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.

Table 1. Ciniza Refinery—Solid Waste Management Unit Identification

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	5	3
Old Burn Pit	viii	4	8	4
Landfill Areas	vii	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 Ponds	xiv	13	13	13
API Separator		14		14

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

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

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

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

Table 2. Solid Waste Management Units

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 (continued)

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]	

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

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

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

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

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).

1.1 Site Description and Operational History

SWMU No. 1, Aeration Basin, (Figure 1-1), located west of the Ciniza tank farm, consists of three man-made earthen basins connected in series on a site measuring approximately 500 feet by 450 feet. The three 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 aeration basin is a component of the refinery wastewater treatment system. Effluent water from the API Separator is directed to an air stripping system for removal of benzene and other VOCs and then passed on to the aeration basin for oxygenation and biological stimulation before evaporation. Total hydraulic holding capacity is approximately 2 million gallons. The aeration basin was constructed in 1987 and has been in continuous operation since that time. Photographs of the aeration basin, taken during the 1998 site inspection performed by Practical Environmental Services, Inc. (PES), are provided in SWMU No. 1 Summary Report.

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.

1.3 Investigation Activities

Applied Earth Sciences (AES) investigated the aeration basin 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; a few of these samples indicated levels slightly above ambient background concentration.

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.

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

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.

The State of New Mexico corrective action levels for BTEX in soil is 50 mg/kg total and 10 mg/kg 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.

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.

1.4 Site Conceptual Model

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

1.5 Site Assessments

During the week of March 23, 1998, PES performed an on-site screening assessment of the aeration 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 only to 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.

1.6 NFA Proposal

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)

- 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 wastewater treatment system and the results of the investigations of the aeration basin, indicating no significant impact or migration. The investigations found no contamination requiring corrective action. The trace amounts of metals at levels slightly above ambient background concentration are likely due to normal soil variation. 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. All berms and sidewalls were intact and stable and there is no sign of erosion, damage, or containment failure.

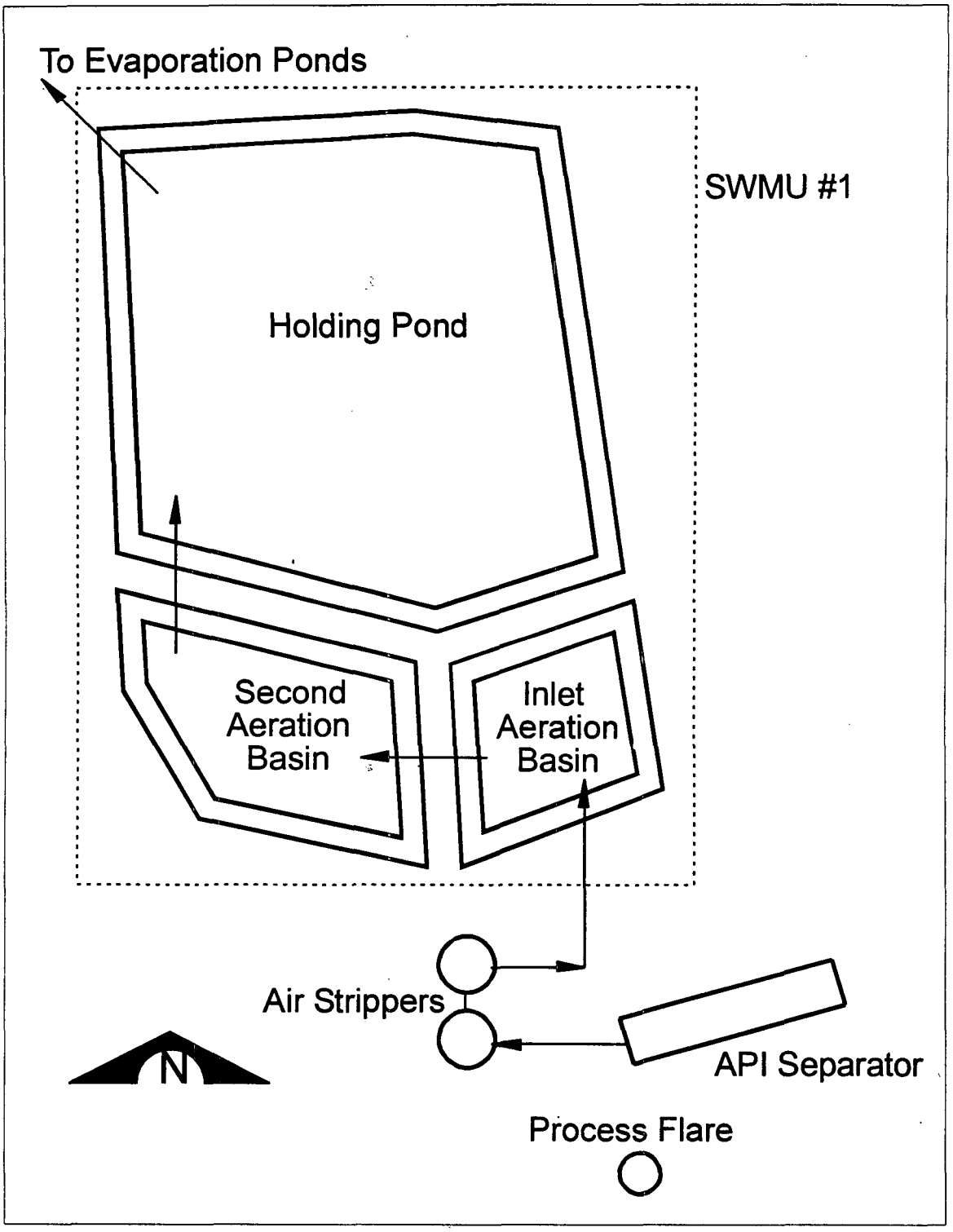


Figure 1-1. SWMU No. 1, Aeration Basin Site

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

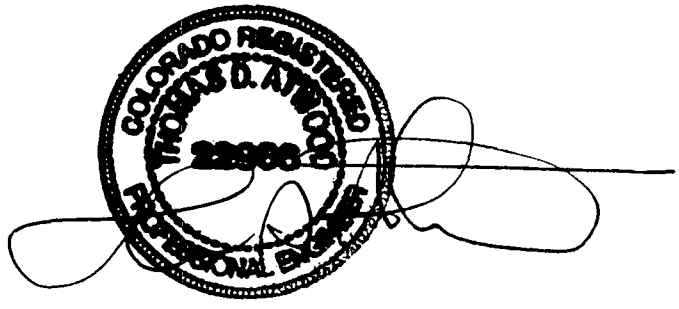
This summary report for SWMU #1 has been prepared under the direct supervision and control of a Registered Professional Engineer.

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

Job No.: 98-205-03

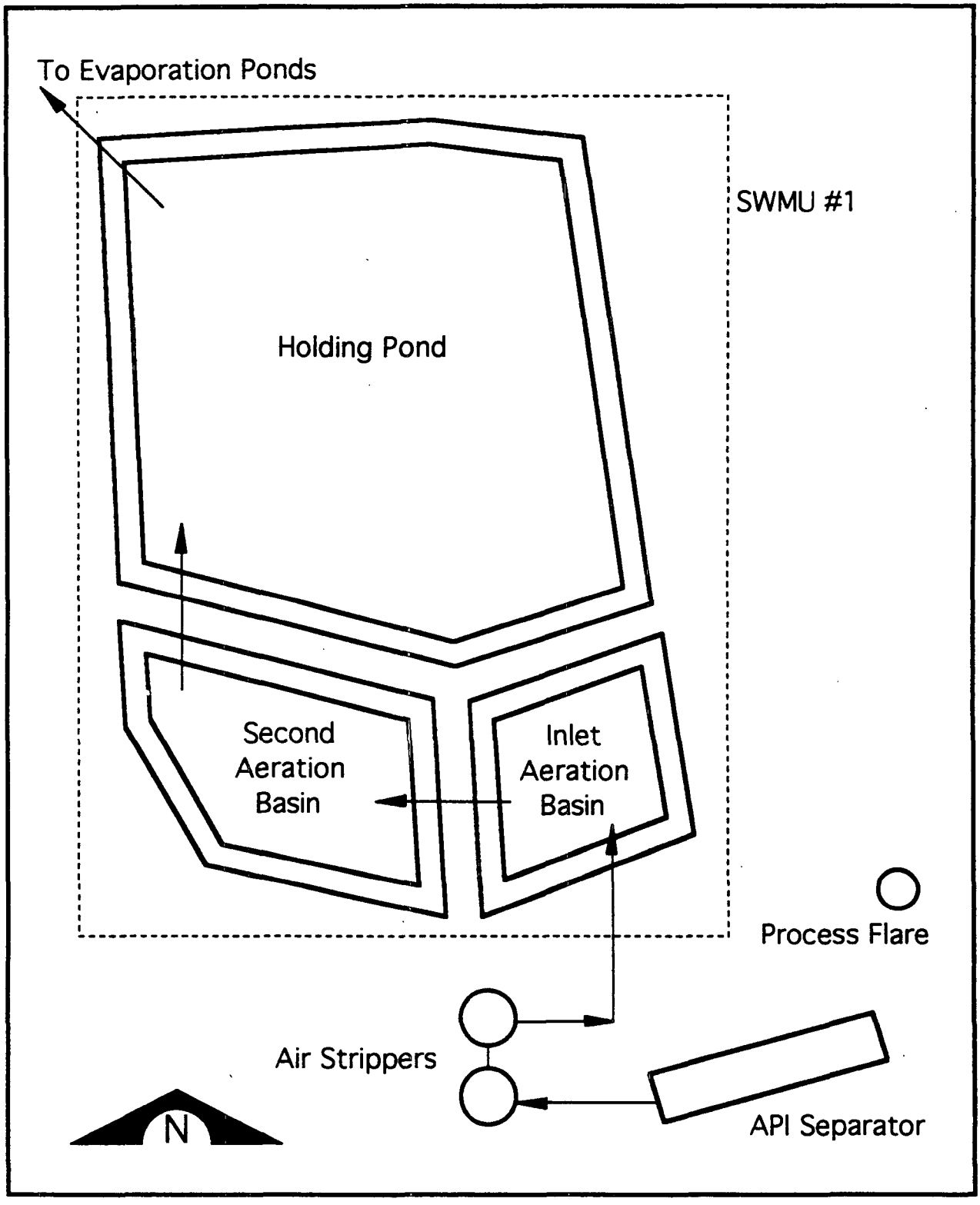
Date: April 23, 1998

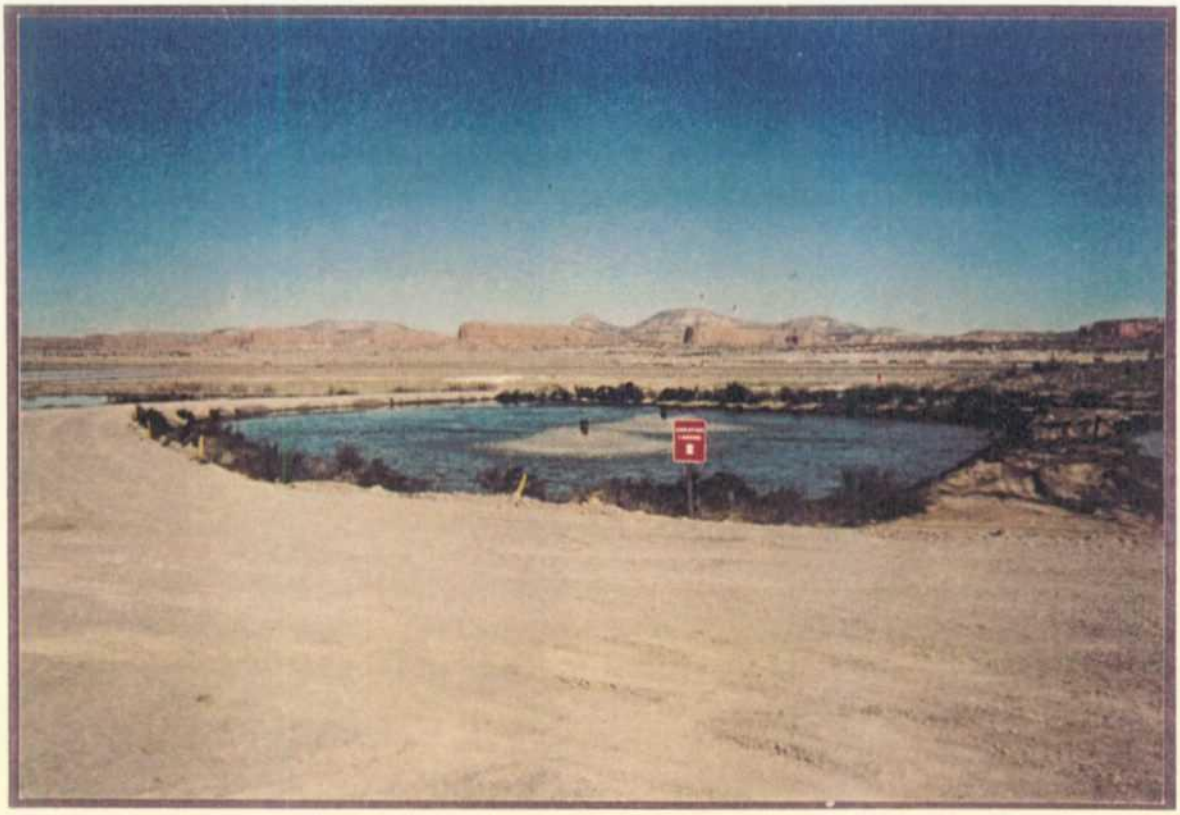
Prepared and Certified by:



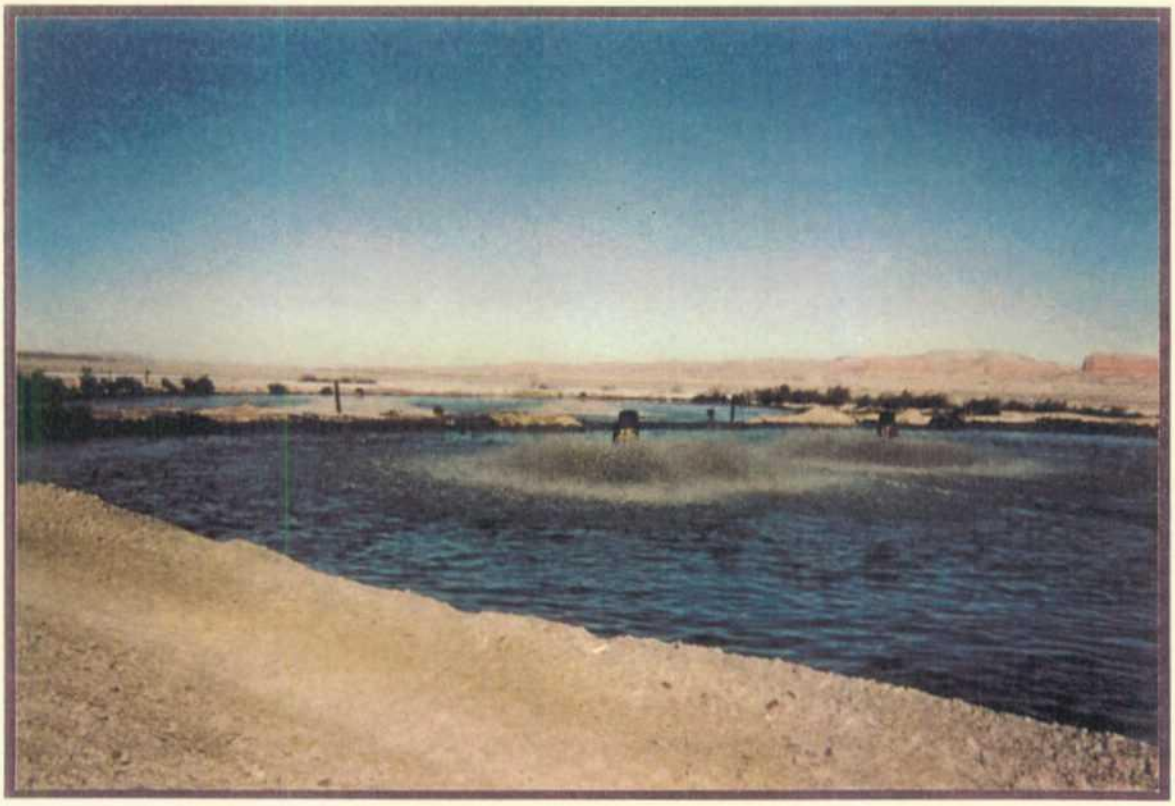
Thomas D. Atwood, P.E.
Colorado Registration No. 22866

Figure No. 1
Aeration Basin Site





View of Aeration Basin



Close-up of Aeration Pumps

SWMU-1 AERATION LAGOONS

GIANT
REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505.
722.3833

March 20, 1997

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:

Pursuant to Giant's **HSWA Permit Condition C.4., Page 11** and the May 31, 1990, **RFI Workplan Approval,** 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.

SWMU 1 - 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 ½ 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

David C. Pavlich

David Pavlich, HSE Manager
Giant Refining Company

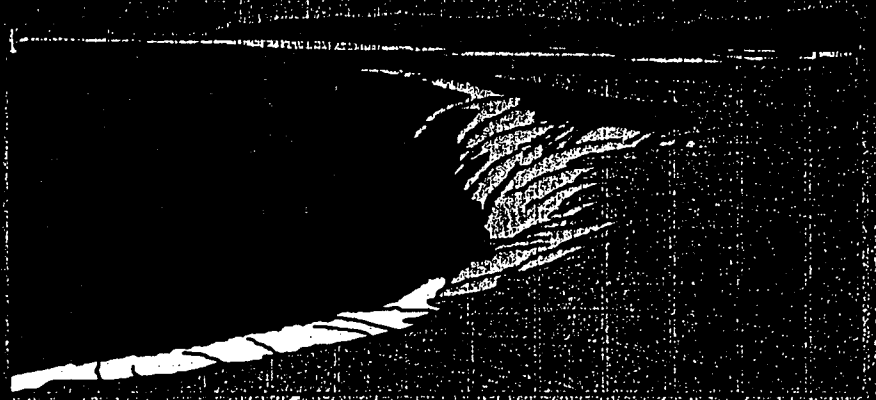
cc: Kim Bullerdick, Corporate Counsel, Giant Industries Arizona, Inc.
Dick Platt, General Manager, Ciniza Refinery
Dorinda Mancini, Environmental Manager, Ciniza Refinery
Steve Morris, Environmental Specialist, Ciniza Refinery
Patricio Sanchez, Petroleum Engineer, OCD

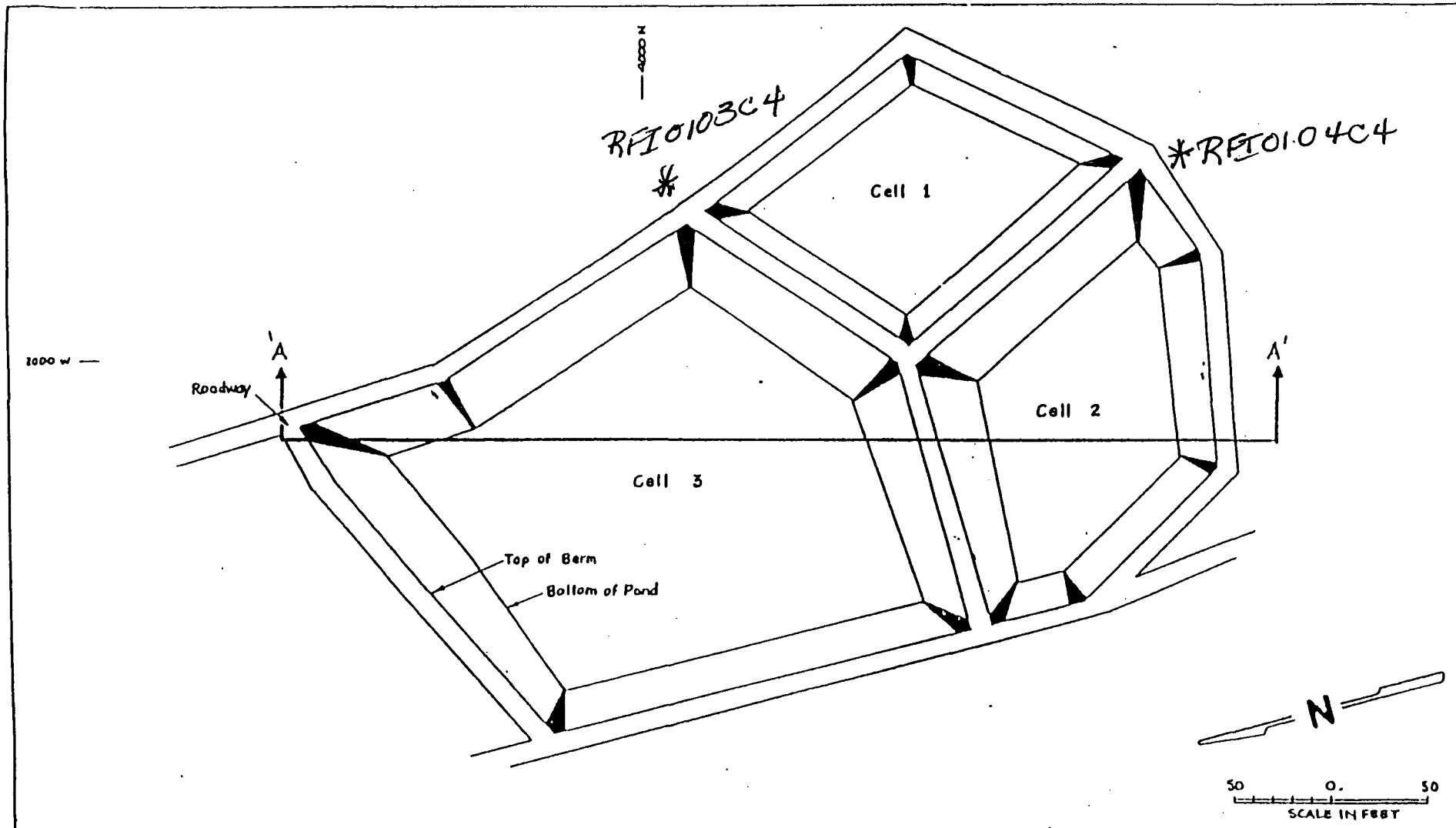
RFI1Q97

GIANT
REFINING CO.

SWMU-1 AERATION LAGOONS ANALYTICAL RESULTS

RFI QUARTERLY PROGRESS REPORT
4TH QTR. 96, 1ST QTR 97





GIANT REFINERY Gallup, New Mexico	AERATION BASIN Plan View and Cross-Section Location

Inter-Mountain Laboratories, Inc.

1160 Research Drive
Bozeman, Montana 59718

EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: RFI0103C4
Project ID: Ciniza
Lab ID: B970821
Matrix: Soil

Date Reported: 03/17/97
Date Sampled: 02/18/97
Date Received: 02/20/97
Date Extracted: 02/28/97
Date Analyzed: 03/03/97

Parameter	Result	PQL	Units
Toluene	ND	0.5	mg/kg
Xylenes (total)	ND	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

ND - 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 CRB

Inter·Mountain Laboratories, Inc.

1160 Research Drive
Bozeman, Montana 59718

EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client: GIANT REFINING COMPANY
Sample ID: RFI0104C4
Project ID: Ciniza
Lab ID: B970822
Matrix: Soil

Date Reported: 03/17/97
Date Sampled: 02/18/97
Date Received: 02/20/97
Date Extracted: 02/28/97
Date Analyzed: 03/03/97

Parameter	Result	PQL	Units
Ethylbenzene	0.61	0.5	mg/kg
Xylenes (total)	ND	0.5	mg/kg

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
1,2-Dichloroethane-d4	110	70 - 121
Bromofluorobenzene	107	74 - 121
Toluene-d8	112	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.D. Reviewed CRB

Inter·Mountain Laboratories, Inc.

1160 Research Drive
Bozeman, Montana 59718

EPA METHOD 8260
VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: Trip Blank
Project ID: Ciniza
Lab ID: B970823
Matrix: Water

Date Reported: 03/10/97
Date Sampled: 02/18/97
Date Received: 02/20/97
Date Extracted: NA
Date Analyzed: 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

J - 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

Inter·Mountain Laboratories, Inc.

1160 Research Drive
Bozeman, Montana 59718

LAB QA/QC
EPA METHOD 8260
METHOD BLANK

Date Analyzed: 03/03/97
Lab ID: MBS97059
Matrix: Soil
Date 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
Toluene-d8	124 #	81 - 117

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

Analyst E.O.

Reviewed

Inter·Mountain Laboratories, Inc.

1160 Research Drive
Bozeman, Montana 59718

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

Date Analyzed: 03/03/97
Lab ID: 0597H00821
Matrix: Soil
Date 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

Parameter	Spike Added (mg/kg)	MSD Result (mg/kg)	MSD Recovery %	RPD %		QC Limits RPD	QC Limits 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 of 10 outside QC limits.
RPD: 1 out of 5 outside QC limits.

Analyst E.D.

