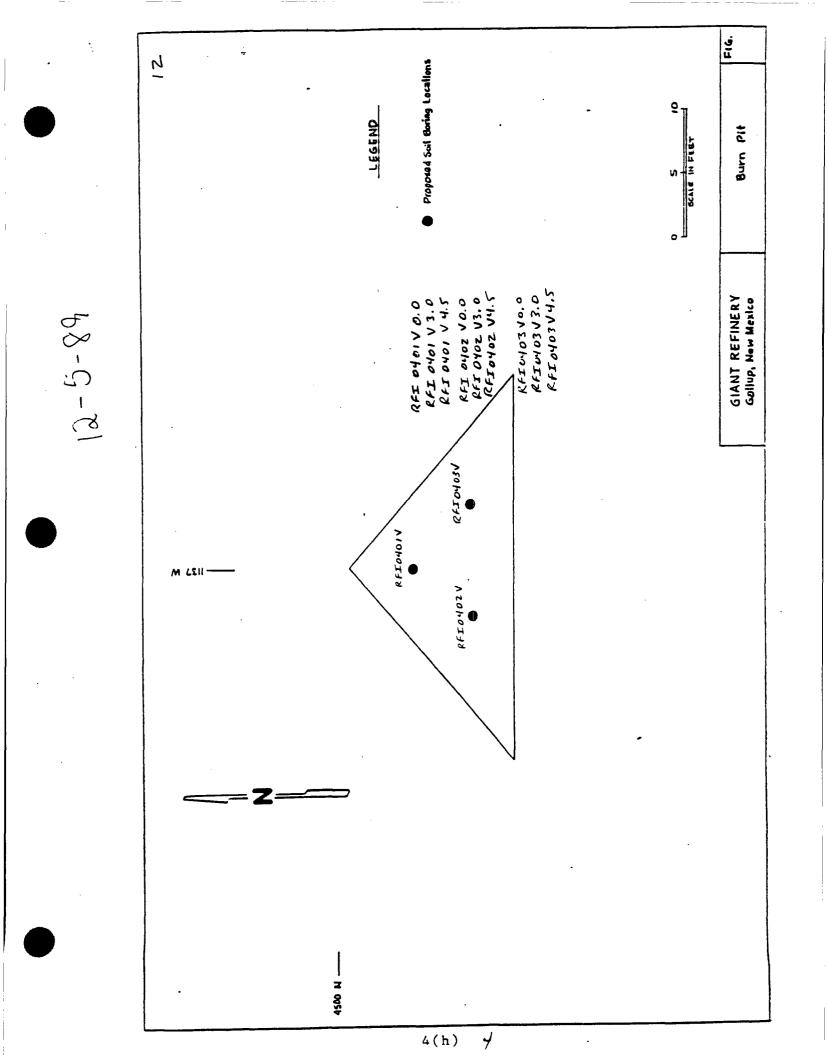
SAMPLE POINT		03	03	03
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT
Ы	. S.U.	2.2	7 1	4.2

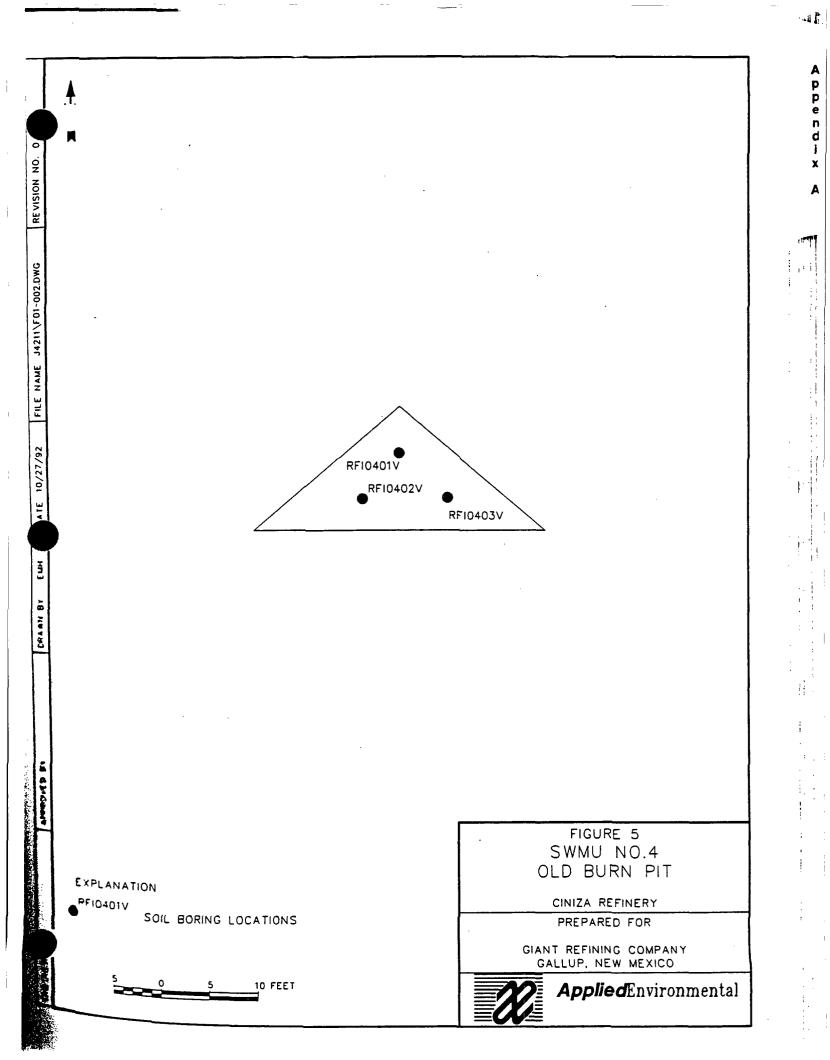
RELINQUISHED BY ISIG 9 (2) • White (1) along the providence for	RELINQUISHED BY (SIGNATURE)	2 64 (Travel Blank	RFE 0403 145 5-5 3:35	RFI0403 V3.0 5.5 3:20	RFT0403 10.0 5-5 3:05	RETOYOZVY,5 5-5 1:00	RFI0402V3.0 5-5 11:10	RECENDING S-5 10:50	REE0401 V45 5-5 2:50	REI040143.0 5-5 2:35	RFICTO1 VO.05-5 1:20	IDENTIFICATION DATE TIME	Spm Shelto LYNN		SAMPLER (SICINATIONE)	riagstaff • 2400 E. Huntington Dr. • AZ 86004 • (602) 774-8708 • fax 774-6469 El Paso • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-35	Phoenix • 3737 E. Broadway Rd. • AZ 85040 • (602) 437-1080 • fax 437-8706	Inc.	Westech Laboratories
RECEIVED BY(SIGNATURE) Prenardmont Lab. File: Pink - Client	RECEIVED BY (SICNATURE)	Balan Setter									PIT	BURN	010		SAMPLE LOCATION	SHELTON	סראורובא ודובראב דאוועון		4 • (602) 774-8708 • fax 774-6469)35 • (915) 592-3591 • fax 592-3594	• (602) 437-1080 • fax 437-8706	,	ries (49.7
						-				 					CO GR/		TE]	5		2	
						6	n	S	5	S	5	S	S	5	<u> </u>	APLE T	YPE	•	505	GIAN	CLIENT	HA
DATE	DATE	She h					-	-	-	-	1	1	-	-	NUI	MBERC	OF RS	REFE	P	4		Chain of Custody Record
	TIME			1		×	<u> </u>	×	×	×	×	+	ア	×				REFER TO FEE SCHEDULE	722	RE		Q
		18				×.	×	×	7	×	X	\times	<u>×</u>	×	6	F.	REQUESTED	FEE		REFINING CO.		Ô
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							METALS.	BACKGROUND	AND	SKINNER LIST	TUENTS 0	1	SEE ATTACHED		COMMENTS		6- ^m	FOR ANALYSES SELECTION •	Ħ	GALLUP, NM	Box7	Ð
					9206655	9206654	9206653	9206652	9206651	9206 laso	6 HOPORD =	84990066	9206647	9206646	I ABORATORY SAMPLE IDENTIFICATION NUMBER	TRAVEL BLANK FIELD BLANK	ODES		KUB/FO. NO.			

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.1.2 <u>Results</u>

Of the 46 VOCs analyzed using EPA Method 8240, nine were detected in soil collected from the empty container storage area (Table 5.1.2.1). All of the compounds detected were present in surface soil and included: 1,1,1-Trichloroethane; tetrechloroethene; 1,1-Dichloroethane; acetone; benzene; ethylbenzene; styrene; trichloroethene; and total xylenes. Most of the VOCs detected occurred in the surface soil collected from Boring No. 1, located in the northeast corner of the empty container storage area. VOCs were not detected in soil collected from depths of 3 and 4.5 ft in any of the borings. T a

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e

PID measurements of volatile organic concentrations were relatively highest in surface soil collected at Boring No. 1 (3.2 parts per million, ppm). PID measurements in the remaining soil samples were at or below background levels.

5.1.3 <u>Recommendations</u>

elatively low concentrations of VOCs detected in surficial soil analyzed from the empty container storage area and the absence of VOCs at depth suggest that no corrective action is required. VOC concentrations in surficial soils could be reduced by disking or tilling to promote aeration, volatilization, and natural degradation of the organics. A corrective action plan for SWMU No. 3 will be developed and submitted for approval.

5.2 SWMU NO. 4 OLD BURN PIT

SWMU No. 4 consists of the old burn pit located just north of the inactive container (Figure 4). The old burn pit was used to burn acid-soluable oils (ASO). ASOs are a heavy molecular weight, asphalt-type cross polymerized hydrocarbon. The landfills have been inactive since the early 1980s.

5.2.1 Methods

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sual description of the soil types encountered during augering was recorded on the data management forms. Field headspace measurement of volatile organic concentrations in each soil sample were made with a PID and these data were also recorded on the data management forms. · i 🛛 🕷

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The soil samples were collected directly into laboratory-supplied containers, labeled, and placed into a cooler chilled to approximately 4 °C for shipment to Westech in Phoenix, Arizona under COC. Samples were collected, labeled, and shipped as required by Sections 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All augers and sampling equipment were decontaminated prior to each use with a steam cleaner as outlined in Section 5.0 of the Generic Sampling Plan.

Westech analyzed each of the soil samples collected for: VOCs using EPA Method 8240; semivolatile organic compounds (SVOCs) using EPA Method 8270; total metals; and pH. Analytical results are summarized below and are also presented in the Appendices.

5.2.2 <u>Results</u>

The VOCs toluene, ethylbezene, xylene (TEX), and styrene were detected in soil samples analyzed from Borings No. 2 and 3 at depths of 3 and 4.5 ft (Table 5.2.2.1). VOCs were not detected in soils collected from Boring No. 1 or in any of the surface soils. Total TEX concentrations in these three samples ranged from 1,700 to 3,170 micrograms per kilogram $(\mu g/kg)$. Styrene was detected in the soil sample collected from a depth of three ft in Boring No. 2. No other VOCs were detected in any of the soil samples analyzed from the old burn pit.

Five SVOCs were detected in the soils analyzed, including: napthalene; Dimethyl phthalate; phenanthrene; Di-n-butyl phthalate; and Bis(2-ethylhexl) phthalate. Of these, Di-n-butyl phthalate was the most widespread, comprising 1,300 to 3,000 μ g/kg in five of the nine soil samples collected at depths ranging from the ground surface to 4.5 ft. Dimethyl phthalate the most concentrated SVOC detected, comprising 18,000 μ g/kg in the 3 and 4.5 ft samples collected from Boring No. 3. A headspace measurements of volatile organic vapor concentrations made with the PID ranged from 3 to 16 ppm in soil collected from depths of 3 to 4.5 ft at Borings No. 2 and 3. These field PID measurements correspond with analytical detections of VOCs and SVOCs at these locations. PID measurements were at background levels in all surface soils and in those examined from Boring No. 1. Т

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Barium, chromium, lead, nickel, and vanadium were detected in concentrations that exceeded background levels for soil in the Ciniza Refinery area (Table 5.2.2.2). Chromium exceedances were detected in 7 of 9 samples, ranging from 20 to 140% above background levels. Nickel concentrations in 4 of 9 samples ranged from 36 to 188% above background levels. Barium exceedances were detected in 3 of 9 samples, ranging from 17 to 200% above background concentrations. Vanadium and lead exceedances were detected in 2 of 9 samples. In general, the metals exceedances were evenly distributed with depth. Arsenic, beryllium, cadmium, and mercury concentrations were within background levels in all of the 'mples examined.

pH measured in the soil samples collected ranged from 2.2 to 8.1. Most of the soils were in the 7 to 8 pH range. pH of 2 to 4 were detected in soil from Boring No. 2 and 3.

5.2.3 <u>Recommendations</u>

Soil analyzed from the old burn pit contained elevated concentrations of VOCs, SVOCs, and metals. The VOC and SVOC concentrations could be decreased by tilling the soil to a depth of 4.5 ft to aerate the deeper soil, promoting natural degradation of the organics. The metals could be isolated from possible contact with humans or surface receptors by capping the area. This would also prevent infiltration of surface water into the pits and would limit downward migration of the contaminants. A corrective action plan will be prepared for SWMU No. 4 and submitted to EPA for approval.

5.3 <u>SWMU No. 5 LANDFILL AREAS</u>

SWMU No. 5 consists of the landfill areas one through five, located midway between the tank farm and the air strip (Figure 6). The landfills were used to dispose of nonregulated,

5-4

DATA MANAGEMENT
Sample Location: <u>Swmu # 4</u> Sample Date: <u>5-5-92</u>
Sample Type:
Team Leader: <u>L.SHELTON</u>
Sample Personnel: M. BARNEY, T. ROGERS
•
Sampling Method: AVHER
Sample No. <u>PFD+03 VO.</u> 0 Sample Time/Description: <u><u><u>3</u></u><u>3</u><u>05</u><u>PM</u><u>5</u><u>0</u><u>1</u><u>2</u><u>10</u><u>9</u></u>
Sample No. <u>AFE040N</u> ; OSample Time/Description: <u>7'7 U Pin</u> <u>Soll</u> <u>PID</u> <u>0-2000 SCALE</u> <u>3.25</u> GMPLE
Sample No. <u>FF0403 W</u> Bample Time/Description: <u>3'35 PM</u> <u>Soll</u> <u>PID & OUTSIDE 12 SAMPLE</u>
Jample No Sample Time/Description:
Sample No Sample Time/Description:
Surface Terrain: <u>BROKEN TERRAIN, SPARSE VEGETATION</u>
Weather Conditions: <u>OVERCAST, OCCASIONAL SPRINKLES</u> <u>E WIND @ 5.10 mpH. 60°F</u> .
General Field Observations: <u>CPENT FCC CATALYST HAD RLOWNINTO</u> <u>THE LOWLYING AREA AND WAS SCRAPED BACK TO</u> <u>REVEAL ORIGINAL SURFACE FOR SAMPLING</u> <u>THE BLACK LAYER REQUIRED STEAMING</u> , SOLVENT, STEAMING,
AND THEN REGULAR WASHING TO GET ANGERS AND EQUIPMENT GLEAN.
Boring Lithology: 0-1' RED & GRAY SAND/CLAY MIXED, SOME SPENT CATALYST FROM DISPOSAL AREA BLOWN IN AND MIXED WITH SAMPLE, 1'-2' VERILATED RED SOIL 2-2.5' ORANCE-RUSTY CLAY, 2.5'-2.25'BLACK LAYER WISCHE TAR LIKE MATERIAL, MIXED BLACK & GRAY SOIL TO J.5' 4.5' 7 SDLID SANDSTONE

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DATA	MANAGEMENT	

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Sample Location: <u>SWMU 4</u> Sample Date: <u>5-5-97</u>
Sample Type:Soll
Team Leader:
Sample Personnel: M. BARNEY T. ROLERS
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•
Sampling Method: AVGER
Sample No. <u>RFF0402V</u> 0. Sample Time/Description: <u>10:50 Ann</u> <u>D2V SUL</u>
Sample No. <u>REFOUCTV3</u> , Sample Time/Description: <u>1110 AM</u> <u>BLACK LAYER</u> <u>PID - 4 OUTSIDE 11 SAMPLE</u>
Sample No.R <u>FT040144</u> 5Sample Time/Description: <u>1400</u> PID-4 CVT <u>Say Sample E</u>
Sample No Sample Time/Description:
Sample No Sample Time/Description:
Surface Terrain: STEEP SLOPE, MOSTLY BARE OCCASIONA
Weather Conditions: <u>PARTER SUNARY, 70°F, 10-15 MpH EAST</u> _WIND
General Field Observations: <u>STRICT ATTENTION PAID TO PROPER</u> <u>DECONTAMINATION</u> , <u>ALL PID REPONGS @ 0-200 RANGE</u> <u>BLACK LAVER REQUIRED STEAMING, SOLVENT, STEAMANG A</u> LAIN
AND THEN REGULAR WASHING AND DECONTAMINATION.
Boring Lithology: D-1' - LODSE SAMEY SOIL - GRAY TD EEGAISH GROWN TURNING TO RED LLAY (C. 15'. SOME LOLOR VERIGATION FROM ROCKS, GLACK LAYER (C. 20". SEMI-BRITTLE SOLID WISOME TAR LIKE MATERIAL TD 39". 39" DIST!" SAND STONE ROCK, SI" TO SY"-LIGHT RED MOIST CLAY WISOME GRAY COLOR & SAME SAND

DATA MARAGEMENT

A p p e n d i x

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ample	Location: _	SwmU #4	, ·	Sample Date	: 5-5-92
Sample	Type:	SOIL	<u></u>		
lean Le	eader:	L. SHELTO	<u>,</u>		
Sample	Personnel:	MBAR	NEY, TR	OLERS	
			· · · · · · · · · · · · · · · · · · ·		
			, •		
Sampliı	ng Method: _	AVGE?			
Sample	No. <u>REAJOR</u>	<u>V₀₀Sample Time/</u>	Description:	20 Pm	CLAY
Sample	No. <u>REEMO</u>	<u>vs</u> oSample Time/	Description:	1351m	
Sample	No <i>L<u>F F 0401</u></i>	/ <u>//</u> Sample Time/	Description:	2:50,00 - 6 007510E	\$ SAMP
~mple	No	Sample Time/	Description:	·	
Sample	No	Sample Time/	Description:		
Surfaci	e Terrain: _	SLOPED ;	BARREN G	ROUNS	
		E WIND C.			CallkLis,
	ARE	HIT ARC A HIT ARC LASTED FOR TUP DN CD	2 12 Mill	PM WHUE TES. PID	AVGERING ESADING
		0-1' SANOY VERICATED			
£0 i	K T CALE	0 CLAY. 2.5	1-45 RED	- GRAY LLAY	, mu, sr.

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TABLE 5.2.2.2

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Metals Exceedances Detected in Soil SWMU NO. 4 Ciniza Refinery

Sample Number	Depth (Ft)	Barlum	Chromium	Lead	Nickel	Vanadium
RF10401V0.0	Surface	:	+17	:	:	:
RF10401V3.0	3	+ 218	+ 80	1	ł	:
RF10401V4.5	4.5	+ 120	;	:	ł	:
RF10402V0.0	Surface	+17	+ 20	1	:	ł
RF10402V3.0	£	:	ł	ł	;	:
RF10402V4.5	4.5	ł	+ 104	1	+36	:
RF10403V0.0	Surface	;	+ 128	+64	+60	+186
RF10403V3.0	3	:	+ 80	+ 48	+68	:
RF10403V4.5	4.5	ł	+ 140	ł	+ 188	+38

Concentrations are within tolerance limit based on statistical analysis of background metals concentrations in the Ciniza Refinery area.

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Arsenic, Beryllium, Cadmium, and Mercury concentrations were all within the tolerance limit for soil samples analyzed from SWMU No. 4. Nq exceedances were noted.

TABLE 5.2.2.1

Volatile Organic & Semivolatile Organic Compounds Detected in Soil SWMU No. 4 Ciniza Refinery

Sample Point	1	1	-	7	7	2	R	to	e
Sample Depth (ft)	V0.0	V3.0	V4.5	V0.0	V3.0	V4.5	V0.0	V3. 0	V4.5
VOCs (µg/kg)									
Tolucne	QN	ND	ND	QN	70	DN	QN	67	87
Ethylbenzene	QN	QN	QN	QN	1,000	ND	QN	910	510
Total tylenes	QN	QN	QN	ND	2,100	QN	QN	2,200	1,100
Styrene	QN	QN	QN	QN	420	ND	QN	Ŋ	QN
SVUCS (ME/KE)									
Napthalene	QN	QN	ND	QN	520	QN	QN	QN	QN
Dimethyl phthalate	QN	QN	ND	ŊŊ	QN	890	Ŋ	18,000	18,000
Phenanthrene	DN	ŊŊ	ND	QN	670	QN	ŊŊ	QN	QN
Di-n-bentyl Phthlate	1,500	2,700	1,300	3,000	QN	1,800	QN.	QN	ND
Bis (2-cthylhexyl) phthalate	ND	QN	DN	400	DN	ND	DN	QN	ND

ND Not Detected

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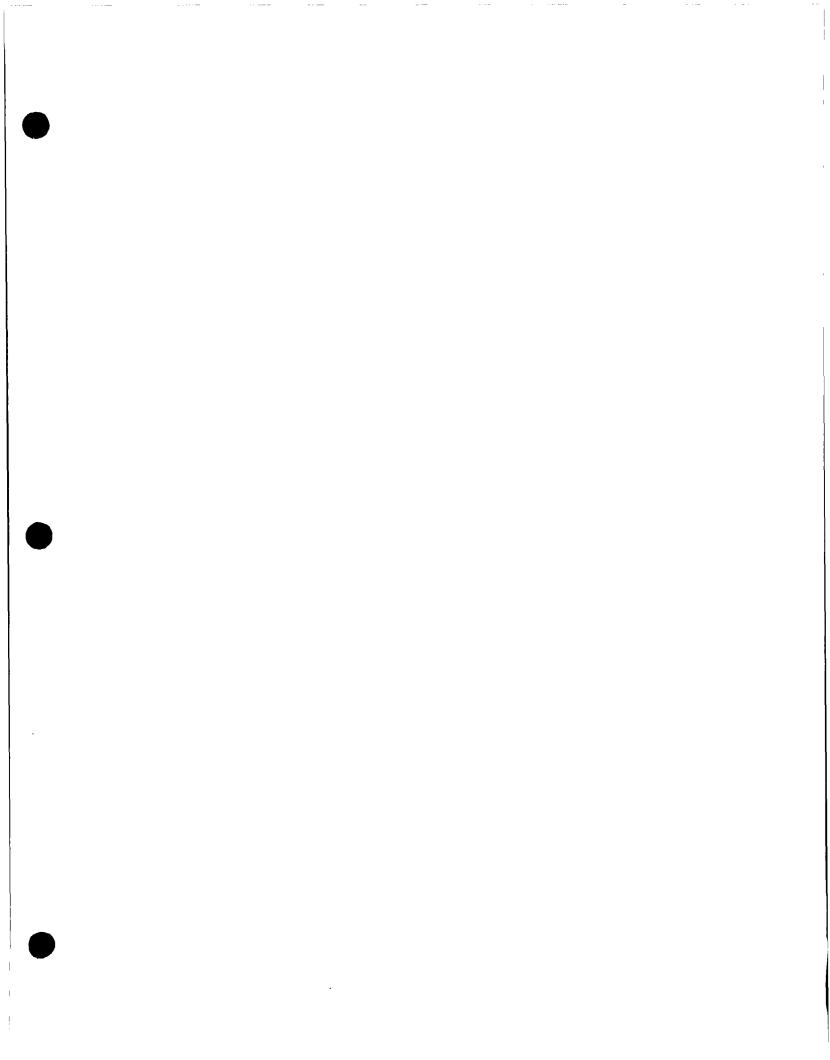
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CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Mr. John J. Stokes, Manager Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

RE: RCRA Facility Investigation (RFI) Phase III Report and Voluntary Corrective Action Plan - Giant Refining Co. -NMD000333211

Dear Mr. Stokes:

We hereby approve your Phase III RFI Report dated November 3, 1992, with the enclosed modifications. The voluntary Corrective Action Plan (CAP) for the Landfill Areas (submitted in March of 1993) is also approved.

The Phase III Supplementary Report (additional soil sampling for the Landfill Areas, the Old Burn Pit, the Secondary Skimmer and the Fire Training Area) is due to the Environmental Protection Agency (EPA) by December 31, 1994. If you have any further questions pertaining to the above mentioned items, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

Allyn M. Davis, Director Hazardous Waste Management Division

Enclosure

cc: Kathleen Sisneros, NMED

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APPROVAL OF THE RFI PHASE III REPORT, WITE MODIFICATIONS, AND APPROVAL OF THE VOLUNTARY CORRECTIVE ACTION PLAN (CAP) FOR THE LANDFILL AREAS FOR GIANT REFINING COMPANY

Below are EPA's general comments and modifications pertaining to Giant's RFI Report and the voluntary CAP for the Landfill Areas. Under general comments, there is a discussion describing the RFI status of each SWMU and the remaining RFI process/requirements for each SWMU. The modifications consist of SWMU specific monitoring or investigations required by EPA.

General Comment: EPA agrees with the finding of no further action for the SWMU #3, the Empty Container Storage Area. Even though EPA is tentatively agreeing with the no further action determination, EPA will require one administrative control for the Empty Container Storage Area. The administrative control shall consist of: a survey plat of the SWMU, according to the procedures required in 40 CFR 264.116. Once Giant has sent documentation to EPA verifying completion of the administrative control, Giant may submit a Class III permit modification to terminate the RFI/CMS process for the Empty Container Storage Area.

On SWMU #4, the Old Burn Pit, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, all 3 samples taken at the 4.5 foot interval (the deepest interval sampled) contained elevated levels of heavy molecular weight semivolatiles. One of the three samples at the 4.5 foot interval also contained elevated BTEX levels. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #11, the Secondary Oil Skimmer, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, one of the two samples taken at the 3 foot interval (the deepest interval sampled) contained volatiles and semivolatiles. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #7; the Fire Training Area, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, 2 of the 4 samples taken at the 4.5 foot interval (the deepest interval sampled) contained oil and grease above 2000 ppm (detection limit is <10 ppm). Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #5, the Landfill Areas, EPA believes that additional deeper borings are needed to: 1) verify that saturated zones found in 3 of the 12 deepest soil boring intervals are isolated and are not connected to the groundwater; 2) ensure that the vertical delineation of waste emplacement has been identified (soil boring logs indicate waste at the 8-9'zone, the deepest samples were taken at 9.5'); and, 3) ensure that the vertical extent of metal contamination has been identified (some of 9.5' samples had elevated metal levels. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

After Giant has completed the additional sampling requirements for the Landfill Areas, they then may proceed with the capping of the landfills under the voluntary Corrective Action Plan.

Modifications

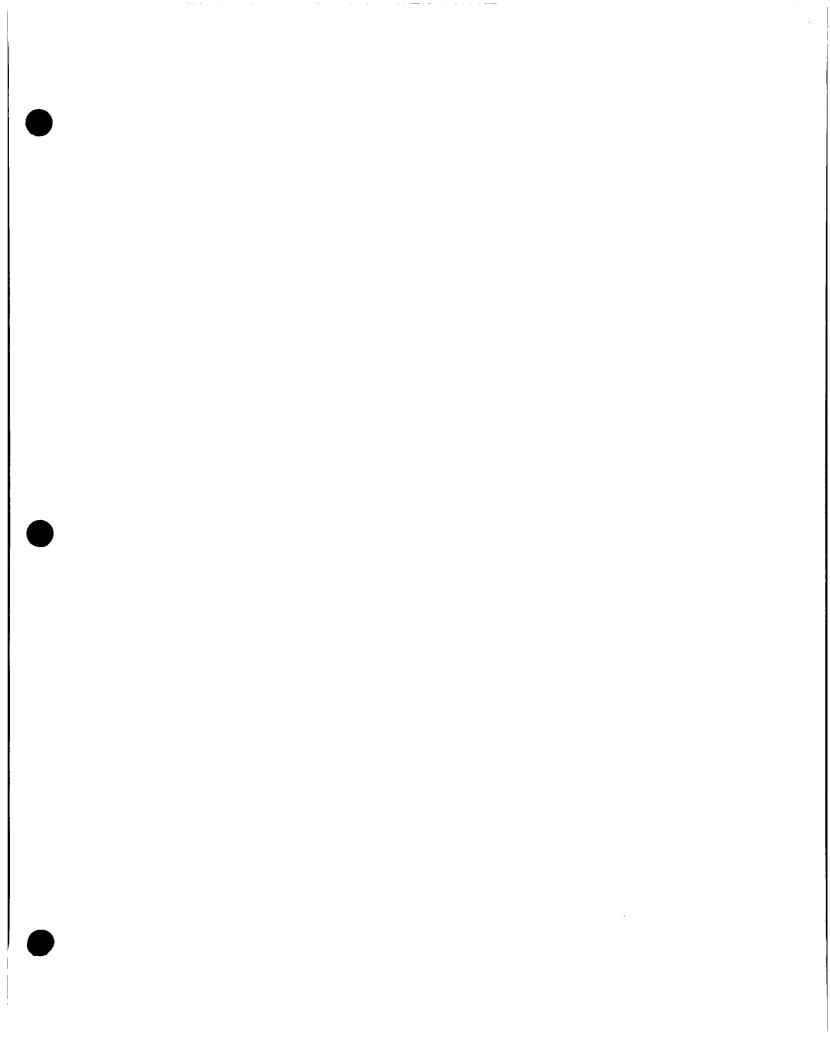
SWMU #4, the Old Burn Pit: Giant shall take soil borings as close as possible to the following sample points (numbers are from previous RFI sampling points, done May of 1992): number's 1, 2, and 3. Sampling intervals shall be at 6 and 10 feet. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by December 31, 1994.

SWMU #11, the Secondary Oil Skimmer: Giant shall take 2 soil borings within the area occupied by the former Skimmer. All borings must be sampled at the 5-6 foot and 9-10 foot interval. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. The results of this sampling event shall be due to EPA by December 31, 1994.

SWMU #7, the Fire Training Area: Giant shall take soil borings as close as possible to sample points number 1 and 2 (numbers are from previous RFI sampling points, done in May of 1992). Sampling intervals shall be at 7' and at 11'. Sampling procedures shall be identical to those required in the previous RFI, except, that all soil borings shall be angled. Constituents to be analyzed shall include the Skinner constituents. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by December 31, 1994.

SWMU #5, the Landfill Areas: Giant shall take soil borings as close as possible to the following sample points (numbers are from previous RFI sampling points, done in May of 1992): number's 2, 3, 4, 5, 6, 7, and 9. Sampling intervals shall be at 11', 16' and 20'. Sampling procedures shall be identical to those required in the previous RFI. Giant shall analyzed the samples for metals. If volatile or semivolatile contamination is encountered when sampling, then those constituents shall be analyzed also. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by December 31, 1994.

Soil Boring Logs: EPA has included an example of a soil boring log which they would like Giant to use in all future borings.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY



REGION 6 1445 ROSS AVENUE, SUITE 1200 DALLAS, TX 75202-2733

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GIANT REFINING CO. CINIZA REFINERY									

CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Mr. John J. Stokes, Manager Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

RE: RCRA Facility Investigation (RFI) Phase III Report and Voluntary Corrective Action Plan Giant Refining Co. NMD000333211

Dear Mr. Stokes:

The Environmental Protection Agency (EPA) hereby approves your RCRA Facility Investigation Phase III Report dated November 3, 1992, with the enclosed modifications. The EPA is requiring that additional soil sampling be completed at several sites, including the Landfill Areas, the Old Burn Pit, the Secondary Skimmer, and the Fire Training Area. A supplementary report detailing the results of these sampling activities shall be submitted to the EPA by December 31, 1994.

Additionally, the EPA is approving the voluntary Corrective Action Plan for the Landfill Areas, submitted in March, 1993.

If you have any further questions or need additional information, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

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Allyn M. Davis, Director Hazardous Waste Management Division (6H)

Enclosure

cc: Kathleen Sisneros, NMED



APPROVAL WITH MODIFICATIONS GIANT REFINING COMPANY RCRA FACILITY INVESTIGATION PHASE III REPORT AND THE CORRECTIVE ACTION PLAN FOR THE LANDFILL AREAS

The Environmental Protection Agency (EPA) has completed a technical review of your RCRA Facility Investigation (RFI) Phase III Report, dated October, 1992, and your voluntary Corrective Action Plan for the Landfill Area, dated February, 1993. The subject reports are hereby approved with the following comments and modifications.

GENERAL COMMENTS

SWMU 5, The Empty Container Storage Area

The EPA hereby approves the finding of No Further Action (NFA) for Solid Waste Management Unit (SWMU) number three (3), the Empty Container Storage Area. However, this approval is contingent upon the completion of a survey plat for the unit. The survey plat shall be completed in accordance with the procedures outlined in 40 CFR 264.116. Giant shall submit a copy of the survey plat to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for the Empty Container Storage Area.

SWMU 8/ The Old Burn Pit

Due to the presence of elevated levels of volatile and semivolatile contaminants in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. All three (3) soil samples taken at the 4.5 foot interval (the deepest interval sampled) contained elevated levels of heavy molecular weight semivolatiles. Additionally, one of the three (3) samples at the 4.5 foot interval also contained elevated BTEX levels. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 11, The Secondary Oil Skimmer

Due to the presence of elevated levels of volatile and semivolatile contaminants in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. One of the two (2) samples taken at the 3.0 foot interval (the deepest interval sampled) contained volatile and semivolatile contaminants. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 4, The Fire Training Area

Due to the presence of elevated levels of oil and grease in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. Two (2) of the four (4) samples

Approval with Modifications, 1/5/93 Giant's RFI Phase III & CAP Reports taken at the 4.5 foot interval (the deepest interval sampled) contained oil and grease above 2,000 ppm. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 7, The Landfill Areas

Because soil borings completed in this unit indicate the presence of waste and metal contamination at depths up to 9.5 feet, the EPA is requiring that additional soil borings be completed at greater depths. These additional soil borings will be installed in order to:

- 1) Verify that saturated zones found in three (3) of the 12 deepest soil boring intervals are isolated and are not connected to the groundwater;
- 2) Ensure that the vertical extent of waste emplacement has been defined;
- 3) Confirm that the vertical extent of metal contamination has been delineated.

Following the completion of the additional soil borings in the Landfill Areas, Giant may proceed with the capping of the landfills as per their voluntary Corrective Action Plan.

MODIFICATIONS

Note: All referenced sampling points correspond to the previous RFI sampling points completed in May, 1992. Soil boring logs included in future report submittals shall follow the attached example.