Reviewed

Inter·Mountain Laboratories, Inc.

1160 Research Drive
Bozeman, Montana 59718

R QA/QC
METHOD 8260
LAB CONTROL SAMPLE

Date Analyzed: 03/03/97
Lab 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
on 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	0	2.1	105	70 -130
Vinyl Chloride	2.0	0	2.9	145 *	70 -130

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

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

Analyst E.D.

Reviewed

imL
Inter-Mountain Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSES / PARAMETERS
GIANT Refining Co - RFI Resample	CINIZA	
Sampler: (Signature)	Chain of Custody Tape No.	

Sample No./ Identification	Date	Time	Lab Number	Matrix	No. of Containers	8260 Toluene Xylenes (Total)	8260 BEBNZ Xylenes (Total)	Remarks
RFI 0103C4	2/18/97	0945	B9700821	Soil	1	✓		Oil Lens in 4°C
RFI 0104C4	"	0925	B9700822	"	1		✓	
TRIP BLANK			B9700823	WATER	1			TRIP BLANK 1/2" head space

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	2/19/97	0900			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by laboratory: (Signature)	Date	Time
FEDEX (Courier)				2/20/97	1235

Inter-Mountain Laboratories, Inc.

☐ 1633 Terra Avenue, Sheridan, Wyoming 82801, Telephone (307) 672-8945

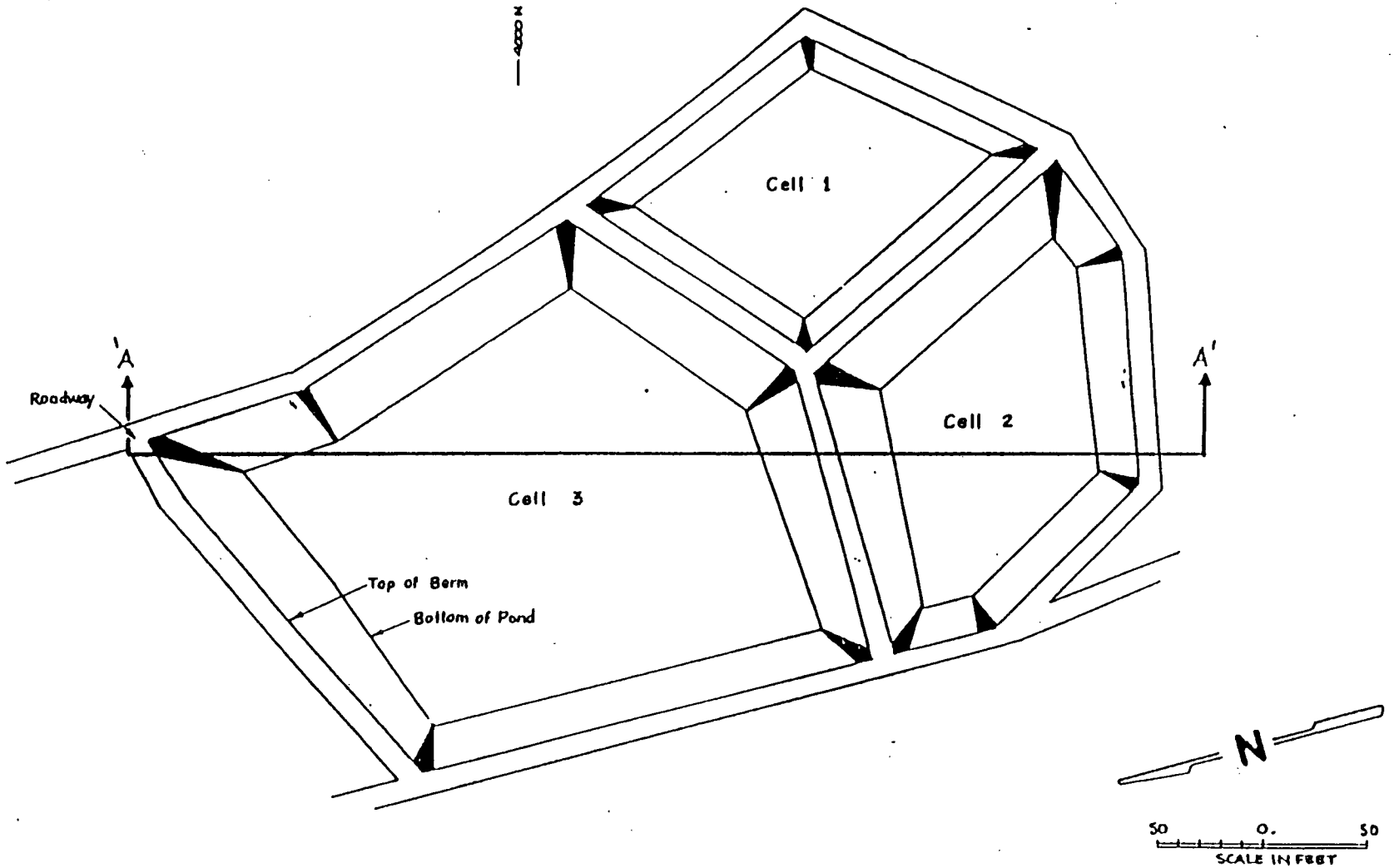
☐ 1701 Phillips Circle, Gillette, Wyoming 82718, Telephone (307) 682-8945

☒ 2506 West Main Street, Farmington, NM 874, Telephone (505) 32

☒ 1160 Research Dr., Bozeman, Montana 59715, Telephone (406) 586-8450

☐ 11183 SH 30, College Station, TX 77845, Telephone (409) 776-8945

43570



GIANT REFINERY Gallup, New Mexico	AERATION BASIN Plan View and Cross-Section Location

GIANT
REFINING COMPANY

Nº 17722

MATERIAL REQUISITION

NOT A PURCHASE ORDER

SUGGESTED VENDORS

1. Precision Engineering
2. _____
3. _____

DATE 4 Mar 97

PURCHASE ORDER NUMBER ISSUED: _____

QUAN.	UNIT	DESCRIPTION	UNIT PRICE	AMOUNT
1		Feb 97 Sampling of RCRA LTU - 201 & 63 Aeration Lagoon Re-Sampling		
		Total		1655 79

NOTE: GIVE FULL DESCRIPTION OF ITEM. INDICATE PART NUMBER, CATALOG NUMBER, BRAND NAME, MODEL AND SERIAL NUMBER.

REQUESTED BY: Derek Mancini

DELIVER TO: _____

ACCOUNT NO./ UNIT NO.: 997-9801-07

FOR USE AT: _____

APPROVED BY: DP

PRIOR CODE: E 1 2 3

HAVE YOU CHECKED THIS REQUISITION FOR REAL NEED? Yes

NO LATER THAN DATE: _____

KEEP COPY NO. 3 FOR YOUR RECORDS

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

3/4/97

GIANT
REFINING COMPANY

Nº 17720

MATERIAL REQUISITION

NOT A PURCHASE ORDER

SUGGESTED VENDORS

1. IML
2. _____
3. _____

DATE 3-5-97

PURCHASE ORDER NUMBER ISSUED: _____

QUAN.	UNIT	DESCRIPTION	UNIT PRICE	AMOUNT	
		IML invoice # 34312			
		GIANT COC # 37869			
		Analytical for Ditch at			
		pond #10 and Aeration lagoon			
		resample		295	80

NOTE: GIVE FULL DESCRIPTION OF ITEM. INDICATE PART NUMBER, CATALOG NUMBER, BRAND NAME, MODEL AND SERIAL NUMBER.

REQUESTED BY: SC Mont

DELIVER TO: _____

ACCOUNT NO./ UNIT NO.: 997-9023-37

FOR USE AT: _____

APPROVED BY: DCP

PRIOR CODE: E 1 2 3

HAVE YOU CHECKED THIS REQUISITION FOR REAL NEED? YES

NO LATER THAN DATE: _____

KEEP COPY NO. 3 FOR YOUR RECORDS

7842 1M BUTLER'S Gallup

***** INVOICE ***** PAGE: 1

INTER-MOUNTAIN LABORATORIES, INC.
P.O. BOX 4006
SHERIDAN, WY 82801

(307) 674-7506

INVOICE NUMBER: 0034312-IN
INVOICE DATE: 11/22/96

LAB LOCATION:0000
Farmington, NM

Giant Refining Company
Rt #3, Box 7
Gallup NM 87301

CUSTOMER NO: 03-0000799
CUSTOMER P.O.:

TERMS: NET 30

Attn: Steve Morris:

SALES CD	DESCRIPTION	QUANTITY	PRICE	AMOUNT
	COC# 37869, Ciniza Rcd: 10/25/96 Lab#0396 G2343-2347 PS# 574			
301700	BETX-Soil	2.0	50.00	100.00
199999	Analytical Suite 8260(Including Extraction)	3.0	202.50	607.50
650	TCLP Metals Analysis	3.0	85.00	255.00
902600	TCLP Metals Extraction	3.0	60.00	180.00
199999	Analytical Suite 8270 (Includes Extraction)	3.0	550.00	1,650.00
900060	Sales Tax	1.0	165.80	165.80

OK
dpp

RECEIVED
FEB 18 1997
GIANT REFINING CO.
CINIZA REFINERY

****THIS IS A DUPLICATE INVOICE****

NET INVOICE: 2,958.30

OCD INSPECTION (TENTATIVE)

4-29 MON - BAIL, PUMP & SAMPLE OW 16, 25, 26

PUMP MW4, OW5, 7

4-30 TUES - SAMPLE MW-4, OW5, 7

PUMP OW 1, 2, 9, & 10

5-1 WED - SAMPLE OW 1, 2, 9 & 10

INSPECT

5-2&3 THU & FRI OPEN (FINISH INSPECTION, SAMPLE OW 12, 13, 14, 20)

RFI PHASE I & II

MON, MAY 6 - ~~SWMU #8 - 2 SAMPLES 7-7½' + DUPLICATE, 1 TRIP BLANK~~

SWMU #6 - TANK ~~#54, #53~~ 11-11½'

~~#568~~ - 11-11½'

CUT DIKE ON ~~#567~~ FOR TUESDAY

~~(TUES)~~ MAY 7 - SAMPLE ~~#569 - 11-11½' (+ DUPLICATE)~~

(1 DUP) (EQPT RINSE) ~~#569~~ (2 sample points) 11-11½'

(TRIP BLANK) ~~#570~~ - 11-11½'

~~#571~~

~~#572~~

(WED) MAY 8 - ~~SWMU #10 - (SLUDGE PIT)~~ 2 SAMPLES @ 15-15½'

(1 DUPLICATE & ~~1 EQUIP BLANK~~)

(STEAM BUCKET @ 12-13')

~~VISUAL @ 19'~~

1 VISUAL on 3rd ~~HOLE~~ @ 15-15½'

VISUAL @ 18'

(~~SEPARATE SAMPLE OF BLACK SLUDGE~~ FOR INSITU REMEDIATION ~ 1 qt.)

~~MAY 9 – SWMU #13 – POND #10 + DITCH.~~

~~1 DUPLICATE~~

~~1 TRIP BLANK~~

~~1 EQUIPMENT~~

~~4 holes 2-2½ + 4-4½~~

~~8 samples~~

MAY 10,13,15 START SWMU # 2 – TAKE PROBABLY THREE DAYS

12 VERTICAL, 6 ANGLE – 3½-4, 5-5½, 6½-7

(54 Samples)

(3 DUPLICATES, 2 EQUIP BLANKS, 3 TRIP BLANKS

MAY-14 KRAMER AIR SAMPLING

MAY 16, 17, 20 SWMU #1 AERATION LAGOONS 4 vertical 2 angle

(3 DAYS)

4-4½, 9-9½, 11-11½, 14-14½

24 SAMPLES

2 EQU BLANKS, 3 TRIP BLANKS

2 DUPLICATES

FACSIMILE TRANSMITTAL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

MULTIMEDIA PERMITTING AND PLANNING DIVISION

NEW MEXICO AND FEDERAL FACILITIES SECTION

PLEASE PRINT IN BLACK INK ONLY

TO: Ed Horst, Environmental Manager - Giant Refining Company, Ciniza	
MACHINE NUMBER: 505.722.0210	VERIFICATION NUMBER: 505.722.0227
FROM: James A. Harris, Jr., RCRA Facility Manager/Geologist	
PHONE: (214) 665-8302	Mail Code: 6FD-N
OFFICE: New Mexico/Federal Facilities Section	PAGES, INCLUDING COVER SHEET: 3
DATE: March 15, 1996	

PLEASE NUMBER ALL PAGES

INFORMATION FOR SENDING FACSIMILE 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 Giant, Ciniza's corrective action progress. Please review and let's discuss it next week. Have a good one.

Thanx,

JAMES

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

Prepared by: James A. Harris, Jr.\GWPM as at March 15, 1996

OCD INSPECTION (TENTATIVE)

4-29 MON - BAIL, PUMP & SAMPLE OW 16, 25, 26

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~~1 EQUIPMENT~~

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4-4½, 9-9½, 11-11½, 14-14½

24 SAMPLES

2 EQU BLANKS, 3 TRIP BLANKS

2 DUPLICATES

FACSIMILE TRANSMITTAL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

MULTIMEDIA PERMITTING AND PLANNING DIVISION

NEW MEXICO AND FEDERAL FACILITIES SECTION

PLEASE PRINT IN BLACK INK ONLY

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Prepared by: James A. Harris, Jr.\6MPH as at March 15, 1996

GIANT REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

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 Quarterly Progress Report for the second quarter of 1994.

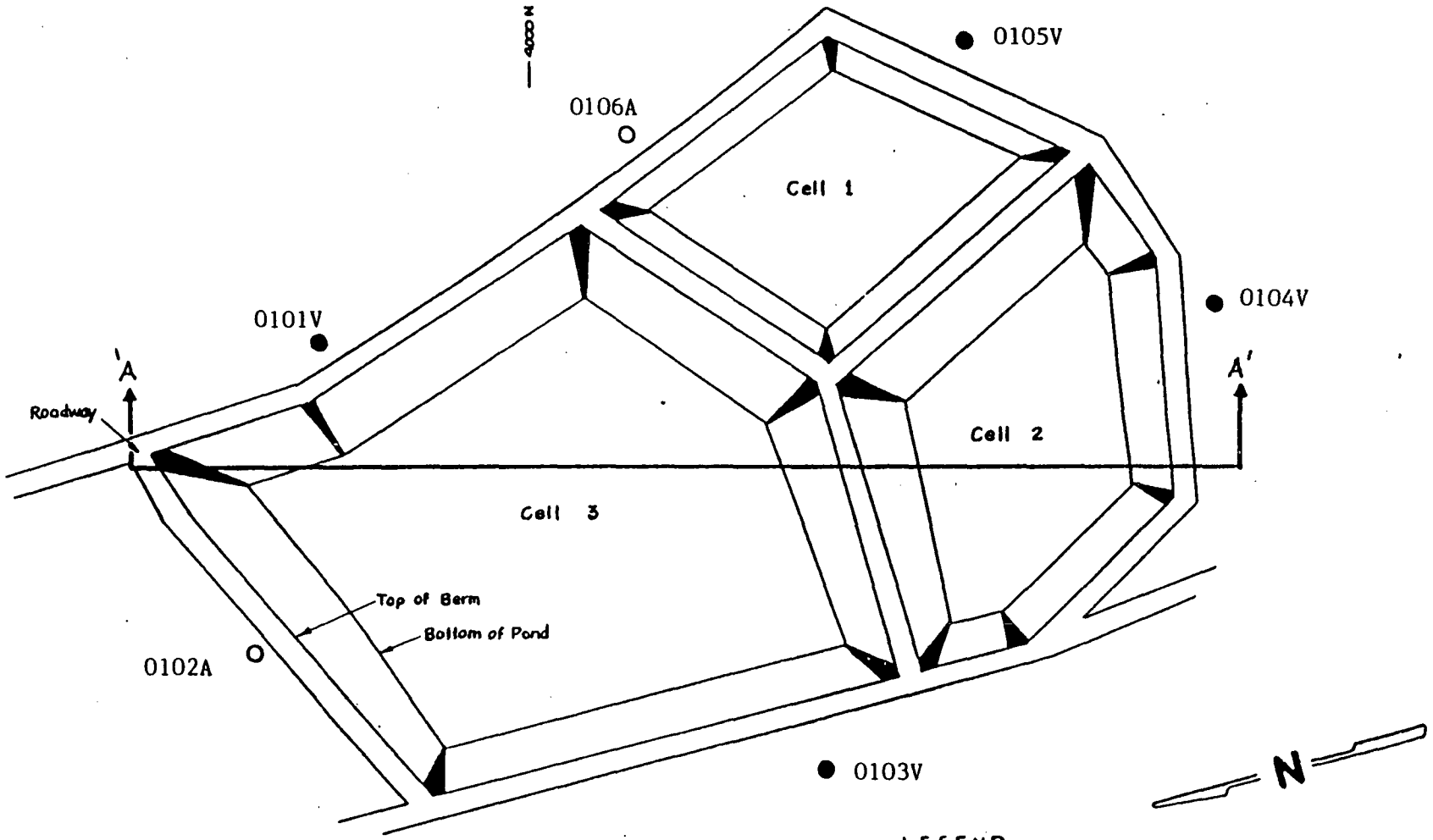
Giant has completed piping modifications to the "Railroad Rack Lagoon" (SWMU #8) system and is presently evacuating the remaining water from the lagoon and disposing of it in the process wastewater system. As soon as it is feasible, Giant will sample the SWMU as required and begin bioremediation activities.

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.

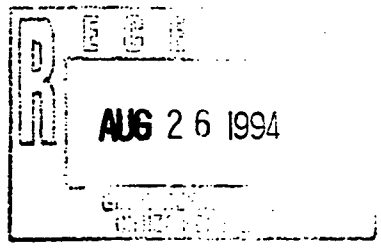
If you require additional information, please contact Lynn Shelton, of my staff, at (505) 722-0227.

"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



GIANT REFINERY Gallup, New Mexico	AERATION BASIN Plan View and Cross-Section Location	FIG.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733



August 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

GIANT
REFINING CO.

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

TLS\ADEPA894

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

JAN 07 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.
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. Davis

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 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 Evaporation Ponds and Neutralization Tank Evaporation Ponds

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

GIANT

DATE: February 3, 1994

TO: David Pavlich
Kim Bullerdick

FROM: Lynn Shelton LHS

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	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	11	Secondary Oil Skimmer
12	14	13	Wastewater Collection
13	14	13	Drainage Ditch

SWMU 17

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.

SWMU #1 - 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.

SWMU #3 - 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.

SWMU #5 - Landfill Areas

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

SWMU #6 - 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.

SWMU #7 - 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.

SWMU #9 - 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.

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.

SWMU #12 - 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.

SWMU #13 - 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

SWMU #	SAMPLES REQUIRED	ANALYSIS	COST
1	30	8240	$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
4	6	8240	1,800
		8270	2,970
		Metals	2,250
		pH	60
5	21	8240	6,300
		8270	10,395
		Metals	4,830
6	8	BTEX	1,000
7	4	TPH	200
		Oil & Grease	200
8	50	8240	15,000
		8270	24,750
10	18	8240	5,400
		8270	8,910
		Metals	4,140
11	4	8240	1,200
		8270	1,980
13	12	8240	3,600
		8270	5,940
		Total Analytical Cost 1994 Only	$119,245

TABLE 4

BIENNIAL ANALYTICAL COST

SWMU #	SAMPLES REQUIRED	ANALYSIS	COST
1	30	8240	$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
13	12	8240	8,600
		8270	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
	$119,245	$94,600	$213,845

* 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 07 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.
NMD000333211

Dear Mr. Stokes:

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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. Davis

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

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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 Neutralization Tank Evaporation Ponds

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

6h-pn:RM:7442:11/3/93:promo disk:A:girfirpt:file in technical NMD.....817

6h-pn Neleigh | 6h-p Honker | 6h 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 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 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.

SWMU #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 #8, 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 interval. Sampling procedures and constituents to be analyzed 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.

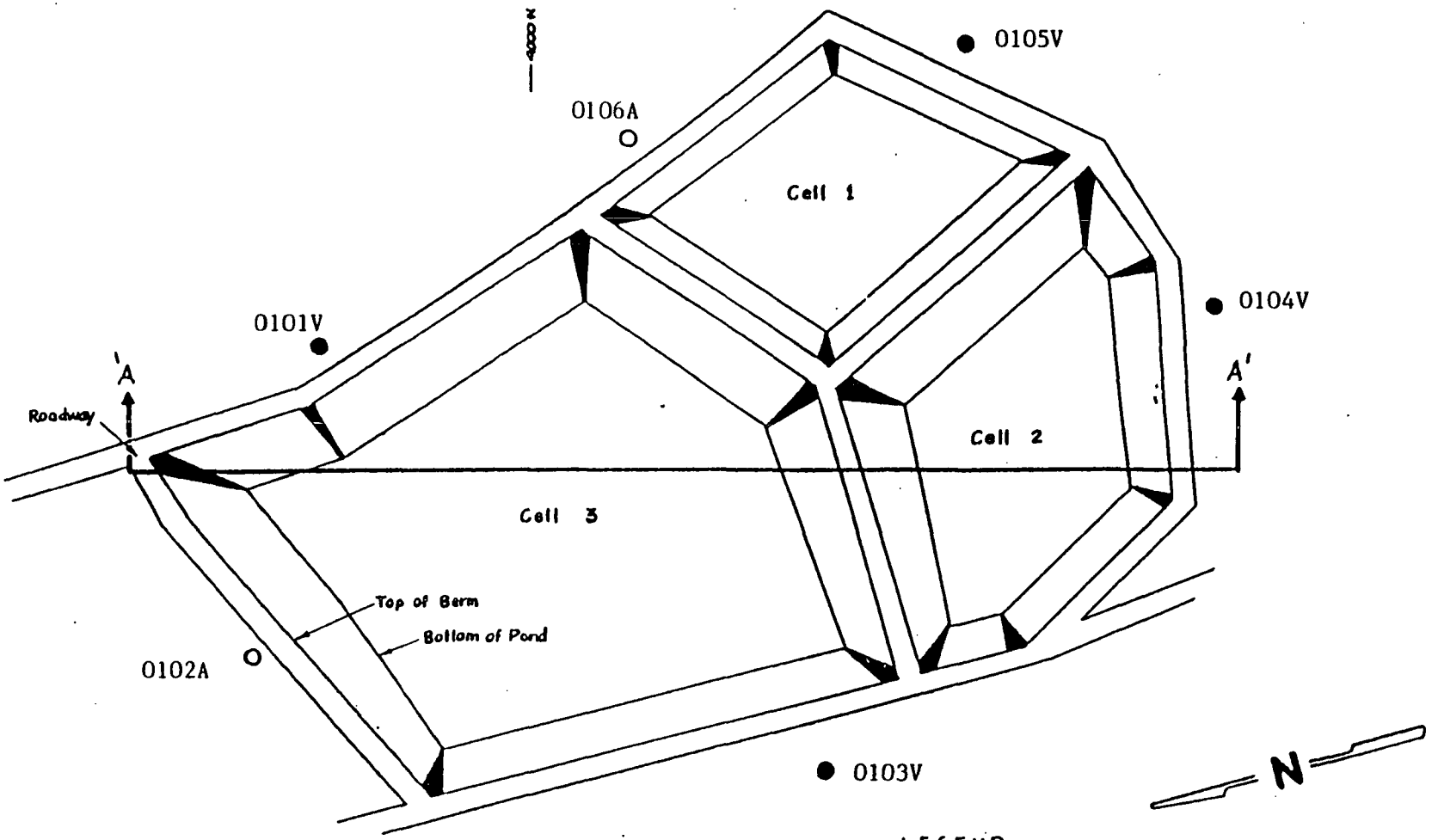
SWMU #12, Contact Waste Water Collection System (CWWCS): Giant shall perform an inspection of the CWWCS every five years (the next inspection will be in 1996) and shall be identical to the one performed in the RFI (if better technological equipment is developed, then Giant may request that an alternative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

~~**SWMU #9,**~~ SWMU 10 **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.

2 west pit only

Before final closure of the West pit 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.



GIANT REFINERY Gallup, New Mexico	AERATION BASIN Plan View and Cross-Section Location	FIG.

SWMU #1

PHASE II, RFI 1991
GIANT REFINING
CINIZA

METALS

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								
Arsenic	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3
Barium	mg/kg	256	225	326	234	204	268	410	243
Beryllium	mg/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	<0.3	<0.3	<0.3
Cobalt	mg/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	mg/kg	5.2	5.0	5.3	5.7	4.3	4.2	3.2	4.6
Mercury	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Potassium	mg/kg	1820	1780	2270	1620	1730	1190	624	1780
Nickel	mg/kg	10.9	9.8	10.4	9.0	6.5	4.6	5.1	4.6
Lead	mg/kg	13	13	11	9	8	9	7	8
Antimony	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3
Selenium	mg/kg	<0.3	<0.3	<0.3	<3	<3	<3	<3	<3
Vanadium	mg/kg	15.4	15.3	15.4	13.3	13.9	13.3	11.4	12.3
Zinc	mg/kg	15.0	14.2	15.6	13.2	10.6	8.0	12.0	11.9

SWMU #1

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								
pH	---	7.78	7.76	7.66	7.54	7.54	7.53	8.14	7.44

SWMU #1

PHASE II, RFI 1991
GIANT REFINING
CINIZA

METALS

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 (mg/l)	V11.0	V14.0
PARAMETER	UNITS										
Arsenic	mg/kg	<3	<3	<3	<3	<3	<3	<3	<0.005	<3	<3
Barium	mg/kg	295	244	321	234	229	103	634	<0.010	249	275
Beryllium	mg/kg	2.6	2.6	2.4	2.9	4.2	2.7	3.7	<0.005	4.0	4.9
Cadmium	mg/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	3.6	5.0
Copper	mg/kg	3.9	3.5	4.0	3.8	4.4	3.9	3.8	<0.010	3.4	3.9
Mercury	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.0002	<0.02	<0.02
Potassium	mg/kg	450	697	561	623	965	1030	1260	<1.0	738	1650
Nickel	mg/kg	4.9	5.3	5.0	5.5	7.2	6.3	6.8	<0.020	5.5	7.6
Lead	mg/kg	7	7	8	7	8	6	6	<0.002	8	6
Antimony	mg/kg	<3	<3	<3	<3	<3	<3	<3	0.05	<3	<3
Selenium	mg/kg	<0.3	<3	<0.3	<3	<3	<0.3	<3	<0.005	<0.3	<3
Vanadium	mg/kg	12.3	14.2	10.0	10.6	12.2	10.8	12.4	<0.010	12.5	12.8
Zinc	mg/kg	6.2	8.3	7.2	8.2	10.6	13.9	16.7	<0.010	9.0	14.2

SWMU #1

PHASE II, RFI 1991
GIANT REFINING
CINIZA

METALS

SAMPLE POINT NUMBER		05	05	05	05	05	06	06	06	06	06
SAMPLE POINT DEPTH		V4.0	V9.0	V11.0	V14.0	D14.0	A4.0	A9.0	A11.0	A14.0	E14.0
PARAMETER	UNITS										(mg/l)
Arsenic	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3	<0.005
Barium	mg/kg	206	168	767	364	525	529	531	282	155	<0.010
Beryllium	mg/kg	3.5	2.7	4.7	3.1	6.5	3.4	3.9	3.6	4.3	<0.005
Cadmium	mg/kg	0.4	<0.3	<0.3	<0.3	0.3	<0.3	<0.3	0.3	0.4	<0.005
Cobalt	mg/kg	3.9	3.5	5.1	4.6	6.9	3.9	2.9	3.1	2.9	<0.010
Chromium	mg/kg	52.1	3.3	5.8	4.4	8.2	4.8	14.5	3.3	2.5	<0.010
Copper	mg/kg	7.6	1.2	<0.5	0.9	<0.5	5.4	4.3	2.1	2.6	<0.010
Mercury	mg/kg	0.16	<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	652	373	474	<1.0
Nickel	mg/kg	6.5	5.2	10.4	9.2	12.7	5.5	4.5	5.0	4.3	<0.020
Lead	mg/kg	8	5	7	<5	8	5	7	6	7	<0.002
Antimony	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3	<0.05
Selenium	mg/kg	<0.3	<3	<3	<3	<3	<3	<0.3	<0.3	<3	<0.005
Vanadium	mg/kg	12.0	11.5	10.3	7.3	10.7	14.8	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

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8240 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								
Chloromethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Vinyl Chloride	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloroethane	mg/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	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbon Disulfide	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	mg/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	mg/kg	<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
1,1,1-Trichloroethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Vinyl Acetate	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachlorethane	mg/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	mg/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	mg/kg	<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
Cis-1,3-Dichloropropene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<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
4-Methyl-2-Pentanone (MIBK)	mg/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	mg/kg	<0.5	<0.5	<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
Ethylbenzene	mg/kg	<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
Total Xylenes	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acrolein	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1
Acrylonitrile	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodiflouromethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methyl Iodide	mg/kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Trans-1,4-Dichloro-2-Butene	mg/kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Trichloromonoflouromethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-Trichloropropane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

SMWU #1

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8240 VOLATILE ORGANICS

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										
Chloromethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Vinyl Chloride	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.05	<0.05
Chloroethane	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.05	<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	mg/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	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
1,1-Dichloroethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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	<5	<0.5	<0.5
Chloroform	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
1,2-Dichloroethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
2-Butanone (MEK)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
1,1,1-Trichloroethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Carbon Tetrachloride	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Vinyl Acetate	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Bromodichloromethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
1,2-Dichloropropane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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	<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	mg/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	<5	<0.5	<0.5
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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	<5	<0.5	<0.5
Bromoform	mg/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	<5	<0.5	<0.5
4-Methyl-2-Pentanone (MIBK)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Tetrachlorethene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Toluene	mg/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	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Styrene	mg/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	mg/kg	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1
Acrylonitrile	mg/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	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Methyl Iodide	mg/kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5	<0.25	<0.25
Trans-1,4-Dichloro-2-Butene	mg/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	<5	<0.5	<0.5
1,2,3-Trichloropropane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5

SMWU #1

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8240 VOLATILE ORGANICS

SAMPLE POINT NUMBER		05	05	05	05	05	06	06	06	06	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										
Chloromethane	mg/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	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<3
Acetone	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
Carbon Disulfide	mg/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	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
1,2-Dichloroethene (Total)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Chloroform	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
1,2-Dichloroethane	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
Carbon 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	mg/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	mg/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	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
1,1,2-Trichloroethane	mg/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	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Bromoform	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<5
2-Hexanone (MBK)	mg/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	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Toluene	mg/kg	<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	<5
Ethylbenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Styrene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Total Xylenes	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Acrolein	mg/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	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Dichlorodiflouromethane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Methyl Iodide	mg/kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5
Trans-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	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
1,2,3-Trichloropropane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5

SWMU #1

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8240 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								
Ethyl Methacrylate	mg/kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Ethanol	mg/kg	<10	<10	<10	<10	<10	<10	<10	<10
Bromomethane	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1
2-Chloroethylvinylether	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichloro-2-Butane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

SWMU #1

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8240 VOLATILE ORGANICS

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										
Ethyl Methacrylate	mg/kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5	<0.25	<0.25
Ethanol	mg/kg	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10
Bromomethane	mg/kg	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1
2-Chloroethylvinylether	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
1,4-Dichloro-2-Butane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

SWMU #1

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8240 VOLATILE ORGANICS

SAMPLE POINT NUMBER		05	05	05	05	05	06	06	06	06	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										
Ethyl Methacrylate	mg/kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5
Ethanol	mg/kg	<10	<10	<10	<10	<10	<10	<10	<10	<10	<100
Bromomethane	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10
2-Chloroethylvinylether	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
1,4-Dichloro-2-Butane	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

SWMU #1

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8270 SEMI-VOLATILE ORGANICS, CONT.

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								
Acetophenone	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
a,a-Dimethylphenethylamine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
4-Aminobiphenyl	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2,6-Dichlorophenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
p-(Dimethylamino)Azobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
7,12-Dimethylbenzo(a) Anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Diphenylamine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Ethyl Methanesulfonate	mg/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	<0.17	<0.17
1-Naphthylamine	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
N-Nitrosopiperidine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<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	<0.85	<0.85	<0.85
Phenacetin	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2,3,4,6-Tetrachlorophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85

SWMU #1

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8270 SEMI-VOLATILE ORGANICS, CONT.

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										
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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
2,6-Dichlorophenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
p-(Dimethylamino)Azobenzene	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Diphenylamine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Ethyl Methanesulfonate	mg/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
Methyl Methanesulfonate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
1-Naphthylamine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
2-Naphtylamine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
N-Nitroso-di-Butylamine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
N-Nitrosopiperidine	mg/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	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85
Phenacetin	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
2-Picoline	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Pronamide	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
2,3,4,6-Tetrachlorophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85

SWMU #1

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8270 SEMI-VOLATILE ORGANICS, CONT.

SAMPLE POINT NUMBER		05	05	05	05	05	06	06	06	06	06
SAMPLE POINT DEPTH		V4.0	V9.0	V11.0	V14.0	D14.0	A4.0	A9.0	A11.0	A14.0	E14.0
PARAMETER	UNITS										(ug/l)
Acetophenone	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
a,a-Dimethylphenethylamine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
4-Aminobiphenyl	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2,6-Dichlorophenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
p-(Dimethylamino)Azobenzene	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Diphenylamine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Ethyl Methanesulfonate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
3-Methylcholanthrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Methyl Methanesulfonate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
1-Naphthylamine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2-Naphtylamine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
N-Nitroso-di-Butylamine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
N-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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2-Picoline	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Pronamide	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
1,2,4,5-Tetrachlorobenzene	mg/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

8270 SEMI-VOLATILE ORGANICS, CONT.

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								
Flourene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
4-Nitroaniline	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
4,6-Dinitro-2-Methylphenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
N-Nitrosodiphenylamine	mg/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	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Flouranthene	mg/kg	<0.17	<0.17	<0.17	<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	<0.17
Pyrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<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
3,3'-Dichlorobenzidine	mg/kg	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
Benzo(a)Anthracene	mg/kg	<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
Chrysene	mg/kg	<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
Benzo(k)Flouranthene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<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	mg/kg	<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
Benzo(g,h,i)Perylene	mg/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	mg/kg	<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
Di-n-Octylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,2-Diphenylhydrazine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17

SWMU #1

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8270 SEMI-VOLATILE ORGANICS, CONT.

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										
Flourene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
4-Nitroaniline	mg/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	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85
N-Nitrosodiphenylamine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
4-'4-Bromophenyl-Phenylether	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Hexachlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Pentachlorophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85
Phenanthrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Di-n-Butylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Flouranthene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
,,3'-Dichlorobenzidine	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Chrysene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Benzo(b)Flouranthene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Benzo(k)Flouranthene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Benzo(a)Pyrene	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Dibenzo(a,h)Anthracene	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
1-Chloronaphthane	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
2-Chloronaphthane	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Dibenzo(a,j)Acridine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Di-n-Octylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
1,2-Diphenylhydrazine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17

SWMU #1

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8270 SEMI-VOLATILE ORGANICS, CONT.

SAMPLE POINT NUMBER		05	05	05	05	05	06	06	06	06	06
SAMPLE POINT DEPTH		V4.0	V9.0	V11.0	V14.0	D14.0	A4.0	A9.0	A11.0	A14.0	E14.0
PARAMETER	UNITS										(ug/l)
Flourene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
4-Nitroaniline	mg/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	mg/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	<5
4-'4-Bromophenyl-Phenylether	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Hexachlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Pentachlorophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25
Phenanthrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Anthracene	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Benzidine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<50
Pyrene	mg/kg	<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	<5
3,3'-Dichlorobenzidine	mg/kg	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<10
Benzo(a)Anthracene	mg/kg	<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	<5
Chrysene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Benzo(b)Flouranthene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Benzo(k)Flouranthene	mg/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	mg/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	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Dibenzo(a,j)Acridine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Di-n-Octylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
1,2-Diphenylhydrazine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5

SWMU #1

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8270 SEMI-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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Phenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Aniline	mg/kg	<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
2-Chlorophenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,3-Dichlorobenzene	mg/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	mg/kg	<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
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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Hexachloroethane	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Nitrobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Isophorene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2-Nitrophenol	mg/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	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
Bis(2-Chloroethoxy)Methane	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2,4-Dichlorophenol	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
4-Chloroaniline	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Hexachlorobutadiene	mg/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	mg/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	mg/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	<0.85	<0.85
4-Nitrophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
2,4-Dinitrotoluene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
2,6-Dinitrotoluene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Diethylphthalate	mg/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

SWMU #1

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8270 SEMI-VOLATILE ORGANICS

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										
N-Nitrosodimethylamine	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Phenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Aniline	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Bis(2-Chloroethyl)Ether	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
2-Chlorophenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
1,3-Dichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
1,4-Dichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Benzyl Alcohol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
1,2-Dichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
2-Methylphenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<5	<0.85	<0.85
Bis(2-Chloroisopropyl)Ether	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<5	<0.85	<0.85
4-Methylphenol	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Hexachloroethane	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Nitrobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Isophorene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
2-Nitrophenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
2,4-Dimethylphenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Benzoic Acid	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85
Bis(2-Chloroethoxy)Methane	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
2,4-Dichlorophenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
1,2,4-Trichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Naphthalene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
4-Chloroaniline	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Hexachlorobutadiene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
4-Chloro-3-Methylphenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
2-Methylnaphthalene	mg/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	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<5	<0.85	<0.85
2,4,5-Trichlorophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85
2-Nitroaniline	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<25	<0.17	<0.17
Dimethylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Acenaphthalene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
3-Nitroaniline	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85
Acenaphthene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
2,4-Dinitrophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85
4-Nitrophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85
2,4-Dinitrotoluene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
2,6-Dinitrotoluene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17
Diethylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	0.9	<0.17	<0.17	<5	<0.17	<0.17
4-Chlorophenyl-Phenylether	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17

SWMU #1

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8270 SEMI-VOLATILE ORGANICS

SAMPLE POINT NUMBER		05	05	05	05	05	06	06	06	06	06
SAMPLE POINT DEPTH		V4.0	V9.0	V11.0	V14.0	D14.0	A4.0	A9.0	A11.0	A14.0	E14.0
PARAMETER	UNITS										(ug/l)
N-Nitrosodimethylamine	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
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	mg/kg	<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	<5
1,4-Dichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Benzyl Alcohol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
1,2-Dichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2-Methylphenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<5
Bis(2-Chloroisopropyl)Ether	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<5
4-Methylphenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
N-Nitroso-di-n-Propylamine	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Isophorene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2-Nitrophenol	mg/kg	<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	<5
Benzoic Acid	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25
Bis(2-Chloroethoxy)Methane	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2,4-Dichlorophenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
1,2,4-Trichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Naphthalene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
4-Chloroaniline	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Hexachlorobutadiene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
4-Chloro-3-Methylphenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2-Methylnaphthalene	mg/kg	<0.17	<0.17	0.21	<0.17	0.33	<0.17	<0.17	<0.17	<0.17	<5
Hexachlorocyclopentadiene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2,4,6-Trichlorophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<5
2,4,5-Trichlorophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25
2-Nitroaniline	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<25
Dimethylphthalate	mg/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	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25
Acenaphthene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2,4-Dinitrophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25
4-Nitrophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25
2,4-Dinitrotoluene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2,6-Dinitrotoluene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Diethylphthalate	mg/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

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

GARY E. JOHNSON
GOVERNOR

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 lagoon 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.

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

GIANT
REFINING CO.

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. Pavlich

David C. Pavlich
Health, Safety, and Environmental Manager

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

GIANT REFINING CO.

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. Pavlich

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]

GIANT
REFINING CO.

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. Pavlich

David C. Pavlich
Health, Safety, and Environmental Manager

GIANT
REFINING CO.

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.

Sincerely,

David C. Pavlich

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]

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

GARY E. JOHNSON
GOVERNOR

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.

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

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved, OMB No. 2050-0034 Expires 9-30-96
GSA No. 0248-EPA-OT

For EPA Regional Use Only

Date Received
Month Day Year

EPA
United States Environmental Protection Agency
Washington, DC 20460

Hazardous Waste Permit Application Part A

(Read the Instructions before starting.)

I. Installation's EPA ID Number (Mark 'X' in the appropriate box)

[ ] A. First Part A Submission [X] B. Part A Amendment #

C. Installation's EPA ID Number: NMD003321 1

D. Secondary ID Number (If applicable):

II. Name of Facility

GIANT REFINING COMPANY CINIZA

III. Facility Location (Physical address not P.O. Box or Route Number)

A. Street: INTERSTATE 40

Street (Continued): EXIT 39

City or Town: JAMESTOWN

State: NM

Zip Code: 87347-

County Code (If known):

County Name: MCKINLEY

B. Land Type (Enter code): P

C. Geographic Location

LATITUDE (Degrees, Minutes, & Seconds): 35 29 02 0

LONGITUDE (Degrees, Minutes & Seconds): 108 25 04 2

D. Facility Existence Date

Month Day Year: 10 18 1980

IV. Facility Mailing Address

Street or P.O. Box: ROUTE 3 BOX 7

City or Town: GALLUP

State: NM

Zip Code: 87301-

V. Facility Contact (Person to be contacted regarding waste activities at facility)

Name (Last): PAVLICH

(First): DAVID

Job Title: MANAGER H/S/E

Phone Number (Area Code and Number): 505-722-3833

VI. Facility Contact Address (See instructions)

A. Contact Address Location [ ] Mailing [X] Other [ ]

B. Street or P.O. Box:

City or Town:

State:

Zip Code:

Form Approved. OMB No 2050-0034 Expires 9-30-96
GSA No. 0248-EPA-OT

Please print or type with ELITE type (... characters per inch) in the unshaded areas only

EPA I.D. Number (Enter from page 1)	Secondary ID Number (Enter from page 1)
NMD000333211	

VII. Operator Information (See instructions)

Name of Operator
GIANT REFINING COMPANY CINIZA

Street or P.O. Box
ROUTE 3 BOX 7

City or Town	State	ZIP Code
GALLUP	NM	87301 —

Phone Number (Area Code and Number)	B. Operator Type	C. Change of Operator Indicator	Date Changed Month Day Year
505 — 722 — 3833	P	Yes [ ] No [X]	

VIII. Facility Owner (See Instructions)

A. Name of Facility's Legal Owner
GIANT INDUSTRIES ARIZONA INC

Street or P.O. Box
2373 NORTH SCOTTSDALE ROAD

City or Town	State	ZIP Code
SCOTTSDALE	AZ	85255 —

Phone Number (Area Code and Number)	B. Owner Type	C. Change of Owner Indicator	Date Changed Month Day Year
602 — 585 — 8888	P	Yes [ ] No [X]	

IX. SIC Codes (4-digit, in order of significance)

Primary		Secondary	
2911	(Description) PETROLEUM REFINING		(Description)
Secondary		Secondary	
	(Description)		(Description)

X. Other Environmental Permits (See Instructions)

A. Permit Type (Enter code)	B. Permit Number	C. Description
R	NMD000333211	RCRA PART B PERMIT
E	AQP6331-M-2	NM AIR QUALITY PERMIT
N	NMR00A172	GENERAL NPDES STORMWATER
E	GW-32	NMOCD DISCHARGE PLAN

EPA I.D. Number (Enter from page 1)												Secondary ID Number (Enter from page 1)												
N	M	D	0	0	0	3	3	3	2	1	1													

XI. Nature of Business (Provide a brief description)

The Giant-Ciniza Plant refines crude oil and markets refined petroleum fuel products.

XII. Process Codes and Design Capacities

A. PROCESS CODE - Enter the code from the list of process codes below that best describes each process to be used at the facility. Thirteen lines are provided for entering codes. If more lines are needed, attach a separate sheet of paper with the additional information. For "other" processes (i.e., D99, S99, T04 and X99), describe the process (including its design capacity) in the space provided in Item XIII.

B. PROCESS DESIGN CAPACITY - For each code entered in column A, enter the capacity of the process.

1. AMOUNT - Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process.

2. UNIT OF MEASURE - For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

C. PROCESS TOTAL NUMBER OF UNITS - Enter the total number of units used with the corresponding process code.

PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
	Disposal:	
D79	Underground Injection	Gallons; Liters; Gallons Per Day; or Liters Per Day
D80	Landfill	Acre-feet or Hectare-meter
D81	Land Treatment	Acres or Hectares
D82	Ocean Disposal	Gallons Per Day r Liters Per Day
D83	Surface Impoundment	Gallons or Liters
D99	Other Disposal	Any Unit of Measure Listed Below
	Storage:	
S01	Container (Barrel, Drum, Etc.)	Gallons or Liters
S02	Tank	Gallons or Liters
S03	Waste Pile	Cubic Yards or Cubic Meters
S04	Surface Impoundment	Gallons or Liters
S05	Drip Pad	Gallons or Liters
S06	Containment Building-Storage	Cubic Yards or Cubic Meters
S99	Other Storage	Any Unit of Measure Listed Below
	Treatment:	
T01	Tank	Gallons Per Day or Liters Per Day
T02	Surface Impoundment	Gallons Per Day or Liters Per Day
T03	Incinerator	Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; or Btu's Per Hour
T04	Other Treatment	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; or Btu's Per Hour
T80	Boiler	Gallons or Liters
T81	Cement Kiln	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; or Btu's Per Hour
T82	Lime Kiln	
T83	Aggregate Kiln	
T84	Phosphate Kiln	
T85	Coke Oven	
T86	Blast Furnace	
T87	Smelting, Melting, Or Refining Furnace	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; or Btu's Per Hour
T88	Titanium Dioxide Chloride Process Oxidation Reactor	
T89	Methane Reforming Furnace	
T90	Pulping Liquor Recovery Furnace	
T91	Combustion Device Used In The Recovery Of Sulfur Values From Spent Sulfuric Acid	
T92	Halogen Acid Furnaces	
T93	Other Industrial Furnaces Listed in 40 CFR §260.10	
T94	Containment Building-Treatment	Cubic Yards or Cubic Meters
	Miscellaneous (Subpart X):	
X01	Open Burning/Open Detonation	Any Unit of Measure Listed Below
X02	Mechanical Processing	Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds Per Hour; or Kilograms Per Hour
X03	Thermal Unit	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; or Btu's Per Hour
X04	Geologic Repository	Cubic Yards or Cubic Meters
X99	Other Subpart X	Any Unit of Measure Listed Below

UNIT OF MEASURE	UNIT OF MEASURE CODE
Gallons	G
Gallons Per Hour	E
Gallons Per Day	U
Liters	L
Liters Per Hour	H
Liters Per Day	V

UNIT OF MEASURE	UNIT OF MEASURE CODE
Short Tons Per Hour	D
Metric Tons Per Hour	W
Short Tons Per Day	N
Metric Tons Per Day	S
Pounds Per Hour	J
Kilograms Per Hour	R

UNIT OF MEASURE	UNIT OF MEASURE CODE
Cubic Yards	Y
Cubic Meters	C
Acres	B
Acre-feet	A
Hectares	Q
Hectare-meter	F
Btu's Per Hour	I

EPA I.D. Number *(Enter from page 1)*: N M D 0 0 0 3 3 3 2 1 1

Secondary ID Number *(Enter from page 1)*:

XII. Process Codes and Design Capabilities *(Continued)*

EXAMPLE FOR COMPLETING ITEM XII (Shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number	A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY 1. Amount (Specify)	B. PROCESS DESIGN CAPACITY 2. Unit Of Measure (Enter code)	C. Process Total Number Of Units	For Official Use Only
X 1	S 0 2	5 3 3 . 7 8 8	G	0 0 1	
1	D 8 1	15.0	B	001	
2	T 0 4	300.0	U	001	
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					

NOTE: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item XIII.

XIII. Other Processes *(Follow instructions from Item XII for D99, S99, T04 and X99 process codes)*

Line Number (Enter #s in seq w/XII)	A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY 1. Amount (Specify)	B. PROCESS DESIGN CAPACITY 2. Unit Of Measure (Enter code)	C. Process Total Number Of Units	D. Description Of Process
X 1	T 0 4				In-situ Vitrification
1	T 0 4	300.0	U	001	FILTER PRESS
2					
3					
4					

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

EPA I.D. Number *(Enter from page 1)*: N M D 0 0 0 3 3 3 2 1 1

Secondary ID Number *(Enter from page 1)*:

XIV. Description of Hazardous Wastes

A. EPA HAZARDOUS WASTE NUMBER - *Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you will handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR, Part 261 Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.*

B. ESTIMATED ANNUAL QUANTITY - *For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.*

C. UNIT OF MEASURE - *For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:*

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in column A select the code(s) from the list of process codes contained in Item 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 Item XII A. on 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 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 Item XIV-D(1).*
3. *Enter in the space provided on page 7, Item 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 DESCRIBED 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:

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, 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 hazardous 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 treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number	A. EPA HAZARD WASTE NO. (Enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (Enter code)	D. PROCESS (1) PROCESS CODES (Enter code)	D. PROCESS (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
X 1	K 0 5 4	900	P	T 0 3 D 8 0	
X 2	D 0 0 2	400	P	T 0 3 D 8 0	
X 3	D 0 0 1	100	P	T 0 3 D 8 0	
X 4	D 0 0 2				Included With Above

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved, OMB No. 2050-0034 Expires 9-30-96
GSA No. 0248-EPA-OT

EPA I.D. Number (Enter from page 1): N M D 0 0 0 3 3 3 2 1 1

Secondary ID Number (Enter from page 1):

XIV. Description of Hazardous Wastes (Continued)

Line Number		A. EPA HAZARDOUS WASTE NO. (Enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
	1	K049	0.4	T	T	04	S	01						FILTER PRESS
	2	K050	5.0	T	T	04	S	01						FILTER PRESS
	3	K051	250.0	T	T	04	S	01						FILTER PRESS
	4	K052	10.0	T	T	04	S	01						FILTER PRESS
	5	D018	200.0	T	S	01	D	81						
	6	D001	1.0	T	S	01								
	7	D039	1.0	T	S	01								
	8	F037	5.0	T	T	04	S	01	D	81				FILTER PRESS
	9													
10														
11														
12														
13														
14														
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16														
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28														
29														
30														
31														
32														
33														

EPA I.D. Number *(Enter from page 1)*	Secondary ID Number *(Enter from page 1)*
N M D 0 0 0 3 3 3 2 1 1	

XV. Map

Attach to this application a topographic map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in this map area. See instructions for precise requirements.