SWMU #8, The Old Burn Pit

Giant shall complete soil borings as close as possible to sample points one (1), two (2) and three (3). Sampling intervals shall be at six (6) and (10) feet and must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. Sampling procedures and analytical requirements are identical to those required in the previous RFI. The results of this sampling event shall be submitted to the EPA by December 31, 1994.

SWMU #11, The Secondary Oil Skimmer

Giant shall complete two (2) soil borings within the area occupied by the former Skimmer. All borings must be sampled at the 5-6 foot and 9-10 foot interval. Sampling shall extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures and analytical requirements are identical to those required in the previous RFI. The results of this sampling event shall be due to EPA by December 31, 1994.

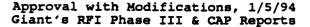
Approval with Modifications, 1/5/94 Giant's RFI Phase III & CAP Reports

SWMU #4, The Fire Training Area

Giant shall complete <u>angled</u> soil borings as close as possible to sample points one (1) and two (2). Sampling intervals shall be at 7 and 11 feet. Sampling must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures shall be identical to those required in the previous RFI. Analytical constituents shall include the Skinner constituents. The results of this sampling event shall be submitted to the EPA by December 31, 1994.

SWMU #7, The Landfill Areas

Giant shall take soil borings as close as possible to sample points two (2) through seven (7), and nine (9). Sampling intervals shall be at 11 feet, 16 feet and 20 feet. Sampling must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures shall be identical to those required in the previous RFI. Giant shall analyze all samples for metals. If volatile or semivolatile contamination is encountered when sampling, then those constituents shall be analyzed also. The results of this sampling event shall be due to EPA by December 31, 1994.



INTEROFFICE MEMORANDUM

DATE: February 3, 1994

TO: David Pavlich Kim Bullerdick

FROM: Lynn Shelton 748

SUBJECT: RCRA Facility Investigation - Additional Requirements

I. Introduction

Giant Refining Company - Ciniza (Giant) performed a RCRA Facility Investigation (RFI) in three phases (I, II, and III) over three years (1990, 1991, and 1992).

Using the analytical results of those three sampling events, Giant submitted four corrective action plans and eight "No Further Action" proposals to Region VI, United States Environmental Protection Agency (EPA).

Correspondence from the EPA (1-7-94) indicated approval of the corrective action plans (with additional requirements) for three Solid Waste Management Units (SWMUs), for RFI reports Phase I, II, and III and assigns a deadline for submittals of additional data.

The additional sampling and reporting requirements, some of which are redundant and unnecessary, are the focus of this correspondence. In the following pages, the scope and cost of the additional sampling requirements will be presented.

Some explanation of a potential problem is in order. The SWMU identification numbering sequence is inconsistent. In discussing the draft letters with Rich Mayer, of Region VI EPA, the discrepancy in reference to the SWMU numbers was mentioned. Mr. Mayer responded that the correct SWMU numbers were taken from the HSWA Permit (Section C, Corrective Actions for Continuing Releases, 5.(a)(1)). Giant had used the numbering sequence from the approved RFI Workplan (revised May 17, 1990). As shown in Table 1, there are discrepancies in all three sequences. Giant should propose to use the numbering sequence identified in the revised RFI Workplan to avoid confusion with the numbering sequence of SWMUs and sample numbers already reported.

Table 2 presents an overview of the status of the SWMUs.

TABLE 1

SWMU	IDENT	'IFI	CATI	[ON
------	-------	------	------	-----

RFI	WORKPLAN	hswa	EPA	LETTER	R SWMU
	1	1		1	Aeration Basin
	2	2		2	Evaporation Ponds
	3	5		5	Empty Container Storage
	4	8		8	Burn Pit
	5	7		7	Four Landfills
	6	3		6	Tank Farm
	7	4		4	Fire Training Area
	8	6		8	Railroad Rack Lagoon
	9	10 & 13		-	Inactive Land Treatment
	10	9		9	Two Sludge Pits
	11	11	1	.1	Secondary Oil Skimmer
	12	14	1	.3	Wastewater Collection
	13	14	1	.3	Drainage Ditch

TABLE 2

STATUS -	INDIVIDUAL	SWMU
----------	------------	------

Caps:

- * Railrack Lagoon
- * Sludge Pits
 - Fire Training Area
- * Landfills

No Further Action:

- ****** Aeration Basin
- ****** Evaporation Ponds
- ****** Drainage Ditch
- Tank Farm

** Empty Container Storage Old Burn Pit Secondary Oil Skimmer

Secondary Oil Skimmer *** Inactive Land Treatment

* Accepted by EPA with Additional Requirements ** "No Further Action" Approved by USEPA *** Not Addressed in Correspondence June 28, 1994

Rich Mayer U.S. Environmental Protection Agency Region VI 1445 Ross Avenue, Suite 1200 Dallas, Texas 75202-2733

Re: Quarterly Progress Report

Dear Mr. Mayer:

Pursuant to requirements of the HSWA Permit, Condition C.4., Page 11 and the May 31, 1990 RFI Workplan approval, Giant Refining Company - Ciniza (Giant) submits the <u>Quarterly Progress Report</u> for the second quarter of 1994.

Giant has completed piping modifications to the "Railroad Rack Lagoon" (SWMU #8) system and is presently evacuating the remaining water from the lagoon and disposing of it in the process wastewater system. As soon as it is feasible, Giant will sample the SWMU as required and begin bioremediation activities.

Giant is soliciting proposals for the survey requirement of SWMUs #1, 3, 8, 9 and 13.

Giant is also developing a scope and estimate of expense to further characterize SWMUs #4, 5, 6, 7, 10, and 11 and expects to complete that sampling during the third quarter of 1994.

If you require additional information, please contact Lynn Shelton, of my staff, at (505) 722-0227.

"I certify under penalty of law that this document and all attachments were prepared under my direction to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false

REFININGC

Route 3, Box 7 Gallup, New Mexico

87301 505 722-3833 information, including the possibility of fine and imprisonment for knowing violations."

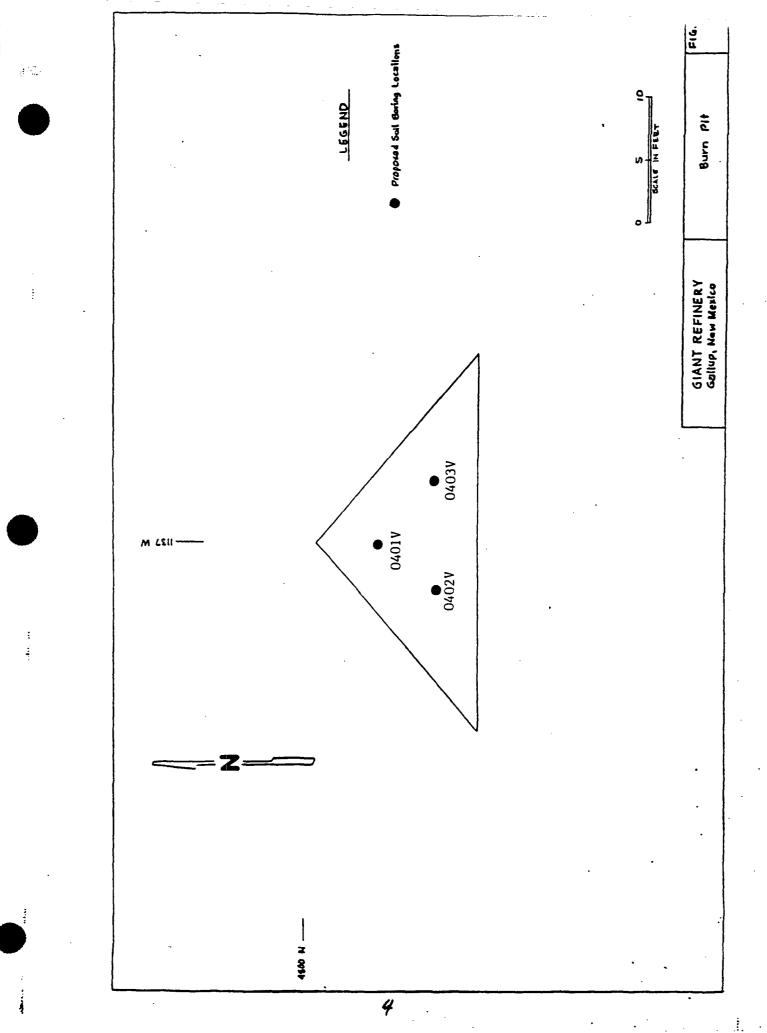
Sincerely, John Stokes

Refinery Manager

JJS/TLS:sp

cc: Kim Bullerdick, Corporate Counsel Giant Industries Arizona, Inc.

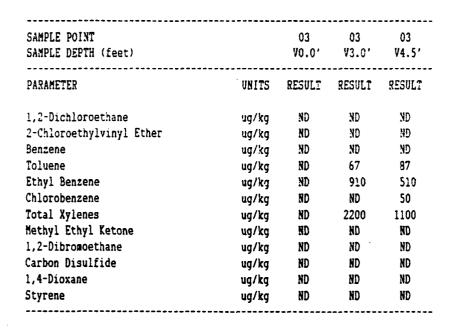
> David Pavlich, Health/Safety and Environmental Manger Giant Refining Company



SOLID WASTE MANAGEMENT UNIT #4- "Old Burn Pit"

8240-Volatile Organics

SAMPLE POINT		01	01	01	02	02	02
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5′	VC.0'	V3.0′	V4.5′
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl Ether	ug/kg	ND	ND	ND	RD	ND	ND
Benzene	ug/kg	ND	ND	ND	ND	ND	ND
Toluene	ug/kg	ND	ND	ND	ND	70	ND
Ethyl Benzene	ug/kg	ND	ND	ND	ND	1000	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND	ND	NÐ
Total Xylenes	ug/kg	ND	ND	ND	ND	2100	ND
Methyl Ethyl Ketone	ug/kg	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	ug/kg	ND	ND	ND	ND	ND	NÐ
Carbon Disulfide	ug/kg	ND	ND	ND	ND	ND	ND
1,4-Dioxane	ug/kg	ND	ND	ND	ND	ND	ND
Styrene	ug/kg	ND	ND	ND	ND	420	ND



SOLID WASTE MANAGEMENT UNIT #4- "Old Burn Pit"

8270-Semi-Volatiles

SAMPLE POINT SAMPLE DEPTH (feet)		-01 V0.0'	01 V3.0'	01 V4.5'	02 V0.0'	02 V3.0'	02 ¥4.5
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Phenol	ug/kg	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND
2-Methylphenol	ug/kg	ND	ND	ND	ND	ND	ND
3-Methylphenol	ug/kg	ND	ND	ND	ND	ND	ND
4-Methylphenol	ug/kg	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ug/kg	ND	ND	ND	ND	ND	ND
Naphthalene	ug/kg	ND	ND	ND	ND	520	NO
Dimethyl phthalate	ug/kg	ND	ND	ND	ND	ND	890
2,4-Dinitrophenol	ug/kg	ND	ND	ND	ND	ND	ND
4-Nitrophenol	ug/kg	ND	ND	ND	ND	ND	ND
Diethyl phthalate	ug/kg	ND	ND	ND	300	ND	ND
Phenanthrene	ug/kg	ND	ND	ND	ND	670	NÐ
Anthracene	ug/kg	ND	ND	ND	ND	ND	ND
)i-n-butyl Phthalate	ug/kg	1500	2700	1300	3000	ND	1800
flouranthene	ug/kg	ND	ND	ND	ND	ND	ND
Pyrene	ug/kg	ND	ND	ND	ND	ND	ND
Butyl benzo phthalate	ug/kg	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	ug/kg	ND	. ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	ug/kg	ND	ND	ND	400	ND	ND
hrysene	ug/kg	ND	ND	ND	ND	ND	ND
Di-n-octyl phthalate	ug/kg	ND	ND	ND	ND	ND	ND
Senzo(b)flouranthene	ug/kg	ND	ND	ND	ND	ND	ND
lenzo(k)flouranthene	ug/kg	ND	ND	ND	ND	ND	ND
enzo(a)pyrene	ug/kg	ND	ND	ND	ND	ND	ND
)ibenzo(a,h)anthracene	ug/kg	ND	ND	ND	ND	ND	ND
)ibenzo(a,j)acridine	ug/kg	ND	ND	ND	ND	ND	ND
,12-Dimethylbenz(a)anthracene	ug/kg	ND	ND	ND	ND	ND	ND
ndene	ug/kg	ND	ND	ND	ND	ND	ND
lethylchrysene	ug/kg	ND	ND	ND	ND	ND	ND
Pyridine	ug/kg	ND	ND	ND	ND"	ND	ND
luinoline	ug/kg	ND	ND	ND	ND	ND	ND
Benzenethiol	ug/kg	ND	ND	ND	ND	ND	ND
L-Nethylnaphthalene	ug/kg	ND	ND	ND	ND	ND	ND



1

SOLID WASTE MANAGEMENT UNIT #4- "Old Burn Pit"

8270-Semi-Volatiles

SAMPLE POINT SAMPLE DEPTH (feet)		03 V0.0'	03 V3.0'	03 V4.5′
PARAMETER	UNITS	RESULT	RESULT	RESULT
Phenol	ug/kg	ND	ND	ND
1,3-Dichlorobenzene	ug/kg	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	ND	ND	ND
1,2-Dichlorobenzene	ug/kg	ND	ND	ND
2-Methylphenol	ug/kg	ND	ND	ND
3-Methylphenol	ug/kg	ND	ND	ND
4-Methylphenol	ug/kg	ND	ND	ND
2,4-Dimethylphenol	ug/kg	ND	ND	ND
Naphthalene	ug/kg	ND	ND	ND
Dimethyl phthalate	ug/kg	ND	18000	18000
2,4-Dinitrophenol	ug/kg	ND	ND	ND
4-Nitrophenol	ug/kg	ND	ND	ND
Diethyl phthalate	ug/kg	ND	ND	ND
Phenanthrene	ug/kg	ND	ND	ND
Anthracene	ug/kg	ND	ND	ND
Di-n-butyl Phthalate	ug/kg	430	ND	ND
Flouranthene	ug/kg	ND	ND	ND
Pyrene	ug/kg	ND	ND	ND
Butyl benzo phthalate	ug/kg	ND	ND	ND
Benzo(a)anthracene	ug/kg	ND	ND	ND
Bis(2-ethylhexyl) phthalate	ug/kg	ND	ND	ND
Chrysene	ug/kg	ND	ND	ND
Di-n-octyl phthalate	ug/kg	ND	ND	ND
Benzo(b)flouranthene	ug/kg	ND	ND	ND
Benzo(k)flouranthene	ug/kg	ND	ND	ND
Benzo(a)pyrene	ug/kg	ND	ND	ND
Dibenzo(a,h)anthracene	ug/kg	ND	ND	ND
Dibenzo(a,j)acridine	ug/kg	ND	ND	ND
7,12-Dimethylbenz(a)anthracene	ug/kg	ND	ND	ND
Indene	ug/kg	ND	ND	ND
Methylchrysene	ug/kg	. ND	ND	ND
Pyridine	ug/kg	ND	ND	ND
Quinoline	ug/kg	ND	ND	- ND
Benzenethiol	ug/kg	ND	ND	ND
1-Methylnaphthalene	ug/kg	ND	ND	ND

SOLID WASTE MANAGEMENT UNIT #4- "Old Burn Pit"

Total Metals

SAMPLE POINT SAMPLE DEPTH (feet)		01 V0.0'	01 V3.0'	01 V4.5'	02 V0.0'	02 V3.0'	02 V4.5
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Arsenic	ag/kg	ND	MD	ND	ND	ND	ND
Barium	mg/kg	380	1300	900	480	360	160
Beryllium	ng/kg	ND	ND	ND	ND	ND	ND
Cadmium	ag/kg	ND	ND	ND	ND	ND	ND
Chrosius	mg/kg	9.8	15	6.2	10.0	3.2	17
Lead	mg/kg	9.5	12	10	13.0	16.0	11
fercury	mg/kg	ND	ND	ND	ND	ND	ND
Nickel	ag/kg	11	12.0	9.1	11	6.3	17
Vanadium	mg/kg	7.9	9.0	6.8	11	ND	5.7

Total Metals

SAMPLE POINT		03	03	03
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5
PARAMETER	UNITS	RESULT	RESULT	RESULT
Arsenic	ng/kg	ND	ND	ND
Barium	mg/kg	120	290	110
Beryllium	ng/kg	ND	ND	ND
Cadmium	ng/kg	ND	ND	ND
Chromium	mg/kg	19	15	20
Lead	mog/kg	30	27	18
Mercury	mg/kg	ND	ND	ND
Nickel	ng/kg	20	21	36
Vanadium	ng/kg	58	ND	29

SOLID WASTE MANAGEMENT UNIT #4- "Old Burn Pit"

pH

SAMPLE POINT SAMPLE DEPTH (feet)		01 V0.0'	01 V3.0'	01 V4.5′	02 V0.0'	02 V3.0'	02 V4.5′
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
ы	S.V.	7.5	7.2	7.8	8.1	2.2	7.3

SAMPLE POINT SAMPLE DEPTH (feet)		03 V0.0'	03 V3.0'	03 V4.5′
PARAMETER	UNITS	RESULT	RESULT	RESULT
Ч	S.U.	2.2	7.1	4.2

pН

RELINQUISHED BY (5) EI	RELINQUISHED BY (SIGNATURE) RECEIVED BY (SIGNATURE)	RELINCUSHED BY (SIGNATURE)	RELINGUISHED BY (SIGNATURE)							REE 0403 V1.5 5 5 3:35 1	12FU403 V3.0 5.5 3.20	2FT 0403 VO.C 5.5 3:05	RETOYO2 VV.5 5.5 1:00 /	RFI 0402 V3.0 5.5 11:10	RITUHUZVO.0 5.5 10:50 PIT	RETONOLANS 2.5 J:20 BNGN	RETOTOLV3.0 552:35 020	RFI0401 VO.05-5 1:20)	IDENTIFICATION DATE TIME SAMPLELOCATION E	to LYNN SHELTON 0	SAMPLER (SIGNATURE) SAMPLER (PLEASE PRINT)		Flagstaff • 2400 E. Huntington Dr. • AZ 86004 • (602) 774-8708 • fax 774-6469 El Paso • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594	Phoenix • 3737 E. Broadway Rd. • AZ 85040 • (602) 437-1080 • fax 437-8706	Inc.	Westech Mar Laboratories
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					-														LABORATORY SAMPLE	G – SLUDGE X – OTHER T – TRAVEL BLANK F – FIELD BLANK)ES		D. NO.			

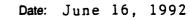
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9206655							X	B)ant	Travel
9206654			x / x	۔ ل			3:35	V4.5 5-5	RFE OYOS VY.S
9206653	METALS.	×	<pre>> x</pre>	5					RFI0408 V3.0
9206652	BACKGROUND	×	× ×	S			3:05	10.05.5	RFI OVOS VO.O
9206651	AJD		~ ×	S			1:00	4.5 5-5	RECOYOZ VY.S
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4 HOPORb >	TUENTS 0	×	X	S		PIT	10:20	0.0 5-5	RECONDINO
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9206646		×	~ ×	5			. /:20	10.05-5	RFICTOIVO.0
LABORATORY SANPLE IDENTIFICATION NUMBER		1		GR/	HO	SAMPLE LOCATION	TIME	DATE	IDENTIFICATION
G - SLUDGE X - OTHER T - TRAVEL BLANK F - FIELD BLANK		NER Y	ABER OF		LD MPOSIT	SHELTON	LYNN	f	John SL
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	FOR ANALYSES SELECT	REFER TO FEE SCHEDULE	REFER 1						
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	GALLUP, NM	REFINING CO.	4	GIAN	б .	Phoenix • 3737 E. Broadway Rd. • AZ 85040 • (602) 437-1080 • fax 437-8706	• AZ 85040 •	Broadway Rd.	Phoenix • 3737 E. (
	ADDRESS R+ 3 BOX 7			CLIENT				Inc.	
	CHAIN OF CUSTODY RECORD	F CUSTOE	IN O	Сна		ies (aqt	Westech Laboratories	Wes	3
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INTEROFFICE MEMORANDUM



To: Zeke Sherman

From: Lynn Shelton JdG

Subject: RFI Soil Analysis

The variance granted to Giant by the EPA that reduces our analytical requirements on total metals for RFI SWMU'S 4 and 5 has reduced our cost of this project considerably. The breakdown is savings is:

б	Metals Preps	@25.00	\$ 150.00
372	Total Metals Analysis	@10.00	\$3,720.00
	NET	SAVINGS	\$3,870.00

RFI WORKPLAN

PHASE III 1992

May 4, 1992

Training Load Equipment 8:00 4:15 SWMU Site Tour

May 5, 1992

SWMU #4 9 Samples Burn Pit

May 6, 1992

SWMU #3 Empty Container Storage 12 Samples

<u>May 7, 1992</u>

SWMU #7	Fire Training Area	12 Samples
SWMU #11	Secondary Oil Skimmer	4 Samples

<u>May 8, 1992</u>

SWMU #5	Land Fill Area	48 Samples

<u>May 11, 1992</u>

Continue SWMU #5 48 Samples

May 12, 1992

Continue SWMU #5 48 Samples

May 13, 1992

Begin set-up for sewer line inspection Expect one week to complete

DATA MANAGEMENT

Sample Location: <u>Swmu #4</u>	Sample Date: <u>5-5-92</u>
Sample Type:	-
Team Leader: <u>L. SHELTON</u>	
Sample Personnel: <u>M BARNEY, T, k</u>	POLIERS
Sampling Method:AVGEA	
Sample No. <u>Produido</u> Sample Time/Description:	1:20 Pm CLAY
Sample No. <u>Recovolv3</u> Sample Time/Description:	
Sample No & <u>FF0401V4.</u> Sample Time/Description:	
Sample No Sample Time/Description: _	
Sample No Sample Time/Description: _	
Surface Terrain: <u>SLOPED</u> BARREN C	GROUNS
Weather Conditions: <u>OVERCAST</u> , OCCA 65°F, ENE WIND @ 5.10 MPH	ASIONAL SPRIJKLAS,
General Field Observations: <u>SMOKE FRA</u> <u>AREA</u> HIT AROUT 9:49 <u>4 NO LASTES FOR 12 MIN</u> <u>WENT UP ON DUTSIDE AUG</u>	PM WHILE AVGERING
Boring Lithology: <u>D-1' SANDY CLAY</u> T RED CLAY, 1-2' VERICATED LLAY, 2-	2.5' LARGE SANDSTONE
RUCK T BAKED CLAY. 2.5' - 4.5 DEL)-GRAY [LAY, MOIST.

DATA MANAGEMENT

Sample Location: <u>SUMU 4</u> Sample Date: <u>5-5-97</u>
Sample Type:
Team Leader:
Sample Personnel: <u>M. BARNEY</u> <u>T. RUGER5</u>
· · · ·
Sampling Method:AUGER
Sample No. <u>RFE0462Vo</u> Sample Time/Description: <u>16:50 Am</u> <u>DRY SOIL</u>
Sample No. <u><i>RFE0401V3</i></u> , Sample Time/Description: <u>11:10 AM</u> <u>BLACK LAYER</u> <u>PID - 4 OUTSIDE 16 SAMPLE</u>
Sample No.R <u>FI040144</u> , Sample Time/Description: <u>1⁴00</u> <u>PID-4007</u> <u>8,4</u> SAMPLE
Sample No Sample Time/Description:
Sample No Sample Time/Description:
Surface Terrain: <u>STEEP SLOPE, MOSTLY RAKE OCCASIONAL</u> CIDINITI TO I THE
Weather Conditions: DARTEY SUNAL, 70°F, 10-15 MpH EAST WIND
General Field Observations: <u>STRICT ATTENTION PAID TO PROPER</u> DECONTAMINATION, ALL PID REPOINTS @ 0-200 RANGE
BLACK LAVER REQUIRED STEAMING, SOLVENT, STEAMANG AGAIN AND THEN REGULAR WASHING AND DECONTAMINATION,
Boring Lithology: D-1' - LODSE SAMEY SOIL - GRAY TD REDDISH BROWN TURNING TO RED LLAY C. 15', SOME
COLOR VERIGATION FROM LOCKS. BLACK LATER @ 20"
- SEMI-BRITTLE SOLID WI SOME TAR LIKE MATERIAL TO 29" 39" TO STI SAVA STUNE ROCK ST" TO SY"-LIGHT REA
MOIST CLAY WISOME GRAY COLOR & SAME SAND

DATA MANAGEMENT

-2

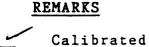
Sample Location:	Sample Date: 5-5-92
Sample Type:	
Team Leader: <u>L.SHELTON</u>	
Sample Personnel: <u>M. BARNEY</u> , T. ROG	ERS
·	
Sampling Method:AVGER	
Sample No. <u><i>PFD-403</i> VD</u> .0 Sample Time/Description:	3:05 PM SUIL 210 0
Sample No. <u><i>LEOYO3V3.</i></u> OSample Time/Description:	7. 2 C P.M SOIL D 0-2000 SCALE 3. 2 SAMPLE
Sample No. <u>AFE0403 W</u> Sample Time/Description:	
Sample No Sample Time/Description:	·
Sample No Sample Time/Description:	
Surface Terrain: <u>BROKEN TERRAIN, 54</u>	PARSE VEGETATION
Weather Conditions: <u>OVERCAST, OCCA</u> <u>E WING @ 5.10 mpit. 60° F.</u>	SIONAL SPRINKLES,
General Field Observations: <u>SPENT FCC</u> CA <u>THE LOWLYING AREA AND WAS</u> <u>REVEAL ORIGINAL SURFACE FOR</u> <u>THE BLACK LAYER REQUIRED STEA</u> <u>AND THEN REGULAR WASHING TO</u> <u>EQUIPMENT CLEAN</u> .	SCRAPED BACK TO SAMPLING, MING, SCLVENT, STEAMING,
Boring Lithology: <u>0-1' RED & GRAY</u> <u>SPENT CATALYST FROM DISPOSAL ARE</u> <u>JITH CAMPLE 1'-2' VERILATED</u> <u>ORANGE-RUSTY CLAY, 2.5'-2,25</u> <u>TAR LIKE MATERIAL</u> , MIXED BLACK <u>SDLID SANDSTONE</u>	EA BLAIN IN AND MIXED LED SOIL . 2-2:5' BLACK LAYER WISOME

TABLE 2

Field Equipment Checklist Soil and Sludge Sampling

5-5-92

ITEM



PID Meter Site Specific SWMU Work Plan Generic Sampling Plan Site Map With Sample Locations Sample Bottles Ice Chests Trip Blanks Methanol ProPANOL Deionized Water Squeeze Bottles Personal Protective Equipment Chain of Custody and Sample Record Forms Plastic Bags (To provide clean surfaces) Disposable Gloves Paper Towels Tape (For labels and dispenser) Sharpie, Pens, Pencils Blue Ice or Ice Zip-Lock Bags, 1 Gallon

JIS



THIS COPY OF MY LETTER TO KAREN LISTS THE SPECIFIC ANALYSIS 13Y SWMU.

Karen Lofquist Westech Laboratories 3737 East Broadway R

Phoenix, Arizona 8

January 15, 1992

Dear Karen:

In anticipation of the May, 1992 RCRA Facility Investigation (RFI) at Giant's Ciniza Refinery, I am requesting a cost proposal for the following analytical work:

SWMU #3

8240	Priority	Pollutants	12	Sampl	Les
			لر	Dupli	icate
			, ×1	Trip	icate Blan
				-	

SWMU #4 bΗ

Skinner Lisz Organics 1 Duplicate 1 Trip Blar ~1 Equipment Background Metals

SWMU #5

pН 8240 Priority Pollutants Background Metals

SWMU #7

Total Petroleum Hydrocarbon (TPH) Oil and Grease

SWMU #11

Skinner List Organics

- 9 Samples
- 48 Samples
- 3 Duplicate 2 Trip Bla
- 2 Equipmen
- 12 Samples l Duplicate 1 Trip Blank

4 Samples

- 1 Duplicate
- 1 Equipment Wash

Giant will require ice chests, bottles, labels and seals, chain of custody and a copy of your quality assurance/quality control documentation.

Please submit your proposals to my office no later than February 29, 1992. If you have any questions, please contact me at (505) 722-0227.

Sincerely,

Sym Shelton

Lynn Shelton Environmental Assistant Ciniza Refinery

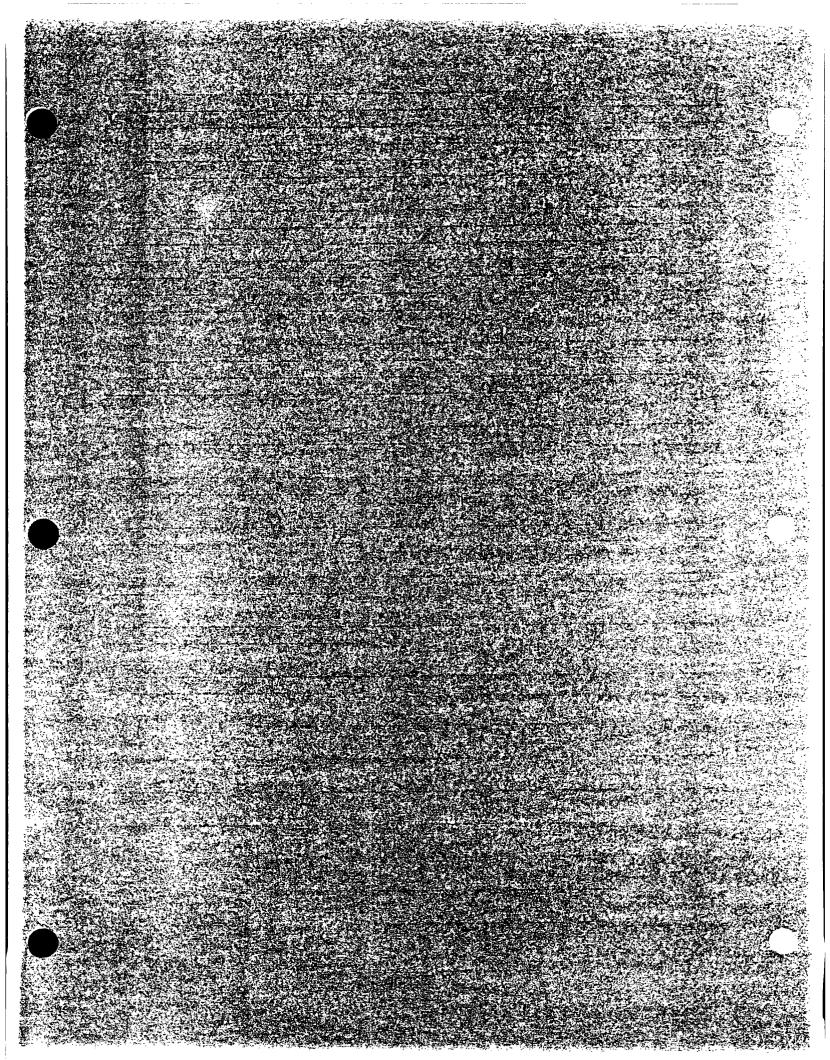
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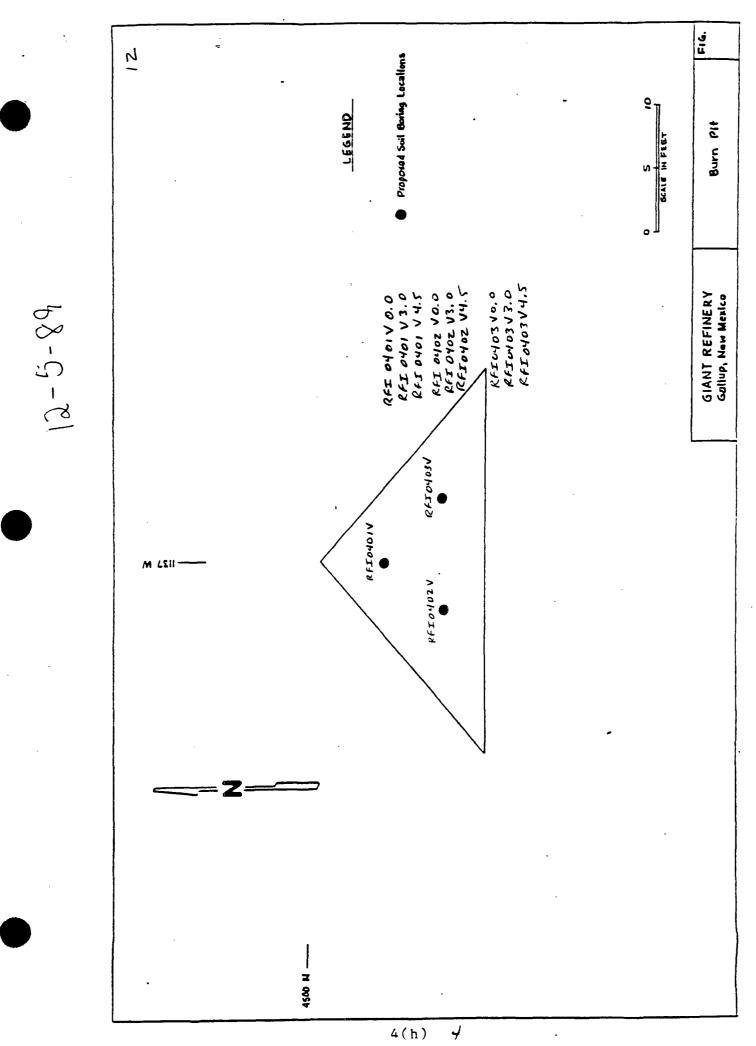
KAREN-

I'VE ATTACHED LISTS OF SPECIFIC CONSTITUENTS FOR THE SKINNER LIST, PRIORITY POLLUTANTS, AND BACK GROUND METALS.

THANKS-

Lym





Sept. 14, 1989

APPLIED EARTH SCIENCES

RELEASE VERIFICATION

SWMU: Burn Pit

LOCATION: Figure 1, No. 2

Release verification was accomplished by a complete review of the facility records to determine if a release has occurred. In addition, plan personnel were interviewed and the area was inspected to check for a release.

At the Burn Pit area no known release has occurred.

APPLIED EARTH SCIENCES

UNIT AREA CHARACTERISTICS

TYPE OF UNIT: Burn Pit

LOCATION OF UNIT: Figure 1, No. 7

DESIGN FEATURES: 20 feet x 40 x 20 feet (triangular) 10 - 12 feet deep

OPERATING PRACTICES (PAST AND PRESENT):

An old metal box uphill from the pit was used in the past to feet oil through a metal pipe in the burn pit. The area was then covered with soil.