* SEE ATTACHMENT A

XVI. Facility Drawing

All existing facilities must include a scale drawing of the facility (see instructions for more detail).

* SEE ATTACHMENT B

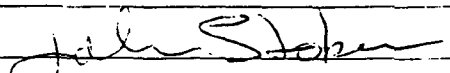
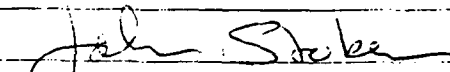
XVII. Photographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).

* SEE ATTACHMENT C

XVIII. Certification(s)

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.

Owner Signature 	Date Signed 3/25/95
Name and Official Title (Type or print) JOHN STOKES, REFINERY MANAGER	
Owner Signature	Date Signed
Name and Official Title (Type or print)	
Operator Signature 	Date Signed 3/25/95
Name and Official Title (Type or print) JOHN STOKES, REFINERY MANAGER	
Operator Signature	Date Signed
Name and Official Title (Type or print)	

XIX. Comments

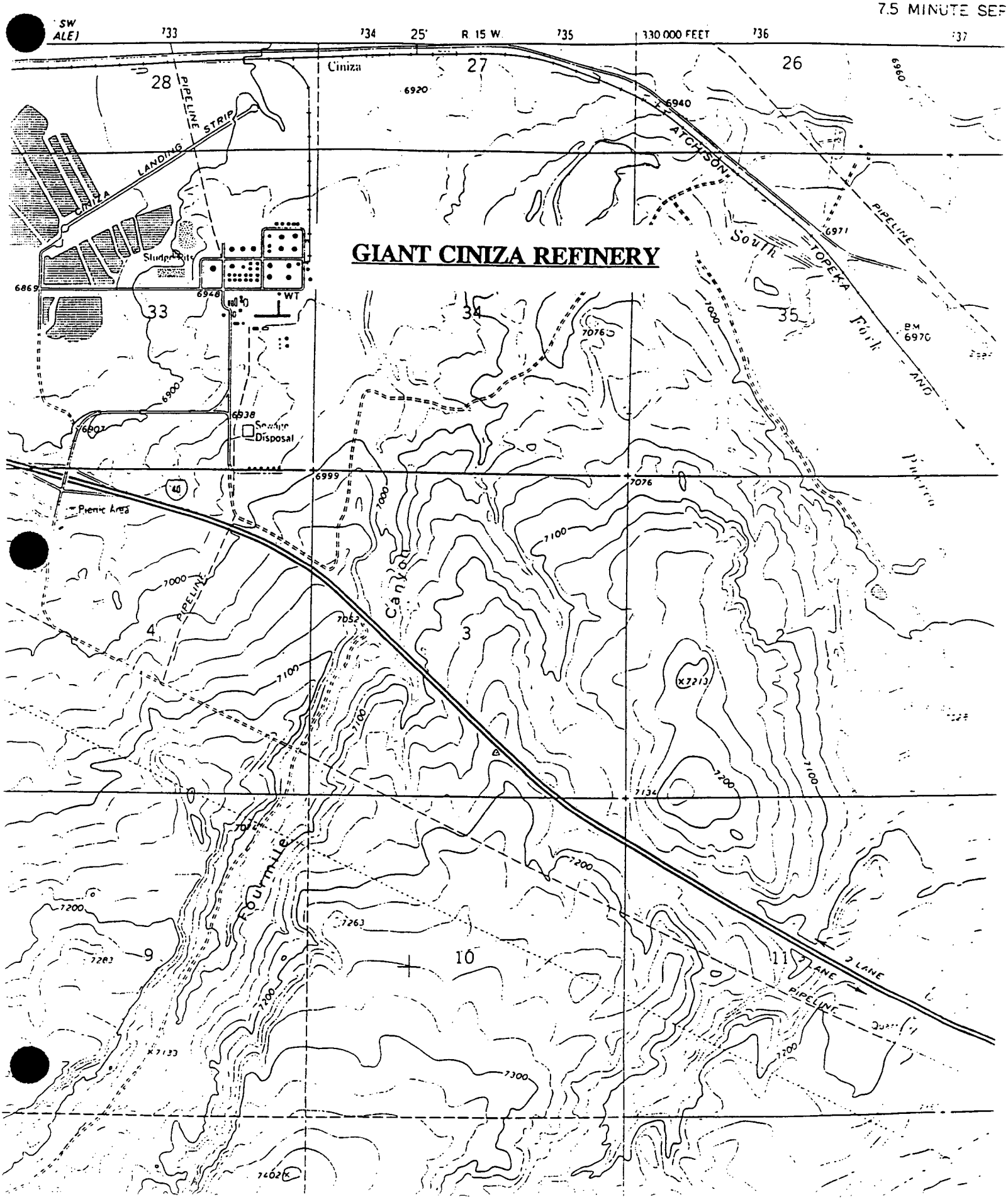
Giant requests a Class I RCRA Part A permit modification based on the provisions of 40 CFR 270.42.

Note: Mail completed form to the appropriate EPA Regional or State Office. (Refer to instructions for more information)

ATTACHMENT A

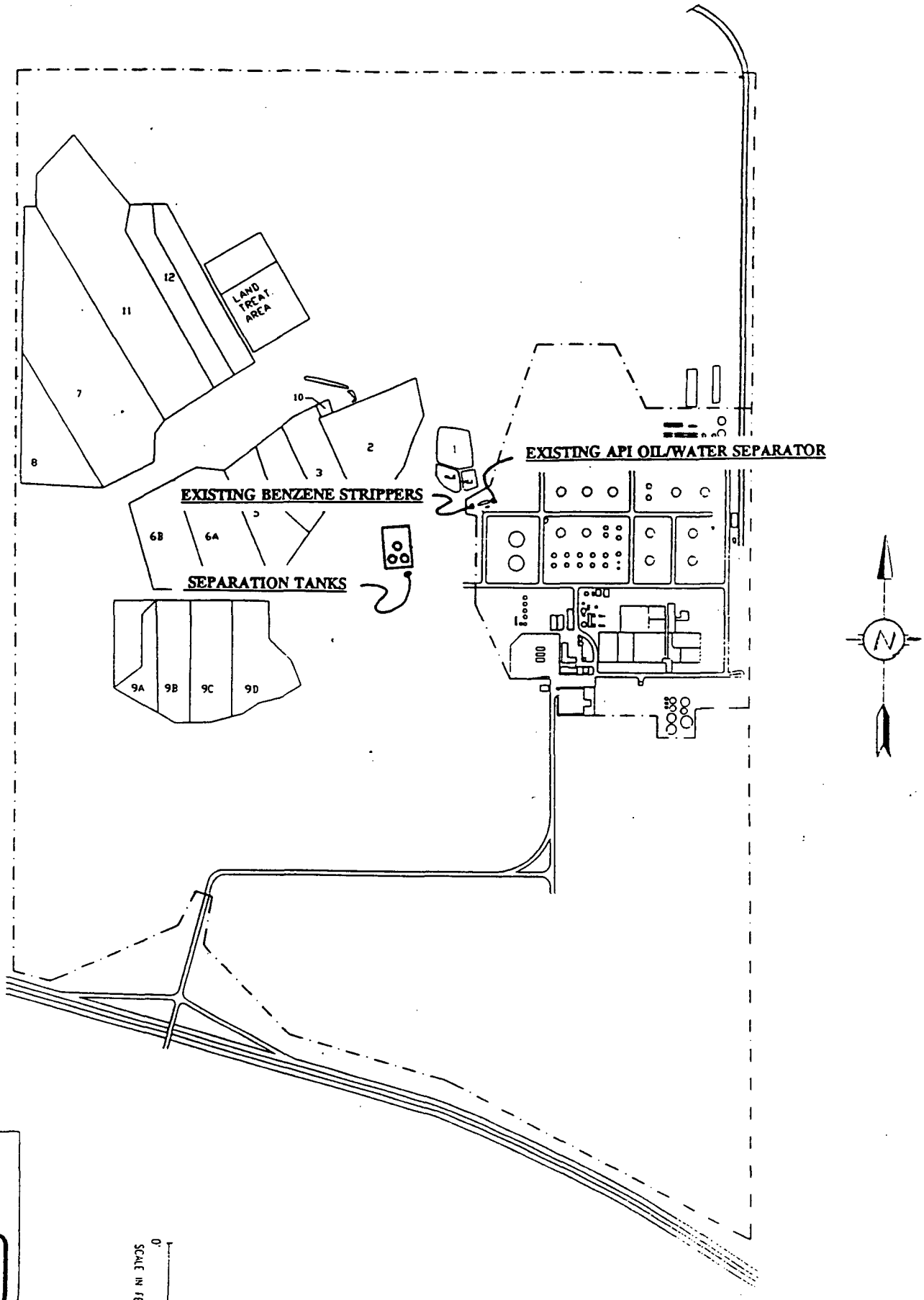
USGS Quadrangle

CINIZA G
NEW MEXIC
7.5 MINUTE SE



ATTACHMENT B

Facility Plan



SCALE IN FEET 0 500

GIANT

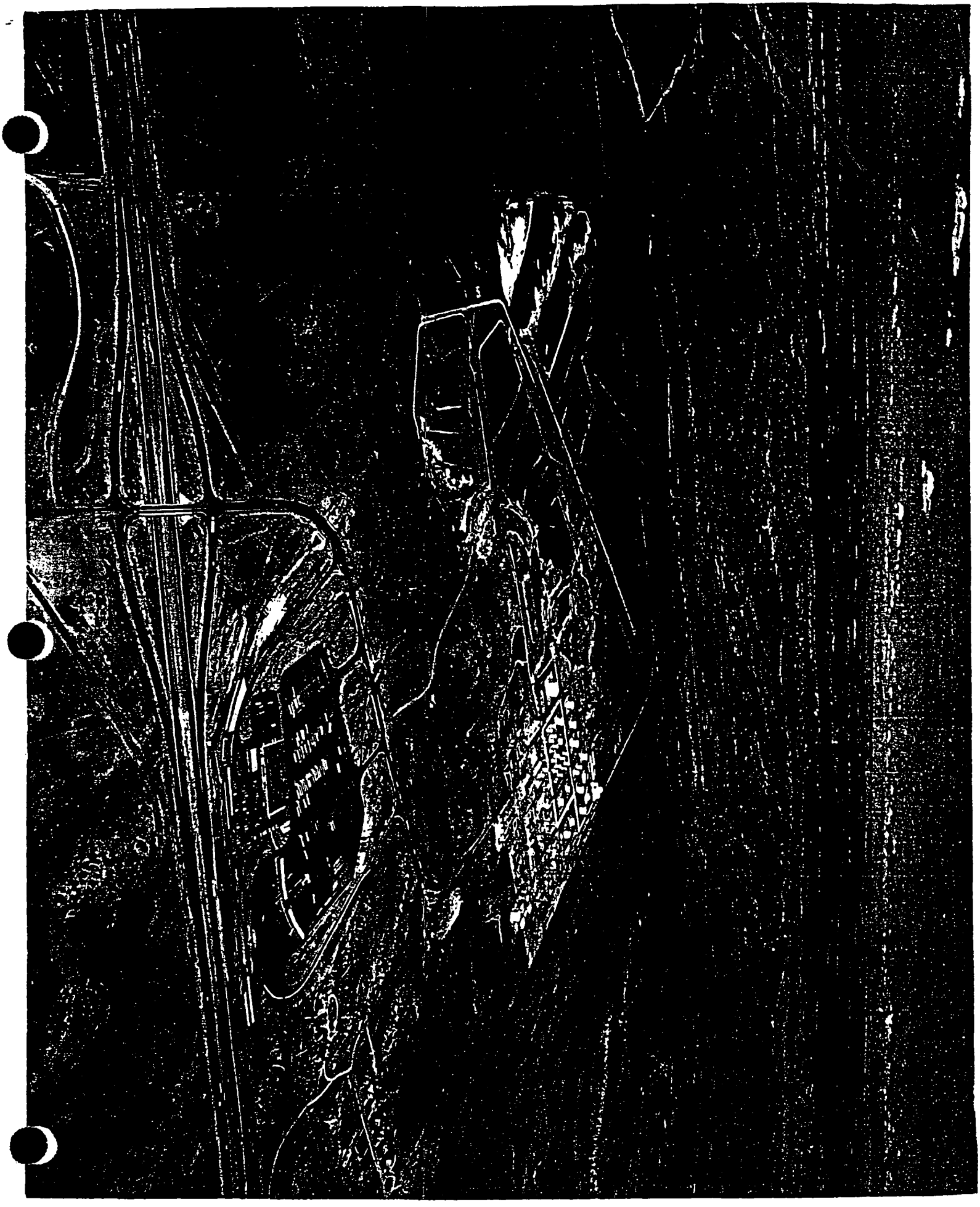
SIZE A

DWG NO

PLAN

ATTACHMENT C

Aerial Photograph



SWMU No. 2, *Evaporation Ponds*

The evaporation pond area was identified as a solid waste management unit (SWMU) and designated as SWMU No. 2 during a Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) 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 the perimeter of the ponds and were sampled for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and metals. It was determined that no significant impact had occurred. Based on this, Ciniza recommended no further action (NFA) for this SWMU. In 1994, the U.S. Environmental Protection Agency (EPA) concurred with this finding and approved cessation of the investigative process. However, EPA requested follow-up monitoring at seven groundwater wells surrounding the ponds every five years. Ciniza initiated the five-year sampling schedule in 1996. The survey plat, as required, was submitted to EPA in 1995. Correspondence from the New Mexico Environment Department (NMED) to Ciniza Refinery clarifies that SWMU No. 2, Evaporation Ponds, 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.

2.1 Site Description and Operational History

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 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 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.

2.2 Land Use

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

2.3 Investigation Activities

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; a few of these samples indicated levels slightly above ambient background concentration.

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.

2.4 Site Conceptual Model

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

2.5 Site Assessments

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

Ciniza is proposing that no further action is required for SWMU No. 2 based on the following criteria:

- 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 wastewater treatment system and the results of the investigation and assessment of the evaporation ponds. 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 levels, and may represent anomalous data. This low level of contaminant detection is indicative of no significant impact or migration. The 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.

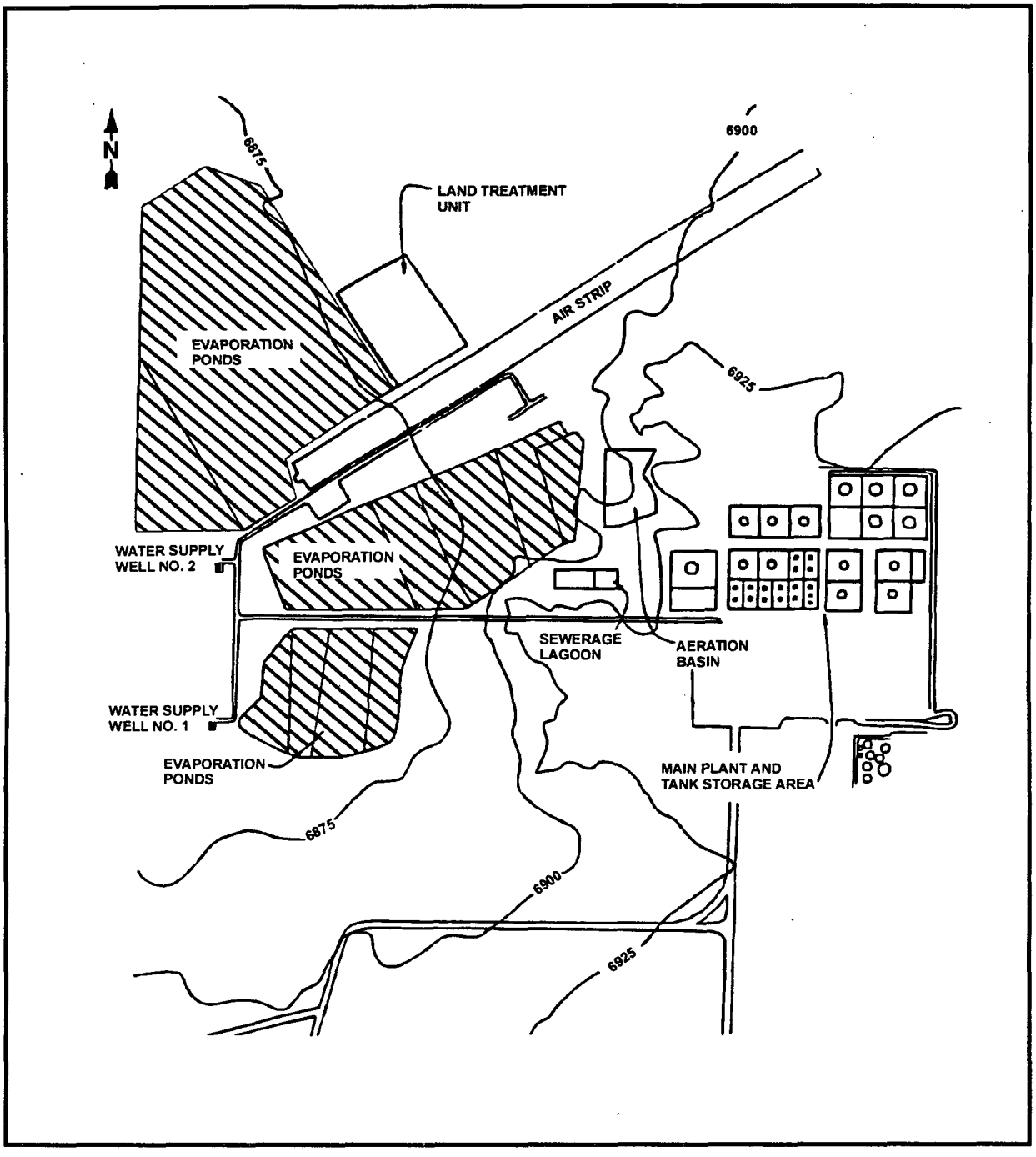


Figure 2-1. SWMU No. 2, Evaporation Pond Sites

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

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

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

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

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 waste-water 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

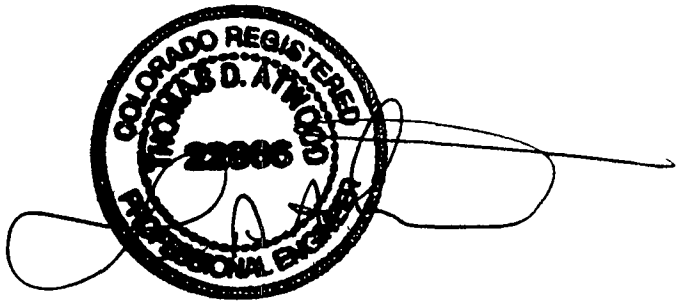
This summary report for SWMU #2 has been prepared under the direct supervision and control of a Registered Professional Engineer.

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

Job No.: 98-205-03

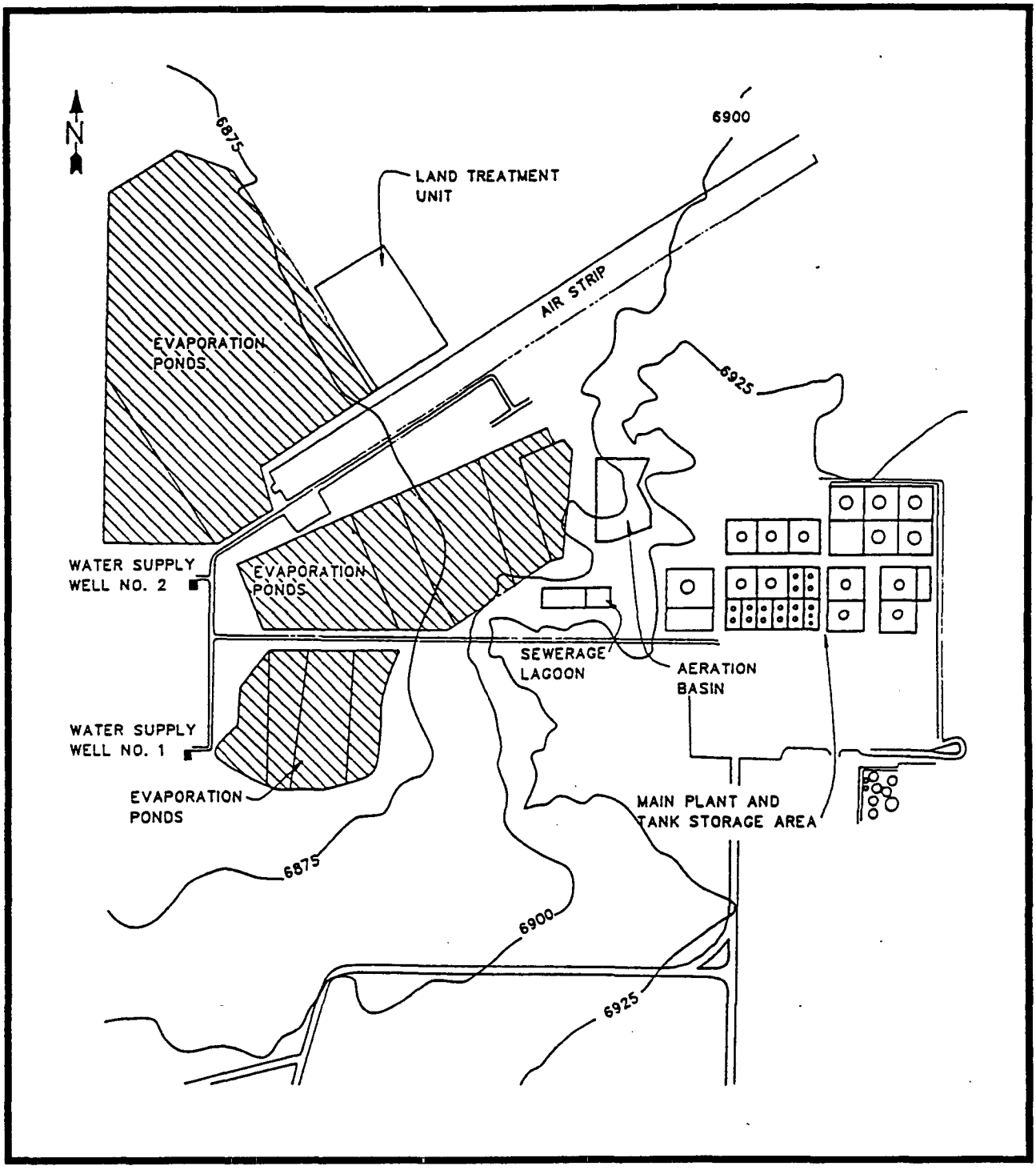
Date: April 23, 1998

Prepared and Certified by:



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

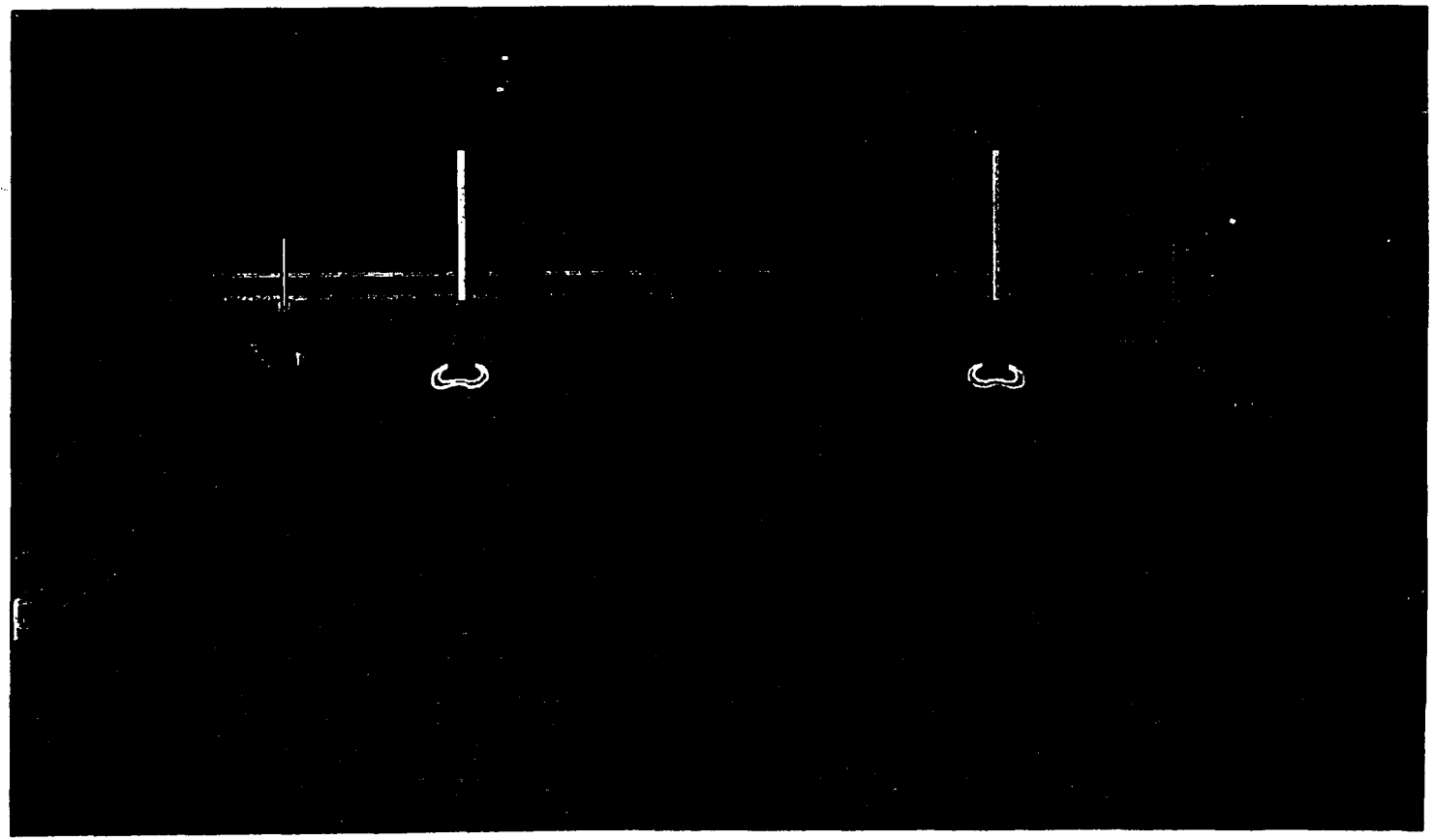
Figure No. 1
Evaporation ponds Site



Evaporation Ponds Overview – Looking Northwest

Evaporation Pond – South Section

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

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: mt

Enclosure

American Environmental Network, Inc.