PERIOD OF OPERATION: 1958 - 1976

AGE OF UNIT: 18 Years

GENERAL PHYSICAL CONDITIONS:

The soil was not discolored and no vegetation was growing in the area.

METHOD USED TO CLOSE THE UNIT:

Closure procedures are not completely documented. Some soil was placed in the pit after 1976. **APPLIED EARTH SCIENCES**

WASTE CHARACTERIZATION

TYPE OF UNIT: Burn Pit

LOCATION OF UNIT: Figure 1, No. 7

TYPE OF WASTE PLACED IN UNIT:

Acid soluble oils from the alkylation unit; possibly spent silicon oxide catalysts

APPROXIMATE QUANTITY MANAGED:

- Acid Soluble Oils: 500 barrels/year

PHYSICAL AND CHEMICAL CHARACTERISTICS:

Organics and heavy metals.

MIGRATION AND DISPERSAL CHARACTERISTICS:

The potential for contamination exists in the soil where the wastes were burned.

INTEROFFICE MEMORANDUM

DATE: June 28, 1994

TO: David Pavlich

FROM: Lynn Shelton JdS

SUBJECT: Required RFI Sampling

In its January 7, 1994 letter, EPA required additional sampling and conditions of the RCRA Facility Investigation.

Although some of the requirements are considered redundant and are therefore subject to challenge, certain additional sampling requirements are acceptable and should be completed in a timely manner regardless of the protest of other, less productive sampling.

A list of the additional sampling sites, depths, and estimated costs are presented below.

I. SWUM #4 Old Burn Pit

BoringsDepthsSamplingAnalysis36.0', 10.0'\$475\$7,026

II. SWMU #5 Landfill Areas

		(Costs
<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	<u>Analysis</u>
9	11.0', 16.0,	\$2,848	\$21,525
	20.0'		

III. SWMU #6 Tank Farm

			Costs
<u>Borings</u>	<u>Depths</u>	Sampling	<u>Analysis</u>
8	16.0', 20.0'	\$2,531	\$1,000

IV. SWMU #7

Fire	Trai	ning	Area	

		Co	osts
<u>Borings</u>	Depths	Sampling	<u>Analysis</u>
2	7.0', 11.0'	\$348	\$400

V. SWMU #10 Sludge Pits

		Co	sts
<u>Borings</u>	<u>Depths</u>	Sampling	<u>Analysis</u>
18	19.0', 25.0'	\$7,119	\$18,450

VI. SWMU #11 Secondary Oil Skimmer

_			363
<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	<u>Analysis</u>
2	6.0', 10.0'	\$316	\$3,180

Total costs for this initial sampling project are estimated to be \$65,218.

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It is my recommendation that Giant complete an RFE and implement the sampling and analysis by July 15, 1994.

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II. Discussion

A discussion of additional requirements, by SWMU, follows. Included, as Figures 1 to 12, are drawings of the SWMUs with individual sample points.

<u>SWMU #1</u> - Aeration Lagoon

EPA approved Giant's proposal for "No Further Action". Although Giant demonstrated that no significant migration of hazardous constituents had taken place, EPA requires biennial sampling that duplicates the original RFI sampling. This is redundant and expensive. Giant should propose either a five year sampling rotation or a phased-in plan (of six sample locations, sample two biennially until all samples are taken, then start again). These sampling plans will diminish the costs considerably and still provide documentation that migration has not occurred.

EPA also requires a survey plat of the SWMU. Giant agrees that this is a reasonable requirement.

SWMU #2 - Evaporation Ponds

EPA has also approved Giant's proposal for "No Further Action" of this SWMU. EPA requires that Giant sample the seven groundwater wells (MW-4, OW-1, OW-2, OW-5, OW-7, OW-9 and OW-10) biennially for the same constituents as monitored for in the RFI sampling event. Giant may wish to propose a five year sampling rotation.

<u>SWMU #3</u> - Empty Container Storage Area

EPA approved Giant's proposal for "No Further Action" for the SWMU, requiring only that Giant provide a survey plat.

SWMU #4 - Old Burn Pit

EPA does not approve Giant's proposal for "No Further Action". Three borings at six and ten feet will be required to characterize constituent migration in this SWMU.

<u>SWMU #5</u> - Landfill Areas

EPA requires that additional borings, at eleven, sixteen and twenty feet to fully characterize contamination.

<u>SWMU #6</u> - Tank Farm

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. EPA requires seven additional borings to sixteen feet and one additional boring to twenty feet to fully characterize contamination. When Giant performed supplemental sampling of this SWMU in 1991, it was anticipated that further sampling would be required.

<u>SWMU #7</u> - Fire Training

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. Two additional angle borings to seven and eleven vertical feet are required. Additional sampling was anticipated when this SWMU was sampled in 1992, although I question why we now have to analyze for the Skinner List constituents. Samples from this SWMU were originally analyzed for TPH and oil & grease only.

<u>SWMU #8</u> - Railroad Rack Lagoon

EPA has approved Giant's corrective action plan for this SWMU, with additional requirements. After piping modifications at the railroad loading rack are complete and the railroad rack lagoon no longer receives waste, sampling is required within the footprint of the lagoon (five borings) and around the periphery of the lagoon (six borings). Sampling is also required in the overflow ditch (three borings to seven feet) and the fan out area (four borings to seven feet). Some sampling will be required during remediation of the lagoon to document completion of the corrective action plan.

A survey plat of the SWMU, after remediation, must be submitted to the EPA.

<u>SWMU #9</u> - Inactive Land Treatment Area

Although Giant had provided data and proposed no further action, this SWMU was not addressed in the correspondence with the EPA. It needs to be determined if EPA accepts our proposal or has additional requirements.

SWMU #10 - Sludge Pits

EPA is requiring additional sampling to 25' in this SWMU (seven borings) to fully characterize any contamination. Monitoring will be required during remediation to document completion of the corrective action plan.

Table 3

SWMU #	SAMPLES <u>REQUIRED</u>	ANALYSIS	COST
1	30	8240 8270 Metals	\$ 9,000 14,850 6,900
2	7	8240 8270 Metals pH	1,750 2,765 1,435 70
4	6	8240 8270 Metals pH	1,800 2,970 2,250 60
5	21	8240 8270 Metals	6,300 10,395 4,830
6	8	BTEX	1,000
7	4	TPH Oil & Grease	200 200
8	50	8240 8270	15,000 24,750
10	18	8240 8270 Metals	5,400 8,910 4,140
11		8240 8270	1,200 1,980
13	12	8240 8270	3,600 5,940
	Total	Analytical Cost	

Total Analytical Cost 1994 Only

<u>\$119,245</u>

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TABLE 4

BIENNIAL ANALYTICAL COST

<u>swmu ‡</u>	Samples <u>Required</u>	ANALYSIS	COST
1	30	8240 8270 Metals	\$ 9,000 14,850 6,900
2	7	8240 8270 Metals pH	1,750 2,765 1,435 70
13	12	8240 8270	8,600 5,940

Total Biennial Analytical Cost \$46,310

TABLE 5

TOTAL COST OF 1994 SAMPLING (ESTIMATE)

SWMU #	ANALYTICAL COST	LABOR *	COST
1	\$ 30,750	\$12,600	\$ 43,350
2	6,020	1,100	7,120
4	7,080	3,000	10,080
5	21,525	14,000	35,525
6	1,000	13,200	14,200
7	400	2,200	2,600
8	39,750	21,400	61,160
10	18,450	22,500	40,950
11	3,180	2,000	5,180
13	9,540	2,600	12,140
	<u>\$119,245</u>	\$94,600	<u>\$213,845</u>

* Including Drilling Rig

IV. Conclusions

The additional requirements to fully characterize SWMUs #4, 5, 6, 7, 8, 10 and 11 are reasonable. Although expensive, full characterization of potential pollution is the thrust of an RFI project and is Giant's objective.

The biennial sampling requirements for SWMUs #1, 2, and 13 are, in effect, a repeat of the original RFI project every two years. This is redundant, expensive and, in my opinion, unwarranted. In completing the original RFI work, it was demonstrated that SWMUs #1, 2, and 13 pose no threat to human health or the environment. Additional sampling is probably justified, because these SWMUs continue to handle wastewater, but on a smaller scale. I recommend that we propose to do additional sampling every five years on one-third of the sample points, or something of that magnitude. This should be enough sampling to document that there is no contamination.

It is important that we act now to minimize sampling requirements in that we can reasonably assume that as other SWMUs are characterized, additional long term sampling requirements for those SWMUs will be requested. This could be an expensive task that provides minimal protection to the environment.

The actual sampling process should be fairly straight forward. Sampling protocol will be identical to past projects and can be accomplished by refinery personnel. The sampling process needs to be modified to using a drilling rig to take core samples in place of backhoe and hand auger. This change is due to the increased depths of samples, the sheer number of samples to be collected, analyzed and reported during 1994, and the requirement to use more appropriate soil boring logs. Using a drilling contractor will provide the necessary speed of sampling and the lithologic observations necessary to complete this project in a timely and efficient manner.

It is in the best interest of Giant that we develop the proper response to these new requirements. I recommend that we carefully analyze our options in this matter and schedule a meeting with the RCRA staff at EPA to discuss this issue.

4.0 SUMMARY AND DISCUSSION OF SWMUs

This section summarizes the methods used to investigate each of the SWMUs and presents a summary of the field observations and analytical results. Recommendations are also made for future corrective actions.

4.1 SWMU No. 4 - Old Burn Pit

SWMU No. 4 consists of the old burn pit located just north and slightly west of the tank farm (Figure 4). The old burn pit was used to burn acid-soluble oils (ASO) which are a high molecular weight, asphalt-type cross polymerized hydrocarbon. The pit has been inactive since the early 1980s.

4.1.1 <u>Methods</u>

Three soil borings were drilled within the perimeter of the old burn pit using a CME drilling rig with a $2\frac{1}{2}$ " hollow-stem carbon steel auger to a depth of 10.0 feet. Samples were collected at the 6.0 and 10.0 foot intervals. A description of the soil types encountered during drilling was recorded on the lithologic log (Appendix C). Attempts were made to take field headspace measurements with the photo ionization detector (PID), but, part way through the sampling schedule, the PID pump ceased functioning.

The soil samples were collected in a clean stainless steel pan and were then placed into laboratory supplied containers, labeled, and placed into a cooler chilled to approximately 4°C for shipment to Westech Laboratories in El Paso, Texas under chain of custody (COC). Samples were collected, labeled, and shipped as required by Sections 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All auger flights, split spoons, and sampling equipment were decontaminated by steam cleaning and/or washing as outlined in section 5.0 of the Generic Sampling Plan.

Westech Laboratories analyzed each of the soil samples collected for: VOCs using EPA Method 8240/8260 (Skinner List); semi-volatile organic compounds (SVOCs) using EPA Method 8270 (Skinner

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List); and Total Metals. Analytical results are summarized below and are also presented in tabulated form in the appendices.

4.1.2 <u>Results</u>

Only one VOC (Methyl Ethyl Ketone [MEK]) and no SVOCs were observed in the analytical data. MEK was observed in RFI 0406V6.0 at a concentration of 1.2 mg/kg.

Chromium and nickel were observed in concentrations that exceeded background levels for soil at the Ciniza refinery area. Chromium exceedances were observed in 4 of 7 samples, ranging from 23 to 49% above background levels. Nickel exceedances were observed in 3 of 7 samples, ranging from 35 to 53% above background levels. Cadmium, lead, mercury, arsenic, barium, beryllium, and vanadium concentrations were within background levels in all of the samples examined.

4.1.3 <u>Recommendations</u>

Soil analyzed from the old burn pit contained only one elevated concentration of VOCs and some elevated levels of nickel and chromium. The VOC, methyl ethyl ketone, was detected at 1.2 mg/kg.

Remediation of this site should be limited to tilling the soil to a depth of 4.5 feet to aerate the deeper soil to promote natural attenuation. The metals can be isolated from human contact and surface receptors by applying a cap of native soil. This would also prevent infiltration of surface water and thereby limit downward migration of constituents.

A corrective action plan will be prepared for SWMU No. 4 and submitted for EPA approval.

4.2 <u>SWMU No. 5 - Landfill Areas</u>

SWMU No. 5 consists of landfill areas midway between the tank farm and the air strip (Figure 6). The landfills were used to dispose of non-regulated, non-hazardous materials from the refinery. The landfills have been inactive since the early 1980s.

4.2.1 <u>Methods</u>

Seven soil borings were drilled, as extensions of previous RFI borings, with a CME drilling rig using a $2\frac{1}{2}$ " hollow stem carbon steel auger to a depth of 20 feet (Figure 7). Samples were collected at 11.0, 16.0, and 20.0 feet. A description of the soil types encountered during drilling was recorded on the lithologic log (Appendix C). Field headspace measurements of volatile organic concentrations in each soil sample were made with a PID meter and recorded on the data management forms.

The soil samples were collected in a clean stainless steel pan and were then placed into laboratory supplied containers, labeled, and placed in a cooler chilled to approximately 4°C for shipment to the lab under COC. Samples were collected, labeled, and shipped as required by Sections 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All auger flights, split spoons, and sampling equipment were decontaminated by steam cleaning and/or washing as outlined in Section 5.0 of the Generic Sampling Plan.

Westech Laboratories analyzed each of the soil samples collected for: VOC using EPA Method 8240/8260 (Skinner List); SVOCs using EPA Method 8270 (Skinner List); and Total Metals. Analytical results are summarized below and are also presented in tabulated form in the appendices.

4.2.2 <u>Results</u>

VOCs were not detected in any of the soil samples collected. Field headspace measurements of volatile organic compounds made with a PID were all non-detect.

One SVOC was detected in three samples from three bore holes. Di-n-Butyl phthalate was detected in RFI 0515V20.0 at 13 mg/kg; in RFI 0516V16.0 at 7.5 mg/kg; and in RFI 0516V20.0 at 13.0 mg/kg.

Barium, chromium, lead, and nickel were detected concentrations exceeding background levels in the refinery area. Chromium was detected in 12 of 22 samples in concentrations from 7 to 120% above background levels. Barium was detected in 2 of 22 samples in concentrations from 25 to 31% above background levels. Lead was detected in 3 of 22 samples in concentrations from 2 to 15% above background levels; and nickel was detected in 12 of 22 samples in concentrations of 33 to 34% above background levels.

4.2.3 <u>Recommendations</u>

Elevated concentrations of chromium, barium, lead, and nickel were detected in the landfill area. Capping with a native soil cap, sloped to allow drainage away from the SWMU, will isolate the metals from surface receptors and will limit infiltration of surface water and downward migration of contaminants. Giant proposes to proceed with the corrective action plan submitted in February, 1993 to USEPA Region VI.

4.3 SWMU No. 6 - Tank Farm

SWMU No. 6 consists of seven hydrocarbon storage tanks, (ranging in size from 1,000 to 24,800 barrels) that have contained leaded gasoline (that is, gasoline blended with the compound tetraethyl lead). The tank farm is located immediately north of the operating units (Figure 2).

4.3.1 <u>Methods</u>

Seven borings were made, as extension of previous RFI borings, with a CME drilling rig using a $2\frac{1}{2}$ " hollow stem carbon steel auger. Samples were collected at 16.0 feet in all borings except RFI 0642V20.0 which was collected at 20.0 feet per USEPA request. Additional depths were sampled as necessary. A description of the soil types encountered during drilling was recorded on the lithologic logs (Appendix C). Field headspace measurement of volatile organic concentrations in each soil sample was attempted with a PID, but the meter was found to be defective.

The soil samples were collected in a clean stainless steel pan and were then placed into laboratory supplied containers, labeled, and placed into a cooler chilled to approximately 4°C for shipment to the lab under COC. Samples were collected, labeled, and shipped as required by Section 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All auger flights, split spoons, and sampling equipment were decontaminated by steam cleaning and/or washing as outlined by Section 5.0 of the Generic Sampling Plan.

Westech Laboratories analyzed each of the soil samples collected for: 8020 BTEX with the exception of samples RFI 0610V16.0 and RFI 0641V19.0 which were accidentally marked on the COC for VOCs by 8240/8260 Skinner List. Analytical results are summarized below and are also presented in tabulated form in the appendices.

4.3.2 <u>Results</u>

Elevated levels of VOCs were detected in most Two tanks in particular showed high samples. concentrations of BTEX, with results for total BTEX of 601,000 ug/kg in sample RFI 0639V16.0 (Tank 569) and 318,600 ug/kg in sample RFI 0640V16.0 (Tank 570). Concentrations in both of these borings showed marked reductions from the 16.0 foot to the 20.0 foot levels: 82% and 41% respectively. Other samples ranged from 52 ug/kg to 190,300 ug/kg for total BTEX. It is important to note that the highest benzene concentration in any sample was 4,600 ug/kg. It is also important to note that none of the deeper samples exceeded the New Mexico Environment Improvement Board water quality control regulatory action limits, which are:

Benzene	-	10,000	ug/kg
BTEX	-	500,000	ug/kg

In the event that obvious contamination is observed in a boring, standard practice is to continue drilling until two "clean" samples are obtained. mentioned, As previously the PID meter malfunctioned part way through the sampling program and, due to the fact that the Ciniza refinery is so isolated, a replacement PID meter could not be found in a timely manner. Sampling and drilling personnel were thus forced to rely on their olfactory senses in determining whether or not the samples collected appeared to be "clean".

4.3.3 <u>Recommendations</u>

Although the deepest samples contained BTEX in concentrations lower than WQCC standards, Giant has contracted to drill additional corings at Tank 569 and 570 to more adequately characterize BTEX concentrations. This drilling will occur on October 24, 1994.

Giant was unable to drill a coring at tank 451 due to limited operating space. A hand auger was used, but sampling personnel were unable to penetrate a gravel interval at approximately 14.0 feet. A portable pneumatic sampling spoon will be used on October 24 or 25 to obtain the samples at RFI 0635V16.0 (Tank 451). Results of both additional sampling activities will be submitted by December 1, 1994.

Elevated BTEX levels at the leaded tanks will need to be addressed. Giant will submit a corrective action plan to EPA to address those problems.

4.4 <u>SWMU No. 7 - Fire Training Area</u>

SWMU No. 7 consists of an open top tank, approximately 1,000 bbl, cut to one-third of its original height. This tank has been used once or twice per year for fire training for the Ciniza fire fighting team.

4.4.1 <u>Methods</u>

Two borings were made, at two points that had been previously sampled, at an angle under the tank. Samples were collected at 7.0 and 11.0 feet in both borings. A description of the soil types encountered during drilling was recorded on the lithologic logs (Appendix C). Field headspace measurement of volatile organic concentrations in each soil sample was attempted, but the PID meter was found to be defective.

The soil samples were collected in a clean stainless steel pan and were then placed into laboratory supplied containers, labeled, and placed into a cooler chilled to approximately 4°C for shipment to the lab under COC. Samples were collected, labeled, and shipped as required by Sections 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All auger flights, split spoons, and sampling equipment were decontaminated by steam cleaning and/or washing as outlined by Section 5.0 of the Generic Sampling Plan.

Westech Laboratories analyzed each of the soil samples collected for: VOCs using EPA Method 8240/8260 (Skinner List); SVOCs using EPA Method 8270 (Skinner List); Total Petroleum Hydrocarbon and Oil & Grease. Analytical results are summarized below and are also presented in tabulated form in the appendices.

4.4.2 <u>Results</u>

No VOCs were detected in SWMU No. 7. An SVOC (di-n-butyl phthalate) was detected in two samples (RFI 0705All.OD and RFI 0706A7.0). No concentrations of Total Petroleum Hydrocarbon or Oil & Grease were detected in this SWMU.

4.4.3 <u>Recommendations</u>

Additional sampling has demonstrated that Oil & Grease and TPH contamination is limited to a total depth of approximately 4.5 feet. Tilling and additions of nutrients will reduce the Oil & Grease concentrations. Upon approval by EPA, Giant will implement the corrective action plan submitted in February, 1993.

4.5 <u>SWMU No. 10 - Sludge Pits</u>

SWMU No. 10 consists of two connected pits that received API separator sludge (K051) and slop oil emulsion solids (K049) in the past. Contents of the pits were vacuumed out in 1980 and clean, dry soil was used to backfill the pits. The sludge pits were sampled in 1990 and again in 1991. A corrective action plan was submitted in 1993 and Giant has been given the authorization to proceed with bioremediation activities, with requirements (see EPA letter of January 7, 1994, in the Correspondence Section).

4.5.1 <u>Methods</u>

Eight borings were made to a depth of 25.0 feet, two being required by EPA to fully characterize the extent of potentially hazardous constituents, and the other six to satisfy requirements of closure of SWMU #10. All borings were made with a CME drilling rig using a $2\frac{1}{2}$ " hollow stem carbon steel auger. A visual description of the soil types encountered while drilling was recorded in the lithologic log (Appendix C). Field headspace measurement of volatile organic concentrations in each soil sample were made with a PID meter and these data were recorded on the data management forms.

The soil samples were collected into a stainless steel pan and were then placed into laboratory supplied containers, labeled, and placed into a cooler chilled to approximately 4°C for shipment to the lab under COC. Samples were collected, labeled, and shipped as required by Sections 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All augers, split spoons, and sampling equipment were decontaminated prior to each use by steam cleaning and/or washing as outlined in Section 5.0 of the Generic Sampling Plan.

Westech Laboratory analyzed each of the soil samples collected for: VOCs using EPA Method 8240/8260 (Skinner List); SVOCs using EPA Method 8270 (Skinner List); and Total Metals. Analytical results are summarized below and are also presented in tabulated form in the appendices.

4.5.2 <u>Results</u>

No VOCs were detected in SWMU No. 10. An SVOC (di-n-butyl phthalate) was detected in four samples: RFI 1018V19.0 at 13 mg/kg; RFI 1019V25.0 at 11 mg/kg; RFI 1021V19.0 at 11 mg/kg; and RFI 1021V25.0 at 11 mg/kg. Giant believes these results may be due to outside contamination. Barium, chromium, lead, nickel and showed significant statistical exceedances above background soil samples from the refinery area. Barium exceedances were observed in 10 of 17 samples, ranging from 2 to 182 % above background. Chromium exceedances were observed in 13 of 17 samples, ranging from 2 to 95%. Lead was observed in 11 of 17 samples, ranging from 2 to 28%. Nickel was observed in 17 of 17 samples, ranging from 9 to 67% above background. The detection of metals showed even distribution throughout the SWMU.

4.5.3 <u>Recommendations</u>

Due to the absence of hazardous hydrocarbon constituents at the deeper levels, Giant proposes to implement the corrective action plan submitted to EPA in February, 1993.

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4.6 <u>SWMU No. 11 - Secondary Skimmer</u>

SWMU No. 11 consists of the area where the old secondary skimmer was situated, in a drainage ditch south of evaporation Lagoon #4. The secondary skimmer has not been used since the late 1970s and was removed in 1991 to expedite sampling.

4.6.1 <u>Methods</u>

Two borings were made , to a depth of 10.0 feet, within the area occupied by the secondary skimmer with a CME drilling rig using a $2\frac{1}{2}$ " hollow stem carbon steel auger. A visual description of the soil types encountered while drilling was recorded in the lithologic logs (Appendix C). Field headspace measurement of volatile organic concentrations were made with a PID meter and recorded on the data management forms.

The soil samples were collected in a stainless steel pan and were then place in laboratory supplied containers, labeled, and placed into a cooler chilled to approximately 4°C for shipment to the lab under COC. Samples were collected, labeled, and shipped as required by Sections 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All augers, split spoons, and sampling equipment were decontaminated prior to each used by steam cleaning and/or washing as outlined by Section 5.0 to the Generic Sampling Plan.

Westech Laboratory analyzed each of the soil samples collected for: VOCs using EPA Method 8240/8260 (Skinner List) and SVOCs using EPA Method 8270 (Skinner List). Analytical results are summarized below and are also presented in tabulated form in the appendices.

4.6.2 <u>Results</u>

Two VOCs (ethylbenzene and xylenes) were detected in two borings: RFI 1104V6.0 and RFI 1104V10.0. No SVOCs were detected.

4.6.3 <u>Recommendations</u>

The extremely low levels of volatile organic compounds present no threat to human health or the environment. Giant believes that natural attenuation will remove the remaining trace VOCs. 1

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ANALYTICAL DATA

REPORTING LEVELS

8240/8260 SKINNER LIST	mg/Kg	
8270 SKINNER LIST	mg/Kg	
TOTAL METALS	mg/Kg	
8020 BTEX	ug/Kg	
OIL & GREASE	mg/Kg	
TOTAL PETROLEUM HYDROCARBONS	mg/Kg	

GIANT REFINING COMPANY

CINIZA

SWMU #4

TOTAL METALS

2.5 2.5 5.0

0.25

2.5 5.0

2.5 2.5 2.5

	DETECTION	CORI	NG NUMBEF	1	
PARAMETER		04V6.0	04V10.0	04V10.0D	05V6.0
Cadmium	2.5	<2.5	<2.5	<2.5	<2.5
Chromium	2.5	11	7.7	7.3	12
Lead	5.0	15	11	12	15
Mercury	0.25	<0.25	<0.25	<0.25	<0.25
Arsenic	2.5	<2.5	<2.5	<2.5	<2.5
Barium	5.0	130	240	260	170
Beryllium	2.5	<2.5	<2.5	<2.5	<2.5
Nickel	2.5	16	10	11	18
Vanadium	2.5	5.4	3.7	4.7	6.5

05V10.0	06V6.0	06V10.0

Cadmium	.	
Chromium		
Lead		
Mercury		
Arsenic		
Barium		
Boryllium		
Nickel		
Vanadium		_

<2.5	<2.5	<2.5
5.2	10	9.9
12	15	13
<0.25	<0.25	<0.25
<2.5	<2.5	<2.5
230	150	220
<2.5	<2.5	<2.5
9.2	18	9.5
4.0	6.4	4.6

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GIANT REFINING COMPANY

CINIZA

SWMU #4

8240/8260 SKINNER LIST

	DETECTION	COF	ING NUMB	ER	<u></u>
PARAMETER	LIMIT	04V6.0	04V10.0	04V10.0D	05V6.0
					•
Benzene	0.5	<0.5	<0.5	<0.5	<0.5
Carbon Disulfide	0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
Chloroethylvinyl Ether	1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	0.5	<0.5	<0.5	<0.5	<0.5
1,2–Dichloroethane	5.0	<5.0	<5.0	<5.0	<5.0
1,4-Dioxane	50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	0.5	<0.5	<0.5	<0.5	<0.5
Methyl Ethyl Ketone	1.0	<1.0	<1.0	<1.0	<1.0
Styrene	0.5	<0.5	<0.5	<0.5	<0.5
Toluene	0.5	<0.5	<0.5	<0.5	<0.5
Xylenes	0.5	<0.5	<0.5	<0.5	<0.5

05V10.0	06V6.0	06V10.0

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Benzene	0.5	<0.5	<0.5	<0.5
Carbon Disulfide	0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<0.5
Chloroethylvinyl Ether	1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	0.5	<0.5	<0.5	<0.5
1,2–Dichloroethane	5.0	<5.0	<5.0	<5.0
1,4-Dioxane	50.0	<50.0	<50.0	<50.0
Ethylbenzene	0.5	<0.5	<0.5	<0.5
Methyl Ethyl Ketone	1.0	<1.0	1.2	<1.0
Styrene	0.5	<0.5	<0.5	<0.5
Toluene	0.5	<0.5	<0.5	<0.5
Xylenes	0.5	<0.5	<0.5	<0.5

TLS 9/94

GIANT REFINING COMPANY CINIZA

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SWMU #4

8270 SKINNER LIST

	DETECTION	CORING NUMBER			
PARAMETER	LIMIT	04V6.0	04V10.0	04V10.0D	05V6.0
Anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzenethiol	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(b)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(k)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Bis(2-ethylhexyl)	ľ				
phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Butyl Benzyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Chrysene	5.0	<5.0	<5.0	<5.0	<5.0
Dibenz(a,j)acridine	5.0	<5.0	<5.0	<5.0	<5.0
Dibenzo(a,h)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Di-n-btyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
2-Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
,,,3–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
Diethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
7,12–Dimethylbenz(a)					
anthracene	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Dimethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dinitrophenol	25.0	<25.0	<25.0	<25.0	<25.0
Di-n-octyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Indene	5.0	<5.0	<5.0	<5.0	<5.0
Methylchrysene	5.0	<5.0	<5.0	<5.0	<5.0
1-Methylnaphthalene	5.0	<5.0	<5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
3-Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
4-Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Naphthalene	5.0	<5.0	<5.0	<5.0	<5.0
4-Nitrophenol	25.0	<25.0	<25.0	<25.0	<25.0
Phenanthrene	5.0	<5.0	<5.0	<5.0	<5.0
Phenol	5.0	<5.0	<5.0	<5.0	<5.0
Pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Pyroline	10.0	<10.0	<10.0	<10.0	<10.0
Quinoline	25.0	<25.0	<25.0	<25.0	<25.0

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GIANT REFINING COMPANY

CINIZA

SWMU #4

Anthracene Benzenethiol

Chrysene

Benzo(a)anthracene Benzo(b)fiouranthene Benzo(k)flouranthene Benzo(a)pyrene Bis(2-ethylhexyl) phthalate

Butyl Benzyl phthalate

Dibenz(a,j)acridine Dibenzo(a,h)anthracene Di-n-btyl phthalate 1,2-Dichlorobenzene 1,3-Dichlorobenzene Diethyl phthalate 7,12-Dimethylbenz(a) anthracene 2,4-Dimethylphenol Dimethyl phthalate 2,4-Dinitrophenol Di-n-octyl phthalate

Flouranthene Indene

Methylchrysene 1-Methylnaphthalene 2,4-Dimethylphenol 3-Methylphenol

4-Methylphenol Naphthalene 4-Nitrophenol Phenanthrene 8270 SKINNER LIST, cont.

PARAMETER

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TLS 9/94

Phenol Pyrene

Pyroline

Quinoline

SWMU No. 5, Landfill Areas

In 1987, five inactive solid waste landfill areas were identified as a solid waste management unit 2 (SWMU) during a Resource Conservation and Recovery Act (RCRA) facility assessment (RFA) 3 conducted at the Giant Refining Company-Ciniza Refinery (Ciniza). No further action was 4 recommended at one site, but further evaluation was required at the other four landfill areas. In the early 5 6 1990s, a subsequent RCRA facility investigation (RFI) designated these four inactive solid waste landfill 7 areas collectively as SWMU No. 5. This investigation included soil sampling and analysis, which indicated the presence of trace metals, and recommended corrective action. In 1994, the U.S. 8 Environmental Protection Agency (EPA) requested additional sampling at greater depth. Results 9 confirmed previous findings. 10

SWMU No. 5 was recommended for corrective action in the Phase III RFI. A voluntary corrective action plan (VCAP) was submitted in March 1993, recommending regrading, compaction, and placement of a 6-inch vegetated cover layer over the landfills. EPA approved the VCAP on January 5, 1994. In 1998, Ciniza proceeded with capping the landfills in accordance with the approved VCAP. This activity has been documented in the Landfill Area - SWMU No. 5 Closure Certification. The closure certification report provides certification of closure by a registered professional engineer.

17 5.1 Site Description and Operational History

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SWMU No. 5, Landfill Areas, (Figure 5-1, 5-2, 5-3) is located northwest of the Ciniza tank farm, 18 19 approximately 500 feet from Tank 337 (midway between the tank farm and airstrip). Three of the landfill 20 areas are contiguous, and the fourth is located approximately 50 feet north of the main landfill area. The 21 main landfill cap is approximately kidney-shaped and borders an access road adjacent to an equipment laydown area. A 15-foot by 15-foot fenced storage area is located immediately to the east of the cap and 22 23 is the most noteworthy local landmark. This area is located on an elevated bench. To the north and west 24 of the cap is a flat plain at an elevation approximately 15 feet below the bench. The smaller, remote 25 landfill area is located on the lower plain approximately 50 feet north of the main landfill cap. 26 Photographs of the landfill areas, taken during the 1998 site inspection performed by Practical 27 Environmental Services, Inc. (PES), are provided in the SWMU No. 5 Closure Certification.

The landfills were used to dispose of nonregulated materials from refinery construction, maintenance, and operational activities, but have been inactive since the early 1980s. These landfill areas are reported to contain inorganic, nonhazardous solid waste and debris from refinery construction, maintenance, and operational activities. No organic materials are known to be present in any of these areas.

5-1

1 5.2 Land Use

The landfill areas have been covered with an earthen cap. Access roads in the vicinity of the landfill areas have been removed and redirected away from the site. Forbidden entry signs have been posted and the capped areas are not currently being used for any purpose. The land will continue under the ownership of the Ciniza refinery.

6 5.3 Investigation Activities

7 Applied Earth Sciences (AES) investigated the landfill areas during the early 1990s. Soil samples were 8 collected and analyzed. No organic contaminants were detected in any sample. Trace metals were 9 detected in most samples, of which a few indicated levels slightly above ambient background 10 concentration. One surface soil sample indicated an elevated chromium concentration. As a result of the 11 investigation, AES recommended capping these areas.

12 5.4 Site Conceptual Model

13 There is no impact on the environmental fate of the land.

feet in other areas.

14 5.5 Site Assessments

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- 15 During the week of March 23, 1998, PES performed an on-site inspection. Observations are as follows:
- A small triangular portion of the equipment laydown area was eliminated in order to reshape 16 the main landfill cap and improve the surface slope. This allowed consolidation of the main 17 18 cap over the three landfill areas located on the upper bench. The main landfill cap has been crowned at a high point west of the fenced storage area and 19 then sloped progressively to the west and north until intersection with the lower plain. This 20 21 has produced a gradual side slope that is less susceptible to erosion. 22 A small, standalone cap was installed over the remote landfill area located north of the main 23 cap. 24 Two access roads in the area were eliminated and replaced by a new access road that routes ٠
 - traffic away from and around the main landfill area.
 Cap thickness was increased in several areas in order to accommodate contouring requirements. Installed thickness ranges from approximately 4 feet in some areas to over 8

PES did not perform any sampling or analysis during this site inspection. The inspection was limited only
to visual observations.

Based on this site assessment, PES certified closure of the landfill areas based on the following: 1 The boundaries of the landfill areas have been delineated. 2 An engineered earthen cap composed of low hydraulic conductivity, native soil has been 3 installed over the surface. 4 Run-on and run-off controls have been installed. The surface has been crowned to prevent 5 ponding and gradually sloped to inhibit erosion. A perimeter ditch and culvert have been 6 installed to redirect run-on. 7 Native manure, amendments, and a revegetation seed mix have been applied, tilled into the 8 surface, and watered. Supplemental watering is planned until initial growth is well 9 established. 10 Access roads in the vicinity of the landfill areas have been removed and redirected away from 11 • 12 the site. Forbidden entry signs have been posted. A post-closure care program is being implemented. 13 5.6 NFA Proposal 14 Ciniza is proposing that no further action is required for SWMU No. 5 based on the following criteria: 15 No release to the environment has occurred or is likely to occur in the future from the 16 SWMU. (NFA Criterion 3) 17 The SWMU has been characterized and remediated (closed) in accordance with current 18 • applicable state regulations, and the available data indicate that contaminants pose an 19 acceptable level of risk under current and projected future land use. (NFA Criterion 5) 20 21 The rationale supporting this proposal for NFA is based on the Landfill Areas - SWMU No. 5 Closure 22 Certification report prepared by PES. The report identifies the criteria for landfill closure established by the State of New Mexico and documents the fulfillment of these criteria for SWMU No. 5. Closure 23 24 information from the report is provided below. Due to the close proximity of three of the landfill areas, a single contiguous cap has been specified for 25 these three upper bench landfill areas. A small secondary cap has been specified for the remote landfill 26 27 area located north of the main area. Neighboring native soil, similar in composition to landfill area subsoils, has been specified and used for 28 cap construction. This soil is predominantly bentonitic clays and silt, and has a very low hydraulic 29 conductivity of less than 10⁻⁷ cm/sec. The use of locally derived soil also promotes a consistent 30 appearance and character of the reclaimed areas vis-à-vis surrounding terrain. 31

Minimum depth of cover has been specified at 2 feet final compacted thickness. However, due to grading
 and surface contouring considerations, actual installed thickness ranges from 4 to 8 feet.

Cap construction has been specified as building upward from existing grade by progressive placement of soil layers 6 to 8 inches thick; followed by wetting and compaction to 95 percent of Standard Proctor maximum dry density. Grading and contouring have been specified and conducted to achieve a finished slope of not greater than 25% (4:1) over any area of the landfill. Caps have been specified and installed as crowned masses with sustained downward slope and no local depressions.

A perimeter ditch has been installed along the interior curve of the main cap adjacent to the access road.
This ditch collects run-off from the adjoining equipment laydown area and funnels collected water to a
low point invert. The ditch has been specified as not less than 2 feet wide by 2 feet deep, and sloped not
less than 1/8 inch per foot downward to the invert.

In addition, a buried culvert is required to transmit collected water from the east side perimeter ditch to a west side outfall. This culvert has been specified and installed as 2 feet in diameter and sloped not less than 1/16 inch per foot downward to the outfall. The culvert has been buried within the built-up cap soil layer and above the landfill's solid waste zone.

Existing access roads, which traversed the main landfill area, have been covered over and eliminated. Access to the capped area has been restricted by road removal and realignment, as well as installation of a new road that routes traffic around the landfill area. Forbidden access signs have also been posted adjacent to the remaining access road.

The surface of the cap has been amended to promote revegetation. Locally generated manure and appropriate grass seed have been tilled into soil and watered. Dryland Pasture Mix was used, consisting of various wheat and rye grass species.

Due to a lack of organic matter within the landfill areas, gas generation is not considered likely and
therefore no venting system has been specified or installed.

25 Ciniza continues to maintain the closed site based on the post-closure care program:

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During the first year's growing season, the site was watered monthly to promote initial rooting and plant growth. One gallon per square foot was spray applied.

• The site is visually inspected on an annual basis to detect erosion or deterioration of the caps, operability of the drainage ditch and culvert, health and coverage of the vegetation, and signs of unauthorized access.

- As necessary, the caps and drainage system are maintained and repaired. As necessary, areas where vegetation has not established are reseeded. As necessary, unauthorized access or other use of the landfill areas is prevented.
- 4 At the end of the five year post-closure care period, the site shall be inspected to confirm compliance with
- 5 regulations and successful reclamation.

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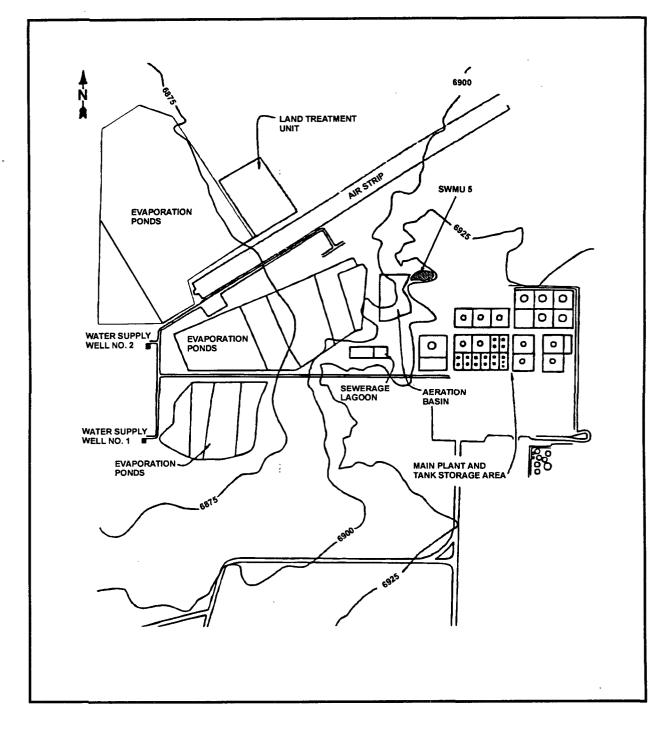


Figure 5-1. SWMU No. 5, Landfill Areas

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Figure 5-2. SWMU No. 5, Landfill Area

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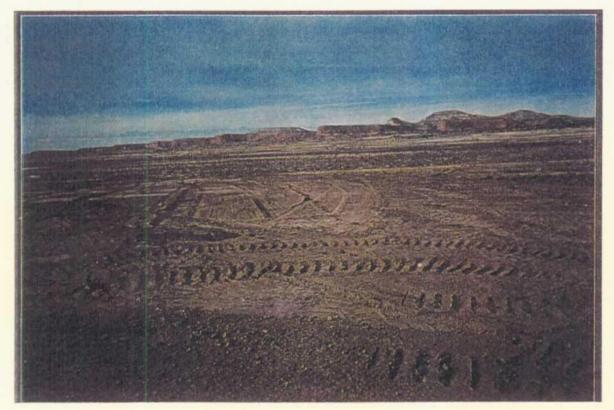


Figure 5-3. SWMU No. 5, Landfill Area

SWMU #5 Closure Certification Report



Solid Waste Landfill Areas Ciniza Refinery McKinley County, New Mexico



Prepared for:

Ciniza Refinery Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

Prepared by:

Practical Environmental Services, Inc. 1444 Wazee Street, Suite 225 Denver, Colorado 80202

Job No. 98-205-03

April 23, 1998

1.0 EXECUTIVE SUMMARY

Practical Environmental Services, Inc. (PES) has been retained by Giant-Ciniza Refinery (Ciniza) to perform detailed engineering design, construction oversight, and installation verification of a cap and related closure requirements for several solid waste landfill areas located within the Ciniza Refinery, in McKinley County, New Mexico.

These solid waste landfill areas were identified as a Solid Waste Management Unit (SWMU), and designated as SWMU #5, during a RCRA Facility Investigation conducted at the refinery in the early 1990's. This investigation included soil sampling and analysis, detected trace metals, and recommended corrective action.

In 1994, the Environmental Protection Agency Region VI Office (EPA) requested additional sampling at greater depth. Results confirmed previous findings. A voluntary corrective action plan (CAP) was prepared by Ciniza and approved by the EPA in 1994. The approved CAP was implemented in 1998.

Closure of SWMU #5 is now being performed in conjunction with submittal of a Resource Conservation and Recovery Act (RCRA) Part B permit application covering post closure care of the Ciniza Refinery Land Treatment Unit. Closure certification findings are summarized as follows.

- \Rightarrow The boundaries of the landfill areas have been delineated.
- ⇒ An engineered earthen cap composed of low hydraulic conductivity, native soil has been installed over the surface.
- ⇒ Run-on and run-off controls have been installed. The surface has been crowned to prevent ponding and gradually sloped to inhibit erosion. A perimeter ditch and culvert have been installed to redirect run-on.
- ⇒ Native manure, amendments, and a revegetation seed mix have been applied, tilled into the surface, and watered. Supplemental watering is planned until initial growth is well established.
- ⇒ Access roads in the vicinity of the landfill areas have been removed and redirected away from the site. Forbidden entry signs have been posted.
- \Rightarrow A post-closure care program is being implemented.

2.0 BACKGROUND

During 1987, a RCRA Facility Assessment was conducted at the Ciniza Refinery. This assessment identified various "solid waste management units" including five former solid waste landfill areas. No further action was recommended at one site. Further evaluation was recommended at four sites.

A RCRA Facility Investigation was subsequently conducted. The four sites recommended for further study were collectively designated as SWMU #5.

Applied Earth Sciences (AES) conducted the follow-up investigation. Soil samples were collected and analyzed. No organic contaminants were detected in any sample. Trace metals were detected in most samples; of which, a few samples indicated levels slightly above ambient background concentration. One surface soil sample indicated an elevated chromium concentration. As a result, AES recommended capping these areas. A voluntary corrective action plan was prepared and submitted to the EPA; which approved the plan in 1994.

These landfill areas are reported to contain inorganic, non-hazardous solid waste and debris from refinery construction, maintenance, and operational activities. No organic materials are known to be present in any of these areas.

All four landfill sites are located in close proximity to each other and are collectively identified as SWMU #5. Three of these sites are contiguous and therefore have been grouped under a single large cap. The fourth site is small and isolated, and has been capped separately. It is located approximately 50 feet north of the main area.

3.0 SITE LOCATION AND DESCRIPTION

SWMU #5 is located within the Ciniza Refinery's property boundary. This refinery is located on the north side of Interstate 40, approximately 17 miles east of Gallup, New Mexico. Within the refinery, SWMU #5 is located northwest of the tank farm, approximately 500 feet from Tank 337. See Drawing X1 in Appendix A for location details.

The main landfill cap is approximately kidney-shaped and borders an access road adjacent to an equipment laydown area. A 15 foot by 15 foot fenced storage area is located immediately to the east of the cap and is the most noteworthy local landmark. This area is located on an elevated bench. To the north and west of the cap is a flat plain at an elevation approximately 15 feet below the bench. The smaller, remote landfill area is located on the lower plain approximately 50 feet north of the main landfill cap.

4.0 CLOSURE REQUIREMENTS

State of New Mexico regulations (20 NMAC 9.1 Section 502) specify the following criteria for landfill closure:

 Installation of a final cover system to include a minimum 18 inch thick infiltration prevention layer of earthen material having a saturated hydraulic conductivity of less than or equal to natural subsoils or 10⁻⁵ cm/sec, whichever is less; plus a minimum 6 inch thick erosion layer capable of sustaining native plant growth; maximum 25% grade side slopes, and a final surface contour sufficient to prevent ponding. • A written description of the final cover as installed, an estimate of the covered surface area and contained waste volume, and plan drawings showing the final contours and reclamation areas.

In addition, the approved corrective action plan also specifies closure criteria as follows:

- A soil cap shall be installed over the landfill areas to isolate waste material and prevent infiltration of precipitation. The cap shall be composed of native soil; properly wetted and compacted to achieve a low hydraulic conductivity.
- The site shall be graded and contoured to eliminate local depressions and achieve positive drainage.
- The surface soil shall be amended and seeded to promote revegetation.
- Post-closure care shall incorporate annual site inspections and maintenance of the soil cap.

5.0 DESIGN AND CONSTRUCTION

The four landfill areas associated with SWMU #5 have been located in the field. Due to close proximity to each other, a single contiguous cap has been specified for the three upper bench landfill areas. A small secondary cap has been specified for the remote landfill area located north of the main area.

Neighboring native soil, similar in composition to landfill area subsoils, has been specified and used for cap construction. This soil is predominantly bentonitic clays and silt, and has a very low hydraulic conductivity of less than 10^{-7} cm/sec. The use of locally derived soil also promotes a consistent appearance and character of the reclaimed areas vis-à-vis surrounding terrain.

Minimum depth of cover has been specified at two feet final compacted thickness. However, due to grading and surface contouring considerations, actual installed thickness ranges from four to eight feet.

Cap construction has been specified as building upward from existing grade by progressive placement of soil layers 6 to 8 inches thick; followed by wetting and compaction to 95 percent of Standard Proctor maximum dry density. Grading and contouring has been specified and conducted to achieve a finished slope of not greater than 25% (4:1) over any area of the landfill. Caps have been specified and installed as crowned masses with sustained downward slope and no local depressions.

A perimeter ditch has been specified and installed along the interior curve of the main cap adjacent to the access road. This ditch collects run-off from the adjoining equipment laydown area and funnels collected water to a low point invert as shown on Drawing X2. The ditch has been specified as not less than 2 feet wide by 2 feet deep, and sloped not less than $1/8^{th}$ inch per foot downward to the invert. In addition, a buried culvert is required to transmit collected water from the east side perimeter ditch to a west side outfall. This culvert has been specified and installed as 2 feet in diameter and sloped not less than $1/16^{th}$ inch per foot downward to the invert to the outfall. The culvert has been buried within the built-up cap soil layer and above the landfill's solid waste zone.

Existing access roads, which traversed the main landfill area, have been covered over and eliminated. Access to the capped area has been restricted by road removal and realignment; plus installation of a new road which routes traffic around the landfill area. Forbidden access signs have also been posted adjacent to the remaining access road.

The surface of the cap has been amended to promote revegetation. Locally generated manure and appropriate grass seed have been tilled into soil and watered. Dryland Pasture Mix was used, consisting of various wheat and rye grass species.

Due to a lack of organic matter within the landfill areas, gas generation is not considered likely and therefore no venting system has been specified or installed.

6.0 SITE INSPECTION

During the week of January 20, 1998, while construction of the landfill caps and related facilities was in progress, an on-site inspection was performed. Photographs are presented in Appendix B. Observations are noted as follows:

- A small triangular portion of the equipment laydown area was eliminated in order to reshape the main landfill cap and improve the surface slope. This allowed consolidation of the main cap over the three landfill areas located on the upper bench.
- The main landfill cap has been crowned at high point west of the fenced storage area and then sloped progressively to the west and north until intersection with the lower plain. This has produced a gradual side slope which is less susceptible to erosion.
- A small, standalone cap was installed over the remote landfill area located north of the main cap.
- Two access roads in the area were eliminated and replaced by a new access road which routes traffic away from and around the main landfills area.

• Cap thickness was increased in several areas in order to accommodate contouring requirements. Installed thickness ranges from approximately four feet in some areas to over eight feet in other areas.

7.0 POST-CLOSURE CARE

A five year post-closure care period is proposed for the capped areas. During this time, the following activities shall be performed.

- During the first year's growing season, the site shall be watered monthly to promote initial rooting and plant growth. One gallon per square foot shall be spray applied.
- The site shall be visually inspected on an annual basis to detect erosion or deterioration of the caps, operability of the drainage ditch and culvert, health and coverage of the vegetation, and signs of unauthorized access.
- As necessary, maintain and repair the caps and drainage system. As necessary, re-seed areas where vegetation has not established. As necessary, prevent unauthorized access or other use of the landfill areas.

At the end of the five year post-closure care period, the site shall be inspected to confirm compliance with regulations and successful reclamation.

8.0 PROFESSIONAL ENGINEER'S CERTIFICATION

This landfill closure certification report has been prepared under the direct supervision and control of a Registered Professional Engineer.

Client: Ciniza Refinery Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

Job No.: 98-205-03

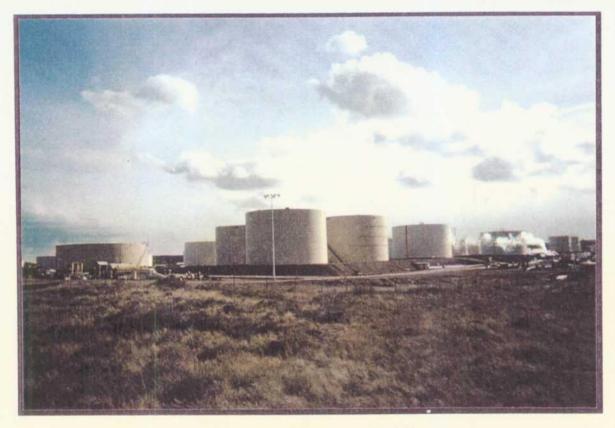
Date: April 23, 1998

Prepared and Certified by:



Thomas D. Atwood, P.E. Colorado Registration No. 22866

SWMU #5 Summary Report



Landfill Location Reference - Tank Farm



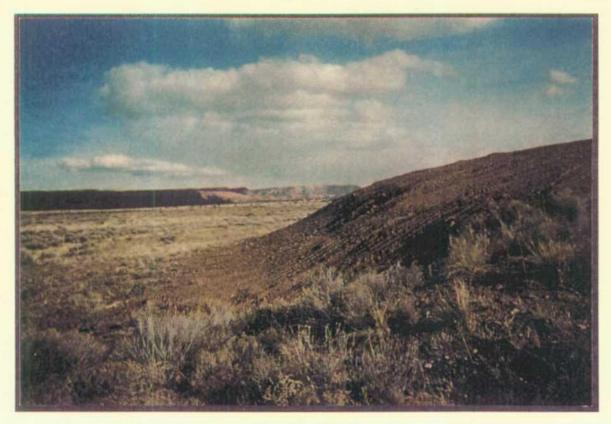
Landfill Site Prior To Cap Installation

SWMU #5 Summary Report





Side Slope Construction



Side Slope Profile

SWMU #5 Summary Report



Clean Soil Being Trucked To Site



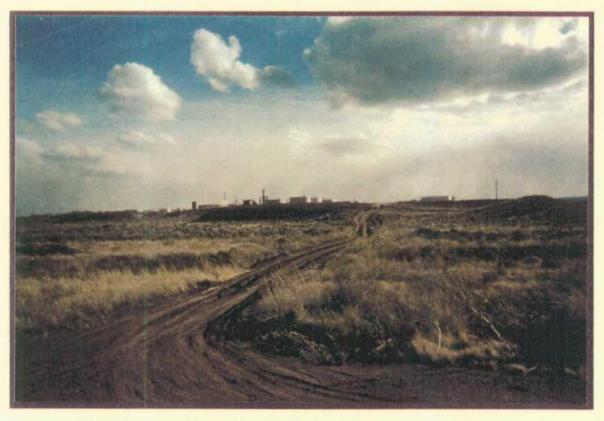


Soil Layer Placement

SWMU #5 Summary Report

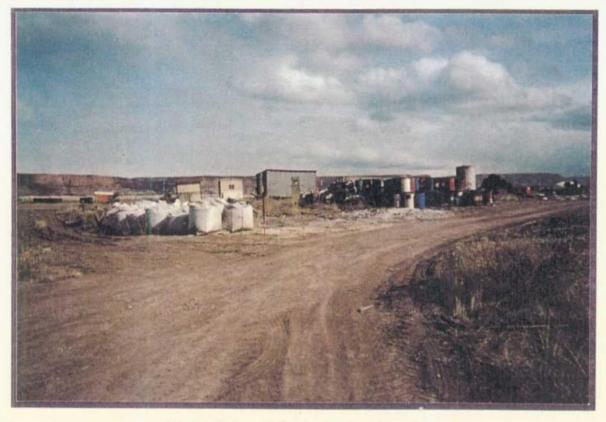


Access Road Being Removed From Site

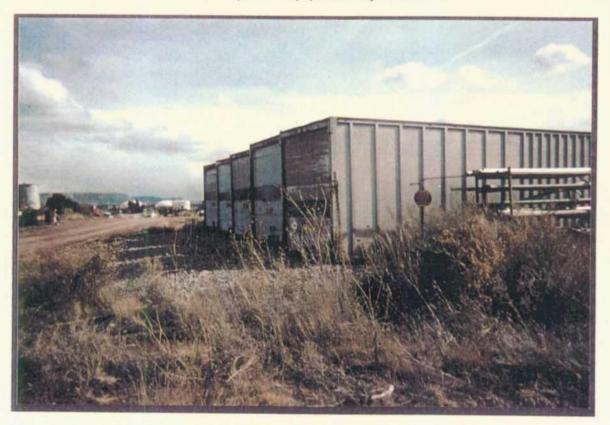


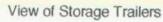
View of Landfill Site From Lower Flat

SWMU #5 Summary Report



View of Adjacent Equipment Laydown Area

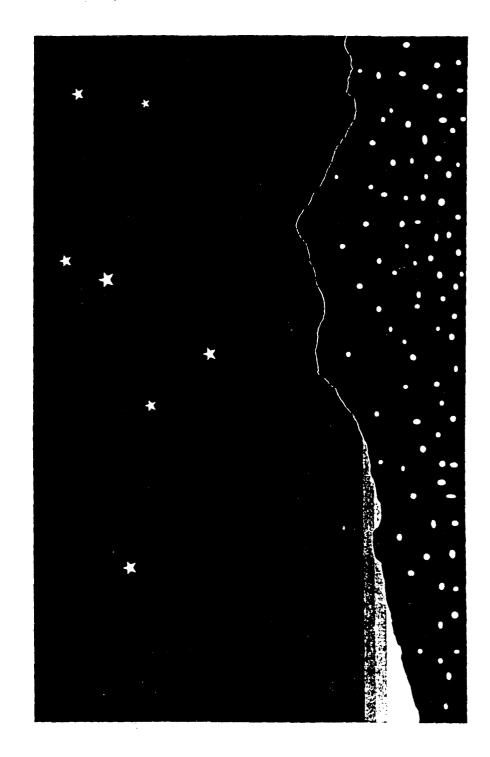




SWMU #5 Summary Report

4

SWMU-5 LANDFILL AREA



SWMU # 3 - EMPTY CONTAINER STORAGE AREA PARAMETERS - 5240 PRIORITY POLLUTANTS IZ SAMPLES

SWMU # 4- BURN PIT

9 SAMPLES

SDMU #5- FOUR LAND FILLS PARAMETERS - 8240 PRIORITY POLLUTANTS BACKGROUND METALS

pH

48 SAMPLES

SWMU #7 - FIRE TRAINING AREA

PARAMETERS - TPH

OIL & GREASE

12 SAMPLES

SWMU # 11 - SECONDARY OIL SKIMMER & ASSC. DITCH PARAMETERS - SKINNER LIST (CONSTITUENTS) 4 SAMPLES

S5 INDIVIDUAL SAMPLES

.....

1	}-1	.5	-96	;	3:36PM	;

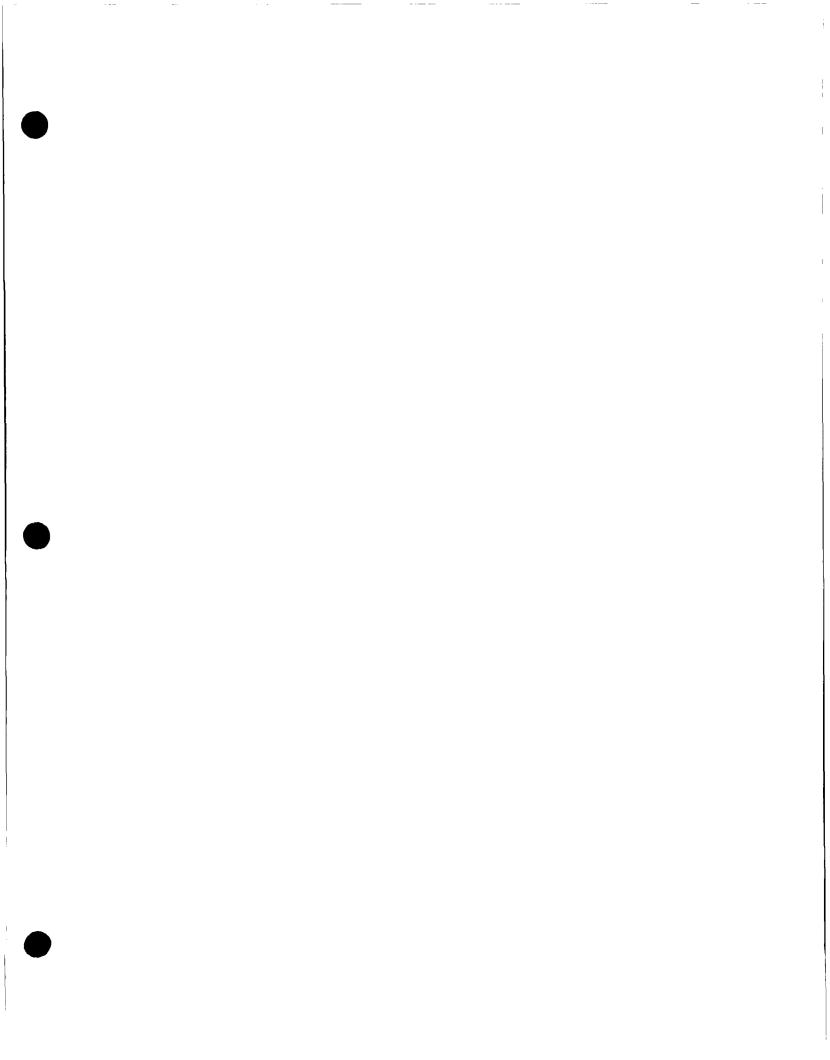
Reg 6 Haz Waste→ 5057220210;# 1/ 3

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	FACSINILE TRANSP	ITTAL '
UNIT	ED STATES ENVIRONMENTA REGION 6 1445 BOSS AVEN DALLAS, TEXAS 752 MULTIMEDIA PERMITTUNG AND NEW MEXICO AND FEDERAL FA	IUE 12-2733 PLANNING DIVISION
	PLEASE PRINT IN BLACK INK ONLY	
TO: Ed Horst, E	svironmental Manager - Ciant Refini	ng Company, Ciniza
MACHINE NUMBER: 505.721.0210	VERIFICATION NUMBER: 505.722.02	227
FROM: James A. Harris, Jr., RCRA	Facility Manager/Geologist	
PHONE: (214) 665-8302	Mail Coder GPD-N	
OFFICE: New Maxice/Federal Facili	itjes Section	PAGES, INCLUDING COVER SHEET
iTE: March 15, 1996		,
	PLEASE NUMBER ALL PAGES	
IN	FURMATION FOR SENDING PACSIMILE M	ESSAGES
EQUIPMENT:	FACSIMILE NUMBER:	VERIFICATION NUMBER:
PANAFAX UF-766	(214) 668-6762	(214) 665-6769
COMMENTS		
Ed.		
Hara's what I have been using to track Ginni,	Ciniza's corrective action program. Please serie	w and lat's discuss it next weak. Have a good one.
M		
Thank JATHES		

		ينتحد بزرج							
repare	. 11:	7:	UT , **	4:	3:	13:	12:	2:	1:
repared by: James A. Harris, Jr.\6MPM as at March 13, T		Fire Training Area (4)	Landfill Areas (7)	Old Burn Pit (8)	Empty Container Storage Area (5)	The Drainage Ditch between APIs Evaporation Ponds and the Neutralization Tank Evaporation Ponds (14)	Contact Waste Water Collection System (CWWCS)	The Evaporation Ponds (2)	The Aeration Basin (1)
	3	2	£	2	Phase III	2	3	3	Phase II
	Under VCA	Under VCA	a Voluntary Corrective Action (VCA) Plan to cap the "Landfill Areas" was submitted in March 1993.			soil and groundwater sampling every five years	Inspection every 5 years beginning 1996	2	soil and groundwater sampling every five years
	discolored soil is the natural color; there is no hydrocarbon staining or odors detected; reference to "black fill" sand is actually "back fill"		EPA approved the VCA Plan on January 5, 1994 but required that additional soil borings be completed prior to Giant proceeding with the capping activities		2	Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process		Burvey and closure certification must be submitted prior to initiating Class III Permit Mod process	RFI PHII RPT APP 1/94 w/modifications; Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process
SENT BY: 3-15-96 : 3:37PM : Reg 6 Haz Waster 5057220210:# 3/ 3									

1





Route 3, Box 7 Gallup, New Mexico 87301

FILE COPY

January 6, 1995

William Honker, Chief RCRA Permits Branch U.S. Environmental Protection Agency Region VI 1445 Ross Avenue, Suite 1200 Dallas, Texas 75202-2733

Re: RCRA Facility Investigation (RFI) Additional Sampling -Revised Report Giant Refining Company - NMD000333211

Dear Mr. Honker:

Giant Refining Company - Ciniza submits the revised report requested in your letter of December 19, 1994. Specifically, the comments are listed and addressed below:

General Comment:

Giant needs to justify in a revised report why the detection limits for the volatile and semi-volatile soil analysis (8240/8260) for each SWMU were relatively high. For example, the PQL for benzene for a low contaminated sample should be 5 ug/kg, Giant's detection limit was 500 ug/kg; likewise, the PQL for chrysene in a low contaminated sample should be 300 ug/kg, Giant's detection limit was 5,000 ug/kg.

Response:

Giant used the reporting limits for volatiles and semi-volatiles (8240/8260) that have been used in all of the RFI sampling since sampling began in 1990 and that are included in the approved <u>Generic Sampling Plan (May 17, 1990)</u>. Giant recognizes that there is a considerable difference between the reporting (detection) limits used in the RFI sampling and the practical quantitation limits determined in a laboratory and that a comparison of the two was never intended. Because no regulatory requirements for reporting (detection) limits in soil were noted, Giant reasoned

that, for consistency, the reporting (detection) limits for all 8240/8260 analysis would remain the same as in past RFI sampling events. As the reporting (detection) limits were well below New Mexico Water Quality Control Regulations and NMED's Solid Waste Management Regulations corrective action levels, Giant considered the limits used to be reasonable and acceptable.

<u>General Comment:</u>

Please include in a revised report the original data package from the sampling event and the QA/QC discussion/analysis on this data package.

<u>Response</u>:

A copy of the original laboratory data and QA/QC report was forwarded to Region VI on or about December 19, 1994.

General Comment:

EPA is requiring that Giant use the boring log/description format attached in the January 7, 1994, RFI Phase I and II approval letter for all future borings required by EPA. Each boring log must indicate whether or not there is visual contamination in each interval; whether or not there is olfactory contamination in each interval; and, include the PID reading for each interval. In addition, Giant should carry an extra PID instrument when conducting the RFI investigations.

<u>Response</u>:

Giant will use the boring log/description format supplied by the EPA in all future borings required by EPA. A copy of of the requested format is attached. Giant will also lease an additional photo-ionization detector when conducting all future RFI sampling.

SWMU \$5, Landfill Areas - Field Notes/Analytical Results:

Please explain in a revised RFI report why the PID reading for sample number 0513 at 16 feet was 230 ppm, but the analytical result for the soil sample was non-detect.

<u>Response</u>:

Although every effort is made during sampling to keep all equipment and materials downwind of the samples, it must be remembered that this is a field sampling project in a refinery and occasional changes in wind patterns, equipment movement, and sample collection, to name a few site variables, may bias certain observations. Giant feels that this is the case with sample 0513 at 16.0 feet and that exhaust fumes were detected with the PID.

Giant will keep more detailed notes of PID observations, PID background levels and weather changes on the RFI Data Management Forms during all future sampling required by EPA.

SWMU #6, Tank Farm - Page 4.5; Results:

EPA's interpretation of the soil boring results indicate that there is BTEX contamination in the most vertical interval taken at each tank boring. Therefore, the full extent of contamination has not been determined at each tank.

<u>Response</u>:

Using the same sampling locations and intervals, numbering system, and sampling protocol as the August, 1994 event, Giant will bore and sample until two clean samples are obtained at each tank. This sampling will occur in the first quarter of 1995.

SWMU #11, Secondary Oil Skimmer - Field Notes from Coring 1104:

Please clarify in the revised RFI report whether the discolored clay/sand at 6 feet is from hydrocarbon contamination or just the natural soil color.

<u>Response</u>:

The discolored soil mentioned in the field notes is the natural color. No hydrocarbon staining or odor was observed in any interval of this boring.

SWMU #11, Secondary Oil Skimmer - Field Notes from Coring 1103:

Please clarify in the revised RFI report whether the black "fill" sand at 5 feet is from hydrocarbon contamination or just the natural soil color.

Response:

The "black fill" sand was a recording error. It should read "back filled" sand and I should have caught the mistake. There were some grey/black sections in the 1.5 to 7.5 foot interval that were not hydrocarbon contaminated. Those sections were most likely the natural soil color or possibly the end product of natural biodegradation of organic matter.

Thank you for the opportunity to address the deficiencies in the <u>Report on the Additional RFI Sampling, October, 1994</u>. If you require additional information, please contact me at (505) 722-0227.

Sincerely,

Lynn Shelton Senior Environmental Coordinator Giant Refining Company

TLS:sp

cc: Kim Bullerdick, Corporate Counsel Giant Industries Arizona, Inc.

> Benito Garcia, Bureau Chief HRMB New Mexico Environment Department

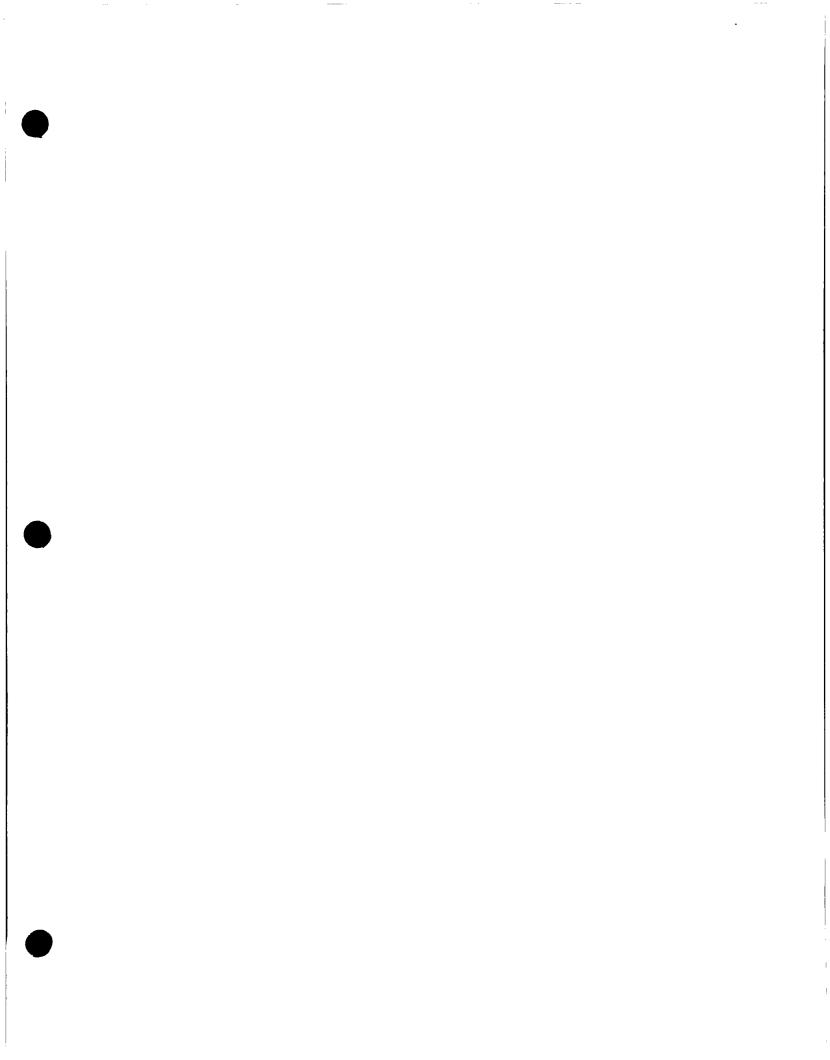


BORING LOG RFI Project 1995 Boring ID Number: Date:

GIANT - CINIZA Logged by: Drilled by: Total Depth:

Description	Depth	Symbol	Sample	PID
(Include odors and discoloration of soil)	l			(ppm)
	0.0			
	2.0			
	4.0			
	6.0			
	8.0			
	10.0			
	12.0			
	14.0			
	16.0			
	18.0			
· .	20.0			
	22.0			
	21.0			
	24.0			
	26.0			
	28.0			
	30.0			
	32.0			
	34.0			
	36.0			
	38.0			
	40.0			

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6 1445 ROSS AVENUE, SUITE 1200 DALLAS, TX 75202-2733

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	UNIT	6 199	5
	GIANT CIN!Z	REFINITION	V.