CLIENT	: GIANT REFINING COMPANY	AEN I.D.	: 805378
PROJECT #	: (none)	DATE RECEIVED	: 5/20/98
PROJECT NAME	: (none)	REPORT DATE	:

AEN ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	OW-7-51898	AQUEOUS	5/18/98
02	OW-10-51898	AQUEOUS	5/18/98

American Environmental Network, Inc.

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: GIANT REFINING COMPANY	AEN I.D. :	805378
PROJECT #	: (none)	DATE RECEIVED :	5/20/98
PROJECT NAME	: (none)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
805378-01	OW-7-51898	AQUEOUS	5/18/98	N/A	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)

GC/MS RESULTS

TEST	: VOLATILE ORGANICS EPA METHOD 8260		
CLIENT	: GIANT REFINING COMPANY	AEN I.D. :	805378
PROJECT #	: (none)	DATE RECEIVED :	5/20/98
PROJECT NAME	: (none)		

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
805378-02	OW-10-51898	AQUEOUS	5/18/98	N/A	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	109	(80 - 120)
Toluene-d8	104	(88 - 110)
Bromofluorobenzene	103	(86 - 115)

American Environmental Network, Inc.

GC/MS RESULTS

TEST : VOLATILE ORGANICS EPA METHOD 8260
CLIENT : GIANT REFINING COMPANY AEN I.D. : 805378
PROJECT # : (none)
PROJECT NAME : (none)

SAMPLE ID #	BATCH	MATRIX	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
REAGENT BLANK	052198	AQUEOUS	N/A	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 - 120)
Toluene-d8	99 (88 - 110)
Bromofluorobenzene	94 (86 - 115)

American Environmental Network, Inc.

Spike Recovery and RPD Summary Report - WATER

Method : C:\HPCHEM\1\METHODS\82600310.M (RTE Integrator)
Title : AEN New Mexico GC/MS
Last Update : Tue May 12 14:39:09 1998
Response via : Initial Calibration

Non-Spiked Sample: 05219811.D

	Spike Sample	Spike Duplicate Sample
File ID :	052198S1.D	052198S2.D
Sample :	805377-04 MS	805377-04 MS
Acq Time:	21 May 98 4:56 pm	21 May 98 5:32 pm

Compound	Sample Conc	Spike Added	Spike Res	Dup Res	Spike %Rec	Dup %Rec	RPD	QC Limits RPD	QC Limits % Rec
1,1-Dichloroethene	0.0	50	48	48	97	96	1	14	61-145
Benzene	0.0	50	50	50	101	101	0	11	76-127
Trichloroethene	0.0	50	50	50	101	99	1	14	71-120
Toluene	0.0	50	50	48	99	96	3	13	76-125
ılorobenzene	0.0	50	48	47	95	94	1	13	75-130

- Fails Limit Check

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

JUNE 10, 1998

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: Brian Wood

Brian W. Wood
Director of Operations

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

Last updated: 3/24/98

CHAIN OF CUSTODY

AMERICAN ENVIRONMENTAL NETWORK
Albuquerque, New Mexico

Interlab Chain of Custody

DATE: 5/20/98 PAGE OF 1

NETWORK PROJECT MANAGER: KIMBERLY D. McNEILL

COMPANY: AMERICAN ENVIRONMENTAL NETWORK
ADDRESS: 2709-D Pan American Freeway, NE
Albuquerque, NM 87107

82355

CLIENT PROJECT MANAGER:

Kim McNeill

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Base/Neutral Acid Compounds GC/MS (625/8270)	NUMBER OF CONTAINERS
805378-01	5/18	0945	AQ	001	XX	
-02	↓	1010	↓	002		

Metals - TAL; Metals - PP List; Metals - RCRA; RCRA Metals by TCLP (1311); TOX; TOC; Gen Chemistry; Oil and Grease; BOD; COD; Pesticides/PCB (608/8080); Herbicides (615/8150); Volatile Organics GC/MS (624/8240); Polynuclear Aromatics (610/8310); 8240 (TCLP 1311) ZHE; 8270 (TCLP 1311); TO-14; Gross Alpha/Beta

PROJECT INFORMATION

PROJECT NUMBER: 805378
PROJECT NAME: Giant Refining Co.
QC LEVEL: (STD.) IV
QC REQUIRED: MS MSD BLANK
TAT: (STANDARD) RUSH!

SAMPLE RECEIPT

TOTAL NUMBER OF CONTAINERS
CHAIN OF CUSTODY SEALS
INTACT?
RECEIVED GOOD COND./COLD
LAB NUMBER

DUE DATE: 6/2
RUSH SURCHARGE:
CLIENT DISCOUNT:
SPECIAL CERTIFICATION REQUIRED: ☐YES ☐NO

SAMPLES SENT TO:

CONNECTICUT	
ILLINOIS	
MASSACHUSETTS	
PENSACOLA	
PORTLAND	
PHOENIX	
N.CAROLINA	
New Jersey	X

RELINQUISHED BY: 1.
Signature: Francine Torivio Time: 1705
Printed Name: Francine Torivio Date: 5/20/98
Albuquerque

RECEIVED BY: 1.
Signature: Time:
Printed Name: Date:
Company:

RELINQUISHED BY: 2.
Signature: Time:
Printed Name: Date:
Company:

RECEIVED BY: (LAB) 2.
Signature: Time: 2000
Printed Name: Date: 5/21/98
Company:

METHODOLOGY REVIEW

ANALYSES	METHOD NUMBER
SEMIVOLATILES	SW846 3510A/8270B

ORGANICS ANALYSIS
DATA AND SAMPLE QUALIFIERS

DATA QUALIFIERS:

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.

LABORATORY CHRONICLE

AEN, Inc. - NEW JERSEY
SAMPLE RECEIPT VERIFICATION FORM

NUMBER: 82359 CLIENT NM DATE RECEIVED: 5/21/18

OF SAMPLES 2 # OF COOLERS 1
CUSTODY SEALS: PRESENT/ ABSENT INTACT/ BROKEN TEMPERATURE BLANK PRESENT: _YES ✓NO

COOLER TEMP/S ° C 5.0 ___ ___ COOLER OUTSIDE 2- 6 ° C ___ PRESERVED: ICE/BLUE ICE/ NONE
IF OUTSIDE TEMP RANGE - WERE SAMPLES RECEIVED LESS THAN 4 HOURS FROM COLLECTION ? __ YES __ NO

CHAIN OF CUSTODY: PRESENT/ABSENT PROPERLY SIGNED, DATED, TIME : _YES _ NO
SAMPLE TAGS : PRESENT/ ABSENT RECEIVED BY: DRIVER ____ IF SHIPPED AIRBILL PRESENT ___ # FR

COOLER RADIOACT. SCREEN BELOW *0.50 uR/hr* YES __ NO __ **(INFORM SAFETY OFFICER IMMED.)**

- YES __ NO SAMPLE BOTTLES INTACT
- YES __ NO PROPER CONTAINERS PER ANALYSIS USED
- YES __ NO SAMPLE LABELS INTACT
- YES __ NO LABELS COMPLETE AND LEGIBLE (ID, DATE,TIME,SIGNATURE,PRESERVATIVE)
- YES __ NO SAMPLES RECEIVED WITHIN HOLDING TIME
- YES __ NO SAMPLES PROPERLY PRESERVED
- YES __ NO NO BUBBLES PRESENT VOA WATER MATRIX ✓NA
- YES __ NO SUFFICIENT SAMPLE VOLUME RECEIVED

_____ INTIAL _____ DATE - RUSH REPORT ISSUED BY ✓NA
_____ INTIAL _____ DATE - pH ANALYSIS PERFORMED BY ✓NA
_____ INTIAL _____ DATE - % MOISTURE PERFORMED BY ✓NA
_____ INTIAL _____ DATE - SAMPLE COMPOSITE PERFORMED BY ✓NA

NOTE AND **ITEMIZE BY SAMPLE AFFECTED**, DISCREPANCIES AND NONCONFORMANCES FOUND: _____

PROJECT MANAGER INFORMED OF DISCREPANCIES : _____INTIALS _____ DATE ✓NA

SUBCONTRACTING OF ANALYSIS REQUIRED __YES __ NO SUB COC COMPLETED __YES __ NO ✓NA
SUBCONTRACTED SAMPLES SHIPPED __YES __ NO CARRIER USED _____

FINAL INSPECTION

BOTTLES CORRECTLY LABELED ✓YES __ NO REVIEWED BY
INTERNAL CHAIN OF CUSTODY INITIATED ✓YES __ NO
ALL SIGNATURES AND DATES COMPLETE ✓YES __ NO

VERIFICATION FORM COMPLETE & ACCURATE: SUPERVISOR DATE 5/21/18
Print name

CLIENT INFORMED OF DISCREPANCIES/NONCONFORMANCES BY PM _____ DATE ____ TIME ___

NAME CLIENT REPRESENTATIVE INFORMED _____ METHOD : PHONE ___ FAX ___

CORRECTIVE ACTION REQUESTED BY CLIENT: _____

CORRECTIVE ACTION TAKEN: _____

PROJECT MANAGER APPROVED VERIFICATION FORM COMPLETE : _____ DATE 5/21/18
Print name

TERNAL CHAIN OF CUSTODY CHRONIC
SAMPLE CONTROL

000000

JOB NUMBER: 82359 DATE RECEIVED: 5/26/98 DATE TO DISPOSE: 7/30/98

PLE CONTROL TECH. ANALYST SAMPLE #/ BOTTLE # / DEPART. / TEST

RELINQUISHED BY	DATE TIME	RECEIVED BY	DATE TIME	SAMPLE #S / DEPARTMENT / ANALYSIS
	5/26/98 15:30		5-21-98 1530	001 → 002 - 01 01 BNA
RECEIVED BY	DATE TIME	RELINQUISHED BY	DATE TIME	SAMPLE STATUS DEPLETED/RETURNED
	5/27/98 16:00		5-21-98 1600	001, 002 - 01 01

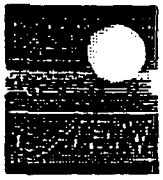
RELINQUISHED BY	DATE TIME	RECEIVED BY	DATE TIME	SAMPLE #S / DEPARTMENT / ANALYSIS
RECEIVED BY	DATE TIME	RELINQUISHED BY	DATE TIME	SAMPLE STATUS DEPLETED/RETURNED

RELINQUISHED BY	DATE TIME	RECEIVED BY	DATE TIME	SAMPLE #S / DEPARTMENT / ANALYSIS
RECEIVED BY	DATE TIME	RELINQUISHED BY	DATE TIME	SAMPLE STATUS DEPLETED/RETURNED

DP 6/8/98

RELINQUISHED BY	DATE TIME	RECEIVED BY	DATE TIME	SAMPLE #S / DEPARTMENT / ANALYSIS
RECEIVED BY	DATE TIME	RELINQUISHED BY	DATE TIME	SAMPLE STATUS DEPLETED/RETURNED

Samples Disposed by _____ Date: _____ Soil Drum # _____ Water Drum # _____
Other: _____ Returned to client (Client Signature) _____ Date _____



AEN, INC. - NEW JERSEY

INTERNAL CHAIN OF CUSTODY CHRONICLE

BNA

JOB/CASE NUMBER: 82359

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

ANALYSIS:

Sample No(s)	Analyst Signature	Date
001,002	[signature]	5/22/98

REANALYSIS:

Sample No(s)	Analyst Signature	Date

PREPARATION:

Sample No(s)	Extraction Tech. Signature	Date	Consumed
001,002	[signature]	5-21-98	

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

REVIEWED BY: Signature [signature] Date 5/26/98

Data Release Authorized By:

AUTHORIZATION: [signature] Group Leader/Lab Manager — Date 6/11/98

AEN - NEW JERSEY SIGNATURE PAGE

Employee Name	Signature	Initials
REPORTS PRODUCTION		
Berchak, Tina	Tina Berchak	TB
Carman, Jennifer	Jennifer Carman	JC
Cignarella, Christine	Christine Cignarella	CC
Powers, Robert	Robert Powers	RP
Wood, Mary	Mary B. Wood	MBW
BOTTLE PREP		
Cajiao, Joaquin		
D'Achille, Al		AdA
Reynolds, Ed		
Sander, James		
SYSTEMS		
Canada, Josh		J. C.
PM		
Brack, Joe		
Coppola, Julianna	Julianna Coppola	J.C
Foschini, Mark	Mark Foschini	MF
Glenn, Dan		DG
Hobart, Paul		PH
ADMINISTRATION		
Gemma, Mike		MG
Nadzen, Al		
Petretti, Deana	Deana Petretti	DP
Williams, Kirsten	Kirsten Williams	KW

AEN - NEW JERSEY SIGNATURE PAGE

Employee Name	Signature	Initials
SAMPLE CONTROL		
Britton-Fedon, Wendy		
Doeffinger, John		
Droz, Efrain		
LAB DIRECTOR		
Wood, Brian		
LAB MANAGER		
Gorman, Kevin		
QA/QC MANAGER		
	(GINA R.M.)	
GC		
Carlone, John		
Herrman, Claus		
Lena, John		
Manlangit, Ferdie		
Scott, Gordon		GDS
Tako, Lisa		
Waldron, Stacey		
GC/MS VOA		
Acierno, Mark		
Klusey, Sylvanus		
Mauriello, Gregg		

AEN - NEW JERSEY SIGNATURE PAGE

Employee Name	Signature	Initials
GC/MS SEMIVOA		
Gustavo, Mato		
Hamernick, Richard		
O'Brien, Patrick		
Pappas, Jerry		
Stanton, Helen		
METALS		
Goudsward, Kevin		
Chang, Grace		
Cousineau, Paul		
Lane, Lisa		
Nadzen, Tim		
Patel, Darshana		
WET CHEMISTRY		
Bussard, Karen		
Florance, Gerard		
Foti, Lisa		
Kenneweg, John		
Piatt, Ernest		
FIELD SERVICES		
Knudsen, Troy		
Morgan, Chris		
Murad, John		

REVISED 3/23/98

CONFORMANCE/NON-CONFORMANCE

Client: AEN - NEW MEXICO

Job No: 20980-82359

NONCONFORMANCE SUMMARY

SEMIVOLATILES

No problems were encountered.

SEMIVOLATILES

CLIENT : AEN-New Mexico

MATRIX: Water

JOB No.: 82359

SEMIVOLATILE ORGANIC ANALYSIS RESULTS

Units: ug/l

Quantitation Factor (QF)	1.00	1.00	1.00			Method Practical Quantitation Limits (PQL)*
Method Blank I.D.	G4670	G4670	G4670			
Lab I.D.	SBLK15746	82359001	82359002			
Client I.D	METHOD BLANK	805378-01	805378-02			
		OW-7-51898	OW-10-51898			
Phenol	U	U	U			10.0
Bis(2-Chloroethyl)Ether	U	U	U			10.0
2-Chlorophenol	U	U	U			10.0
1,3-Dichlorobenzene	U	U	U			10.0
1,4-Dichlorobenzene	U	U	U			10.0
1,2-Dichlorobenzene	U	U	U			10.0
2-Methylphenol	U	U	U			10.0
2,2'-Oxybis(1-Chloropropane)	U	U	U			10.0
4-Methylphenol	U	U	U			10.0
N-Nitrosodi-n-Propylamine	U	U	U			10.0
Hexachloroethane	U	U	U			10.0
Nitrobenzene	U	U	U			10.0
Isophorone	U	U	U			10.0
2-Nitrophenol	U	U	U			10.0
2,4-Dimethylphenol	U	U	U			10.0
Bis(2-Chloroethoxy) Methane	U	U	U			10.0
2,4-Dichlorophenol	U	U	U			10.0
1,2,4-Trichlorobenzene	U	U	U			10.0
Naphthalene	U	U	U			10.0
4-Chloroaniline	U	U	U			10.0
Hexachlorobutadiene	U	U	U			10.0
4-Chloro-3-Methylphenol	U	U	U			10.0
2-Methylnaphthalene	U	U	U			10.0
Hexachlorocyclopentadiene	U	U	U			10.0
2,4,6-Trichlorophenol	U	U	U			10.0
2,4,5-Trichlorophenol	U	U	U			50.0
2-Chloronaphthalene	U	U	U			10.0
2-Nitroaniline	U	U	U			50.0
Dimethylphthalate	U	U	U			10.0
Acenaphthylene	U	U	U			10.0
2,6-Dinitrotoluene	U	U	U			10.0
3-Nitroaniline	U	U	U			50.0
Acenaphthene	U	U	U			10.0
2,4-Dinitrophenol	U	U	U			50.0
4-Nitrophenol	U	U	U			50.0

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

CLIENT : AEN-New Mexico

MATRIX: Water

JOB No.: 82359

SEMIVOLATILE ORGANIC ANALYSIS RESULTS

Units: ug/l

Quantitation Factor (QF)	1.00	1.00	1.00			Method Practical Quantitation Limits (PQL)*
Method Blank I.D.	G4670	G4670	G4670			
Lab I.D.	SBLK15746	82359001	82359002			
Client I.D	METHOD BLANK	805378-01	805378-02			
		OW-7-51898	OW-10-51898			
Dibenzofuran	U	U	U			10.0
2,4-Dinitrotoluene	U	U	U			10.0
Diethylphthalate	U	U	U			10.0
4-Chlorophenyl-Phenyl Ether	U	U	U			10.0
Fluorene	U	U	U			10.0
4-Nitroaniline	U	U	U			50.0
4,6-Dinitro-2-Methylphenol	U	U	U			50.0
N-Nitrosodiphenylamine (1)	U	U	U			10.0
4-Bromophenyl-Phenylether	U	U	U			10.0
Hexachlorobenzene	U	U	U			10.0
Pentachlorophenol	U	U	U			50.0
Phenanthrene	U	U	2J			10.0
Anthracene	U	U	U			10.0
Carbazole	U	U	U			10.0
Di-n-Butylphthalate	U	U	U			10.0
Fluoranthene	U	U	3J			10.0
Pyrene	U	U	2J			10.0
Butylbenzylphthalate	U	U	U			10.0
3,3'-Dichlorobenzidine	U	U	U			10.0
Benzo(a)Anthracene	U	U	1J			10.0
Chrysene	U	U	U			10.0
Bis(2-Ethylhexyl)Phthalate	U	U	U			10.0
Di-n-Octylphthalate	U	U	U			10.0
Benzo(b)Fluoranthene	U	U	1J			10.0
Benzo(k)Fluoranthene	U	U	U			10.0
Benzo(a)Pyrene	U	U	U			10.0
Indeno(1,2,3-cd)Pyrene	U	U	U			10.0
Dibenz(a,h)Anthracene	U	U	U			10.0
Benzo(g,h,i)Perylene	U	U	U			10.0

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

4B
SEMIVOLATILE METHOD BLANK SUMMARY

SBLK15746

Lab Name: IEA-NJ

Job No. : 82359

Lab File ID: G4670 Lab Sample ID: SBLK15746

Instrument ID: MSG Date Extracted: 05/21/98

Matrix: (soil/water) Water Date Analyzed: 05/22/98

Level: (low/med) low 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: IEA-NJ

Job No. : 82359

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	S7 (2CP) #	S8 (DCB) #	TOT OUT
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
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		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(35-114)
S2 (FBP)	= 2-Fluorobiphenyl	(43-116)
S3 (TPH)	= Terphenyl-d14	(33-141)
S4 (PHL)	= Phenol-d5	(10-94)
S5 (2FP)	= 2-Fluorophenol	(21-100)
S6 (TBP)	= 2,4,6-Tribromophenol	(10-123)

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

FORM II SV-1

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: IEA-NJ

Job No. : 82359

Matrix Spike - Client Sample No.: MW-4-3MS

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 LIMITS RPD	QC LIMITS 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 11 outside limits
Spike Recovery: 4 out of 22 outside limits
COMMENTS: _____

3C
WATER SEMIVOLATILE BLANK SPIKE RECOVERY

Lab Name: IEA-NJ

Job No. : 82359

Matrix Spike - Client Sample No.: SBLK15746BS

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 11 outside limits

COMMENTS: _____

_____

FORM III SV-1

5B
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: IEA-NJ

Job No. : 82359

Lab File ID: GG385 DFTPP Injection Date: 05/18/98

Instrument ID: MSG DFTPP Injection Time: 09:45

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
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
04	SSTD120	SSTD120	G4594	05/18/98	13:21
05	SSTD160	SSTD160	G4595	05/18/98	14:11
06	SSTD010	SSTD010	G4596	05/18/98	15:02
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5B
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: IEA-NJ

Job No. : 82359

Lab File ID: GG392 DFTPP Injection Date: 05/22/98

Instrument ID: MSG DFTPP Injection Time: 08:24

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
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	SSTD080	SSTD080	G4668	05/22/98	08:41
02	SBLK15746	SBLK15746	G4670	05/22/98	10:16
03	805378-01	82359001	G4678	05/22/98	18:17
04	805378-02	82359002	G4679	05/22/98	19:05
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5B
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: IEA-NJ

Job No. : 82359

Lab File ID: GG396 DFTPP Injection Date: 05/26/98

Instrument ID: MSG 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
01	SSTD080	SSTD080	G4686	05/26/98	12:49
02	MW-4-3MSMS	82290005MS	G4687	05/26/98	15:30
03	MW-4-3MSDMSD	82290006MSD	G4688	05/26/98	16:18
04	SBLK15746BS	SBLK15746BS	G4689	05/26/98	17:06
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FORM V SV

Quantitation Report

Data File : C:\HPCHEM\1\DATA\052298\G4670.D
Acq On : 22 May 98 10:16 am
Sample : MSG;SBLK;
Misc : SBLK15746;B;WG15746;AQ;;;;LOW;
Quant Time: May 22 10:57 1998

Vial: 4
Operator: aen/nj
Inst : 5970-BNA1
Multiplr: 1.00

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) 1,4-Dichlorobenzene-d4	9.59	152	253501	40.00	ppb	0.00
20) Naphthalene-d8	12.76	136	989837	40.00	ppb	-0.02
35) Acenaphthene-d10	17.33	164	683367	40.00	ppb	-0.03
56) Phenanthrene-d10	21.24	188	1389539	40.00	ppb	-0.02
68) Chrysene-d12	28.24	240	1802840	40.00	ppb	-0.04
77) Perylene-d12	32.49	264	1633587	40.00	ppb	-0.03
86) 1,4-Dichlorobenzene-d4B	9.59	152	253501	40.00	ppb	0.00
88) Perylene-d12B	32.49	264	1633587	40.00	ppb	-0.03
89) Acenaphthene-d10B	17.33	164	683367	40.00	ppb	-0.03
91) 1,4-Dichlorobenzene-d4C	9.95	152	122517	40.00	ppb	-0.02
94) Acenaphthene-d10C	17.33	164	683367	40.00	ppb	-0.03
96) Naphthalene-d8C	0.00	136	0	0.00	ppb	-14.23
98) Phenanthrene-d10C	21.24	188	1389539	40.00	ppb	-0.02
System Monitoring Compounds						**%Recovery**
4) 2-Fluorophenol	6.54	112	195991	36.58	ppb	48.77%
5) Phenol-d5	8.69	99	185376	24.14	ppb	32.19%
9) 2-Chlorophenol-d4	9.03	132	363806	53.37	ppb	71.15%
13) 1,2-Dichlorobenzene-d4	9.95	152	122517	26.60	ppb	53.20%
21) Nitrobenzene-d5	10.94	82	276283	35.17	ppb	70.34%
39) 2-Fluorobiphenyl	15.58	172	519094	33.64	ppb	67.28%
59) 2,4,6-Tribromophenol	19.40	332	234325	50.03	ppb	66.70%
71) Terphenyl-d14	25.45	244	1159543	28.23	ppb	56.46%
Target Compounds						**Qvalue**