DEC 2 2 1994

CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Mr. John J. Stokes, Manager Giant Refining Company Route 3, Box 7 Gallup, NM 87301

RE: RCRA Facility Investigation (RFI) Additional Sampling Report, Giant Refining Co. - NMD000333211

Dear Mr. Stokes:

The Environmental Protection Agency (EPA) has completed a technical review of Giant Refining's RFI report, dated October 1, 1994, and has determined that the report is deficient. Enclosed is a list of deficiencies for your review.

A revised Report addressing the enclosed deficiencies must be submitted to EPA by February 10, 1995. If this revised report is not approved, then EPA may make further modifications as required. The modified report then becomes the approved RFI report.

If you should have any questions or need additional information, please feel free to contact Mr. Rich Mayer of my staff at (214) 665-7442.

Sincerely yours,

Om gallaghen, ben

William K. Honker, P.E., Chief RCRA Permits Branch

Enclosure

cc: Mr. Benito Garcia New Mexico Environment Department



DEFICIENCY COMMENTS ON GIANT'S RFI ADDITIONAL SAMPLING REPORT FOR SWMUS' 4, 5, 6, 10 AND 11

General Comment: Giant needs to justify in a revised report why the detection limits for the volatile and semivolatile soil analysis (8240/8260) for each SWMU were relatively high. For example, the PQL for benzene for a low contaminated sample should be 5 ug/kg, Giant's detection limit was 500 ug/kg; likewise, the PQL for chrysene in a low contaminated sample should be 300 ug/kg, Giant's detection limit was 5,000 ug/kg.

General Comment: Please include in a revised report the original data package from the sampling event and the QA/QC discussion/analysis on this data package.

General Comment: EPA is requiring that Giant use the boring log/description format attached in the January 7, 1994, RFI Phase I and II approval letter for all future borings required by EPA. Each boring log must indicate whether or not there is visual contamination in each interval; whether or not there is olfactory contamination in each interval; and, include the PID reading for each interval. In addition, Giant should carry an extra PID instrument when conducting the RFI investigations.

SWMU #5, Landfill Areas

Field Notes/Analytical Results: Please explain in a revised RFI report why the PID reading for sample number 0513 at 16 feet was 230 ppm, but the analytical results for the soil sample was non-detect?

SWMU #6, Tank Farm

Page 4.5; Results: EPA's interpretation of the soil boring results indicate that there is BTEX contamination in the most vertical interval taken at each tank boring. Therefore, the full extent of contamination has not been determined at each tank.

SWMU #11, Secondary Oil Skimmer

Field Notes from Coring 1104: Please clarify in the revised RFI Report whether the discolored clay/sand at 6 feet is from hydrocarbon contamination or just the natural soil color.

Field Notes from Coring 1103: Please clarify in the revised RFI Report whether the black "fill" sand at 5 feet is from hydrocarbon contamination or just the natural soil color.



Route 3, Box 7 Gallup, New Mexico 87301

December 16, 1994

Nancy Morlock Hazardous Waste Management Division U.S. Environmental Protection Agency Region VI 1445 Ross Avenue, Suite 1200 Dallas, Texas 75202-3733

Re: Quarterly Progress Report

Dear Ms. Morlock:

Pursuant to the requirements of the HSWA permit, condition C.4., Page 11 and the May 31, 1990 RFI Workplan Approval, Giant Refining Company-Ciniza (Giant) submits the Quarterly Progress Report for the fourth quarter of 1994.

Giant has performed additional drilling at two locations around Tank 569. Sample point RFI 0639 was drilled to a depth of fifty five feet and sample point RFI 0640 was drilled to a depth of forty feet. BTEX (method 8020) analysis indicated that sample point RFI 0640 was drilled deep enough to yield two clean samples, while sample point RFI 0639, although clean at the 40, 45 and 50 foot intervals showed BTEX at the fifty five foot sample interval.

During grouting operations, the displaced water had some hydrocarbon in it, indicating the need for additional characterization activities.

Giant believes that additional characterization work at Tank 569 is necessary and is preparing a sampling program to characterize the extent of contamination and to develop remediation options. The extent of additional drilling and sampling has not been fully determined at this time. Giant will develop the program and complete the drilling during the first quarter of 1995.

A pneumatic rig for sampling was to be employed to sample Tank 451, but the drilling contractor was unable to make the rig operable. Giant has been assured that the pneumatic rig will be ready in early 1995 and sampling will occur at the earliest date possible. A report on that sampling and analysis will be provided to your office by March 31, 1995.

Giant plans to implement the corrective action plans for SWMU #5 "The Landfill Areas"; SWMU #7 "The Fire Training Area"; and to continue with the corrective action plan for SWMU #8 "The Railroad Rack Lagoon" during the first quarter of 1995. If you require additional information, please contact Lynn Shelton, of my staff, at (505) 722-0227.

"I certify under penalty of law that this document and all attachments were prepared under my direction to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sincerely 'John 🖌. Stokes Refinery Manager

JJS:tls

cc: Kim Bullerdick, Corporate Counsel Giant Industries Arizona, Inc. David Pavlich, HSE Manager Giant Refining Co. INTEROFFICE MEMORANDUM

DATE: June 28, 1994

TO: David Pavlich

Lynn Shelton 725 FROM:

SUBJECT: Required RFI Sampling

In its January 7, 1994 letter, EPA required additional sampling and conditions of the RCRA Facility Investigation.

Although some of the requirements are considered redundant and are therefore subject to challenge, certain additional sampling requirements are acceptable and should be completed in a timely manner regardless of the protest of other, less productive sampling.

A list of the additional sampling sites, depths, and estimated costs are presented below.

I. SWUM #4 Old Burn Pit

BoringsDepthsSamplingCosts36.0', 10.0'\$475\$7,026

II. SWMU #5 Landfill Areas

		Cos	sts
<u>Borings</u> 9	<u>Depths</u> 11.0', 16.0, 20.0'	<u>Sampling</u> \$2,848	<u>Analysis</u> \$21,525

III. SWMU #6 Tank Farm

		_ Cos	STS
<u>Borings</u>	Depths	Sampling	<u>Analysis</u>
8	16.0', 20.0'	\$2,531	\$1,000

IV. SWMU #7 Fire Training Area

<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	<u>Analysis</u>
2	7.0', 11.0'	\$348	\$400

Coste

Costs

V. SWMU #10 Sludge Pits

		~	0000
<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	<u>Analysis</u>
18	19.0', 25.0'	\$7,119	\$18,450

VI. SWMU #11 Secondary Oil Skimmer

	• • •		Costs	
<u>Borings</u>	Depths	<u>Sampling</u>		<u>Analysis</u>
2	6.0', 10.0'	\$316		\$3,180

Total costs for this initial sampling project are estimated to be \$65,218.

It is my recommendation that Giant complete an RFE and implement the sampling and analysis by July 15, 1994.

TLS:sp

June 28, 1994

Rich Mayer U.S. Environmental Protection Agency Region VI 1445 Ross Avenue, Suite 1200 Dallas, Texas 75202-2733

Re: Quarterly Progress Report

Dear Mr. Mayer:

Pursuant to requirements of the HSWA Permit, Condition C.4., Page 11 and the May 31, 1990 RFI Workplan approval, Giant Refining Company - Ciniza (Giant) submits the <u>Quarterly Progress Report</u> for the second quarter of 1994.

REFINING CO

Route 3, Box 7 Gallup, New Mexico

87301 505 722-3833

Giant has completed piping modifications to the "Railroad Rack Lagoon" (SWMU #8) system and is presently evacuating the remaining water from the lagoon and disposing of it in the process wastewater system. As soon as it is feasible, Giant will sample the SWMU as required and begin bioremediation activities.

Giant is soliciting proposals for the survey requirement of SWMUs #1, 3, 8, 9 and 13.

Giant is also developing a scope and estimate of expense to further characterize SWMUs #4, 5, 6, 7, 10, and 11 and expects to complete that sampling during the third quarter of 1994.

If you require additional information, please contact Lynn Shelton, of my staff, at (505) 722-0227.

"I certify under penalty of law that this document and all attachments were prepared under my direction to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sincerely, 0 John Stokes **Refinery Manager**

JJS/TLS:sp

cc: Kim Bullerdick, Corporate Counsel Giant Industries Arizona, Inc.

> David Pavlich, Health/Safety and Environmental Manger Giant Refining Company

INTEROFFICE MEMORANDUM

DATE: February 3, 1994

TO: David Pavlich Kim Bullerdick

FROM: Lynn Shelton JJS

SUBJECT: RCRA Facility Investigation - Additional Requirements

I. Introduction

Giant Refining Company - Ciniza (Giant) performed a RCRA Facility Investigation (RFI) in three phases (I, II, and III) over three years (1990, 1991, and 1992).

Using the analytical results of those three sampling events, Giant submitted four corrective action plans and eight "No Further Action" proposals to Region VI, United States Environmental Protection Agency (EPA).

Correspondence from the EPA (1-7-94) indicated approval of the corrective action plans (with additional requirements) for three Solid Waste Management Units (SWMUs), for RFI reports Phase I, II, and III and assigns a deadline for submittals of additional data.

The additional sampling and reporting requirements, some of which are redundant and unnecessary, are the focus of this correspondence. In the following pages, the scope and cost of the additional sampling requirements will be presented.

Some explanation of a potential problem is in order. The SWMU identification numbering sequence is inconsistent. In discussing the draft letters with Rich Mayer, of Region VI EPA, the discrepancy in reference to the SWMU numbers was mentioned. Mr. Mayer responded that the correct SWMU numbers were taken from the HSWA Permit (Section C, Corrective Actions for Continuing Releases, 5.(a)(1)). Giant had used the numbering sequence from the approved RFI Workplan (revised May 17, 1990). As shown in Table 1, there are discrepancies in all three sequences. Giant should propose to use the numbering sequence identified in the revised RFI Workplan to avoid confusion with the numbering sequence of SWMUs and sample numbers already reported.

Table 2 presents an overview of the status of the SWMUs.

TABLE 1

SWMU IDENTIFICATION

RFI WORKPLAN	hswa	EPA	LETTER	r swmu
1	1		1	Aeration Basin
2	2		2	Evaporation Ponds
3	5		5	Empty Container Storage
4	8		8	Burn Pit
5	7		7	Four Landfills
6	3		6	Tank Farm
7	4		4	Fire Training Area
8	6		8	Railroad Rack Lagoon
9	10 & 13		-	Inactive Land Treatment
10	9 [·]		9	Two Sludge Pits
11	11	1	.1	Secondary Oil Skimmer
12	14	1	.3	Wastewater Collection
13	14	1	.3	Drainage Ditch

TABLE 2

STATUS - INDIVIDUAL SWMU

<u>Caps</u>:

- * Railrack Lagoon
- * Sludge Pits
- Fire Training Area
- * Landfills

No Further Action:

- ** Aeration Basin
- ** **Evaporation** Ponds
- ** Drainage Ditch
- Tank Farm

** Empty Container Storage Old Burn Pit Secondary Oil Skimmer Inactive Land Treatment

* Accepted by EPA with Additional Requirements ** "No Further Action" Approved by USEPA *** Not Addressed in Correspondence

II. Discussion

A discussion of additional requirements, by SWMU, follows. Included, as Figures 1 to 12, are drawings of the SWMUs with individual sample points.

<u>SWMU #1</u> - Aeration Lagoon

EPA approved Giant's proposal for "No Further Action". Although Giant demonstrated that no significant migration of hazardous constituents had taken place, EPA requires biennial sampling that duplicates the original RFI sampling. This is redundant and expensive. Giant should propose either a five year sampling rotation or a phased-in plan (of six sample locations, sample two biennially until all samples are taken, then start again). These sampling plans will diminish the costs considerably and still provide documentation that migration has not occurred.

EPA also requires a survey plat of the SWMU. Giant agrees that this is a reasonable requirement.

<u>SWMU #2</u> - Evaporation Ponds

EPA has also approved Giant's proposal for "No Further Action" of this SWMU. EPA requires that Giant sample the seven groundwater wells (MW-4, OW-1, OW-2, OW-5, OW-7, OW-9 and OW-10) biennially for the same constituents as monitored for in the RFI sampling event. Giant may wish to propose a five year sampling rotation.

<u>SWMU #3</u> - Empty Container Storage Area

EPA approved Giant's proposal for "No Further Action" for the SWMU, requiring only that Giant provide a survey plat.

SWMU #4 - Old Burn Pit

EPA does not approve Giant's proposal for "No Further Action". Three borings at six and ten feet will be required to characterize constituent migration in this SWMU.

<u>SWMU #5</u> - Landfill Areas

EPA requires that additional borings, at eleven, sixteen and twenty feet to fully characterize contamination.

<u>SWMU #6</u> - Tank Farm

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. EPA requires seven additional borings to sixteen feet and one additional boring to twenty feet to fully characterize contamination. When Giant performed supplemental sampling of this SWMU in 1991, it was anticipated that further sampling would be required.

<u>SWMU #7</u> - Fire Training

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. Two additional angle borings to seven and eleven vertical feet are required. Additional sampling was anticipated when this SWMU was sampled in 1992, although I question why we now have to analyze for the Skinner List constituents. Samples from this SWMU were originally analyzed for TPH and oil & grease only.

<u>SWMU #8</u> - Railroad Rack Lagoon

EPA has approved Giant's corrective action plan for this SWMU, with additional requirements. After piping modifications at the railroad loading rack are complete and the railroad rack lagoon no longer receives waste, sampling is required within the footprint of the lagoon (five borings) and around the periphery of the lagoon (six borings). Sampling is also required in the overflow ditch (three borings to seven feet) and the fan out area (four borings to seven feet). Some sampling will be required during remediation of the lagoon to document completion of the corrective action plan.

A survey plat of the SWMU, after remediation, must be submitted to the EPA.

<u>SWMU #9</u> - Inactive Land Treatment Area

Although Giant had provided data and proposed no further action, this SWMU was not addressed in the correspondence with the EPA. It needs to be determined if EPA accepts our proposal or has additional requirements.

<u>SWMU #10</u> - Sludge Pits

EPA is requiring additional sampling to 25' in this SWMU (seven borings) to fully characterize any contamination. Monitoring will be required during remediation to document completion of the corrective action plan. It is reasonable to expect that EPA will require a survey plat of this SWMU after closure.

<u>SWMU #11</u> - Secondary Oil Skimmer

EPA does not approve Giant's proposal for "No Further Action" and is requiring additional sampling to ten feet (two borings). This is a reasonable request.

<u>SWMU #12</u> - Contact Wastewater System

Although onerous, the requirement to inspect the wastewater system every five years is acceptable in that we were not sure if we could get any kind of "Buy In" from EPA. Costs of monitoring this SWMU are therefore significantly less than anticipated.

<u>SWMU #13</u> - Drainage Ditch

Although EPA approves Giant's proposal of "No Further Action", additional requirements have been added. Complete resampling is required biennially. This is redundant and expensive. Even though this SWMU continues to be exposed to wastewater, Giant does not believe there is a significant possibility of migration. Giant should propose a five year sampling schedule or a "Phased-In" rotation of sampling.

A survey plat will be required for this SWMU.

III. Estimation of Expenses

Not normally a consideration of the regulatory community, expense is an indicator to industry of the scope and complexity of regulatory requirements. In providing a cost estimate, we are able to judge the economic impact for our company and determine the extent to which we are willing to contest the requirements issued to us.

The following tables (Tables 3, 4, and 5) illustrate the estimated costs per SWMU (for 1994 and biennially).

Table 3

T

SWMU #	SAMPLES <u>REQUIRED</u>	ANALYSIS	COST
1	30	8240 8270 Metals	\$ 9,000 14,850 6,900
2	7	8240 8270 Metals pH	1,750 2,765 1,435 70
4	6	8240 8270 Metals pH	1,800 2,970 2,250 60
5	21	8240 8270 Metals	6,300 10,395 4,830
6	8	BTEX	1,000
7	4	TPH Oil & Grease	200 200
8	50	8240 8270	15,000 24,750
10	18	8240 8270 Metals	5,400 8,910 4,140
11	4	8240 8270	1,200 1,980
13	12	8240 8270	3,600 5,940

Total Analytical Cost 1994 Only

<u>\$119,245</u>

TABLE 4

i

BIENNIAL ANALYTICAL COST

<u>swmu ‡</u>	SAMPLES <u>REQUIRED</u>	ANALYSIS	COST
1	30	8240 8270 Metals	\$ 9,000 14,850 6,900
2	7	8240 8270 Metals pH	1,750 2,765 1,435 70
13	12	8240 8270	8,600 5,940

Total Biennial Analytical Cost <u>\$46,310</u>

TABLE 5

TOTAL COST OF 1994 SAMPLING (ESTIMATE)

SWMU #	ANALYTICAL COST	LABOR *	COST
1	\$ 30,750	\$12,600	\$ 43,350
2	6,020	1,100	7,120
4	7,080	3,000	10,080
5	21,525	14,000	35,525
6	1,000	13,200	14,200
7	400	2,200	2,600
8	39,750	21,400	61,160
10	18,450	22,500	40,950
11	3,180	2,000	5,180
13	9,540	2,600	12,140
	<u>\$119,245</u>	<u>\$94,600</u>	<u>\$213,845</u>

* Including Drilling Rig

IV. Conclusions

The additional requirements to fully characterize SWMUs #4, 5, 6, 7, 8, 10 and 11 are reasonable. Although expensive, full characterization of potential pollution is the thrust of an RFI project and is Giant's objective.

The biennial sampling requirements for SWMUS #1, 2, and 13 are, in effect, a repeat of the original RFI project every two years. This is redundant, expensive and, in my opinion, unwarranted. In completing the original RFI work, it was demonstrated that SWMUS #1, 2, and 13 pose no threat to human health or the environment. Additional sampling is probably justified, because these SWMUs continue to handle wastewater, but on a smaller scale. I recommend that we propose to do additional sampling every five years on one-third of the sample points, or something of that magnitude. This should be enough sampling to document that there is no contamination.

It is important that we act now to minimize sampling requirements in that we can reasonably assume that as other SWMUs are characterized, additional long term sampling requirements for those SWMUs will be requested. This could be an expensive task that provides minimal protection to the environment.

The actual sampling process should be fairly straight forward. Sampling protocol will be identical to past projects and can be accomplished by refinery personnel. The sampling process needs to be modified to using a drilling rig to take core samples in place of backhoe and hand auger. This change is due to the increased depths of samples, the sheer number of samples to be collected, analyzed and reported during 1994, and the requirement to use more appropriate soil boring logs. Using a drilling contractor will provide the necessary speed of sampling and the lithologic observations necessary to complete this project in a timely and efficient manner.

It is in the best interest of Giant that we develop the proper response to these new requirements. I recommend that we carefully analyze our options in this matter and schedule a meeting with the RCRA staff at EPA to discuss this issue.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6 1445 ROSS AVENUE, SUITE 1200 DALLAS, TX 75202-2733

JAN 7 1994

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GIANT REFINING CO. CINIZA REFINERY									
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CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Mr. John J. Stokes, Manager Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

RCRA Facility Investigation (RFI) Phase III Report and RE: Voluntary Corrective Action Plan Giant Refining Co. NMD000333211

Dear Mr. Stokes:

The Environmental Protection Agency (EPA) hereby approves your RCRA Facility Investigation Phase III Report dated November 3, 1992, with the enclosed modifications. The EPA is requiring that additional soil sampling be completed at several sites, including the Landfill Areas, the Old Burn Pit, the Secondary Skimmer, and the Fire Training Area. A supplementary report detailing the results of these sampling activities shall be submitted to the EPA by December 31, 1994.

Additionally, the EPA is approving the voluntary Corrective Action Plan for the Landfill Areas, submitted in March, 1993.

If you have any further questions or need additional information, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

Jack Sinta

Allyn M. Davis, Director Hazardous Waste Management Division (6H)

Enclosure

cc: Kathleen Sisneros, NMED

APPROVAL WITH MODIFICATIONS GIANT REFINING COMPANY RCRA FACILITY INVESTIGATION PHASE III REPORT AND THE CORRECTIVE ACTION PLAN FOR THE LANDFILL AREAS

The Environmental Protection Agency (EPA) has completed a technical review of your RCRA Facility Investigation (RFI) Phase III Report, dated October, 1992, and your voluntary Corrective Action Plan for the Landfill Area, dated February, 1993. The subject reports are hereby approved with the following comments and modifications.

GENERAL COMMENTS

SWMU 5, The Empty Container Storage Area

The EPA hereby approves the finding of No Further Action (NFA) for Solid Waste Management Unit (SWMU) number three (3), the Empty Container Storage Area. However, this approval is contingent upon the completion of a survey plat for the unit. The survey plat shall be completed in accordance with the procedures outlined in 40 CFR 264.116. Giant shall submit a copy of the survey plat to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for the Empty Container Storage Area.

SWMU 8, The Old Burn Pit

Due to the presence of elevated levels of volatile and semivolatile contaminants in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. All three (3) soil samples taken at the 4.5 foot interval (the deepest interval sampled) contained elevated levels of heavy molecular weight semivolatiles. Additionally, one of the three (3) samples at the 4.5 foot interval also contained elevated BTEX levels. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 11, The Secondary Oil Skimmer

Due to the presence of elevated levels of volatile and semivolatile contaminants in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. One of the two (2) samples taken at the 3.0 foot interval (the deepest interval sampled) contained volatile and semivolatile contaminants. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 4, The Fire Training Area

Due to the presence of elevated levels of oil and grease in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. Two (2) of the four (4) samples

Approval with Modifications, 1/5/93 Giant's RFI Phase III & CAP Reports taken at the 4.5 foot interval (the deepest interval sampled) contained oil and grease above 2,000 ppm. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 7, The Landfill Areas

Because soil borings completed in this unit indicate the presence of waste and metal contamination at depths up to 9.5 feet, the EPA is requiring that additional soil borings be completed at greater depths. These additional soil borings will be installed in order to:

- 1) Verify that saturated zones found in three (3) of the 12 deepest soil boring intervals are isolated and are not connected to the groundwater;
- 2) Ensure that the vertical extent of waste emplacement has been defined;
- 3) Confirm that the vertical extent of metal contamination has been delineated.

Following the completion of the additional soil borings in the Landfill Areas, Giant may proceed with the capping of the landfills as per their voluntary Corrective Action Plan.

MODIFICATIONS

Note:

All referenced sampling points correspond to the previous RFI sampling points completed in May, 1992. Soil boring logs included in future report submittals shall follow the attached example.

SWMU #8, The Old Burn Pit

Giant shall complete soil borings as close as possible to sample points one (1), two (2) and three (3). Sampling intervals shall be at six (6) and (10) feet and must extend vertically until no subsequent increase in contaminant levels is likely to occur. Α minimum of two (2) "clean" samples are required to verify delineation. Sampling procedures and analytical requirements are identical to those required in the previous RFI. The results of this sampling event shall be submitted to the EPA by December 31, 1994.

SWMU #11, The Secondary Oil Skimmer

Giant shall complete two (2) soil borings within the area occupied by the former Skimmer. All borings must be sampled at the 5-6 foot and 9-10 foot interval. Sampling shall extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures and analytical requirements are identical to those required in the previous RFI. The results of this sampling event shall be due to EPA by December 31, 1994.

Approval with Modifications, 1/5/94 Giant's RFI Phase III & CAP Reports

SWMU #4, The Fire Training Area

Giant shall complete <u>angled</u> soil borings as close as possible to sample points one (1) and two (2). Sampling intervals shall be at 7 and 11 feet. Sampling must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures shall be identical to those required in the previous RFI. Analytical constituents shall include the Skinner constituents. The results of this sampling event shall be submitted to the EPA by December 31, 1994.

SWMU #7, The Landfill Areas

Giant shall take soil borings as close as possible to sample points two (2) through seven (7), and nine (9). Sampling intervals shall be at 11 feet, 16 feet and 20 feet. Sampling must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures shall be identical to those required in the previous RFI. Giant shall analyze all samples for metals. If volatile or semivolatile contamination is encountered when sampling, then those constituents shall be analyzed also. The results of this sampling event shall be due to EPA by December 31, 1994.

Approval with Modifications, 1/5/94 Giant's RFI Phase III & CAP Reports INTEROFFICE MEMORANDUM

DATE: June 28, 1994

TO: David Pavlich

FROM: Lynn Shelton JdS

SUBJECT: Required RFI Sampling

In its January 7, 1994 letter, EPA required additional sampling and conditions of the RCRA Facility Investigation.

Although some of the requirements are considered redundant and are therefore subject to challenge, certain additional sampling requirements are acceptable and should be completed in a timely manner regardless of the protest of other, less productive sampling.

A list of the additional sampling sites, depths, and estimated costs are presented below.

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I. SWUM #4 Old Burn Pit

		C C	OSTS
<u>Borings</u>	Depths	Sampling	<u>Analysis</u>
3	6.0', 10.0'	\$475	\$7,026

II. SWMU #5 Landfill Areas

		Cos	sts
<u>Borings</u>	<u>Depths</u>	Sampling	<u>Analysis</u>
9	11.0', 16.0,	\$2,848	\$21,525
	20.0'		

III. SWMU #6 Tank Farm

		Cos	sts
<u>Borings</u>	<u>Depths</u>	Sampling	<u>Analysis</u>
8	16.0', 20.0'	\$2,531	\$1,000

IV. SWMU #7 Fire Training Area

		Cos	STS
<u>Borings</u>	<u>Depths</u>	Sampling	<u>Analysis</u>
2	7.0', 11.0'	\$348	\$400

V. SWMU #10 Sludge Pits

<u>Borings</u>	Depths	Sampling	<u>Analysis</u>
18	19.0', 25.0'	\$7,119	\$18,450

VI. SWMU #11 Secondary Oil Skimmer

			Costs	
<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>		<u>Analysis</u>
2	6.0', 10.0'	\$316		\$3,180

Total costs for this initial sampling project are estimated to be \$65,218.

It is my recommendation that Giant complete an RFE and implement the sampling and analysis by July 15, 1994.

TLS:sp

APPROVAL WITH MODIFICATIONS GIANT REFINING COMPANY RCRA FACILITY INVESTIGATION PHASE III REPORT AND THE CORRECTIVE ACTION PLAN FOR THE LANDFILL AREAS

The Environmental Protection Agency (EPA) has completed a technical review of your RCRA Facility Investigation (RFI) Phase III Report, dated October, 1992, and your voluntary Corrective Action Plan for the Landfill Area, dated February, 1993. The subject reports are hereby approved with the following comments and modifications.

GENERAL COMMENTS

SWMU 5, The Empty Container Storage Area

The EPA hereby approves the finding of No Further Action (NFA) for Solid Waste Management Unit (SWMU) number three (3), the Empty Container Storage Area. However, this approval is contingent upon the completion of a survey plat for the unit. The survey plat shall be completed in accordance with the procedures outlined in 40 CFR 264.116. Giant shall submit a copy of the survey plat to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for the Empty Container Storage Area.

SWMU 8, The Old Burn Pit

Due to the presence of elevated levels of volatile and semivolatile contaminants in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. All three (3) soil samples taken at the 4.5 foot interval (the deepest interval sampled) contained elevated levels of heavy molecular weight semivolatiles. Additionally, one of the three (3) samples at the 4.5 foot interval also contained elevated BTEX levels. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 11, The Secondary Oil Skimmer

Due to the presence of elevated levels of volatile and semivolatile contaminants in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. One of the two (2) samples taken at the 3.0 foot interval (the deepest interval sampled) contained volatile and semivolatile contaminants. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 4, The Fire Training Area

Due to the presence of elevated levels of oil and grease in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. Two (2) of the four (4) samples

Approval with Modifications, 1/5/93 Giant's RFI Phase III & CAP Reports taken at the 4.5 foot interval (the deepest interval sampled) contained oil and grease above 2,000 ppm. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 7, The Landfill Areas

Because soil borings completed in this unit indicate the presence of waste and metal contamination at depths up to 9.5 feet, the EPA is requiring that additional soil borings be completed at greater depths. These additional soil borings will be installed in order to:

- 1) Verify that saturated zones found in three (3) of the 12 deepest soil boring intervals are isolated and are not connected to the groundwater;
- 2) Ensure that the vertical extent of waste emplacement has been defined;
- 3) Confirm that the vertical extent of metal contamination has been delineated.

Following the completion of the additional soil borings in the Landfill Areas, Giant may proceed with the capping of the landfills as per their voluntary Corrective Action Plan.

MODIFICATIONS

All referenced sampling points correspond to the previous Note: RFI sampling points completed in May, 1992. Soil boring logs included in future report submittals shall follow the attached example.

SWMU #8, The Old Burn Pit

Giant shall complete soil borings as close as possible to sample points one (1), two (2) and three (3). Sampling intervals shall be at six (6) and (10) feet and must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. Sampling procedures and analytical requirements are identical to those required in the previous RFI. The results of this sampling event shall be submitted to the EPA by December 31, 1994.

SWMU #11, The Secondary Oil Skimmer

Giant shall complete two (2) soil borings within the area occupied by the former Skimmer. All borings must be sampled at the 5-6 foot and 9-10 foot interval. Sampling shall extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures and analytical requirements are identical to those required in the previous RFI. The results of this sampling event shall be due to EPA by December 31, 1994.

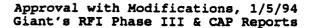
Approval with Modifications, 1/5/94 Giant's RFI Phase III & CAP Reports

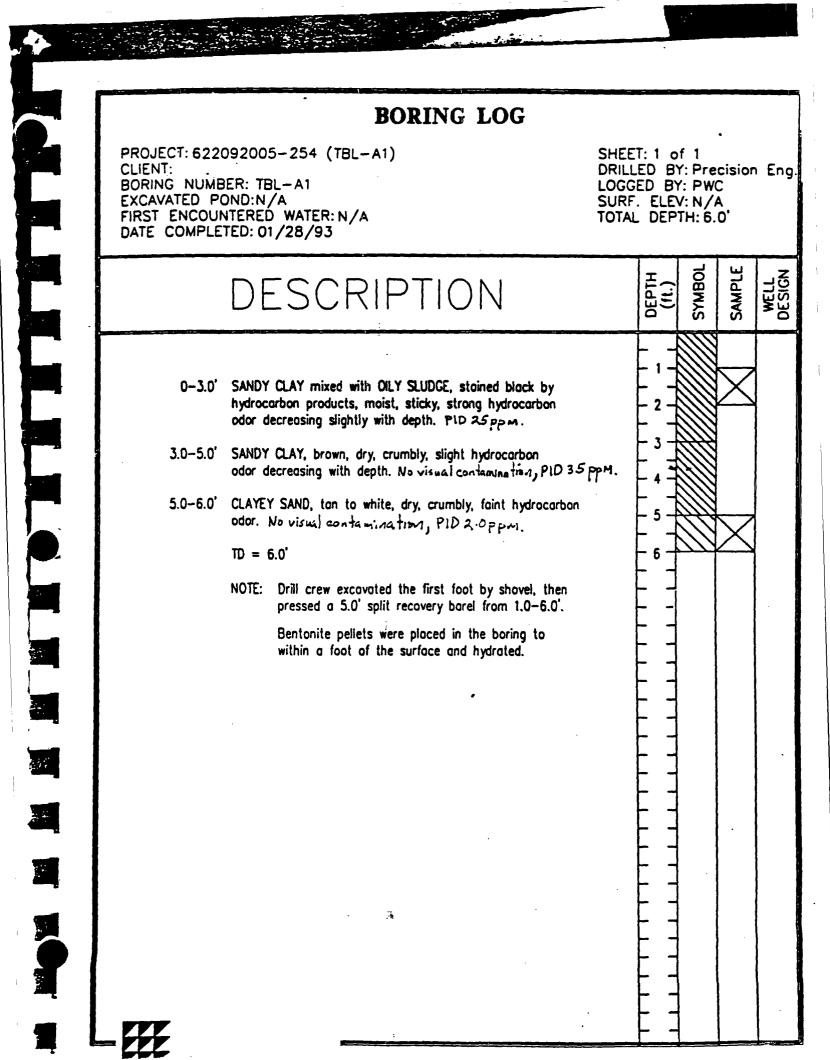
SWMU #4, The Fire Training Area

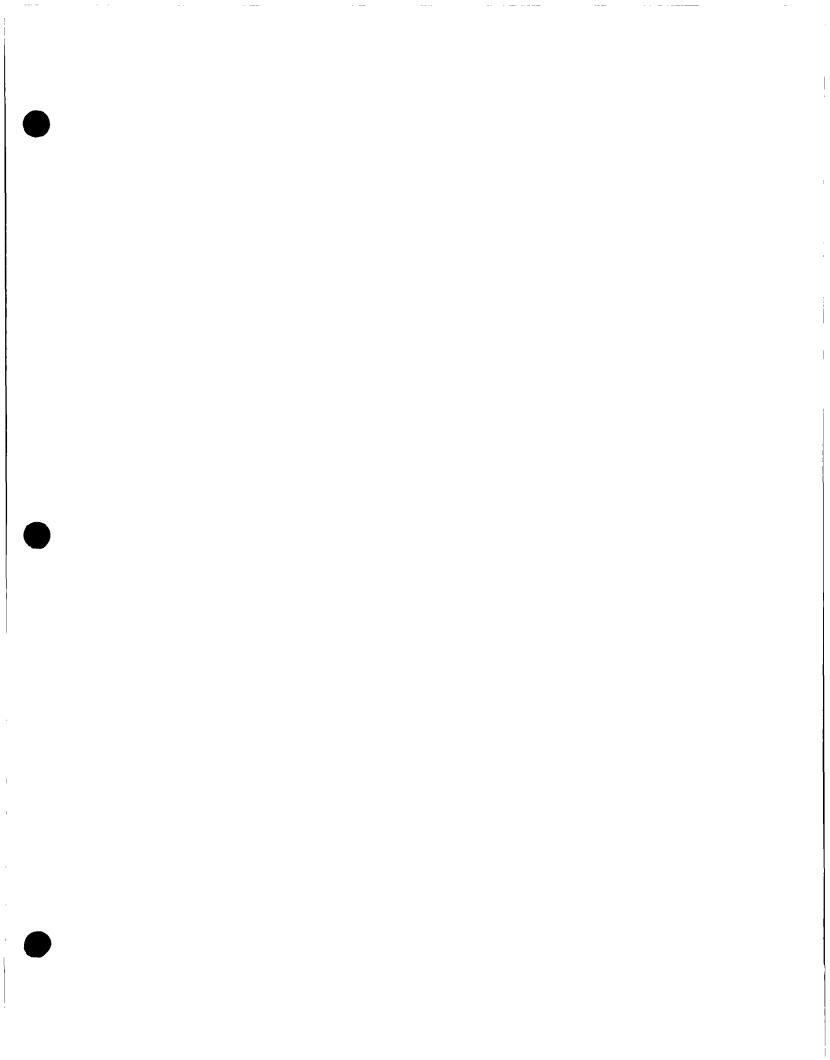
Giant shall complete <u>angled</u> soil borings as close as possible to sample points one (1) and two (2). Sampling intervals shall be at 7 and 11 feet. Sampling must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures shall be identical to those required in the previous RFI. Analytical constituents shall include the Skinner constituents. The results of this sampling event shall be submitted to the EPA by December 31, 1994.