(#) = qualifier out of range (m) = manual integration

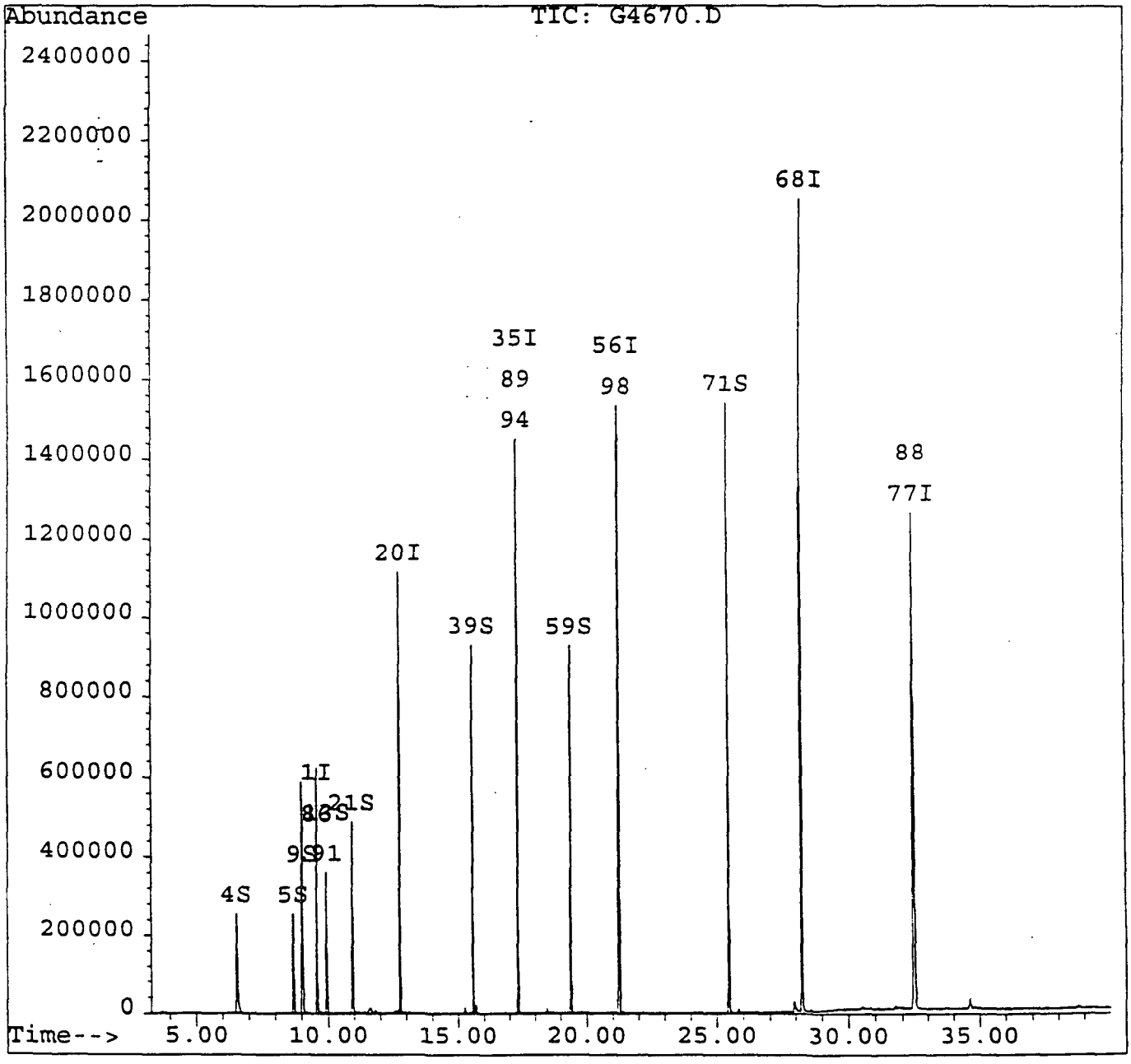
Quantitation Report

000027

Data File : C:\HPCHEM\1\DATA\052298\G4670.D
Acq On : 22 May 98 10:16 am
Sample : MSG;SBLK;
Misc : SBLK15746;B;WG15746;AQ;;;;LOW;
Quant Time: May 22 10:57 1998

Vial: 4
Operator: aen/nj
Inst : 5970-BNA1
Multiplr: 1.00

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



Quantitation Report

000028

Data File : C:\HPCHEM\1\DATA\052298\G4678.D
Acq On : 22 May 98 18:17 pm
Sample : MSG;;
Misc : 82359001;B;WG15746;AQ;;;;LOW;
Quant Time: May 22 18:58 1998

Vial: 12
Operator: aen/nj
Inst : 5970-BNA1
Multiplr: 1.00

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) 1,4-Dichlorobenzene-d4	9.57	152	264017	40.00	ppb	-0.02
20) Naphthalene-d8	12.76	136	1019255	40.00	ppb	-0.02
35) Acenaphthene-d10	17.33	164	676657	40.00	ppb	-0.03
56) Phenanthrene-d10	21.24	188	1372444	40.00	ppb	-0.02
68) Chrysene-d12	28.23	240	1658722	40.00	ppb	-0.06
77) Perylene-d12	32.46	264	1512846	40.00	ppb	-0.06
86) 1,4-Dichlorobenzene-d4B	9.57	152	264017	40.00	ppb	-0.02
88) Perylene-d12B	32.46	264	1512846	40.00	ppb	-0.06
89) Acenaphthene-d10B	17.33	164	676657	40.00	ppb	-0.03
91) 1,4-Dichlorobenzene-d4C	9.95	152	240093	40.00	ppb	-0.02
94) Acenaphthene-d10C	17.33	164	676657	40.00	ppb	-0.03
96) Naphthalene-d8C	0.00	136	0	0.00	ppb	-14.23
98) Phenanthrene-d10C	21.24	188	1372444	40.00	ppb	-0.02

System Monitoring Compounds						%Recovery
4) 2-Fluorophenol	6.54	112	246394	44.15	ppb	58.87%
5) Phenol-d5	8.67	99	227627	28.46	ppb	37.95%
9) 2-Chlorophenol-d4	9.02	132	457802	64.48	ppb	85.97%
13) 1,2-Dichlorobenzene-d4	9.95	152	240093	50.05	ppb	100.10%
21) Nitrobenzene-d5	10.94	82	368082	45.50	ppb	91.01%
39) 2-Fluorobiphenyl	15.58	172	794900	52.03	ppb	104.05%
59) 2,4,6-Tribromophenol	19.40	332	258080	55.79	ppb	74.38%
71) Terphenyl-d14	25.45	244	1244012	32.92	ppb	65.84%

Target Compounds	Qvalue

RA
5-26-98

(#) = qualifier out of range (m) = manual integration

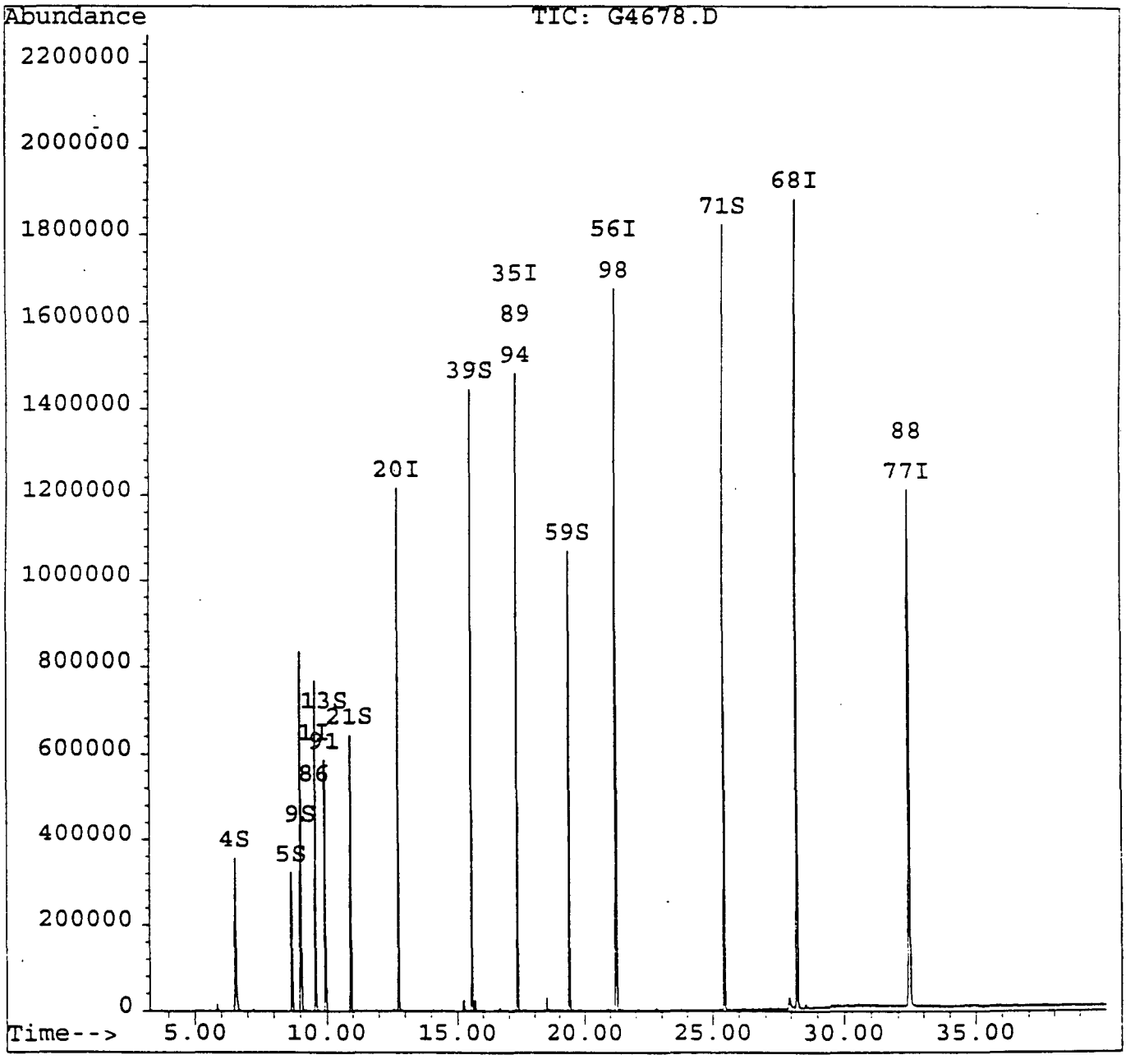
Quantitation Report

000029

Data File : C:\HPCHEM\1\DATA\052298\G4678.D
Acq On : 22 May 98 18:17 pm
Sample : MSG;;
Misc : 82359001;B;WG15746;AQ;;;;LOW;
Quant Time: May 22 18:58 1998

Vial: 12
Operator: aen/nj
Inst : 5970-BNA1
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\SW0518G.M
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\052298\G4679.D
Acq On : 22 May 98 19:05 pm
Sample : MSG;;
Misc : 82359002;B;WG15746;AQ;;;;LOW;
Quant Time: May 26 11:12 1998

Vial: 13
Operator: aen/nj
Inst : 5970-BNA1
Multiplr: 1.00

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) 1,4-Dichlorobenzene-d4	9.57	152	258689	40.00	ppb		-0.02
20) Naphthalene-d8	12.76	136	1010650	40.00	ppb		-0.02
35) Acenaphthene-d10	17.33	164	688585	40.00	ppb		-0.03
56) Phenanthrene-d10	21.24	188	1397536	40.00	ppb		-0.02
68) Chrysene-d12	28.23	240	1547848	40.00	ppb		-0.05
77) Perylene-d12	32.47	264	1880840	40.00	ppb		-0.06
86) 1,4-Dichlorobenzene-d4B	9.57	152	258689	40.00	ppb		-0.02
88) Perylene-d12B	32.47	264	1880840	40.00	ppb		-0.06
89) Acenaphthene-d10B	17.33	164	688585	40.00	ppb		-0.03
91) 1,4-Dichlorobenzene-d4C	9.95	152	235096	40.00	ppb		-0.02
94) Acenaphthene-d10C	17.33	164	688585	40.00	ppb		-0.03
96) Naphthalene-d8C	0.00	136	0	0.00	ppb		-14.23
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		40.49%
9) 2-Chlorophenol-d4	9.02	132	448891	64.53	ppb		86.03%
13) 1,2-Dichlorobenzene-d4	9.95	152	235096	50.02	ppb		100.03%
21) Nitrobenzene-d5	10.94	82	360196	44.91	ppb		89.82%
39) 2-Fluorobiphenyl	15.58	172	794796	51.12	ppb		102.24%
59) 2,4,6-Tribromophenol	19.40	332	268700	57.04	ppb		76.05%
71) Terphenyl-d14	25.46	244	1110619	31.49	ppb		62.99%
Target Compounds							**Qvalue**
64) Phenanthrene	21.29	178	52963	1.81	ppb		96
67) Fluoranthene	24.42	202	126145	3.42	ppb		82
70) Pyrene	25.03	202	100030	1.97	ppb		86
73) Benzo[a]anthracene	28.20	228	56912	1.16	ppb		86
79) Benzo[b]fluoranthene	31.17	252	54481	1.23	ppb	m	91

RA
5-26-98

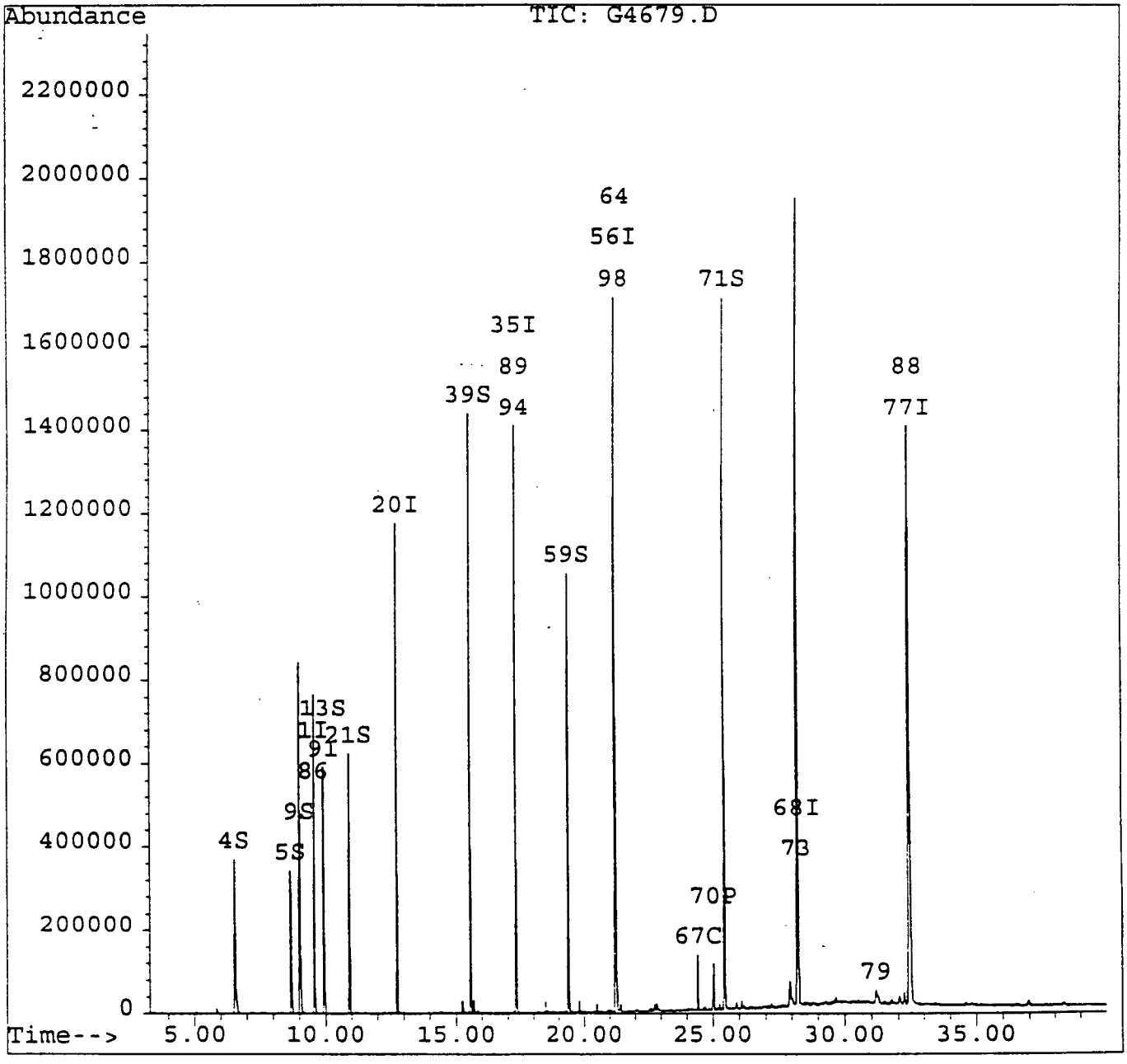
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\052298\G4679.D
Acq On : 22 May 98 19:05 pm
Sample : MSG;;
Misc : 82359002;B;WG15746;AQ;;;;LOW;
Quant Time: May 26 11:12 1998

Vial: 13
Operator: aen/nj
Inst : 5970-BNA1
Multiplr: 1.00

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



American Environmental Network (NM), Inc.

CHAIN OF CUSTODY

DATE 5-19-98 PAGE: 1 OF 1

AEN (NM) ACCOUNT 805

SHADED AREAS ARE FOR LAB USE ONLY

PROJECT MANAGER:

COMPANY: Giant Refining Company
ADDRESS: Route 3, Box 7
Gallup, NM 87301
PHONE: 505-722-3833
FAX: 505-722-0210
BILL TO: Giant Refining Co./Ciniza
COMPANY: Same
ADDRESS:

SAMPLE ID	DATE	TIME	MATRIX
OW-7-51898	5/18/98	0945	H_2O
OW-10-51898	5/18/98	1010	"

Petroleum Hydrocarbons (418.1) TRPH	(MOD.8015) Diesel/Direct Inject	(M8015) Gas/Purge & Trap	8021 (BTEX)/8015 (Gasoline)	8021 (BTEX) ☐ MTBE ☐ TMB ☐ PCE	8021 (TCL)	8021 (EDX)	8021 (HALO)	8021 (CUST)	504.1 EDB ☐ / DBCP ☐	8260 (TCL) Volatile Organics	8260 (Full) Volatile Organics	8260 (CUST) Volatile Organics	8260 (Landfill) Volatile Organics	Pesticides /PCB (608/8081)	Herbicides (615/8151)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Polynuclear Aromatics (610/8310)	General Chemistry:	8270 Semi Vols	8260 BTEX	Priority Pollutant Metals (13)	Target Analyte List Metals (23)	RCRA Metals (8)	RCRA Metals by TCLP (Method 1311)	Metals:	
																			X	X						
																			X	X						

PROJECT INFORMATION

PROJ. NO.:
PROJ. NAME:
P.O. NO.:
SHIPPED VIA:

SAMPLE RECEIPT

NO. CONTAINERS	10
CUSTODY SEALS	Y / N / NA
RECEIVED INTACT	Y / N
BLUE ICE/ICE	Y / N

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) [ ] 24hr [ ] 48hr [ ] 72hr [ ] 1 WEEK (NORMAL) [ ]

CERTIFICATION REQUIRED: [ ] NM [ ] SDWA [ ] OTHER

METHANOL PRESERVATION [ ]

COMMENTS: FIXED FEE [ ]

1998 Annual Groundwater samples

RELINQUISHED BY:

Signature: Time: 0900
Printed Name: Steve Morris Date: 5/19/98
Company: Giant

RECEIVED BY:

Signature: Time:
Printed Name: Date:
Company:

RELINQUISHED BY:

Signature: Time:
Printed Name: Date:
Company:

RECEIVED BY: (LAB)

Signature:
Printed Name:
American Environmental Network (NM) Inc.

PLEASE FILL THIS FORM IN COMPLETELY.

OCD INSPECTION (TENTATIVE)

4-29 MON - BAIL, PUMP + SAMPLE OW 16, 25, 26

PUMP MW4, OW5, 7

4-30 TUES - SAMPLE MW-4, OW5, 7

PUMP OW 1, 2, 9, +10

5-1 WED - SAMPLE OW 1, 2, 9 + 10

INSPECT

5-2+3 ~~THU + FRI~~ OPEN (FINISH INSPECTION, SAMPLE OW 12, 13, 14, 20)

RFI PHASE I + ~~II~~

~~MON, MAY 6 - SWMU #8 - 2 SAMPLES 7-7½'~~

~~+ DUPLICATE, 1 TRIP BLANK~~

SWMU #6 - TANK ~~#54~~, ~~#53~~ 11-11½'

~~#568~~ - 11-11½'

CUT DIKE ON ~~#567~~ for TUESDAY

(TUES) MAY 7 - SAMPLE ~~#567 - 11-11½'~~ (~~1 DUPLICATE~~)

(1 DUP) (EQPT RINSE) ~~#569~~ (2 sample points) 11-11½'

(TRIP BLANK) ~~#570 -~~ 11-11½'

~~#571~~

~~#572~~

(WED) MAY 8 - ~~SWMU #10 -~~ (SLUDGE PIT) 2 SAMPLES @ 15-15½'

(1 DUPLICATE + ~~1 EQUIP BLANK~~)

~~VISUAL @ 19'~~

1 VISUAL on ~~3rd HOLE~~ @ 15-15½

VISUAL @ 18'

(STEAM BUCKET @ 12-13')

(~~SEPARATE SAMPLE OF BLACK SLUDGE~~ for IN SITU REMEDIATION ~ 1 qt.)

~~MAY 9 — SWMU #13 — POND #10 + DITCH.~~

~~1 DUPLICATE~~

~~1 TRIP BLANK~~

~~1 EQUIPMENT~~

~~4 holes 2-2½ & 4-4½~~

~~8 samples~~

MAY 10, 13, 15 START SWMU # 2 — TAKE PROBABLY THREE DAYS

12 VERTICAL, 6 ANGLE — 3½-4, 5-5½, 6½-7

(54 Samples)

(3 DUPLICATES, 2 EQUIP BLANKS, 3 TRIP BLANKS

MAY-14 KRAMER AIR SAMPLING

MAY 16, 17, 20 SMWU #1 AERATION LAGOONS 4 vertical 2 Angle

(3 DAYS)

4-4½, 9-9½, 11-11½, 14-14½

24 SAMPLES

2 EQU BLANKS, 3 TRIP BLANKS

2 DUPLICATES

FACSIMILE TRANSMITTAL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

MULTIMEDIA PERMITTING AND PLANNING DIVISION

NEW MEXICO AND FEDERAL FACILITIES SECTION

PLEASE PRINT IN BLACK INK ONLY

TO:	Ed Hernt, Environmental Manager - Giant Refining Company, Ciniza
MACHINE NUMBER: 505.722.0210	VERIFICATION NUMBER: 505.722.0227
FROM: James A. Harris, Jr., RCRA Facility Manager/Geologist	
PHONE: (214) 665-8302	Mail Code: 6PD-N
OFFICE: New Mexico/Federal Facilities Section	PAGES, INCLUDING COVER SHEET: 3
DATE: March 15, 1996	

PLEASE NUMBER ALL PAGES

INFORMATION FOR SENDING FACSIMILE 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 Giant, Ciniza's corrective action progress. Please review and let's discuss it next week. Have a good one.

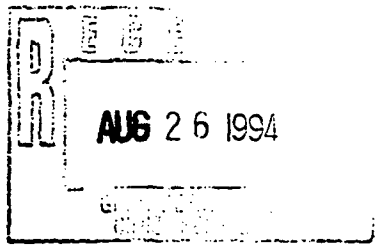
Thanx,

JAMES

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

Prepared by: James A. Harris, Jr.\6MPN as at March 13, 1996

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733



August 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

GIANT
REFINING CO.

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

TLS\ADEPA894

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

JAN 07 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.
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. Davis

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 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 Evaporation Ponds and Neutralization Tank Evaporation Ponds

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.

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.

SWMU #12 - 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.