SWMU #7, The Landfill Areas

Giant shall take soil borings as close as possible to sample points two (2) through seven (7), and nine (9). Sampling intervals shall be at 11 feet, 16 feet and 20 feet. Sampling must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures shall be identical to those required in the previous RFI. Giant shall analyze all samples for metals. If volatile or semivolatile contamination is encountered when sampling, then those constituents shall be analyzed also. The results of this sampling event shall be due to EPA by December 31, 1994.







CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Mr. John J. Stokes, Manager Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301

RE: RCRA Facility Investigation (RFI) Phase III Report and Voluntary Corrective Action Plan - Giant Refining Co. -NMD000333211

Dear Mr. Stokes:

We hereby approve your Phase III RFI Report dated November 3, 1992, with the enclosed modifications. The voluntary Corrective Action Plan (CAP) for the Landfill Areas (submitted in March of 1993) is also approved.

The Phase III Supplementary Report (additional soil sampling for the Landfill Areas, the Old Burn Pit, the Secondary Skimmer and the Fire Training Area) is due to the Environmental Protection Agency (EPA) by December 31, 1994. If you have any further questions pertaining to the above mentioned items, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

Allyn M. Davis, Director Hazardous Waste Management Division

Enclosure

cc: Kathleen Sisneros, NMED

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6h-pn 6h-p 6h Neleigh Honker Morisato

APPROVAL OF THE RFI PHASE III REPORT, WITH MODIFICATIONS, AND APPROVAL OF THE VOLUNTARY CORRECTIVE ACTION PLAN (CAP) FOR THE LANDFILL AREAS FOR GIANT REFINING COMPANY

Below are EPA's general comments and modifications pertaining to Giant's RFI Report and the voluntary CAP for the Landfill Areas. Under general comments, there is a discussion describing the RFI status of each SWMU and the remaining RFI process/requirements for each SWMU. The modifications consist of SWMU specific monitoring or investigations required by EPA.

General Comment: EPA agrees with the finding of no further action for the SWMU #3, the Empty Container Storage Area. Even though EPA is tentatively agreeing with the no further action determination, EPA will require one administrative control for the Empty Container Storage Area. The administrative control shall consist of: a survey plat of the SWMU, according to the procedures required in 40 CFR 264.116. Once Giant has sent documentation to EPA verifying completion of the administrative control, Giant may submit a Class III permit modification to terminate the RFI/CMS process for the Empty Container Storage Area.

On SWMU #4, the Old Burn Pit, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, all 3 samples taken at the 4.5 foot interval (the deepest interval sampled) contained elevated levels of heavy molecular weight semivolatiles. One of the three samples at the 4.5 foot interval also contained elevated BTEX levels. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #11, the Secondary Oil Skimmer, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, one of the two samples taken at the 3 foot interval (the deepest interval sampled) contained volatiles and semivolatiles. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #7; the Fire Training Area, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, 2 of the 4 samples taken at the 4.5 foot interval (the deepest interval sampled) contained oil and grease above 2000 ppm (detection limit is <10 ppm). Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #5, the Landfill Areas, EPA believes that additional deeper borings are needed to: 1) verify that saturated zones found in 3 of the 12 deepest soil boring intervals are isolated and are not connected to the groundwater; 2) ensure that the vertical delineation of waste emplacement has been identified (soil boring logs indicate waste at the 8-9'zone, the deepest samples were taken at 9.5'); and, 3) ensure that the vertical extent of metal contamination has been identified (some of 9.5' samples had elevated metal levels. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

After Giant has completed the additional sampling requirements for the Landfill Areas, they then may proceed with the capping of the landfills under the voluntary Corrective Action Plan.

Modifications

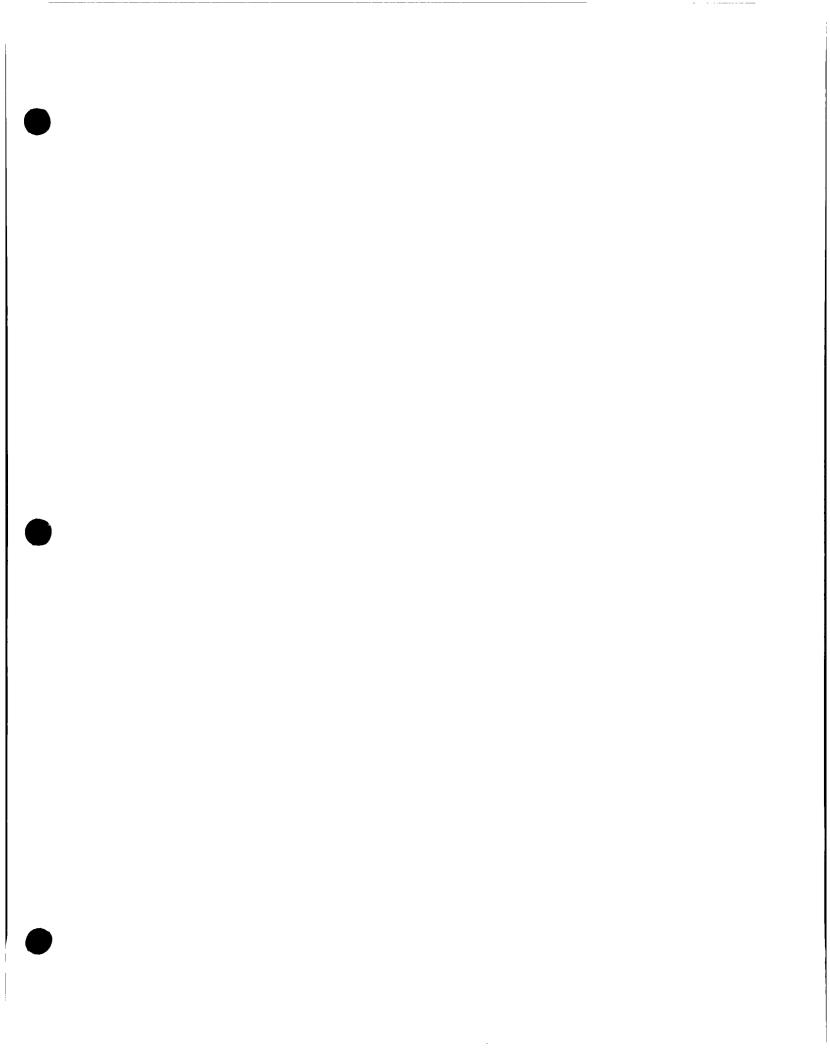
SWMU #4, the Old Burn Pit: Giant shall take soil borings as close as possible to the following sample points (numbers are from previous RFI sampling points, done May of 1992): number's 1, 2, and 3. Sampling intervals shall be at 6 and 10 feet. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by December 31, 1994.

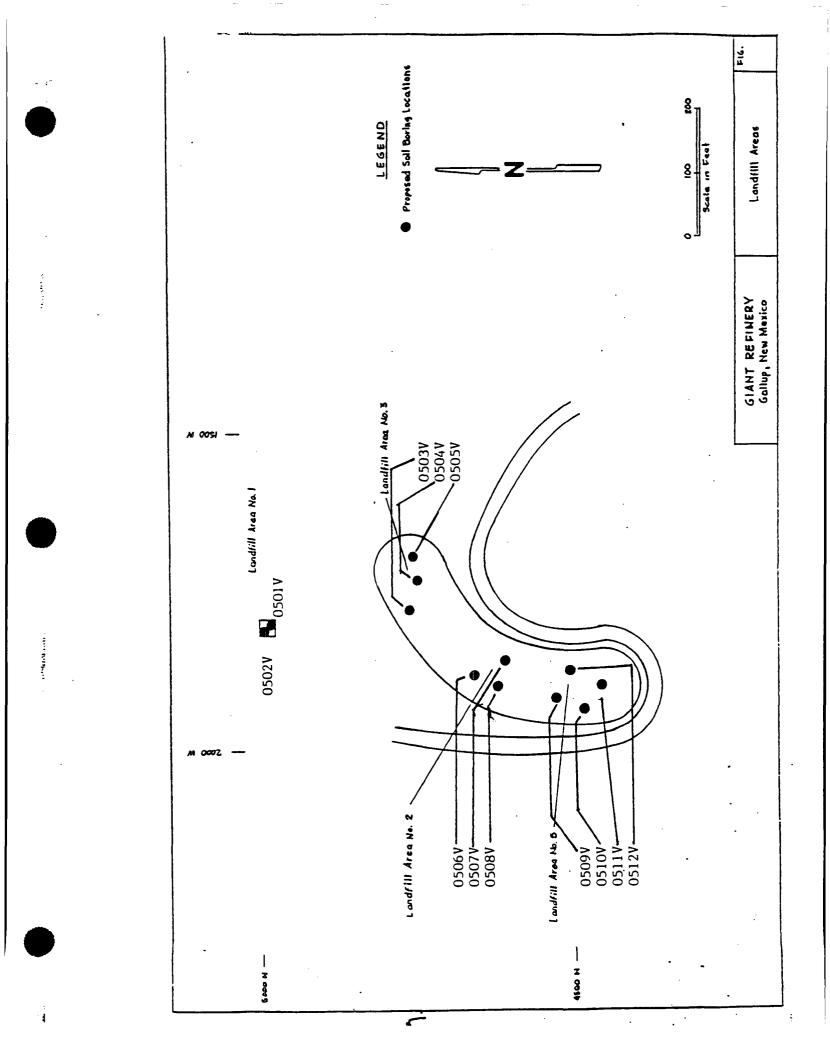
SWMU #11, the Secondary Oil Skimmer: Giant shall take 2 soil borings within the area occupied by the former Skimmer. All borings must be sampled at the 5-6 foot and 9-10 foot interval. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. The results of this sampling event shall be due to EPA by December 31, 1994.

SWMU #7, the Fire Training Area: Giant shall take soil borings as close as possible to sample points number 1 and 2 (numbers are from previous RFI sampling points, done in May of 1992). Sampling intervals shall be at 7' and at 11'. Sampling procedures shall be identical to those required in the previous RFI, except, that all soil borings shall be angled. Constituents to be analyzed shall include the Skinner constituents. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by December 31, 1994.

SWMU #5, the Landfill Areas: Giant shall take soil borings as close as possible to the following sample points (numbers are from previous RFI sampling points, done in May of 1992): number's 2, 3, 4, 5, 6, 7, and 9. Sampling intervals shall be at 11', 16' and 20'. Sampling procedures shall be identical to those required in the previous RFI. Giant shall analyzed the samples for metals. If volatile or semivolatile contamination is encountered when sampling, then those constituents shall be analyzed also. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by December 31, 1994.

Soil Boring Logs: EPA has included an example of a soil boring log which they would like Giant to use in all future borings.







Route 3, Box 7 Gallup, New Mexico 87301

505 722-3833

August 11, 1992

Barbara Driscoll U.S. Environmental Protection Agency Region VI 1445 Ross Avenue, Suite 1200 Dallas, Texas 75202-2733

Re: Quarterly Progress Report

Dear Mr. Driscoll:

Giant Refining Company - Ciniza (GRC) is submitting this quarterly progress report as required by the May 31, 1990 RFI Workplan approval letter and HSWA Permit Condition C.4., Page 11.

GRC finished soil sampling of SWMU's #3, 4, 5, 7, and 11 on May 15, 1992. All samples were sent to Westech Laboratories for analysis. Hard copy of analytical results has been received and tabulated and is currently having statistical analysis done by Mr. Mark Wilson of the University of New Mexico.

The inspection of the remaining process wastewater system (that part not inspected in 1990) is being organized. Please refer to the attached drawings for lines that may be inspected. The lines were identified using the drawings included in the approved RFI Workplan and by using a corrected drawing from a hydroblasting project completed in 1988. Only lines marked in blue may be inspected and will represent what GRC believes will reasonably demonstrate the integrity of the process wastewater system. Some lines may not be inspected due to safety or process considerations.

This inspection is tentatively scheduled to take place in late August, 1992.

If you require additional information, please contact Lynn Shelton, of my staff, at (505) 722-0227.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sincerely,

John Stokes Refinery Manager Ciniza Refinery

JJS/TLS:sp

cc: Kim Bullerdick - Corporate Counsel Giant Industries Arizona, Inc.



INTEROFFICE MEMORANDUM

Date: June 16, 1992

To: Zeke Sherman

From: Lynn Shelton JdS

Subject: RFI Soil Analysis

The variance granted to Giant by the EPA that reduces our analytical requirements on total metals for RFI SWMU'S 4 and 5 has reduced our cost of this project considerably. The breakdown is savings is:

6	Metals Preps	@25.00	\$ 150.00
372	Total Metals Analysis	@10.00	\$3,720.00
	NET	SAVINGS	\$3,870.00



Route 3, Box 7 Gallup, New Mexico 87301

505 722-3833

June 9, 1992

Barbara Rutten Marketing Director Westech Laboratories 3737 East Broadway Road Phoenix, Arizona 85040

Re: RFI Phase III Background Metals

Dear Barbara:

With our submittals of soils for analysis, Giant requested analysis of only four of the listed metals for SWMU's #4 and #5 pending approval from the U.S. EPA Region VI.

Giant has received permission to analyze for an abbreviated list of background metals to include:

Arsenic Barium Beryllium Cadmium Chromium Lead Nickel Vanadium

* Mercury

* Indicates metals already analyzed

Giant requests that Westech Laboratories analyze the soil samples you are holding in cold storage (SWMU #4 and #5) for the balance of the metals on this abbreviated list.

Specific sample numbers to be analyzed are:

RFI0401V0.0	RFI0503D9.5	RFI0590V0.0
RFI0401V3.0	RFI0504V0.0	RFI0509V3.0
RFI0401V4.5	RFI0504V3.0	RFI0509V7.0
RFI0402V0.0	RFI0504V7.0	RFI0509V9.5
RFI0402V3.0	RFI0504V9.5	RFI0510VO.O
RFI0402V4.5	RFI0505V0.0	RFI0510V3.0



RFI0403V0.0	RFI0505V3.0
RFI0403V3.0	RF10505V7.0
RFI0403V4.5	RFI0505V9.5
RFI0501V0.0	RFI0506V0.0
RFI0501V3.0	RF10506V3.0
RFI0501V7.0	RF10506V7.0
RFI0501V9.5	RF10506V9.5
RFI0501D9.5	RF10507V0.0
RFI0502V0.0	RFI0507V3.0
RFI0502V3.0	RF10507V7.0
RFI0502V7.0	RFI0507V9.5
RFI0502V9.5	RFI0507D9.5
RF10503V0.0	RF10508V0.0
RFI0503V3.0	RF10508V3.0
RF10503V7.0	RF10508V7.0
RFI0503V9.5	RF10508V9.5
	RFI0508D9.5

If you require additional information about this analysis, please contact mat at (505) 722-0227.

RFI0510V7.0 RFI0510V9.5 RFI0511V0.0 RFI0511V3.0 RFI0511V7.0 RFI0511V9.5 RFI0512V0.0 RFI0512V3.0 RFI0512V7.0 RFI0512V9.5 RFI0512D9.5

Sincerely,

Lyn Shelto

Lynn Shelton Environmental Assistant Ciniza Refinery

TLS:sp



Route 3, Box 7 Gallup, New Mexico 87301

505 722-3833

August 11, 1992

Barbara Driscoll U.S. Environmental Protection Agency Region VI 1445 Ross Avenue, Suite 1200 Dallas, Texas 75202-2733

Re: Quarterly Progress Report

Dear Mr. Driscoll:

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If you require additional information, please contact Lynn Shelton, of my staff, at (505) 722-0227.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sincerely,

John Stokes Refinery Manager Ciniza Refinery

JJS/TLS:sp

cc: Kim Bullerdick - Corporate Counsel Giant Industries Arizona, Inc.

PHASE III, RFI 1992 GIANT REFINING CINIZA

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SOLID WASTE MANAGEMENT UNIT #5-"Old Land Sills"-

8260 VOLATILES

SAMPLE POINT NUMBER		01	01	01	01	01
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	¥7.0'	¥9.5′	D9.5
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESUL
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND	ND
Tetrechloroethene (PCE)	ug/kg	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	ug/kg	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND	ND
2-Hexanone	ug/kg	ND	ND	ND	ND	ND
Acetone	ug/kg	ND	ND	ND	ND	ND
Benzene	ug/kg	ND	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND	ND
Bromoform	ug/kg	ND	ND	ND	ND	ND
Bromomethane	ug/kg	ND	ND	ND	ND	ND
Carbon tetrachloride	ug/kg	ND	ND	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND	ND
Chloroethane	ug/kg	ND	ND	ND	ND	ND
Chloroform	ug/kg	ND	ND	ND	ND	ND
Chloromethane	ug/kg	ND	ND	ND	ND	ND
Dibromochloromethane	ug/kg	ND	ND	ND	ND	ND
Dibromomethane	ug/kg	ND	ND	ND	ND	ND
Dichlorodiflouromethane	ug/kg	ND	NL	NÐ	ND	ND
Dichloromethane	ug/kg	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	ND	ND	ND	ND	ND
fethyl ethyl ketone	ug/kg	ND	ND	ND	ND	ND
ethyl isobutyl ketone	ug/kg	ND	ND	ND	ND	ND
Styrene	ug/kg	ND	ND	ND	ND	ND
oluene	ug/kg	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND	ND
frichloroethene	ug/kg	ND	ND	ND	ND	ND
Trichloroflouromethane	ug/kg	ND	ND	ND	ND	ND
/inyl chloride	ug/kg	ND	ND	ND	ND	ND
Cis-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND	ND
Frans-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND	ND
otal xylenes	ug/kg	ND	ND	ND	ND	ND
crolein	ug/kg	ND	ND	ND	ND	ND
crylonitrile	ug/kg	ND	ND	ND	ND	ND
arbon disulfide	ug/kg	ND	ND	DK	ND	ND
is-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND
frans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND
thanol	ug/kg	ND	ND	ND	MÐ	ND
Ethylmethacrylate	ug/kg	ND	ND	ND	ND	ND
odomethane (Methyliodide)	ug/kg	ND	ND	ND	ND	ND
'inyl acetate	ug/kg	ND	ND	ND	ND	ND

PHASE III, RFI 1992 GIANT REFINING CINIZA

SOLID WASTE MANAGEMENT UNIT #5-"Old Land Fills"

	8260 VOLATILES					
SAMPLE POINT NUMBER		02	02	02	02	02
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	٧7.0'	V9.5′	E9.5
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
1,1,1-Trichloroethane	ug/kg	DK	ND	DK	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND	ND
Tetrechloroethene (PCE)	ug/kg	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	ug/kg	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND	ND
2-Hexanone	ug/kg	ND	ND	ND	ND	ND
Acetone	ug/kg	ND	ND	ND	ND	ND
Benzene	ug/kg	ND	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND	ND
Brosofora	ug/kg	ND	ND	ND	ND	ND
Bromomethane	ug/kg	ND	ND	ND	ND	ND
Carbon tetrachloride	ug/kg	ND	ND	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND	ND
Chloroethane	ug/kg	ND	ND ·	ND	ND	ND
Chloroform	ug/kg	ND	ND	ND	ND	ND
Chloromethane	ug/kg	ND	ND	ND	ND	ND
Dibromochloromethane	ug/kg	ND	ND	ВK	ND	ND
Dibromomethane	ug/kg	ND	ND	ND	ND	ND
Dichlorodiflouromethane	ug/kg	DM	ND	ND	ND	ND
Dichloromethane	ug/kg	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	ND	ND	ND	ND	ND
Methyl ethyl ketone	ug/kg	ND	ND	ND	DN	ND
Methyl isobutyl ketone	ug/kg	ND	ND	ND	ND	ND
Styrene	ug/kg	ND	ND	ND	ND	ND
Toluene	ug/kg	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND	ND
Trichloroethene	ug/kg	ND	ND	ND	ND	ND
Trichloroflouromethane	ug/kg	ND	NO	ND	ND	ND
Vinyl chloride	ug/kg	ND	ND	ND	ND	ND
Cis-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND	ND
Frans-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND	ND
Total xylenes	ug/kg	ND	ND	ND	ND	ND
Acrolein	ug/kg	ND	ND	ND	ND	ND
Acrylonitríle	ug/kg	ND	ND	ND	ND	ND
Carbon disulfide	ug/kg	ND	ND	ND	ND	ND
Cis-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND
Trans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND
Ethanol	ug/kg	ND	ND	ND	ND	ND
Ethylmethacrylate	ug/kg	ND	ND	ND	ND	ND
Iodomethane (Methyliodide)	ug/kg	ND	RD	ND	ND	ND
Vinyl acetate	ug/kg	ND	ND	ND	ND	ND

SOLID WASTE MANAGEMENT UNIT \$5-"Old Land Fills"

.

SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		03 V0.0'	03 V3.0'	03 V7.0 '	03 V9.5′	03 D9.5
SAMPLE VERIN MUNBER		VU.U.	42.U.	¥/.U'	¥¥.5.	כ.עע
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESUL
1,1,1-Trichloroethane	ug/kg	ND	NÐ	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND	ND
Tetrechloroethene (PCE)	ug/kg	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	ug/kg	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	nd	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND	ND
2-Hexanone	ug/kg	ND	ND	ND	ND	ND
Acetone	ug/kg	ND	ND	ND	ND	ND
Benzene	ug/kg	ND	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND	ND
Bromoform	ug/kg	ND	ND	ND	ND	ND
Bromomethane	ug/kg	ND	ND	ND	ND	ND
Carbon tetrachloride	ug/kg	ND	ND	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND	ND
Chloroethane	ug/kg	ND	ND	ND	ND	ND
Chloroform	ug/kg	ND	ND	ND	ND	ND
Chloromethane	ug/kg	ND	ND	ND	ND	ND
Dibromochloromethane	ug/kg	ND	ND	ND	ND	ND
Dibromethane	ug/kg	ND	ND	ND	ND	ND
Dichlorodiflouromethane	ug/kg	ND	ND	ND	ND	ND
Dichloromethane	ug/kg	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	ND	ND	ND	ND	ND
fethyl ethyl ketone	ug/kg	ND	ND	ND	ND	ND
fethyl isobutyl ketone	ug/kg	ND	ND	ND	ND	ND
Styrene	ug/kg	ND	ND	ND	ND	ND
loluene	ug/kg	ND	ND	ND	ND	ND
trans-1,2-Dichlcroethene	ug/kg	ND	ND	ND	ND	ND
Trichloroethene	ug/kg	ND	ND	ND	ND	ND
[richloroflouromethane	ug/kg	ND	ND	ND	ND	ND
Vinyl chloride	ug/kg	ND	ND	ND	ND	ND
is-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND	ND
Trans-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND	ND
otal xylenes	ug/kg	ND	ND	ND	ND	ND
crolein	ug/kg	ND	ND	ND	ND	ND
crylonitrile	ug/kg	ND	ND	ND	ND	ND
arbon disulfide	ug/kg	ND	ND	ND	ND	ND
is-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND
Trans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND
Ethanol	ug/kg	ND	ND	ND	ND	ND
Lthylmethacrylate	ug/kg	ND	ND	ND	ND	ND
odomethane (Methyliodide)	ug/kg	ND	ND	ND	ND	ND
'inyl acetate	ug/kg	ND	ND	ND	ND	ND

SOLID WASTE MANAGEMENT UNIT \$5-"Old Land Fills"

SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		04 V0.0'	04 V3.0'	04 V7.0'	04 V9.5'	04 E9.5
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
radilila	00110	REGULI	10001	:	د يز با ل ند ۸	. دا ۷ نمب ت
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND	ND
Tetrechloroethene (PCE)	ug/kg	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	ug/kg	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND	ND
2-Hexanone	ug/kg	ND	ND	ND	ND	ND
Acetone	ug/kg	ND	ND	ND	ND	ND
Benzene	ug/kg	ND	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND	ND
Bromoform	ug/kg	ND	ND	ND	ND	SC
Brcmomethane	ug/kg	ND	ND	ND	ND	ND
Carbon tetrachloride	ug/kg	ND	ND	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND	ND
Chloroethane	ug/kg	ND	ND	ND	D	ND
Chloroform	ug/kg	ND	ND	ND	ND	ND
Chloromethane	ug/kg	ND	ND	ND	ND	ND
Dibromochloromethane	ug/kg	ND	ND	ND	ND	ND
Dibromomethane	ug/kg	ND	ND	ND	ND	ND
Dichlorodiflouromethane	ug/kg	ND	ND	ND	ND	ND
Dichloromethane	ug/kg	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	ND	ND	ND	ND	ND
Methyl ethyl ketone	ug/kg	ND	ND	ND	ND	ND
Methyl isobutyl ketone	ug/kg	ND	ND	ND	ND	ND
Styrene	ug/kg ug/kg	ND	ND	ND	ND	ND
foluene		ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND	ND
Trichloroethene	ug/kg	ND	ND	ND	ND	ND
	ug/kg					
Trichloroflouromethane	ug/kg	ND ND	ND	ND ND	ND	ND
Vinyl chloride	ug/kg	ND	ND	ND	ND	ND
Cis-1,3-Dichloropropylene	ug/kg	ND ND	ND	ND	ND	ND
Trans-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND	ND
Total xylenes	ug/kg	ND	ND	ND	ND	ND
Acrolein	ug/kg	ND	ND	ND	ND	ND
Acrylonitrile	ug/kg	ND	ND	ND	ND	ND
Carbon disulfide	ug/kg	ND	ND	ND	ND	ND
Cis-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	DR	ND
Frans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND
Ethanol	ug/kg	ND	ND	ND	ND	ND
Ethylmethacrylate	ug/kg	ND	ND	ND	ND	ND
lodomethane (Methyliodide)	ug/kg	ND	ND	ND	ND	ND
linyl acetate	ug/kg	ND	ND	ND	ND	ND

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SOLID WASTE MANAGEMENT UNIT #5-"Old Land Fills"

SAMPLE POINT NUMBER		05	05	05	05
SAMPLE DEPTH NUMBER		V0.0'	¥3.0'	¥7.0'	V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND
Tetrechloroethene (PCE)	ug/kg	ND	ND	ND	ND
1,1,2-Trichloroethane	ug/kg	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	ND	ND	ND	ND
1,2,3-Trichloropropane	ug/kg	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND
2-Hexanone	ug/kg	ND	ND	ND	ND
Acetone	ug/kg	ND	ND	ND	ND
Benzene	ug/kg	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND
Bromoform	ug/kg	ND	ND	ND	ND
Bromomethane	ug/kg	ND ·	ND	ND	ND
Carbon tetrachloride	ug/kg	ND	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND
Chloroethane	ug/kg	ND	ND	ND	ND
Chloroform	ug/kg	ND	ND	ND	ND
Chloromethane	ug/kg	ND	ND	ND	ND
Dibromochloromethane	ug/kg	ND	ND	ND	ND
Dibromomethane	ug/kg	ND	ND	ND	ND
Dichlorodiflouromethane	ug/kg	ND	ND	ND	ND
Dichlorozethane	ug/kg	ND	ND	ND	ND
Ethylbenzene	ug/kg	ND	ND	ND	ND
Methyl ethyl ketone	ug/kg	ND	ND	ND	ND
Methyl isobutyl ketone	ug/kg	ND	ND	ND	ND
Styrene	ug/kg	ND	ND	ND	ND
Toluene	ug/kg	ND	ND	ND	ND
trans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND
Trichloroethene	ug/kg	ND	ND	ND ·	ND
Trichloroflouromethane	ug/kg	ND	ND	ND	ND
Vinyl chloride	ug/kg	ND	ND	ND	ND
Cís-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND
Trans-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND
Total xylenes	ug/kg	ND	ND	ND	ND
Acrolein	ug/kg	ND	. ND	ND	ND
Acrylonitrile	ug/kg	ND	ND	ND	ND
Carbon disulfide	ug/kg	ND	ND	ND -	ND
Cis-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND
Trans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND
Ethanol	ug/kg	ND	ND	ND	ND
Ethylmethacrylate	ug/kg	ND	ND	ND	ND
Iodomethane (Methyliodide)	ug/kg	ND	ND	ND	ND
Vinyl acetate	ug/kg	ND	ND	ND	ND

SOLID WASTE MANAGEMENT UNIT #5-"Old Land Fills"

SAMPLE POINT NUMBER		06	06	06	06
SAMPLE DEPTH NUMBER		V0.0'	¥3.0′	٧7.0′	V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND
Tetrechloroethene (PCE)	ug/kg	ND	ND	ND	ND
1,1,2-Trichloroethane	ug/kg	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	ND	ND	ND	ND
1,2,3-Trichloropropane	ug/kg	RD	ND	ND	ND
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND
2-Hexanone	ug/kg	ND	ND	ND	ND
Acetone	ug/kg	ND	ND	ND	ND
Benzene	ug/kg	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND
Bromoform	ug/kg	ND	ND	ND	ND
Bromomethane .	ug/kg	ND	ND	ND	ND
Carbon tetrachloride	ug/kg	ND	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND
Chloroethane	ug/kg	ND	ND	ND	ND
Chloroform	ug/kg	ND	ND	ND	ND
Chloromethane	ug/kg	ND	ND	ND	ND
Dibromochloromethane	ug/kg	ND	ND	ND	ND
Dibromomethane	ug/kg	ND	ND	ND	ND
Dichlorodiflouromethane	ug/kg	ND	ND	ND	ND
Dichloromethane	ug/kg	ND	ND	ND	ND
Ethylbenzene	ug/kg	ND	ND	ND	ND
Methyl ethyl ketone	ug/kg	ND	ND	ND	ND
Methyl isobutyl ketone	ug/kg	ND	ND	ND	ND
Styrene	ug/kg	ND	ND	DK	ND
Toluene	ug/kg	ND	ND	ND	ND
trans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND
Irichloroethene	ug/kg	ND	ND	ND	ND
Trichloroflouromethane	ug/kg	ND	ND	ND	ND
Vinyl chloride	ug/kg	ND	ND	ND	ND
Cis-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND
Frans-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND
fotal xylenes	ug/kg	ND	. ND	ND	ND
Acrolein	ug/kg	ND	ND	ND	ND
Acrylonitrile	ug/kg	ND	ND	ND	ND
Carbon disulfide	ug/kg	ND	ND	ND	ND
Cis-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND
Trans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND
Ethanol	ug/kg	ND	ND	ND	ND
Ethylmethacrylate	ug/kg	ND	ND	ND	ND
(odomethane (Methyliodide)	ug/kg	ND	ND	ND	ND
Vinyl acetate	ug/kg	ND	ND	ND	ND

SOLID WASTE MANAGEMENT UNIT #5-"01d Land Fills" -

SAMPLE POINT NUMBER		07	07	07	07	07
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0′	V9.5'	D9.5
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESUL
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND	ND
Tetrechloroethene (PCE)	ug/kg	ND	ND	DR	ND	ND
1,1,2-Trichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	ug/kg	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	ND	ND	nd	ND	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND	ND
2-Hexanone	ug/kg	ND	ND	ND	ND	ND
Acetone	ug/kg	ND	ND	ND	ND	ND
Benzene	ug/kg	ND	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND	ND
Bromoform	ug/kg	ND	ND	ND	ND	ND
Bromomethane	ug/kg	ND	ND	ND	ND	ND
Carbon tetrachloride	ug/kg	ND	ND	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND	ND
Chloroethane	ug/kg	ND	ND	ND	ND	ND
Chloroform	ug/kg	ND	ND	ND	ND	ND
Chloromethane	ug/kg	ND	ND	ND	ND	ND
Dibromochloromethane	ug/kg	ND	ND	ND	ND	ND
Dibromomethane	ug/kg	ND	ND	ND	ND	ND .
Dichlorodiflouromethane	ug/kg	ND	ND	ND	ND	ND
Dichloromethane	ug/kg	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	ND	' ND	ND	ND	ND
Methyl ethyl ketone	ug/kg	ND	ND	ND	ND	ND
Methyl isobutyl ketone	ug/kg	ND	ND	ND	ND	ND
Styrene	ug/kg	ND	ND	ND	ND	ND
foluene	ug/kg	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND	ND
Trichloroethene	ug/kg	ND	ND	ND	ND	ND
Trichloroflouromethane	ug/kg	ND	ND	ND	ND	ND
Vinyl chloride	ug/kg	ND	ND	ND	ND	ND
Cis-1,3-Dichloropropylene	ug/kg	RD	ND	ND	ND	ND
Frans-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND	ND
Total xylenes	ug/kg	ND	ND	ND	ND	ND
Icrolein	ug/kg	ND	ND	ND	ND	ND
lcrylonítríle	ug/kg	RD	ND	ND	ND	ND
arbon disulfide	ug/kg	ND	ND	ND	ND	ND
lis-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND
Trans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND
Ethanol	ug/kg	ND	ND	ND	ND	ND
Ethylmethacrylate	· ug/kg	ND	ND	ND	ND	ND
odomethane (Methyliodide)	ug/kg	ND	ND	ND	ND	ND
Vinyl acetate	ug/kg	ND	ND	ND	ND	ND

SOLID WASTE MANAGEMENT UNIT #5-"Old Land Fills"

		6260 VOLATILES					
SAMPLE POINT NUMBER		08	08	08	08	08	
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	٧7.0'	V9.5'	D9.5	
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESUL	
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ND	ND	
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND	ND	
Tetrechloroethene (PCE)	ug/kg	ND	ND	ND	ND	ND	
1,1,2-Trichloroethane	ug/kg	ND	ND	ND	ND	ND	
1,1-Dichloroethane	ug/kg	ND	ND	ND	ND	ND	
1,1-Dichloroethene	ug/kg	ND	ND	ND	ND	ND	
1,2,3-Trichloropropane	ug/kg	ND	ND	ND	ND	ND	
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND	ND	
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND	ND	
2-Hexanone	ug/kg	RD	ND	ND	ND	ND	
Ácetone	ug/kg	ND	ND	ND	ND	ND	
Benzene	ug/kg	ND	ND	ND	ND	ND	
Bromodichloromethane	ug/kg	ND	ND	ND	ND	ND	
Bromoform	ug/kg	ND	ND	ND	ND	ND	
Bromomethane	ug/kg	ND	ND	ND	ND	ND	
Carbon tetrachloride	ug/kg	ND	ND	ND	ND	ND	
Chlorobenzene	ug/kg	ND	ND	ND	ND	ND	
Chloroethane	ug/kg	ND	ND	ND	ND	ND	
Chloroform	ug/kg	ND	ND	ND	ND	ND	
Chloromethane	ug/kg	ND	ND	ND	ND	ND	
Dibromochloromethane	ug/kg	ND	ND	ND	ND	ND	
Dibromomethane	ug/kg	ND	ND	ND	ND	ND	
Dichlorodiflouromethane	ug/kg	ND	ND	ND	ND	ND	
Dichloromethane	ug/kg	ND	ND	ND	ND	ND	
Ethylbenzene	ug/kg	ND	ND	ND	ND	ND	
Methyl ethyl ketone	ug/kg	ND	ND	ND	ND	ND	
Methyl isobutyl ketone	ug/kg	ND	ND	ND	ND	ND	
Styrene	ug/kg	ND	ND	ND	ND	ND	
Toluene	ug/kg	ND	ND	ND	ND	ND	
trans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND	ND	
Trichloroethene	ug/kg	ND	ND	ND	ND	ND	
Trichloroflouromethane	ug/kg	ND	ND	ND	ND	ND	
Vinyl chloride	ug/kg	ND	ND	ND	ND	ND	
Cis-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND	ND	
Trans-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND	ND	
Total xylenes	ug/kg	ND	ND	ND	ND	ND	
Acrolein	ug/kg	ND	ND	ND	ND	ND	
Acrylonitrile	ug/kg	ND	ND	ND	ND	ND	
Carbon disulfide	ug/kg	ND	ND	ND	ND	ND	
Cis-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND	
Trans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND	
Ethanol	ug/kg	ND	ND	ND	ND	ND	
Ethylmethacrylate	ug/kg	ND	ND	ND	ND	ND	
Iodomethane (Methyliodide)	ug/kg	ND	ND	ND	ND	ND	
Vinyl acetate	ug/kg	ND	ND	ND	ND	ND	

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SOLID WASTE MANAGEMENT UNIT #5-"Old Land Fills"

		B260 VOLA	IILEO			
SAMPLE POINT NUMBER		09	09	09	09	09
SAMPLE DEPTH NUMBER		¥0.0'	¥3.0'	¥7.0'	V9.5'	E9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND	ND
Tetrechloroethene (PCE)	ug/kg	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	ug/kg	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND	ND
2-Hexanone	ug/kg	ND	ND	ND	ND	ND
Acetone	ug/kg	ND	ND	ND	ND	ND
Benzene	ug/kg	ND	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND	ND
Bromoform	ug/kg	ND	ND	ND	ND	ND
Bromomethane	ug/kg	ND	ND	ND	ND	ND
Carbon tetrachloride	ug/kg	ND	ND	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	DK	ND	ND
Chloroethane	ug/kg	ND	ND	ND	ND	ND
Chloroform	ug/kg	ND	ND	ND	ND	ND
Chloromethane	ug/kg	ND	ND	ND	ND	ND
Dibromochloromethane	ug/kg	ND	ND	ND	ND	ND
Dibromomethane	ug/kg	ND	ND	ND	ND	ND
Dichlorodiflouromethane	ug/kg	ND	ND	ND	ND	ДK
Dichloromethane	ug/kg	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	ND	ND	ND	ND	ND
Methyl ethyl ketone	ug/kg	ND	ND	ND	ND	ND
Methyl isobutyl ketone	ug/kg	ND	ND	ND	ND	ND
Styrene	ug/kg	ND	ND	ND	ND	ND
Toluene	ug/kg	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND	ND
Trichloroethene	ug/kg	ND	ND	ND	ND	ND
Trichloroflouromethane	ug/kg	ND	ND	ND	ND	ND
Vinyl chloride	ug/kg	ND	ND	ND	ND	ND
Cis-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND	ND
Trans-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND	ND
Total xylenes	ug/kg	ND	ND	ND	ND	ND
Acrolein	ug/kg	ND	ND	ND	ND	ND
Acrylonitrile	ug/kg	ND	ND	ND	ND	ND
Carbon dísulfide	ug/kg	ND	ND	ND	ND	ND
Cis-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND
Trans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND
Ethanol	ug/kg	ND	ND	ND	ND	ND
Ethylmethacrylate	ug/kg	ND	ND	ND	ND	ND
Iodomethane (Nethyliodide)	ug/kg	ND	ND	ND	ND	ND
Vinyl acetate	ug/kg	ND	ND	ND	ND	ND

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SOLID WASTE MANAGEMENT UNIT #5-"Old Land Fills"

SAMPLE POINT NUMBER		10	10	10	10
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	¥7.0'	¥9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND
Tetrechloroethene (PCE)	ug/kg	ND	ND	ND	ND
1,1,2-Trichloroethane	ug/kg	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	ND	ND	ND	ND
1,2,3-Trichloropropane	ug/kg	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND
2-Hexanone	ug/kg	ND	ND	ND	ND
cetone	ug/kg	ND	ND	ND	ND
Benzene	ug/kg	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND
Bromoform	ug/kg	ND	ND	ND	ND
Bromomethane	ug/kg	ND	ND	ND	ND
Carbon tetrachloride	ug/kg	ND	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND
Chloroethane	ug/kg	ND	ND	ND	ND
Chloroform	ug/kg	ND	ND	ND	ND
Chloromethane	ug/kg	ND	ND	ND	ND
Dibromochloromethane	ug/kg	ND	ND	ND	ND
Dibromomethane	ug/kg	ND	ND	ND	ND
lichlorodiflouromethane	ug/kg	ND	ND	ND	ND
Dichloromethane	ug/kg	ND	ND	ND	ND
Sthylbenzene	ug/kg	ND	ND	ND	ND
lethyl ethyl ketone	ug/kg	ND	ND	ND	ND
lethyl isobutyl ketone	ug/kg	ND	DK	ND	ND
Styrene	ug/kg	ND	ND	ND	ND
oluene	ug/kg	ND	ND	ND	ND
rans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND
richloroethene	ug/kg	ND	ND	ND	ND
richloroflouromethane	ug/kg	ND	ND	ND	ND
inyl chloride	ug/kg	ND	ND	ND	ND
is-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND
rans-1,3-Dichloropropylene	ug/kg	ND	ND	DM	ND
otal xylenes	ug/kg	ND	D	ND	ND
crolein	ug/kg	ND	ND	ND	ND
crylonitrile	ug/kg	ND	ND	ND	ND
arbon disulfide	ug/kg	ND	ND	ND	- ND
is-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND
rans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND
thanol	ug/kg	ND	ND	ND	ND
thylmethacrylate	ug/kg	ND	ND	ND	ND
odomethane (Hethyliodide)	ug/kg	ND	ND	ND	ND
inyl acetate	ug/kg	ND	ND	ND	ND

SOLID WASTE MANAGEMENT UNIT #5-"01d Land Fills"

SAMPLE POINT NUMBER	•	11	11	11	11
SAMPLE DEPTH NUMBER		¥0.0'	¥3.0′	¥7.0′	V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULI
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND
Tetrechloroethene (PCE)	ug/kg	ND	ND	ND	ND
1,1,2-Trichloroethane	ug/kg	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	ND	ND	nd	ND
1,2,3-Trichloropropane	ug/kg	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND
2-Hexanone	ug/kg	ND	ND	ND	ND
Acetone	ug/kg	ND	ND	ND	ND
Benzene	ug/kg	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND
Bromoform	ug/kg	ND	ND	ND	ND
Bromomethane	ug/kg	ND	ND	ND	ND
Carbon tetrachloride	ug/kg	ND	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND
Chloroethane	ug/kg	ND.	ND	ND	ND
Chloroform	ug/kg	ND	ND	ND	ND
Chloromethane	ug/kg	ND	ND	ND	ND
Dibromochloromethane	ug/kg	ND	ND	ND	ND
Dibromomethane	ug/kg	ND	ND	ND	ND
Dichlorodiflouromethane	ug/kg	ND	ND	ND	ND
Dichloromethane	ug/kg	ND	ND	ND	ND
Ethylbenzene	ug/kg	ND	ND	ND	ND
Methyl ethyl ketone	ug/kg	ND	ND	ND	ND
Methyl isobutyl ketone	ug/kg	ND	ND	ND	ND
Styrene	ug/kg	ND	ND	ND	ND
Toluene	ug/kg	ND	ND	ND	ND
trans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND
Trichloroethene	ug/kg	ND	ND	ND	ND
Trichloroflouromethane	ug/kg	ND	ND	ND	ND
Vinyl chloride	ug/kg	ND	ND	ND	ND
Cis-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND
Trans-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND
Total xylenes	ug/kg	ND	ND	ND	ND
crolein	ug/kg	ND	- ND	ND	ND
crylonitrile	ug/kg	ND	ND	ND	ND
arbon disulfide	ug/kg	ND	ND	ND -	ND
lis-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND
Trans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND
Ithanol	ug/kg	ND	ND	ND	ND
Ethylmethacrylate	ug/kg	ND	ND	ND	ND
odomethane (Methyliodide)	ug/kg	ND	ND	ND	ND
inyl acetate	ug/kg	ND	ND	ND	ND

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SOLID WASTE MANAGEMENT UNIT #5-"Old Land Fills" -

SAMPLE POINT NUMBER		12	12	12 V7.0'	12 V9.5'	12 D9.5
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V/.U [.]	¥9.5'	U9.5
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESUL
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND	ND
Tetrechloroethene (PCE)	ug/kg	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	ug/kg	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND	ND
2-Hexanone	ug/kg	ND	ND	ND	ND	ND
Acetone	ug/kg	ND	ND	ND	ND	ND
Benzene	ug/kg	ND	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND	ND
Bromoform	ug/kg	ND	ND	ND	ND	ND
Bromomethane	ug/kg	ND	ND	ND	ND	ND
Carbon tetrachloride	ug/kg	ND	ND	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND	ND
Chloroethane	ug/kg	ND	ND	ND	ND	ND
Chloroform	ug/kg	ND	ND	ND	ND	ND
Chloromethane	ug/kg	ND	ND	ND	ND	ND
Dibromochloromethane	ug/kg	ND	ND	ND	ND	ND
Dibromomethane	ug/kg	ND	ND	ND	ND	ND
Dichlorodíflouromethane	ug/kg	ND	ND	ND	ND	ND
Dichloromethane	ug/kg	ND	ND	ND	ND	DM
Ethylbenzene	ug/kg	ND	ND	ND	ND	ND
Methyl ethyl ketone	ug/kg	ND	ND	ND	ND	ND
Methyl isobutyl ketone	ug/kg	ND	ND	ND	ND	ND
Styrene	ug/kg	ND	ND	ND	ND	ND
Toluene	ug/kg	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND	ND
Trichloroethene	ug/kg	ND	ND	ND	ND	ND
Trichloroflouromethane	'ug/kg	ND	ND	ND	ND	ND
Vinyl chloride	ug/kg	ND	ND	ND	ND	ND
Cis-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND	ND
Trans-1,3-Dichloropropylene	ug/kg	ND	ND	ND	ND	ND
Total xylenes	ug/kg	ND	ND	ND	ND	ND
Acrolein	ug/kg	ND	• ND	ND	ND	ND
Acrylonitrile	ug/kg	ND	ND	ND	ND	ND
Carbon disulfide	ug/kg	ND	ND	ND	ND	ND
Cis-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND
Trans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND
Ethanol	ug/kg	ND	ND	ND	ND	ND
Ethylmethacrylate	ug/kg	ND	ND	· ND	ND	ND
Iodomethane (Methyliodide)	ug/kg	ND	ND	ND	ND	ND
Vinyl acetate	ug/kg	ND	ND	ND	ND	ND

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

TOTAL METALS

SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		01 V0.0'	01 V3.0'	01 V7.0'	01 V9.5 '	01 D9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
Arsenic	ng/kg	4.3	14	9.4	6.6	2.7
Barium	ng/kg	290	240	270	120	290
Beryllium	ng/kg	ND	ND	ND	ND	ND
Cadmiun	ng/kg	ND	ND	ND	ND	ND
Chrome	ng/kg	8.7	6.8	8.3	27	12
Lead	ng/kg	10	8.1	6.5	10	11
lercury	ng/kg	ND	ND	ND	ND	ND
Nickel	ng/kg	6.8	4.9	6.1	14	10
Vanadium	ng/kg	8.1	6.3	7.0	5.1	4.6

PHASE III, RFI 1992 GIANT REFINING CINIZA

		pH				
SAMPLE POINT NUMBER SAMPLE DEPTH RUMBER		01 V0.0'	01 V3.0'	01 V7.0'	01 V9.5'	01 D9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
ph	S.V.	7.3	7.4	8.3	9.2	9.5

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

		TOTAL METALS						
SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		02 V0.0'	02 V3.0'	02 ¥7.0'	02 V9.5′			
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT			
Arsenic	ag/kg	12	6.7	9.6	7.8			
Barium	nng/kg	340	380	130	290			
Beryllium	mg/kg	ND	ND	ND	ND			
Cadmium	ng/kg	ND	ND	ND	ND			
Chrome	mg/kg	8.2	5.7	16	8.5			
Lead	ng/kg	7.8	9.0	14	6.5			
Mercury	mg/kg	ND	ND	ND	ND			
Nickel	mg/kg	7.6	4.7	7.3	7.3			
Vanadium	ag/kg	8.1	8.6	7.3	4.7			

PHASE III, RFI 1992 GIANT REFINING CINIZA

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SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		02 V0.0'	02 V3.C'	02 ¥7.0'	02 V9.5′
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
ph	S.V.	8.4	9.2	7.7	8.6

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

		TOTAL MET	als			
SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		03 V0.0'	03 V3.0'	03 ¥7.0'	03 V9.5'	03 D9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
Arsenic	ng/kg	19	16	15	23	22
Barium	ng/kg	260	110	170	130	200
Beryllium	ng/kg	ND	ND	ND	ND	ND
Cadmium	ng/kg	ND	ND	ND	ND	ND
Chrome	ng/kg	110	10	12	11	5.8
Lead	mg/kg	21	9.4	18	ND	6.1
Hercury	∎g/kg	ND	ND	ND	ND	ND
Nickel	∎g/kg	46	8.8	9.7	10	8.6
Vanadium	ng/kg	10	5.9	6.7	5.1	6.4

PHASE III, RFI 1992 GIANT REFINING CINIZA

		рН				
SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		03 V0.0'	03 V3.0'	03 V7.0'	03 V9.5*	03 D9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
ph	S.U.	8.1	8.8	9.1	9.0	8.8

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

TOTAL METALS _____ -----04 04 04 04 SAMPLE POINT NUMBER V9.5' V0.0' V3.0' ¥7.0' SAMPLE DEPTH NUMBER _____ _____ -----PARAMETER UNITS RESULT RESULT RESULT RESULT ag/kg 8.5 22 14 24 Arsenic 460 230 170 320 Bariua ag/kg ND ND ND ND Beryllium ng/kg ND ND ND ND Cadmium ng/kg Chrome 21 270 8.9 31 ng/kg 9.6 9.0 16 16 Lead ng/kg ND ND ND Mercury ag/kg 0.31 Nickel ng/kg 23 83 9.7 13 ag/kg 9.6 13 6.7 5.3 Vanadium

PHASE III, RFI 1992 GIANT REFINING CINIZA

		рН 			
SANPLE POINT NUMBER SAMPLE DEPTH NUMBER		04 V0.0'	04 V3.0'	04 V7.0'	04 V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
ph	s.v.	9.2	8.1	8.5	9.4

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER	•	TOTAL METALS						
		05 V0.0'	05 V3.0'	05 V7.0'	05 V9.5'			
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT			
Arsenic	∎g/kg	22	20	18	35			
Barium	ng/kg	200	730	410	220			
Beryllium	ag/kg	ND	ND	ND	ND			
Cadmium	ag/kg	ND	ND	ND	ND			
Chrone	ng/kg	9.3	10	9.0	9.8			
Lead	mg/kg	6.4	9.2	7.8	9.3			
Mercury	∎g/kg	ND	ND	ND	ND			
Nickel	ag/kg	9.0	11	11	12			
Vanadium	mg/kg	28	9.1	5.7	6.3			

PHASE III, RFI 1992 GIANT REFINING CINIZA

		pH			
SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		05 V0.0'	05 V3.0'	05 V7.0'	05 V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
ph	S.V.	9.3	7.5	8.0	7.9

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER	5	TOTAL METALS						
		06 V0.0'	06 V3.0'	06 V7.0'	06 V9.5'			
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT			
Arsenic	ng/kg	ND	21	25	20			
Barium	ng/kg	390	140	56	89			
Beryllium	mg/kg	ND	ND	ND	ND			
Cadmium	ng/kg	ND	ND	RÐ	ND			
Chrome	ng/kg	9.6	12	8.7	6.4			
Lead	ng/kg	13	7.9	6.9	7.1			
Mercury	mg/kg	ND	ND	ND	ND			
Nickel	mg/kg	6.8	10	11	7.5			
Vanadium	ng/kg	11	5.7	5	3.9			

PHASE III, RFI 1992 GIANT REFINING CINIZA

		рН			
SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		06 V0.0'	06 V3.0'	06 V7.0'	06 V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
ph	S.U.	8.7	. 8.8	8.9	9.3

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

TOTAL METALS

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SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		07 V0.0'	07 V3.0'	07 V7 .0'	07 V9.5'	07 D9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
Arsenic	ng/kg	7.3	6.1	4.2	4.1	3.7
Barium	ng/kg	720	340	300	520	760
Beryllium	ng/kg	ND	ND	ND	ND	ND
Cadmium	∎g/kg	ND	ND	ND	ND	ND
Chrome	ng/kg	5.6	6.1	5.1	7.8	5.2
Lead	mg/kg	ND	7.0	9.5	6.0	9.0
lercury	ng/kg	ND	ND	ND	ND	ND
Nickel	ng/kg	5.8	7.5	3.6	9.2	5.9
Vanadium	ng/kg	8.7	7.1	6.6	8.2	6.4

PHASE III, RFI 1992 GIANT REFINING CINIZA

·		рН				
SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		07 ¥0.0'	07 V3.0'	07 V7.0'	07 ¥9.5'	07 D9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
ph	S.U.	8.8	8.2	9.1	8.6	8.4

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

		TOTAL MET	ALS	.		
SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		08 V0.0'	08 V3.0'	08 V7.0'	08 V9.5'	08 D9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
Arsenic	ag/kg	ND	3.4	5.5	ND	ND
Barium	ag/kg	590	440	150	700	490
Berylliu	ng/kg	ND	ND	ND	ND	ND
Cadmium	sg/kg	ND	ND	ND	ND	ND
Chrome	ng/kg	7.2	10	4.7	7.1	8.3
Lead	ng/kg	9.6	5.9	ND	9.6	11
Mercury	mg/kg	ND	ND	ND	ND	ND
Nickel	mg/kg	5.5	11	7.1	5.3	6.3
Vanadium	mg/kg	14	10	6.5	20	16

PHASE III, RFI 1992 GIANT REFINING CINIZA

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SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		08 V0.0'	08 V3.0'	08 V7.0'	08 V9.5'	08 D9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
ph	S.U.	8.2	8.5	7.7	9.1	9.0

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

		TOTAL MET	ALS		
SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		09 VO.O'	09 V3.0'	09 V7.0'	09 V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
Arsenic	ng/kg	ND	ND	ND	ND
Barium	∎g/kg	600	680	370	130
Beryllium	ng/kg	ND	ND	ND	ND
Cadmium	ng/kg	ND	ND	ND	ND
Chrome	ng/kg	15	7.3	7.2	4.1
Lead	ag/kg	17	6.2	ND	ND
Hercury	ng/kg	ND	ND	ND	ND
Nickel	ng/kg	13	7.1	8.6	5.0
Vanadium	ng/kg	14	13	3.2	5.9

PHASE III, RFI 1992 GIANT REFINING CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

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SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		09 V0.0'	09 V3.0'	09 V7.0'	09 V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
ph	S.V.	8.7	7.9	8.3	8.8

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

	•	TOTAL HET	ALS		
SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		10 V0.0'	10 V3.0'	10 V7.0'	10 V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
Arsenic	ng/kg	ND	3.6	5.4	2.6
Barium	ng/kg	280	300	370	100
Beryllium	mg/kg	ND	ND	ND	ND
Cadmium	∎g/kg	ND	ND	ND	ND
Chrome	ng/kg	8.8	5.6	10	6.2
Lead	ng/kg	7.6	5.0	12	7.7
Mercury	mg/kg	ND	ND	ND	ND
Nickel	ag/kg	8.0	5.6	5.7	6.9
Vanadium	ag/kg	11	6.4	8.2	27

PHASE III, RFI 1992 GIANT REFINING CINIZA

		рН				
SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		10 V0.0'	10 V3.0'	10 V7.0'	10 V9.5'	
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	
ph	S.U.	7.5	7.7	7.9	8.2	

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

TOTAL METALS

SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		11 V0.0'	11 V3.0'	11 V7.0'	11 V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
Arsenic	sg/kg	ND	ND	ND	ND
Barium	ag/kg	850	1600	710	780
Beryllius	ng/kg	ND	ND	ND	ND
Cadaiua	ng/kg	ND	ND	ND	ND
Chrome	∎g/kg	7.4	9.1	6.1	7.2
Lead	ng/kg	6.1	9.8	6.2	9.5
lercury	mg/kg	ND	ND	ND	ND
Nickel	ng/kg	7.8	7.2	5.4	5.2
Vanadium	ag/kg	12	6.5	6.6	11

PHASE III, RFI 1992 GIANT REFINING CINIZA

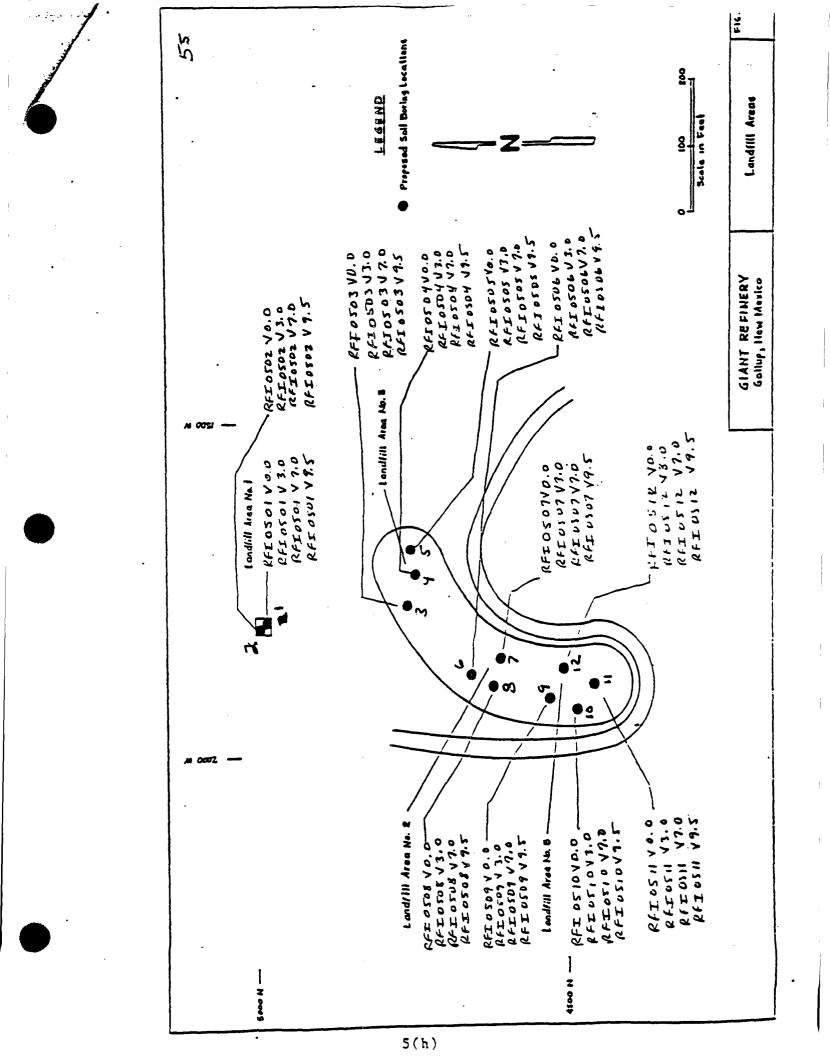
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SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		11 VO.O'	11 V3.0'	11 V7.0'	11 V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
ph	S.U.	8.2	7.8	8.3	8.7

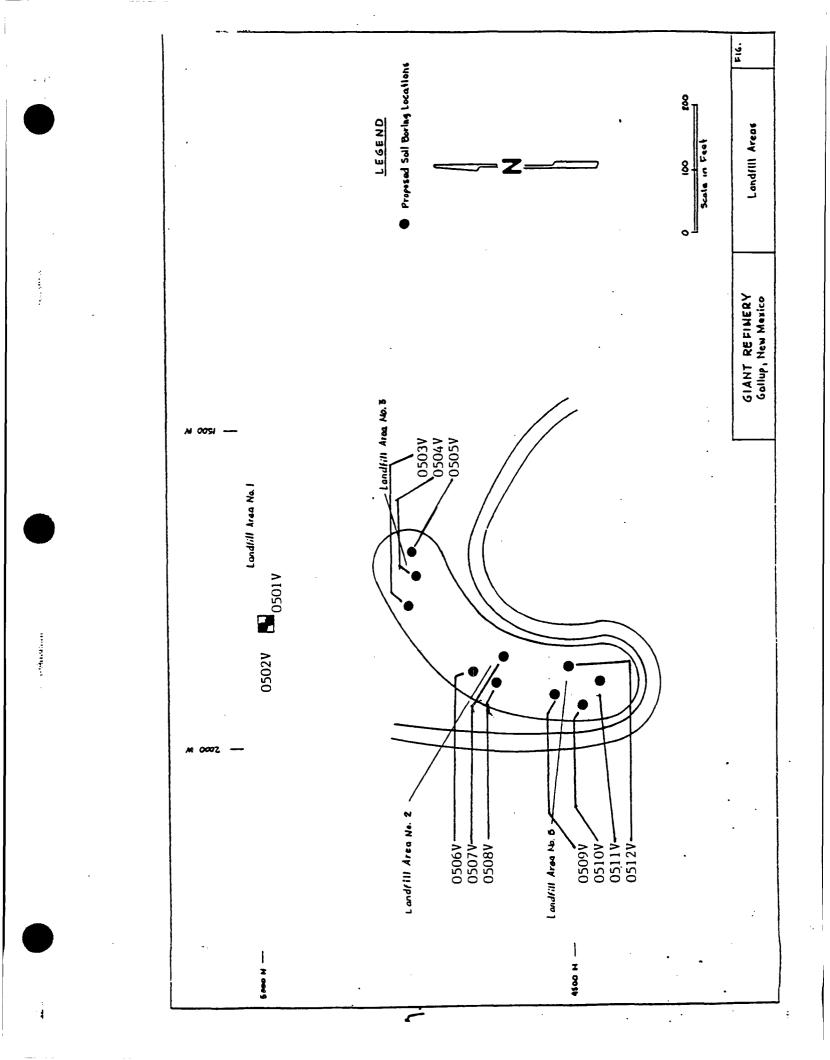
SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

		TOTAL MET	ALS			
SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER	· · · · · · · · · · · · · · · · · · ·	12 V0.0'	12 V3.0'	12 V7.0'	12 V9.5'	12 D9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
Arsenic	mg/kg	ND	ND	ND	6.7	2.7
Barium	ng/kg	460	310	420	190	200
Beryllium	ng/kg	ND	ND	ND	ND	ND
Cadmium	mg/kg	ND	ND	ND	ND	ND
Chrome	mg/kg	8.5	6.7	7.5	6.6	7.1
Lead	mg/kg	5.5	6.4	11	6.3	6.0
Mercury	mg/kg	ND	ND	ND	ND	ND
Nickel	ng/kg	6.6	4.5	6.2	7.0	7.6
Vanadium	ng/kg	9.4	4.8	9.2	4.9	4.2

PHASE III, RFI 1992 GIANT REFINING CINIZA

		pH				
SAMPLE POINT NUMBER SAMPLE DEPTH NUMBER		12 VO.O'	12 V3.0'	12 V7.0'	12 V9.5'	12 D9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
ph	S.U.	8.3	7.9	8.3	8.5	8.6





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SLUDGE X ~ OTHER TRAVEL BLANK FIELD BLANK	WAY S-SOIL G- W-WATER T- O-OIL F-			MBER OF	NPLE TYP	MPOSITE	LD	YUN SHELTON	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	Lym Shelts
CODES	AD SAMPLE TYPE	7 7	REQUESTED		۶E	:		SAMPLER (PLEASE PRINT)	SAMPLER	SAMPLER (SIGNATURE)
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21	GALLUTNM 87	REFINING CO	EFT		GINNT		60	Phoenix • 3737 E. Broadway Rd. • AZ 85040 • (602) 437-1080 • fax 437-8706	Rd. • AZ 85040	hoenix • 3737 E. Broadway
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RFI WORKPLAN PHASE III 1992

May 4,	1992	
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Training 8:00 - 4:15 Load Equipment SWMU Site Tour

May 5, 1992

SWMU #4

Burn Pit 9 Samples

May 6, 1992

SWMU #3 Empty Container Storage 12 Samples

<u>May 7, 1992</u>

SWMU #7	Fire Training Area	12 Samples
SWMU #11	Secondary Oil Skimmer	4 Samples

May 8, 1992

SWMU #5	Land Fill Area	48 Samples
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May 11, 1992

Continue SWMU #5 48 Samples

May 12, 1992

Continue SWMU #5 48 Samples

May 13, 1992

Begin set-up for sewer line inspection Expect one week to complete

Sample Location:	Sample Date: <u>5-14-92</u>
Sample Type:	
Team Leader:	
Sample Personnel: <u>MBARNEY, TRO</u>	GERS
Sampling Method:AULLR	
Sample No. <u>REFLOS NYA</u> Sample Time/Description:	9:00 AM DRY SOIL
Sample No. 0502V3.0 Sample Time/Description:	
Sample No. <u>050 2 Y 7.0</u> Sample Time/Description:	
Sample No. <u>0502 V9.5</u> Sample Time/Description:	9:40 Am Meisrsoic PID-0
Sample No. <u>0502 E9.5</u> Sample Time/Description:	<u>9:45Am WATER</u>
Surface Terrain: FLAT DENSE CURF BRUSH ACOUND PERIMETER TO 4	ACÉ VECETATION,
Weather Conditions: <u>CLEAR</u> 650F, ES	SE WIND CZ Z-3mpH.
General Field Observations:	
Boring Lithology: <u>0-1.5' RED CLAY.</u> <u>SOIL</u> <u>WISCIME</u> <u>DERRIS.</u> 3.5- <u>7'-8'</u> <u>CRAVEL</u> <u>WISCIME</u> <u>WATER</u> <u>CLAY</u> , <u>DISTINCT</u> <u>CRAY</u> <u>BANBAT</u>	7' REDICRAY CLAY. S'-9.5' REDIGRAY

Sample Location:	<u>SWMU #5</u>	_ Sample Date:	5-14-92
Sample Type:	SUIL	-	
Team Leader:	SHELTON	_	
Sample Personnel:	M BARNEY, TR	OLERS	
	······		
Sampling Method:	AUGER		·
Sample No. <u><i>RfF0510</i></u>	C.Cample Time/Description:	10:10 Am PID-0	DENSOIL
Sample No. <u>05/0/3</u> .	O Sample Time/Description:	10:20 Am PID Ø	DAMP SOIL
Sample No. 0510 V7.2	2 Sample Time/Description: _	·	DAMP SOIL
Sample No. <u>0570√9.5</u>	Sample Time/Description:	10:40 P/D	DAMP SOIL
Sample No	Sample Time/Description: _		
Surface Terrain:	DPEJ, MOSTLY FLAT	SCATTERED DE	BRIS
Weather Conditions:	CLEAR, 70°F, U	N WIND @ 5	mptt
General Field Observ	ations:		
	······································		
Boring Lithology: RED_CLAY/SA	0-1.5' MIXED SOIL ND MIX SOME DEBRI. 5-1.5' RED CLAY/S/	AND DEBRIS, 5, 5-5.5' RUC.	1.51 - 51 K IGRAVEL/

Sample Location:	SLUMU #5	Sample Date:	5-14-92
Sample Type:	5016		
Team Leader:	L SHELTON		
Sample Personnel: _	M BARNEY , T	LOGERS	
	•		
Sampling Method:	AUGER		
Sample No. <u>Refesosy</u>	<u>COSample Time/Description:</u>	11:15 Am PID-Ø	DRY SOIL
Sample No. 0503V3	<u>C</u> Sample Time/Description:	11:25AM Pib-P	DRYSOIL
Sample No. 050317.	<u>O</u> Sample Time/Description:	11:35AM PID-4	DRYSOIL
Sample No. <u>(3503V</u> 9	Sample Time/Description:		DRY SUIL
Sample No. <u>0503D9</u> .	Sample Time/Description:	11:451AM PID-0	DRY SOIL
Surface Terrain: _/	FLAT, SURFACE GR	2.JTH TO 112'.	
Weather Conditions:	LIEAR, 75°F,	WWIND Q	5-10mpH
General Field Obser	vations:	······	

	·····		
Boring Lithology: _ A YUKc.me	0-3' DEBRIS/SOIL DEBRIS AND ROCK.	3' to 5' M	<u>XED RED/</u> W CLAY
- <u></u>		<u></u>	<u> </u>

Sample Location:	MU # 5	Sample Date: <u>5-/3-92</u>
Sample Type:50	216	
Team Leader:	SHELTEN	
Sample Personnel:	n BARNEY, TI	20LERS
	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
	٠.	
Sampling Method:	AVLER	
Sample No. R <u>FZ 0504 VO</u> D Sam	ple Time/Description: _/;	PID-P DRYSOIL
Sample No. 0104V3.0 Sam	ple Time/Description: _/_	10 DRY SOIL FID - 201
Sample No. 010117.0 Sam	ple Time/Description: _/	120 DRYSOIL PID-0
Sample No. 050419.5 Sam	ple Time/Description: <u>//</u>	RID4
Sample No. 050469.5 Sam	ple Time/Description:	WATER
Surface Terrain: <u>FLAT</u>	SURFACE GROWTH	TT 1/2'
Weather Conditions:	LEAR, 750F, W	WIND @ 5-10 mpH
BANLY BETWEE	S: <u>CIDES OF HOL</u> 1 & 7' . STRONG C MINATION.	E ARE SLOUGHING CHANCE OF SOME
Boring Lithology: <u>D-11</u> SOIL (<u>RUSTY + B.C.</u> <u>RED CLAY</u>	- CLAY/SANA MIX, CIJU), 7'-8' MIXE	1' - 7' DEBRIS & DISCOLORED SOIL & CONCRETE. 8'-9.5
· .		