SWMU #13 - 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

SWMU #	SAMPLES REQUIRED	ANALYSIS	COST
1	30	8240	$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
4	6	8240	1,800
		8270	2,970
		Metals	2,250
		pH	60
5	21	8240	6,300
		8270	10,395
		Metals	4,830
6	8	BTEX	1,000
7	4	TPH	200
		Oil & Grease	200
8	50	8240	15,000
		8270	24,750
10	18	8240	5,400
		8270	8,910
		Metals	4,140
11	4	8240	1,200
		8270	1,980
13	12	8240	3,600
		8270	5,940
		Total Analytical Cost 1994 Only	$119,245

TABLE 4

BIENNIAL ANALYTICAL COST

SWMU #	SAMPLES REQUIRED	ANALYSIS	COST
1	30	8240	$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
13	12	8240	8,600
		8270	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
	$119,245	$94,600	$213,845

* Including Drilling Rig

IV. Conclusions

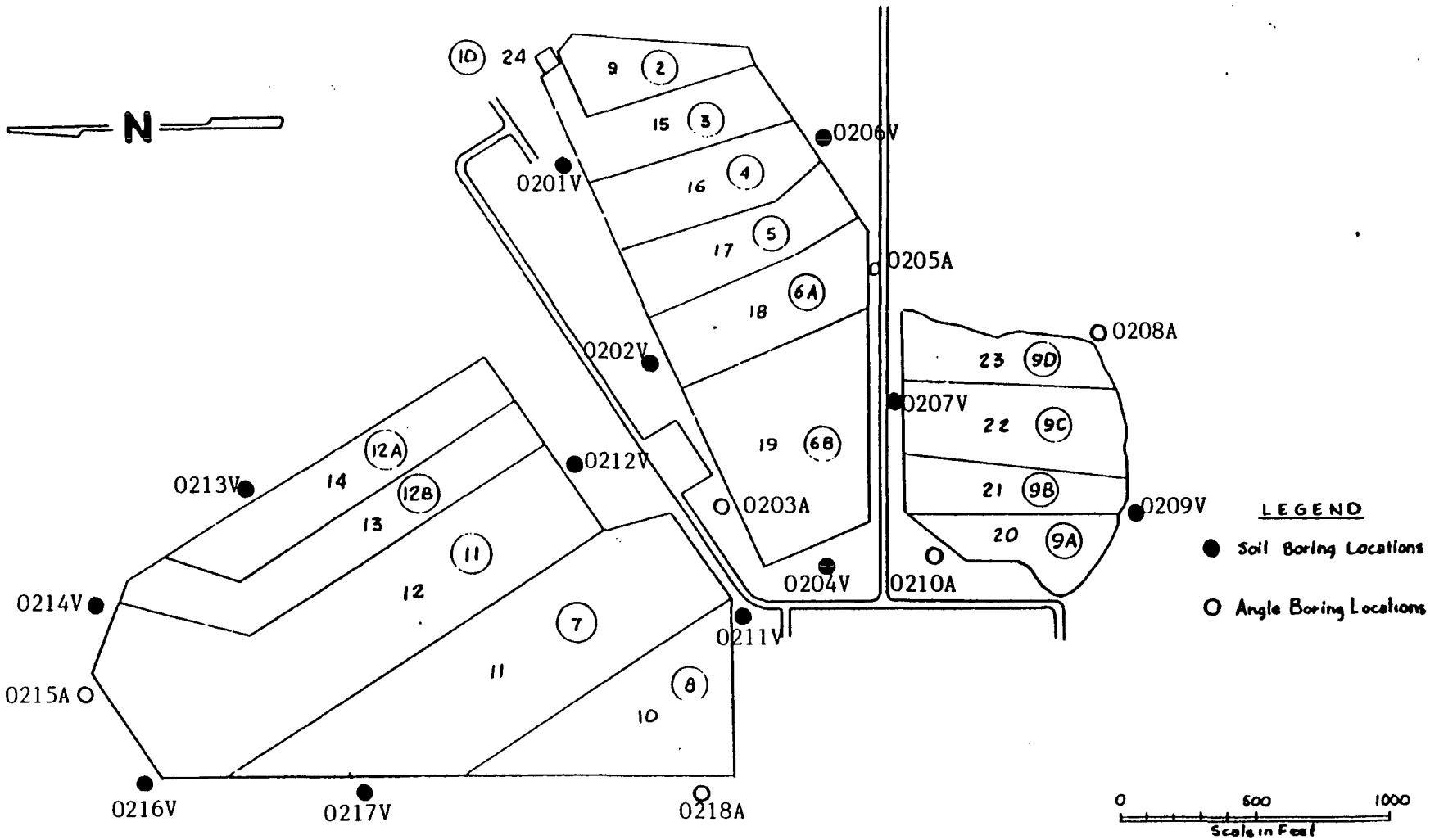
The additional requirements to fully characterize SWMUs #4, 5, 6, 7, 8, 10 and 11 are reasonable. Although expensive, full characterization of potential pollution is the thrust of an RFI project and is Giant's objective.

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.



GIANT REFINERY Gallup, New Mexico	Evaporation Ponds	FIG

INTEROFFICE
MEMORANDUM

GIANT

DATE: February 3, 1994

TO: David Pavlich
Kim Bullerdick

FROM: Lynn Shelton LHS

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	11	Secondary Oil Skimmer
12	14	13	Wastewater Collection
13	14	13	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.

SWMU #1 - 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.

SWMU #3 - 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.

SWMU #5 - Landfill Areas

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

SWMU #6 - 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.

SWMU #7 - 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.

SWMU #9 - 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.

DEC 17-1993 08:48

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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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 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.

SWMU #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 #8, 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 interval. Sampling procedures and constituents to be analyzed 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.

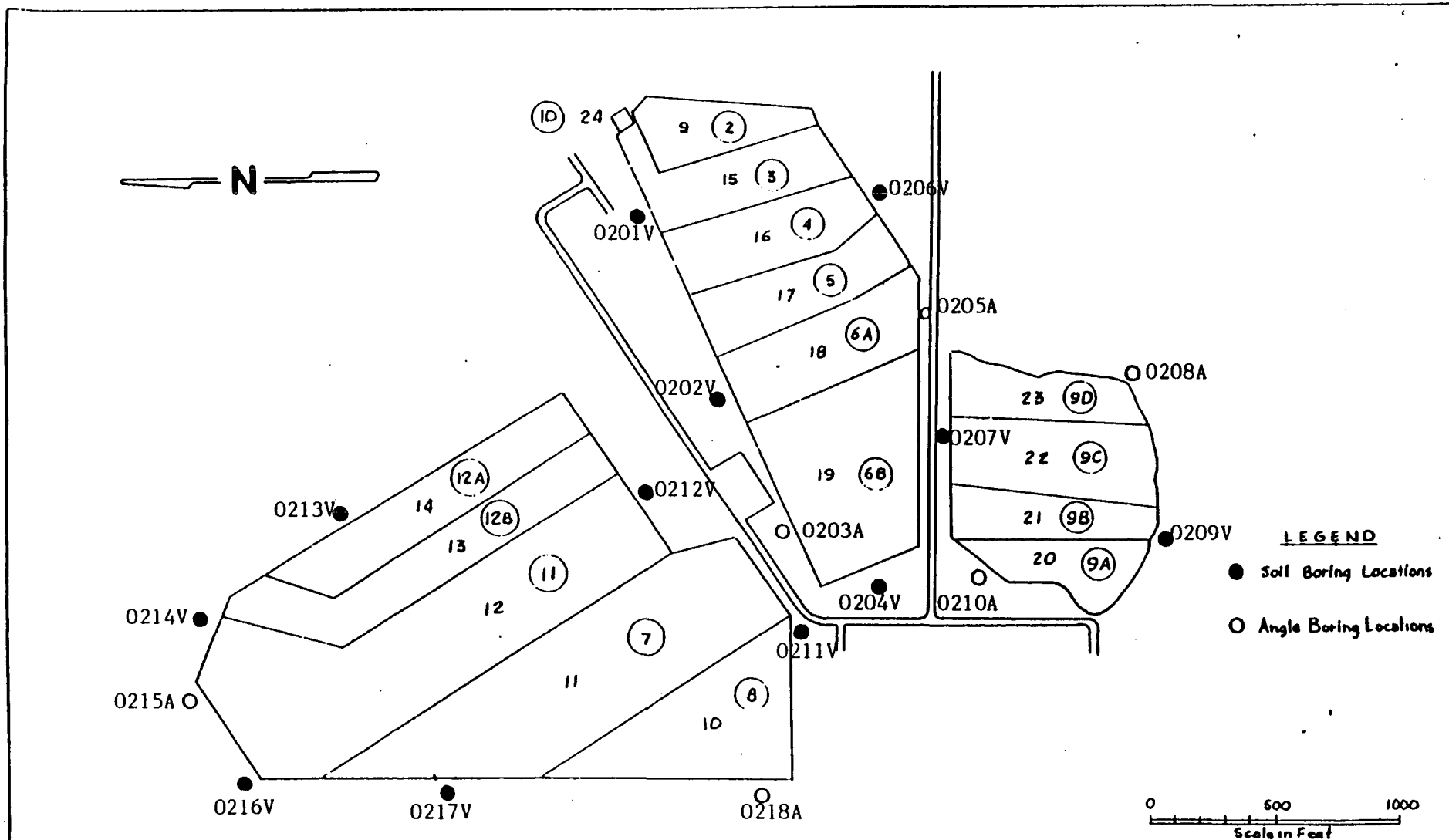
SWMU #12, Contact Waste Water Collection System (CWWCS): Giant shall perform an inspection of the CWWCS every five years (the next inspection will be in 1996) and shall be identical to the one performed in the RFI (if better technological equipment is developed, then Giant may request that an alternative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

~~SWMU #9~~ SWMU 10, **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.

2, west pit only

Before final closure of the West pit 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.



GIANT REFINERY Gallup, New Mexico	Evaporation Ponds

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

METALS

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									
Arsenic	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3
Barium	mg/kg	256	225	326	234	204	268	410	243	286
Beryllium	mg/kg	5.8	6.0	5.9	2.2	1.4	1.3	1.0	1.1	1.4
Cadmium	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Cobalt	mg/kg	5.7	5.6	5.8	4.9	3.6	3.1	2.9	4.0	4.4
Chromium	mg/kg	7.3	6.4	7.4	6.1	4.2	3.0	3.3	4.4	4.4
Copper	mg/kg	5.2	5.0	5.3	5.7	4.3	4.2	3.2	4.6	5.9
Mercury	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Potassium	mg/kg	1820	1780	2270	1620	1730	1100	624	1780	1470
Nickel	mg/kg	10.9	9.8	10.4	9.0	6.5	4.6	5.1	4.6	6.8
Lead	mg/kg	13	13	11	9	8	9	7	8	10
Antimony	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3
Selenium	mg/kg	<0.3	<0.3	<0.3	<3	<3	<3	<3	<3	<3
Vanadium	mg/kg	15.4	15.3	15.4	13.3	13.9	13.3	11.4	12.3	15.0
Zinc	mg/kg	15.0	14.2	15.6	13.2	10.6	8.0	12.0	11.9	11.3

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

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									
pH	---	7.78	7.76	7.66	7.54	7.54	7.53	8.14	7.44	7.63

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

METALS

SAMPLE POINT NUMBER		04	04	04	04	05	05	05	06	06	06	06
SAMPLE POINT DEPTH		V3.5	V5.0	V6.5	D6.5	A3.5	A5.0	A6.5	V3.5	V5.0	V6.5	E6.5
PARAMETER	UNITS											(mg/l)
Arsenic	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<0.005
Barium	mg/kg	216	245	296	236	191	526	237	327	158	176	<0.010
Beryllium	mg/kg	1.6	2.1	1.5	1.6	1.1	0.6	0.9	0.9	0.6	0.5	<0.005
Cadmium	mg/kg	<0.3	0.4	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.005
Cobalt	mg/kg	4.6	6.4	4.4	4.9	3.7	1.8	3.4	2.8	2.2	1.7	<0.010
Chromium	mg/kg	6.4	10.1	4.8	5.4	4.4	1.2	3.8	3.3	2.6	1.7	<0.010
Copper	mg/kg	4.7	4.9	5.7	6.0	4.2	2.9	3.6	3.0	3.4	2.4	<0.010
Mercury	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.000
Potassium	mg/kg	2210	3490	1350	1220	1690	327	1420	685	531	338	<1.0
Nickel	mg/kg	8.9	12.4	7.6	6.0	7.0	3.1	5.4	4.3	3.9	2.6	<0.020
Lead	mg/kg	10	9	9	11	7	<5	6	6	7	<5	<0.002
Antimony	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<0.05
Selenium	mg/kg	<3	<3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.005
Vanadium	mg/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	8.3	8.3	7.1	5.2	0.020

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

SAMPLE POINT NUMBER		04	04	04	04	05	05	05	06	06	06	06
SAMPLE POINT DEPTH		V3.5	V5.0	V6.5	D6.5	A3.5	A5.0	A6.5	V3.5	V5.0	V6.5	E6.5
PARAMETER	UNITS											
pH	---	7.48	7.60	7.93	7.83	7.49	7.63	7.78	8.20	8.12	8.23	5.29

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

METALS

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	A5.0	A6.5	E6.5 (mg/l)	V3.5	V5.0	V6.5	D6.5
PARAMETER	UNITS											
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	5.8	6.8	6.2
Chromium	mg/kg	11.4	10.9	9.5	13.4	9.9	5.7	<0.010	14.1	8.8	11.5	9.1
Copper	mg/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	<0.02
Potassium	mg/kg	3770	3620	2190	5360	3150	1390	<1.0	4260	2920	4110	3260
Nickel	mg/kg	12.5	12.4	12.1	12.0	11.2	7.6	<0.020	15.6	11.2	12.4	11.4
Lead	mg/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	mg/kg	<0.3	<0.3	<0.3	<3	<3	<0.3	<0.010	<3	<3	<3	<3
Vanadium	mg/kg	20.0	17.5	17.1	22.6	15.9	12.0	<0.010	21.7	15.0	18.0	14.8
Zinc	mg/kg	25.3	20.8	17.9	28.3	20.2	13.5	0.012	21.0	18.2	21.1	18.6

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

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	A5.0	A6.5	E6.5	V3.5	V5.0	V6.5	D6.5
PARAMETER	UNITS											
pH	---	7.51	7.71	7.85	8.09	8.31	8.60	5.69	7.62	7.73	7.90	7.88

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

METALS

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

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

SAMPLE POINT NUMBER		10	10	10	11	11	11	12	12	12
SAMPLE POINT DEPTH		A3.5	A5.0	A6.5	V3.5	V5.0	V6.5	V3.5	V5.0	V6.5
PARAMETER	UNITS									
pH	---	7.47	7.39	7.82	7.60	7.89	8.06	7.47	7.56	7.80

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

METALS

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										
Arsenic	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Barium	mg/kg	204	281	305	276	223	280	278	231	327	260
Beryllium	mg/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	mg/kg	5.8	5.3	5.9	3.9	3.6	6.0	5.2	6.0	6.6	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	mg/kg	3.1	2.9	3.4	2.1	3.2	3.0	2.9	3.2	3.7	3.4
Mercury	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Potassium	mg/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	mg/kg	9	9	8	6	7	8	6	7	9	9
Antimony	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Selenium	mg/kg	<0.3	<0.3	<0.3	<3	<0.3	<3	<3	<0.3	<3	<3
Vanadium	mg/kg	15.7	10.7	14.4	11.7	10.9	15.3	17.3	16.9	17.3	16.1
Zinc	mg/kg	17.6	17.3	16.3	12.0	9.2	19.0	16.0	18.7	20.2	18.1

SWMU #2

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										
pH	---	7.96	7.91	8.27	8.08	8.55	8.57	8.54	8.03	8.43	7.87

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

METALS

SAMPLE POINT NUMBER SAMPLE POINT DEPTH		16 V3.5	16 V5.0	16 V6.5	17 V3.5	17 V5.0	17 V6.5	18 A3.5	18 A5.0	18 A6.5
PARAMETER	UNITS									
Arsenic	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3
Barium	mg/kg	138	249	302	260	333	260	228	241	281
Beryllium	mg/kg	1.5	4.5	2.0	3.1	2.9	3.7	4.3	4.6	4.3
Cadmium	mg/kg	<0.3	0.4	0.3	0.5	0.5	<0.3	0.3	0.6	0.5
Cobalt	mg/kg	2.5	7.0	4.1	6.4	7.0	6.2	6.3	6.8	6.5
Chromium	mg/kg	2.8	11.8	4.8	10.8	11.5	8.5	11.1	12.9	11.1
Copper	mg/kg	2.0	3.9	2.9	3.9	3.2	3.5	3.6	3.1	4.0
Mercury	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Potassium	mg/kg	930	4050	1460	3170	3770	2920	3440	4250	3320
Nickel	mg/kg	5.3	13.9	8.0	12.3	14.2	12.4	12.8	14.0	3.1
Lead	mg/kg	11	9	10	9	6	8	7	8	8
Antimony	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3
Selenium	mg/kg	<3	<3	<0.3	<3	<3	<3	<3	<3	<0.3
Vanadium	mg/kg	7.2	21.6	9.8	18.4	17.6	16.4	16.8	19.3	17.4
Zinc	mg/kg	7.9	21.3	11.5	19.3	22.5	18.6	19.2	21.4	21.0

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

SAMPLE POINT NUMBER SAMPLE POINT DEPTH		16 V3.5	16 V5.0	16 V6.5	17 V3.5	17 V5.0	17 V6.5	18 A3.5	18 A5.0	18 A6.5
PARAMETER	UNITS									
pH	---	8.20	8.51	8.59	7.61	7.93	8.36	7.72	7.76	7.82

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8240 VOLATILE ORGANICS

SAMPLE POINT NUMBER		01	01	01	02	02	02	03	03	03
SAMPLE POINT DEPTH		V3.6	V5.0	V6.5	V3.5	V5.0	V6.5	V3.5	V5.0	V6.5
PARAMETER	UNITS									
Carbon Disulfide	mg/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	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	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	mg/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	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dioxane	mg/kg	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5
1,2-Dibromoethane (EDB)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8240 VOLATILE ORGANICS

SAMPLE POINT NUMBER		04	04	04	04	05	05	05	06	06	06	06
SAMPLE POINT DEPTH		V3.5	V5.0	V6.5	D6.5	V3.5	V5.0	V6.5	V3.5	V5.0	V6.5	E6.5 (ug/l)
PARAMETER	UNITS											
Carbon Disulfide	mg/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	mg/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)	mg/kg	<0.5	<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	<0.5	<5
2-Chloroethylvinylether	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Toluene	mg/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	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Styrene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Total Xylenes	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
1,4-Dioxane	mg/kg	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<10
1,2-Dibromoethane (EDB)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8240 VOLATILE ORGANICS

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	A5.0	A6.5	E6.5 (ug/l)	V3.5	V5.0	V6.5	D6.5
PARAMETER	UNITS											
Carbon Disulfide	mg/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	mg/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)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinylether	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	0.011	0.009	0.013	<0.5	<5	<0.5	<0.5	0.007	<0.5
Chlorobenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5
Ethybenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5
Styrene	mg/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	mg/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)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8240 VOLATILE ORGANICS

SAMPLE POINT NUMBER		10	10	10	11	11	11	12	12	12
SAMPLE POINT DEPTH		A3.5	A5.0	A6.5	V3.5	V5.0	V6.5	V3.5	V5.0	V6.5
PARAMETER	UNITS									
Carbon Disulfide	mg/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	mg/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	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethybenzene	mg/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	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dioxane	mg/kg	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5
1,2-Dibromoethane (EDB)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8240 VOLATILE ORGANICS

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	mg/kg	<0.5	<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	<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	<0.5
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinylether	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	0.5	<0.5	<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	<0.5
Ethybenzene	mg/kg	<0.5	<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	<0.5
Total Xylenes	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dioxane	mg/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)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8240 VOLATILE ORGANICS

SAMPLE POINT NUMBER		16	16	16	17	17	17	18	18	18
SAMPLE POINT DEPTH		V3.5	V5.0	V6.5	V3.5	V5.0	V6.5	A3.5	A5.0	A6.5
PARAMETER	UNITS									
Carbon Disulfide	mg/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	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<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	mg/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	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dioxane	mg/kg	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5
1,2-Dibromoethane (EDB)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

SWMU #2

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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,3-Dichlorobenzene	mg/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	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	<0.85	<0.85	<0.85	<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	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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Di-n-butylphthalate	mg/kg	<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
Pyrene	mg/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	mg/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	mg/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	mg/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	mg/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	mg/kg	<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
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	mg/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	<5
Quinoline	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8270 SEMI-VOLATILE ORGANICS

SAMPLE POINT NUMBER		04	04	04	04	05	05	05	06	06	06	06
SAMPLE POINT DEPTH		V3.5	V5.0	V6.5	D6.5	A3.5	A5.0	A6.5	V3.5	V5.0	V6.5	E6.5 (ug/L)
PARAMETER	UNITS											
Phenol	mg/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	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
2-Methylphenol	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Dimethylphthalate	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-Dinitrophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25
4-Nitrophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25
Diethylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Phenanthrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Anthracene	mg/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	mg/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	mg/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	mg/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	mg/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	mg/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	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)pyrene	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,h)anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
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	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Indene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
Methylchrysene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
1-Methylnaphthalene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5
3-Methylphenol	mg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pyridine	mg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Quinoline	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8270 SEMI-VOLATILE ORGANICS

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	A5.0	A6.5	E6.5 (ug/l)	V3.5	V5.0	V6.5	D6.5
PARAMETER	UNITS											
Phenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
1,3-Dichlorobenzene	mg/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	mg/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	mg/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	<0.17	<0.17
4-Methylphenol	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-Dimethylphenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Naphthalene	mg/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	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85	<0.85	<0.85
4-Nitrophenol	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85	<0.85	<0.85
Diethylphthalate	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Phenanthrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Anthracene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Di-n-butylphthalate	mg/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	mg/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	<0.17	<0.17	<0.17	<0.17	<5	<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	<5	<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	<5	<0.17	<0.17	<0.17	<0.17
Chrysene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<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	<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	<5	<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	<5	<0.17	<0.17	<0.17	<0.17
Benzo(a)pyrene	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
Benzenethiol	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<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	mg/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	<5	<0.17	<0.17	<0.17	<0.17
1-Methylnaphthalene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<5	<0.17	<0.17	<0.17	<0.17
3-Methylphenol	mg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pyridine	mg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Quinoline	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<25	<0.85	<0.85	<0.85	<0.85

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8270 SEMI-VOLATILE ORGANICS

SAMPLE POINT NUMBER		10	10	10	11	11	11	12	12	12
SAMPLE POINT DEPTH		A3.5	A5.0	A6.5	V3.5	V5.0	V6.5	V3.5	V5.0	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	mg/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	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	<0.85	<0.85	<0.85	<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	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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Di-n-butylphthalate	mg/kg	<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
Pyrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<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
Benzo(a)anthracene	mg/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	mg/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	mg/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	mg/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	mg/kg	<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
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	mg/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	<5
Quinoline	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85