Sample Location:	Sample Date: 5-14-92
Sample Type: Soil	
Team Leader:	
Sample Personnel: GACNEY _ ROG.	ERS
Sampling Method: <u>AUGER</u>	
Sample No. <u><i>Effostos Vo.</i></u> 0 Sample Time/Description:	1:40 DRY SOIL PID-\$
Sample No. <u><i>REFOSOSV3</i></u> a Sample Time/Description: <u>/</u>	:50 501L PID-0
Sample No. RHIOSOSV2.0 Sample Time/Description:	
Sample No. <u><i>RFI0505V9.</i></u> Sample Time/Description: <u>)</u>	
Sample No. Antipitation Sample Time/Description:	
Surface Terrain: SHALLOW SLOPE, SURFAC	E VEGETATION TO 11/2'
Weather Conditions: <u>CLEAR</u> , 75°F, WL	NA @ 5-10mpH
General Field Observations:	
Boring Lithology: <u>O-1' MIXED CLAY</u> <u>SOIL & DEBRIS. 1.5-6' RED CL</u> <u>L'-7' SLIGHTLY RUSTY BAND. 7-</u>	SAND. 1-1,5' BAND OF HY W/SOME SAND, 9.5' DENSE RED CLA.

Sample Location:	Sample Date: 5-15-92
Sample Type:	
Team Leader:	
Sample Personnel: M BARNEY, T Ri	54ERS
•	
Sampling Method:AUGER	
Sample No. <u>RFL050/V0.</u> 0 Sample Time/Description: <u></u>	130 Am DEYSOIL PID- Ø
Sample No. <u>050/V3.0</u> Sample Time/Description: <u>%</u>	40 Am DAMPSOIL PID - O
Sample No. 050/V7.0 Sample Time/Description: <u>}</u>	50 Am MOISTSOIL PID-0
Sample No. <u>050/V9.5</u> Sample Time/Description: _9	
Sample No. 050/ D9.5 Sample Time/Description: 9!	pip-0
Surface Terrain: FLAT HEAVH SURFACE PERIMETER IS BRUSH 3-4'HIG	LE VECETATION. ANDIND
Weather Conditions: <u>CLEAR</u> , 65°F, E.	-0
General Field Observations:	·
Boring Lithology: <u>0-1'</u> <u>RED CLAY</u> , 1'-3' <u>W/SOME METAL DEBRIS. RUSTY</u> , 3 <u>MUIST @ 7'-715'WITH MOSTLY CRAVE</u> <u>RED CLAY W/SOME GRAY STREAK</u>	- 7' RED CLAY, VERY L LAYER. 75 - 9.0'

Uriginal Date US/SI/09 Revision Date 12/15/89

TABLE 2

Field Equipment Checklist Soil and Sludge Sampling

ITEM

REMARKS PID Meter Calibrated Site Specific SWMU Work Plan Generic Sampling Plan Site Map With Sample Locations Sample Bottles Ice Chests Trip Blanks Methanol ROPANOU Deionized Water Squeeze Bottles Personal Protective Equipment Chain of Custody and Sample Record Forms Plastic Bags (To provide clean surfaces) Disposable Gloves Paper Towels Tape (For labels and dispenser) Sharpie, Pens, Pencils Blue Ice or Ice Zip-Lock Bags, 1 Gallon

MAY 14, 1992 ESLett

Revision Date 12/13/09

REMARKS

Calibrated

TABLE 2

Field Equipment Checklist Soil and Sludge Sampling

ITEM

PID Meter Site Specific SWMU Work Plan 🗁 Generic Sampling Plan Site Map With Sample Locations Sample Bottles Ice Chests Trip Blanks Mechanol PROPANOL Deionized Water Squeeze Bottles Personal Protective Equipment Chain of Custody and Sample Record Forms Plastic Bags (To provide clean surfaces) Disposable Gloves Paper Towels Tape (For labels and dispenser) Sharpie, Pens, Pencils " Blue Ice or Ice Zip-Lock Bags, 1 Gallon

5-15-92 Ff.

Sample Location:	SWMU #5	Sample Date: <u>5-13-9</u> z
Sample Type:	SOIL	_
Team Leader:	L SHELTON	-
Sample Personnel:	M BARNEY	TROGERS
	•	
	AUGER	
Sample No. REF 050940	C Sample Time/Description:	10:40AM DRY Soil FID-OB
•		10:50AM DRYSOIL PID-Ø
Sample No. 0509V7.	<pre>o Sample Time/Description:</pre>	PID-0 PID-0
Sample No. 0509 V9.5	Sample Time/Description:	11:10 Am DRY SOIL PID-0
Sample No. <u>0309 27.5</u>	Sample Time/Description:	11:20 Am WATER
Surface Terrain: <u>F</u>	LAT, SCATTERED	SURFALE GROWTH
Weather Conditions:	CLEAR TROF	WWINS @ 5-10mpH
· · · · · · · · · · · · · · · · · · ·		
General Field Observ	ations:	
Boring Lithology:	15' RED CLAY w/	SUME SOIL (LOGO MIXED
85-9.5 REC	TEAY.	
ناكله السري واستحدى يعربي تصويحي أويفا الأعباسية كالألو سيجوا	SOIL + DEBRIS 1/4"	LAVER OF BLACK CARSON REALGERY CLAY.

Sample Location: _	Swm0 # 5	Sample Date:	5-13-92
Sample Type:	SOIL	_	
Team Leader:	L SHELTON	<u> </u>	
Sample Personnel:	IN BARNEY, T	ROCERS	
	•		
Sampling Method: _	AUGER		
Sample No PPIOSIIV	<u>0.0</u> Sample Time/Description:	8:30Am PID-0	DRY SOIL
Sample No.R <u>FJ05111</u>	<pre>/3.0 Sample Time/Description:</pre>	8:45Am PID- Ø	MOIST SOIL
Sample No.0571V7	. O Sample Time/Description:	,	MOIST SOIL
Sample No.0571179.	<u>Sample Time/Description:</u>	9:05AM PID-0	DRY SOIL
Sample No	Sample Time/Description:		
Surface Terrain: _	SLOPE ; OPEN GRO	UND IN LAN	BFILL.
Weather Conditions	: <u>CLEAR</u> , 60°F,	NNW WIND @	.5 mpt
General Field Obse	rvations:		
	·		
Boring Lithology:	0-2' RED/WHITE LLAY SPME THIN'S KENROCK/UNICONSC	CLAY W/SO	ME SAND IL ORGRAVEL
$\frac{1}{2} = 1 \cdot 3' + 15 R D$	KENKOLK DALLONSO	-/ ISFT TED SEILE	
			•

TABLE 2

Field Equipment Checklist Soil and Sludge Sampling

ITEM

REMARKS

PID Meter _____ Calibrated
Site Specific SWMU Work Plan
Generic Sampling Plan
Site Map With Sample Locations
Sample Bottles
Ice Chests
Trip Blanks
Methanot Propawor
Deionized Water
Squeeze Bottles
Personal Protective Equipment
Chain of Custody and Sample Record Forms
Plastic Bags (To provide clean surfaces)
Disposable Gloves
Paper Towels
Tape (For labels and dispenser)
Sharpie, Pens, Pencils
Blue Ice or Ice
Zip-Lock Bags, 1 Gallon

5-13-92 JLS

Sample Location:	SWMU #5	Sample Date: 5-13-92
Sample Type:	SOIL	
Team Leader:	LSHELTON	
Sample Personnel:	M BARNEY T	ROGERS
Sampling Method:		
Sample No.2 <u>FIOS12VO.</u>	<pre>Sample Time/Description:</pre>	9:15 AM DRY SOIL FID - Ø
•	Sample Time/Description:	9:50 Am
		RID-Ø MOIST SOIL
Sample No. 0512V 7.0	Sample Time/Description:	PID-0
Sample No. <u>0512 V9.5</u>	Sample Time/Description:	PID. Ø
Sample No. 0512D9.5	Sample Time/Description:	10:20Am DRYSOIL PID-0
Surface Terrain: _FI	TERED SURFACE	GROWTH
		UNW WWD @ Smpt
General Field Observa	tions:	
		. 3'-5' RED / WHITE
(60-40 MIX) -	1.5 + 8.5' ROCKY LA	10, 5-7.5' MIXED SOIL & ROX. YER RUSTY COLOR W/SOME
_SOIL (80-20,	mix) \$ 5-9.5' RED	CLAY,

Sample Location:
Sample Type:Soll
Team Leader: SHELTON
Sample Personnel: <u>MBARNEY</u> TROGERS
Sampling Method:AUGER
Sample No <u>Lefosorvo.</u> O Sample Time/Description: <u>12:50</u> FM <u>DEV Scil</u> <u>PID-0</u>
Sample No. 0507V7.0 Sample Time/Description: 1/07 Pm DRY Soll PID-Ø
Sample No. 0507V7.0 Sample Time/Description: <u>//20 Pm DRY Soll</u> PID-9
Sample No. 0507V9.5 Sample Time/Description: 1:40 Pm DRYSOL
Sample No. 050709.5 Sample Time/Description: /:40 Fm DRV50/L
Surface Terrain: <u><u><u>NPEN</u></u><u>SHALLOW</u><u>SLCPE</u>, <u>SPARSE</u><u>SURFACE</u></u>
Weather Conditions: <u>CLEAR, 70°F</u> , WWWW @ SmpH (9USF3 TU 10-15 mpH)
General Field Observations:
Boring Lithology: <u>D-,5'</u> <u>CLAY/SAND/ROLKS</u> , <u>5-3.5'</u> <u>DARKEA</u> <u>BROWN CLAY/WITH WHITE (OR GRAY) CLAY MIXED</u> , <u>3.5'50'-</u> <u>RED CHAY W/SOME LIGHTER SPECKS</u> , <u>50~9.0'-</u> <u>CLAY/SAND</u> <u>MIX WITH 607</u> ROLK, GRAVEL, AND RUSTY MATERIAL, <u>7'-9.5'</u> <u>MOSTLY RED CLAY WISOME LIGHTER COLURING</u>

ξ
PID - Ø
MOIST SCIL PID - Ø
MOIST SOIL
MOIST SOIL PID - Ø
·
ED SURFALE
Co 5-10 mpH
2.5'- 7.5' RED 2" LAYER OF ATED CLAY ISAND/ROLK . 9.0-9.5" DENSE
Ś

Sample Location:	Sample Date: <u><u><u></u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>
Sample Type:	
Team Leader: SITELTON	
Sample Personnel: BARNEY ROU	IERS
Sampling Method: AUGER	
Sample No. <u>RELOTOS VO</u> . CSample Time/Description: 31:	20 Rm DAM! SOIL PID-0
Sample No. <u>0508V3.0</u> Sample Time/Description: <u>3</u> :2	25 PM DRY SOIL PID-0
Sample No. 0503V 7.0 Sample Time/Description: _37	
Sample No. 0508V95 Sample Time/Description: 3	
Sample No. 0508 D9.5 Sample Time/Description:	
Surface Terrain: <u>SLOPE, HEAVY (. ROWTH</u>	,
Weather Conditions: <u>CLEAR</u> , 75°F, W WI.	NO @ 10 mpH
General Field Observations:	
Boring Lithology: <u>O-1.51 - CLAY/SAND M.</u> <u>CLAY MIX WITH SOME ROCK. 4.0-5</u> <u>SOIL, 5.0-7.51 MOSTZYREDCLAYISAND</u> <u>CLAY ISAND ROCK.</u>	1. 7. J-9. J' MIXED

TABLE 2

Field Equipment Checklist Soil and Sludge Sampling

ITEM

REMARKS

Calibrated / PID Meter Site Specific SWMU Work Plan Generic Sampling Plan Site Map With Sample Locations Sample Bottles Ice Chests Ice Chests Trip Blanks Methanoi PROPANOL (IN COMBUSTIBLE WARENOUSE) Deionized Water Squeeze Bottles Personal Protective Equipment \leq Chain of Custody and Sample Record Forms Plastic Bags (To provide clean surfaces) ____ Disposable Gloves / Paper Towels Tape (For labels and dispenser) Sharpie, Pens, Pencils Blue Ice or Ice Zip-Lock Bags, 1 Gallon /

5-12-92 Jold



THIS COPY OF MY LETTER TO KAREN LISTS THE SPECIFIC ANALYSIS 13Y SWMU.

January 15, 1992

Karen Lofquist Westech Laboratories 3737 East Broadway R Phoenix, Arizona 8

Dear Karen:

In anticipation of the May, 1992 RCRA Facility Investigation (RFI) at Giant's Ciniza Refinery, I am requesting a cost proposal for the following analytical work:

SWMU #3 8240 Priority Pollutants

SWMU #4 pH Skinner List Organics Background Metals

SWMU #5 pH 8240 Priority Pollutants Background Metals

SWMU #7 Total Petroleum Hydrocarbon (TPH) Oil and Grease

SWMU #11 Skinner List Organics

- 12 Samples 1 Duplicate 1 Trip Blank
 - 9 Samples 1 Duplicate 1 Trip Blank
- ~1 Equipment Wash
- 48 Samples
- 3 Duplicates
- 2 Trip Blanks
- 2 Equipment Washes
- 12 Samples 1 Duplicate 1 Trip Blank

4 Samples

1 Duplicate

1 Equipment Wash

Giant will require ice chests, bottles, labels and seals, chain of custody and a copy of your quality assurance/quality control documentation.

Please submit your proposals to my office no later than February 29, 1992. If you have any questions, please contact me at (505) 722-0227.

Sincerely,

Lym Shelton

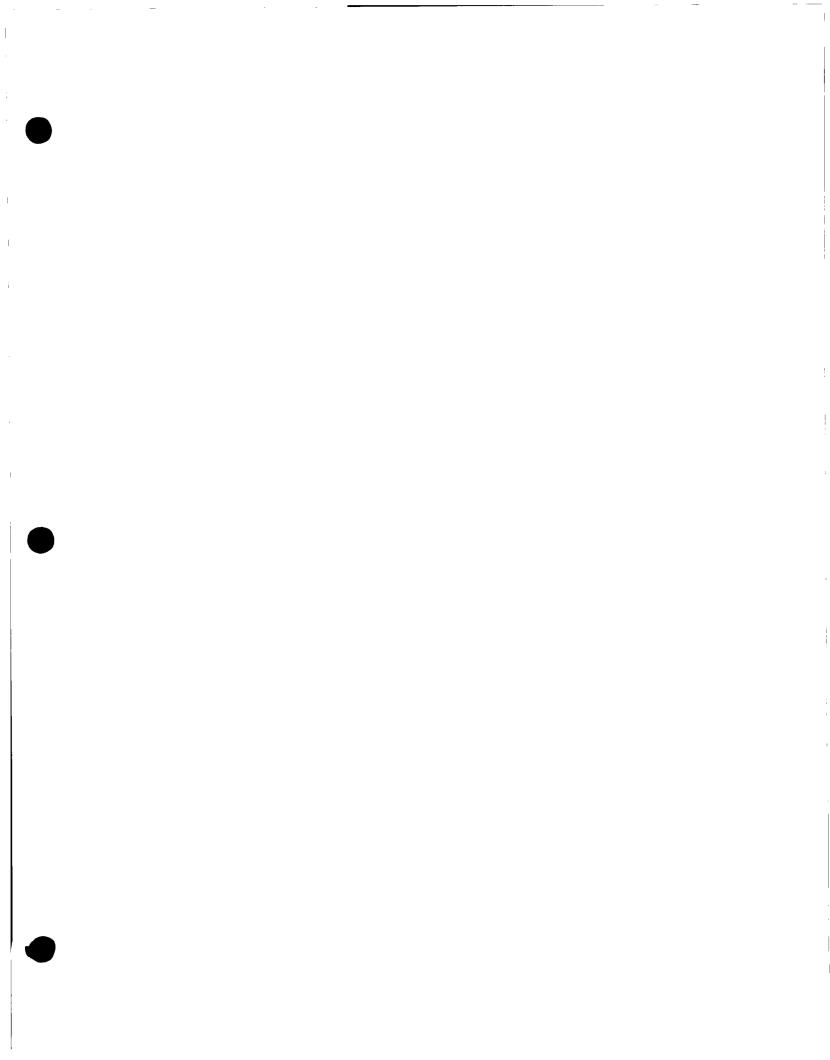
Lynn Shelton Environmental Assistant Ciniza Refinery

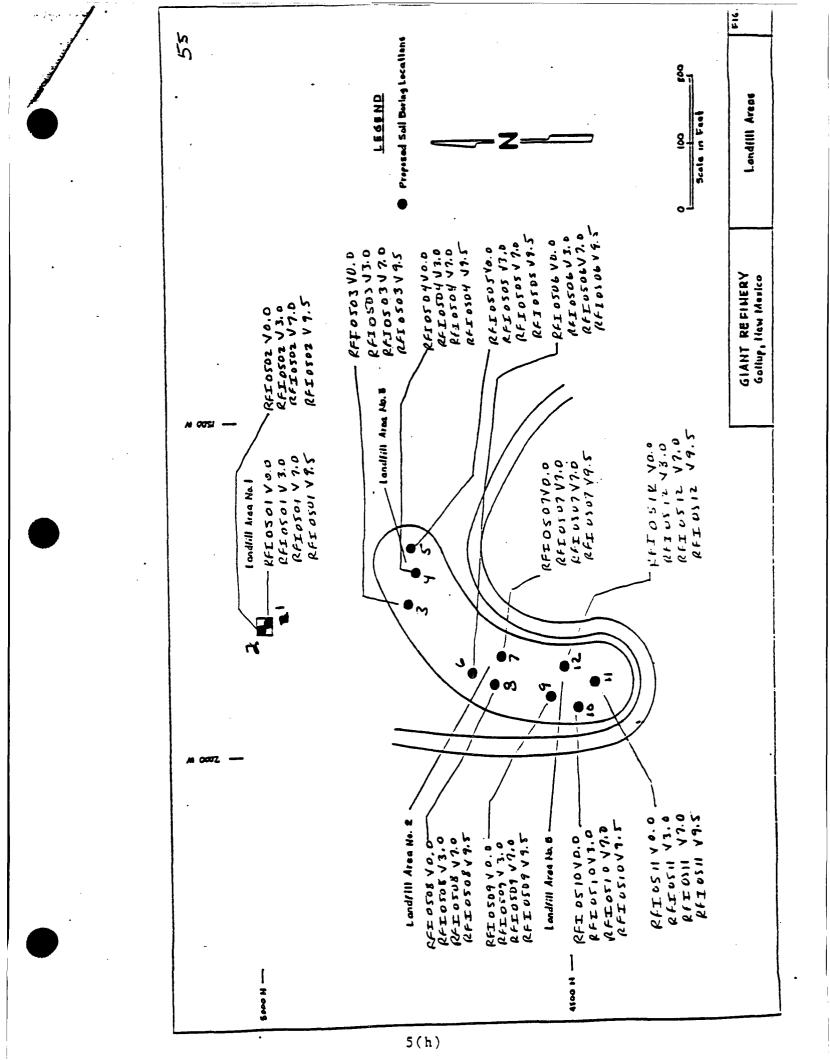
TLS:sp

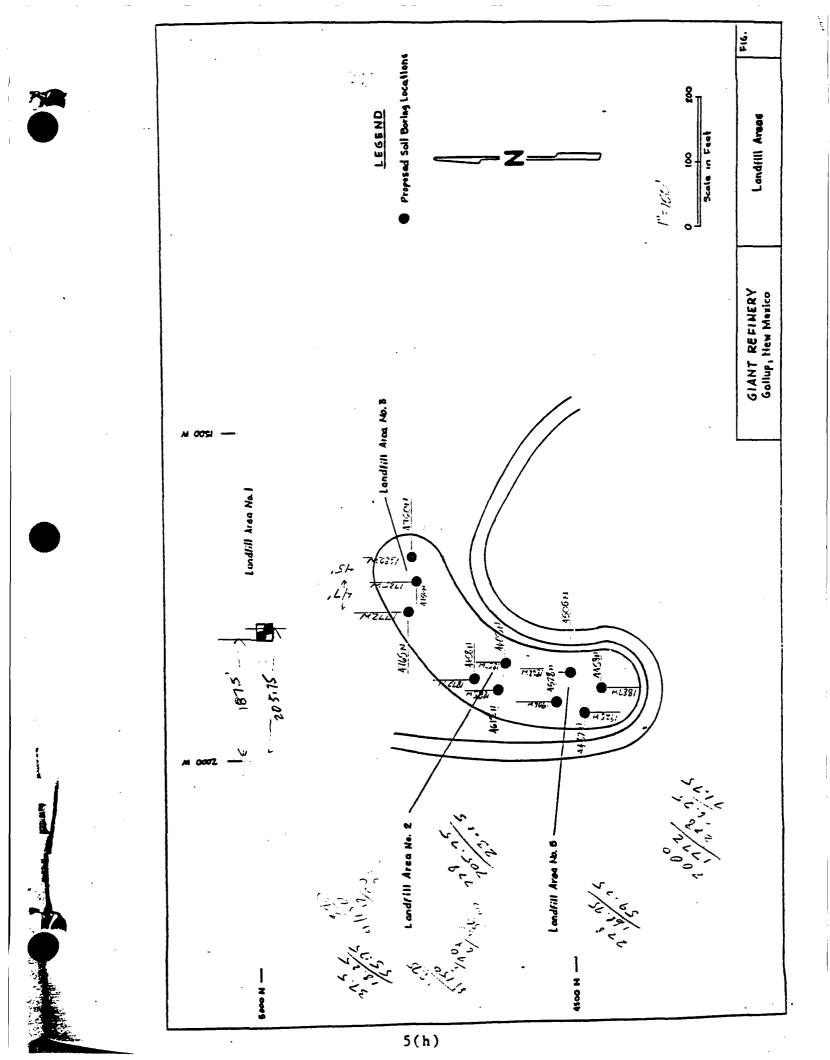
KAREN-

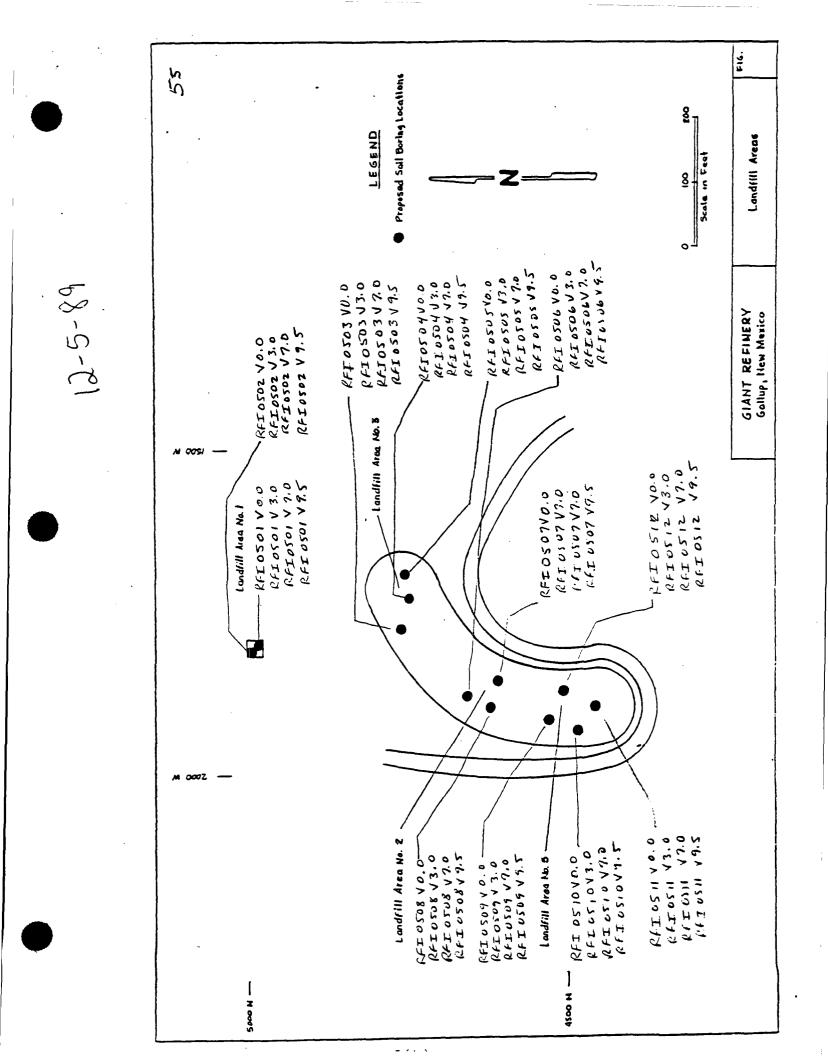
I'VE ATTACHED LISTS OF SPECIFIC CONSTITUENTS FOR THE SKINNER LIST, PRIORITY POLLUTANTS, AND BACK GROUND METALS.

THANKS-Lym









RELEASE VERIFICATION

Sept. 14, 1989

SWMU: Landfill

LOCATION: Figure 1, No. 1, 2, 3, 5

Release verification was accomplished by a complete review of the facility records to determine if a release has occurred. In addition, plant personnel were interviewed and the area was inspected to check for a release.

Giant Refining Company has no records, data, or information which indicate any releases to ground water, surface water, soil on the atmosphere from the landfill area.

UNIT AREA CHARACTERISTICS

TYPE OF UNIT: Landfill

LOCATION OF UNIT: Figure 1, No. 1

DESIGN FEATURES: 20 x 20 feet, 6-8 feet deep

OPERATING PRACTICES (PAST AND PRESENT):

Landfill received solid wastes consisting primarily of demolition and construction wastes (asphalt paving, concrete, scrap metal) and a variety of office, residential and shop wastes. Alkyl scrap metal.

PERIOD OF OPERATION:

1958 - 1979

AGE OF UNIT:

21 years

GENERAL PHYSICAL CONDITIONS:

Area covered with native soil.

METHOD USED TO CLOSE THE UNIT:

Units were closed by covering them with 'soil. Closure procedures are not fully documented.

WASTE CHARACTERIZATION

TYPE OF UNIT: Landfill

LOCATION OF UNIT: Figure 1, No. 1

TYPE OF WASTE PLACED IN UNIT:

Demolition and construction wastes (asphalt, paving, concrete, scrap metal) and a variety of office, residential and shop wastes. Some defluorinator bauxite and hydrotreating catalyst (Co/Mo/Ni--since 1970), as well as outdated laboratory chemicals, may have been landfilled prior to 1982.

Scrap metal; possibly alky scrap metal from alkylation unit.

APPROXIMATE QUANTITY MANAGED:

Asbestos	0.5	tons/year
Bauxite	2.0	tons/year
Co/Mo/Ni	4.5	tons/year
Alky scrap	5.0	tons/year
Lab. chemicals	200	lbs/year

PHYSICAL AND CHEMICAL CHARACTERISTICS:

Asbestos:	toxic by inhalation	
Molybdenum:	low toxicity	
Alky scrap:	possibly low pH	
Miscellaneous	wastes, including possible	e laboratory
chemicals:	Unknown	

MIGRATION AND DISPERSAL CHARACTERISTICS:

The potential for soil contamination exists under the landfills.

UNIT AREA CHARACTERISTICS

TYPE OF UNIT: Landfill

LOCATION OF UNIT: Figure 1, No. 2

DESIGN FEATURES:

85 x 80 x 100 feet (triangular), 6-8 feet deep

OPERATING PRACTICES (PAST AND PRESENT):

Landfill received solid wastes consisting primarily of demoliton and construction wastes (asphalt paving, concrete, scrap metal) and a variety of office, residential and shop wastes.

PERIOD OF OPERATION: 1958 - 1979

AGE OF UNIT:

21 years

GENERAL PHYSICAL CONDITIONS:

Area covered with native soil.

METHOD USED TO CLOSE THE UNIT:

Units were closed by covering them with soil. Closure procedures are not fully documented.

WASTE CHARACTERIZATION

TYPE OF UNIT: Landfill

LOCATION OF UNIT: Figure 1, No. 2

TYPE OF WASTE PLACED IN UNIT:

Demolition and construction wastes (asphalt, paving, concrete, scrap metal) and a variety of office, residential and shop wastes. Some defluorinator bauxite and hydrotreating catalyst (Co/Mo/Ni--since 1970), as well as outdated laboratory chemicals, may have been landfilled prior to 1982.

APPROXIMATE QUANTITY MANAGED:

Asbestos	0.5 tons/year
Bauxite	2.0 tons/year
Co/Mo/Ni	4.5 tons/year
Alky scrap	5.0 tons/year
Lab. chemicals	200 lbs/year

PHYSICAL AND CHEMICAL CHARACTERISTICS:

Asbestos:	toxic by inhalation		
Molybdenum:	low toxicity		
Alky scrap:	possibly low pH		
Miscellaneous	wastes, includi	ng possible	laboratory
chemicals:	Unknown		

MIGRATION AND DISPERSAL CHARACTERISTICS:

The potential for soil contamination exists under the landfills.

Applied Earth Sciences

UNIT AREA CHARACTERISTICS

TYPE OF UNIT: Landfill

LOCATION OF UNIT: Figure 1, No. 3

DESIGN FEATURES:

50 x 100 feet, 6-8 feet table

OPERATING PRACTICES (PAST AND PRESENT):

Landfill received solid wastes consisting primarily fo demolition and construction waste (asphalt paving, concrete, scrap metal) and a variety of office, residential and shop wastes.

PERIOD OF OPERATION: 1958 - 1979

AGE OF UNIT:

21 years

GENERAL PHYSICAL CONDITIONS:

Area covered with native soil.

METHOD USED TO CLOSE THE UNIT:

Units were closed by covering them with soil. No documentation. Closure procedures are not fully documented.

Applied Earth Sciences

WASTE CHARACTERIZATION

TYPE OF UNIT: Landfill

LOCATION OF UNIT: Figure 1, No. 3

TYPE OF WASTE PLACED IN UNIT:

Demolition and construction wastes (asphalt, paving, concrete, scrap metal) and a variety of office, residential and shop wastes. Some defluorinator bauxite and hydrotreating catalyst (Co/Mo/Ni--since 1970), as well as outdated laboratory chemicals, may have been landfilled prior to 1982.

APPROXIMATE QUANTITY MANAGED:

Asbestos0.5 tons/yearBauxite2.0 tons/yearCo/Mo/Ni4.5 tons/yearAlky scrap5.0 tons/yearLab. chemicals200 lbs/year

PHYSICAL AND CHEMICAL CHARACTERISTICS:

Asbestos:	toxic by inhalation		
Molybdenum:	low toxicity		
Alky scrap:	possibly low pH		
Miscellaneous	wastes, including	possible	laboratory
chemicals:	Unknown		

MIGRATION AND DISPERSAL CHARACTERISTICS:

The potential for soil contamination exists under the landfills.

UNIT AREA CHARACTERISTICS

TYPE OF UNIT: Landfill

LOCATION OF UNIT: Figure 1, No. 5

DESIGN FEATURES:

50 x 100 feet

OPERATING PRACTICES (PAST AND PRESENT):

Landfill received solid wastes consisting primarily of demolition and construction wastes (asphalt paving, concrete, scrap metal) and a variety of office, residential and shop wastes.

PERIOD OF OPERATION: 1958 - 1979

AGE OF UNIT:

21 years

GENERAL PHYSICAL CONDITIONS:

Open area where rubbish is burned.

METHOD USED TO CLOSE THE UNIT:

N/A

WASTE CHARACTERIZATION

TYPE OF UNIT: Landfill

LOCATION OF UNIT: Figure 1, No. 5

TYPE OF WASTE PLACED IN UNIT:

Demolition and construction wastes (asphalt, paving, concrete, scrap metal) and a variety of office, residential and shop wastes. Some defluorinator bauxite and hydrotreating catalyst (Co/Mo/Ni--since 1970), as well as outdated laboratory chemicals, may have been landfilled prior to 1982.

Combustible wastes are burned at this landfill.

APPROXIMATE QUANTITY MANAGED:

Asbestos	0.5 tons/year
Bauxite	2.0 tons/year
Co/Mo/Ni	4.5 tons/year
Alky scrap	5.0 tons/year
Lab. chemicals	200 lbs/year

PHYSICAL AND CHEMICAL CHARACTERISTICS:

Asbestos:	toxic by	inhalation		
Molybdenum:	low toxicity			
Alky scrap:	possibly	low pH		
Miscellaneous	wastes,	including	possible	laboratory
chemicals:	Unknown	_	-	_

MIGRATION AND DISPERSAL CHARACTERISTICS:

The potential for soil contamination exists under the landfills.