SWMU #2

PHASE II, RFI 1991
GIANT REFINING
CINIZA

8270 SEMI-VOLATILE ORGANICS

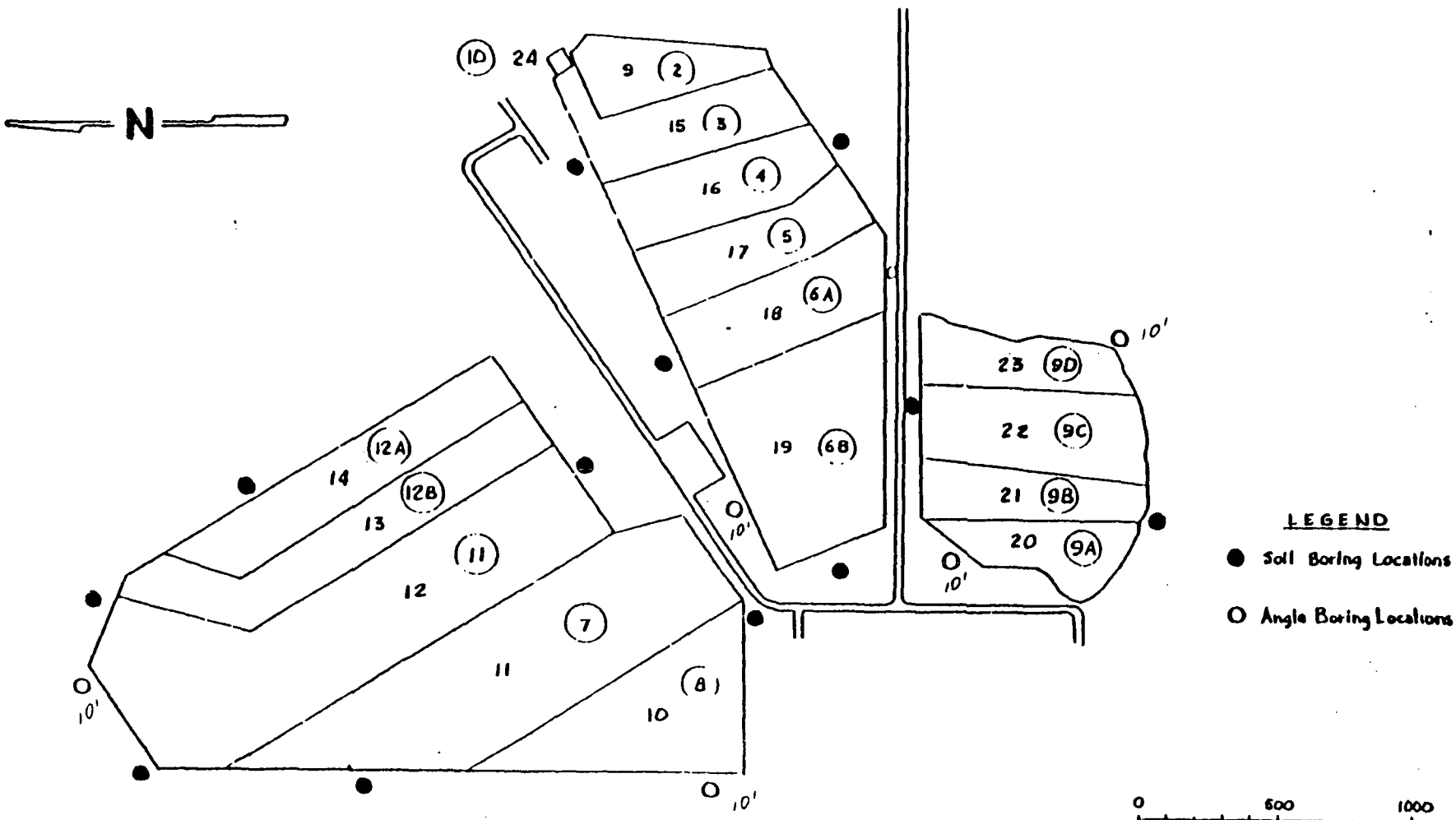
SAMPLE POINT NUMBER		13	13	13	14	14	14	14	15	15	15
SAMPLE POINT DEPTH		V3.5	V5.0	V6.5	A3.5	A5.0	A6.5	D6.5	A3.5	A5.0	A6.5
PARAMETER	UNITS										
Phenol	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,3-Dichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
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	mg/kg	<0.17	<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	<0.17
4-Methylphenol	mg/kg	<0.17	<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	<0.17
Naphthalene	mg/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	<0.85	<0.85	<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	<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	mg/kg	<0.17	<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	<0.17
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	<0.17	<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	mg/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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<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	<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	<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
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	mg/kg	<0.17	<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	<0.17
3-Methylphenol	mg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pyridine	mg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Quinoline	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85

SWMU #2

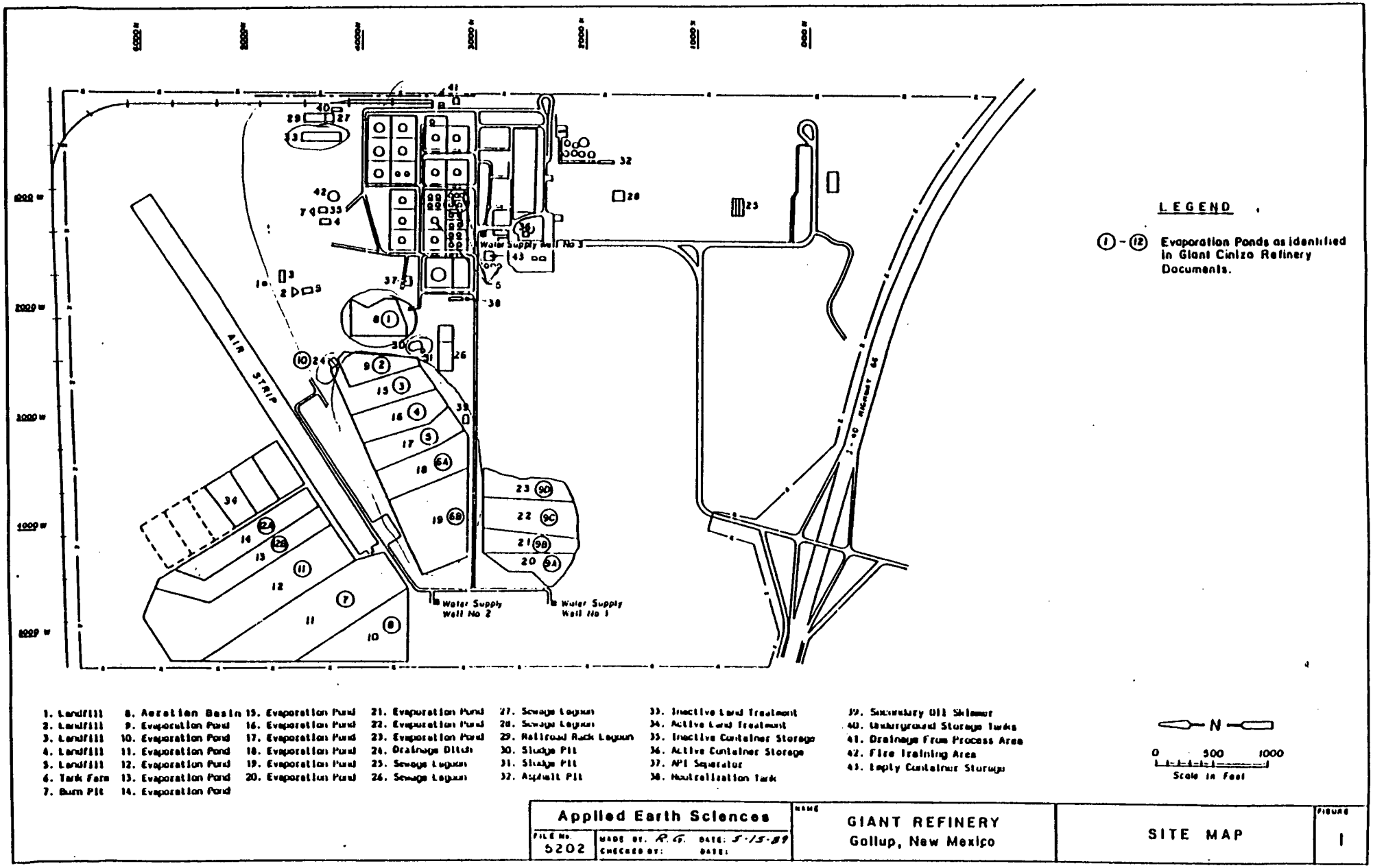
PHASE II, RFI 1991
GIANT REFINING
CINIZA

8270 SEMI-VOLATILE ORGANICS

SAMPLE POINT NUMBER		16	16	16	17	17	17	18	18	18
SAMPLE POINT DEPTH		V3.5	V5.0	V6.5	V3.5	V5.0	V6.5	A3.5	A5.0	A6.5
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	mg/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	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	<0.85	<0.85	<0.85	<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	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	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Di-n-butylphthalate	mg/kg	<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
Pyrene	mg/kg	<0.17	<0.17	<0.17	<0.17	<0.17	<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
Benzo(a)anthracene	mg/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	mg/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	mg/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	mg/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	mg/kg	<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
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	mg/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	<5
Quinoline	mg/kg	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85

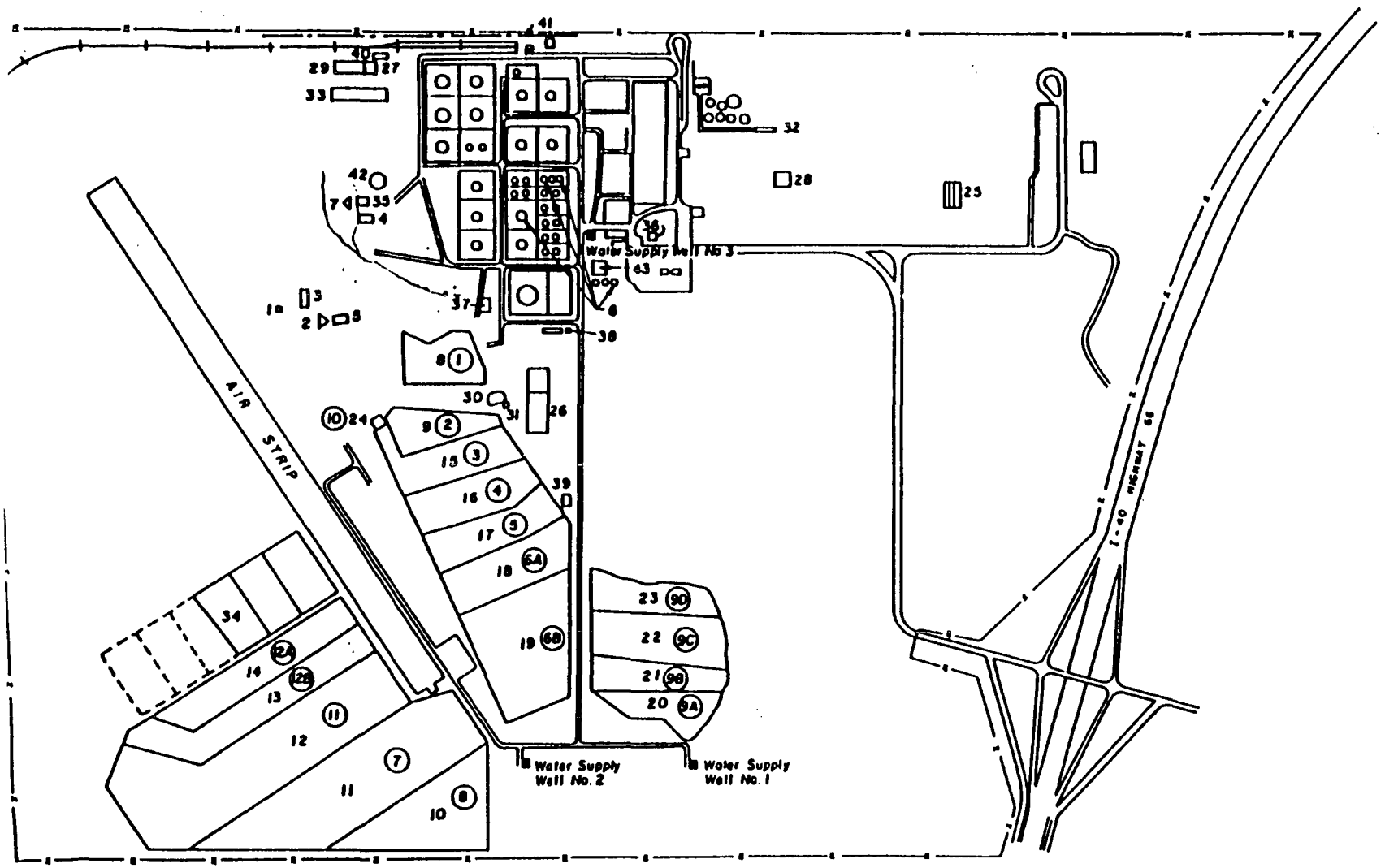


GIANT REFINERY Gallup, New Mexico	Evaporation Ponds	FIG.



Applied Earth Sciences		NAME		FIGURE
FILE No. 5202	MADE BY: R.G. DATE: 5-15-89 CHECKED BY: DATE:	GIANT REFINERY Gallup, New Mexico	SITE MAP	1

1(h)



LEGEND

(1) - (12) Evaporation Pond in Giant Ciniza Documents.

1. Landfill
2. Landfill
3. Landfill
4. Landfill
5. Landfark Farm
6. Sump Pit
8. Aeration Basin
9. Evaporation Pond
10. Evaporation Pond
11. Evaporation Pond
12. Evaporation Pond
13. Evaporation Pond
14. Evaporation Pond
15. Evaporation Pond
16. Evaporation Pond
17. Evaporation Pond
18. Evaporation Pond
19. Evaporation Pond
20. Evaporation Pond
21. Evaporation Pond
22. Evaporation Pond
23. Evaporation Pond
24. Drainage Ditch
25. Sewage Lagoon
26. Sewage Lagoon
27. Sewage Lagoon
28. Sewage Lagoon
29. Railroad Rack Lagoon
30. Sludge Pit
31. Sludge Pit
32. Asphalt Pit
33. Inactive Land Treatment
34. Active Land Treatment
35. Inactive Container Storage
36. Active Container Storage
37. API Separator
38. Neutralization Tank
39. Secondary Oil Skimmer
40. Underground Storage Tanks
41. Drainage From Process Area
42. Fire Training Area
43. Empty Container Storage

N

0 500

Scale in Feet

Applied Earth Sciences		NAME: GIANT REFINERY Gallup, New Mexico	SITE MAP
FILE No. 5202	MADE BY: R. G. DATE: 5-15-89 CHECKED BY: DATE:		

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

GARY E. JOHNSON
GOVERNOR

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 lagoon 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.

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

GIANT
REFINING CO.

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. Pavlich

David C. Pavlich
Health, Safety, and Environmental Manager

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

GIANT
REFINING CO.

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. Pavlich

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]

GIANT
REFINING CO.

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.

Sincerely,

David C. Pavlich

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]

State of New Mexico
ENVIRONMENT DEPARTMENT
Hazardous & Radioactive Materials Bureau
525 Camino De Los Marquez
P.O. Box 26110
Santa Fe, New Mexico 87502
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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.

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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Form Approved, OMB No. 2050-0034 Expires 9-30-96
GSA No. 0248-EPA-OT

For EPA Regional Use Only

Date Received
Month Day Year

EPA
United States Environmental Protection Agency
Washington, DC 20460

Hazardous Waste Permit Application Part A

(Read the Instructions before starting.)

I. Installation's EPA ID Number (Mark 'X' in the appropriate box)

[ ] A. First Part A Submission [X] B. Part A Amendment #

C. Installation's EPA ID Number: NMD003321211

D. Secondary ID Number (If applicable):

II. Name of Facility

GIANT REFINING COMPANY CINIZA

III. Facility Location (Physical address not P.O. Box or Route Number)

A. Street: INTERSTATE 40

Street (Continued): EXIT 39

City or Town: JAMESTOWN

State: NM

Zip Code: 87347

County Code (If known):

County Name: MCKINLEY

B. Land Type (Enter code): P

C. Geographic Location — LATITUDE (Degrees, Minutes & Seconds): 35 29 02 0 — LONGITUDE (Degrees, Minutes & Seconds): 108 25 04 2

D. Facility Existence Date — Month Day Year: 10 18 1980

IV. Facility Mailing Address

Street or P.O. Box: ROUTE 3 BOX 7

City or Town: GALLUP

State: NM

Zip Code: 87301

V. Facility Contact (Person to be contacted regarding waste activities at facility)

Name (Last): PAVLICH

(First): DAVID

Job Title: MANAGER H/S/E

Phone Number (Area Code and Number): 505-722-3833

VI. Facility Contact Address (See instructions)

A. Contact Address — Location [ ] Mailing [X] Other [ ]

B. Street or P.O. Box:

City or Town:

State:

Zip Code:

Please print or type with ELITE type (... characters per inch) in the unshaded areas only

Form Approved, OMB No. 2050-0034 Expires 9-30-96
GSA No. 0248-EPA-OT

EPA I.D. Number (Enter from page 1)	Secondary ID Number (Enter from page 1)
NMD003332111	

VII. Operator Information (See instructions)

Name of Operator			
GIANT REFINING COMPANY CINIZA			
Street or P.O. Box			
ROUTE 3 BOX 7			
City or Town	**State**	**ZIP Code**	
GALLUP	NM	87301 —	
Phone Number (Area Code and Number)	**B. Operator Type**	**C. Change of Operator Indicator**	**Date Changed**
505 — 722 — 3833	P	Yes [ ] No [X]	Month Day Year

VIII. Facility Owner (See Instructions)

A. Name of Facility's Legal Owner			
GIANT INDUSTRIES ARIZONA INC			
Street or P.O. Box			
2373 NORTH SCOTTSDALE ROAD			
City or Town	**State**	**ZIP Code**	
SCOTTSDALE	AZ	85255 —	
Phone Number (Area Code and Number)	**B. Owner Type**	**C. Change of Owner Indicator**	**Date Changed**
602 — 585 — 8888	P	Yes [ ] No [X]	Month Day Year

IX. SIC Codes (4-digit, in order of significance)

Primary	Secondary
2911 (Description) PETROLEUM REFINING	(Description)
Secondary	**Secondary**
(Description)	(Description)

X. Other Environmental Permits (See Instructions)

A. Permit Type (Enter code)	B. Permit Number	C. Description
R	NMD003332111	RCRA PART B PERMIT
E	AQP633-M-2	NM AIR QUALITY PERMIT
N	NMR00A172	GENERAL NPDES STORMWATER
E	GW-32	NMOCD DISCHARGE PLAN

EPA I.D. Number (Enter from page 1)												Secondary ID Number (Enter from page 1)													
N	M	D	0	0	0	3	3	2	1	1															

XI. Nature of Business (Provide a brief description)

The Giant-Ciniza Plant refines crude oil and markets refined petroleum fuel products.

XII. Process Codes and Design Capacities

A. PROCESS CODE - Enter the code from the list of process codes below that best describes each process to be used at the facility. Thirteen lines are provided for entering codes. If more lines are needed, attach a separate sheet of paper with the additional information. For "other" processes (i.e., D99, S99, T04 and X99), describe the process (including its design capacity) in the space provided in Item XIII.

B. PROCESS DESIGN CAPACITY - For each code entered in column A, enter the capacity of the process.

1. AMOUNT - Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process.

2. UNIT OF MEASURE - For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

C. PROCESS TOTAL NUMBER OF UNITS - Enter the total number of units used with the corresponding process code.

PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
	Disposal:	
D79	Underground Injection	Gallons; Liters; Gallons Per Day; or Liters Per Day
D80	Landfill	Acre-feet or Hectare-meter
D81	Land Treatment	Acres or Hectares
D82	Ocean Disposal	Gallons Per Day r Liters Per Day
D83	Surface Impoundment	Gallons or Liters
D99	Other Disposal	Any Unit of Measure Listed Below
	Storage:	
S01	Container (Barrel, Drum, Etc.)	Gallons or Liters
S02	Tank	Gallons or Liters
S03	Waste Pile	Cubic Yards or Cubic Meters
S04	Surface Impoundment	Gallons or Liters
S05	Drip Pad	Gallons or Liters
S06	Containment Building-Storage	Cubic Yards or Cubic Meters
S99	Other Storage	Any Unit of Measure Listed Below
	Treatment:	
T01	Tank	Gallons Per Day or Liters Per Day
T02	Surface Impoundment	Gallons Per Day or Liters Per Day
T03	Incinerator	Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; or Btu's Per Hour
T04	Other Treatment	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; or Btu's Per Hour
T80	Boiler	Gallons or Liters
T81	Cement Kiln	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; or Btu's Per Hour
T82	Lime Kiln	
T83	Aggregate Kiln	
T84	Phosphate Kiln	
T85	Coke Oven	
T86	Blast Furnace	
T87	Smelting, Melting, Or Refining Furnace	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; or Btu's Per Hour
T88	Titanium Dioxide Chloride Process Oxidation Reactor	
T89	Methane Reforming Furnace	
T90	Pulping Liquor Recovery Furnace	
T91	Combustion Device Used In The Recovery Of Sulfur Values From Spent Sulfuric Acid	
T92	Halogen Acid Furnaces	
T93	Other Industrial Furnaces Listed in 40 CFR §260.10	
T94	Containment Building-Treatment	Cubic Yards or Cubic Meters
	Miscellaneous (Subpart X):	
X01	Open Burning/Open Detonation	Any Unit of Measure Listed Below
X02	Mechanical Processing	Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds Per Hour; or Kilograms Per Hour
X03	Thermal Unit	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; or Btu's Per Hour
X04	Geologic Repository	Cubic Yards or Cubic Meters
X99	Other Subpart X	Any Unit of Measure Listed Below

UNIT OF MEASURE	UNIT OF MEASURE CODE
Gallons	G
Gallons Per Hour	E
Gallons Per Day	U
Liters	L
Liters Per Hour	H
Liters Per Day	V

UNIT OF MEASURE	UNIT OF MEASURE CODE
Short Tons Per Hour	D
Metric Tons Per Hour	W
Short Tons Per Day	N
Metric Tons Per Day	S
Pounds Per Hour	J
Kilograms Per Hour	R

UNIT OF MEASURE	UNIT OF MEASURE CODE
Cubic Yards	Y
Cubic Meters	C
Acres	B
Acre-feet	A
Hectares	Q
Hectare-meter	F
Btu's Per Hour	I

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Form Approved. OMB No. 2050-0034 Expires 9-30-96
GSA No. 0248-EPA-OT

EPA I.D. Number *(Enter from page 1)*: N M D 0 0 0 3 3 3 2 1 1

Secondary ID Number *(Enter from page 1)*:

XII. Process Codes and Design Capabilities *(Continued)*

EXAMPLE FOR COMPLETING ITEM XII (Shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number	A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY 1. Amount (Specify)	B. PROCESS DESIGN CAPACITY 2. Unit Of Measure (Enter code)	C. Process Total Number Of Units	For Official Use Only
X 1	S 0 2	5 3 3 . 7 8 8	G	0 0 1	
1	D 8 1	15.0	B	001	
2	T 0 4	300.0	U	001	
3		.			
4		.			
5		.			
6		.			
7		.			
8		.			
9		.			
10		.			
11		.			
12		.			
13		.			

NOTE: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item XIII.

XIII. Other Processes *(Follow instructions from Item XII for D99, S99, T04 and X99 process codes)*

Line Number (Enter #s in seq w/XII)	A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY 1. Amount (Specify)	B. PROCESS DESIGN CAPACITY 2. Unit Of Measure (Enter code)	C. Process Total Number Of Units	D. Description Of Process
X 1	T 0 4	.			In-situ Vitrification
1	T 0 4	300.0	U	001	FILTER PRESS
2		.			
3		.			
4		.			

EPA I.D. Number *(Enter from page 1)*: N M D 0 0 0 0 3 3 2 1 1

Secondary ID Number *(Enter from page 1)*:

XIV. Description of Hazardous Wastes

A. EPA HAZARDOUS WASTE NUMBER - *Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you will handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR, Part 261 Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.*

B. ESTIMATED ANNUAL QUANTITY - *For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.*

C. UNIT OF MEASURE - *For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:*

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in column A select the code(s) from the list of process codes contained in Item 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 Item XII A. on 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 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 Item XIV-D(1).*
3. *Enter in the space provided on page 7, Item 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 DESCRIBED 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:

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, 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 hazardous 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 treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number	A. EPA HAZARD WASTE NO. (Enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (Enter code)	D. PROCESS (1) PROCESS CODES (Enter code)	D. PROCESS (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
X 1	K 0 5 4	900	P	T 0 3 D 8 0	
X 2	D 0 0 2	400	P	T 0 3 D 8 0	
X 3	D 0 0 1	100	P	T 0 3 D 8 0	
X 4	D 0 0 2				Included With Above

EPA I.D. Number (Enter from page 1)											Secondary ID Number (Enter from page 1)											
N	M	D	0	0	0	3	3	3	2	1	1											

XIV. Description of Hazardous Wastes (Continued)

Line Number		A. EPA HAZARDOUS WASTE NO. (Enter code)				B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
	1	K	0	4	9	0.4	T	T	0	4	S	0	1				FILTER PRESS
	2	K	0	5	0	5.0	T	T	0	4	S	0	1				FILTER PRESS
	3	K	0	5	1	250.0	T	T	0	4	S	0	1				FILTER PRESS
	4	K	0	5	2	10.0	T	T	0	4	S	0	1				FILTER PRESS
	5	D	0	1	8	200.0	T	S	0	1	D	8	1				
	6	D	0	0	1	1.0	T	S	0	1							
	7	D	0	3	9	1.0	T	S	0	1							
	8	F	0	3	7	5.0	T	T	0	4	S	0	1	D	8	1	FILTER PRESS
	9																
1	0																
1	1																
1	2																
1	3																
1	4																
1	5																
1	6																
1	7																
1	8																
1	9																
2	0																
2	1																
2	2																
2	3																
2	4																
2	5																
2	6																
2	7																
2	8																
2	9																
3	0																
3	1																
3	2																
3	3																

EPA I.D. Number *(Enter from page 1)*	Secondary ID Number *(Enter from page 1)*
N M D 0 0 0 3 3 3 2 1 1	

XV. Map

Attach to this application a topographic map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in this map area. See instructions for precise requirements.

* SEE ATTACHMENT A

XVI. Facility Drawing

All existing facilities must include a scale drawing of the facility (see instructions for more detail).

* SEE ATTACHMENT B

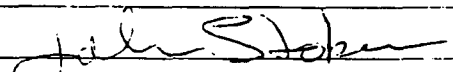
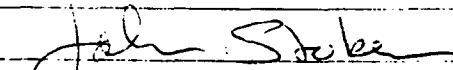
XVII. Photographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).

* SEE ATTACHMENT C

XVIII. Certification(s)

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.

Owner Signature 	Date Signed 3/25/95
Name and Official Title (Type or print) JOHN STOKES, REFINERY MANAGER	
Owner Signature	Date Signed
Name and Official Title (Type or print)	
Operator Signature 	Date Signed 3/25/95
Name and Official Title (Type or print) JOHN STOKES, REFINERY MANAGER	
Operator Signature	Date Signed
Name and Official Title (Type or print)	

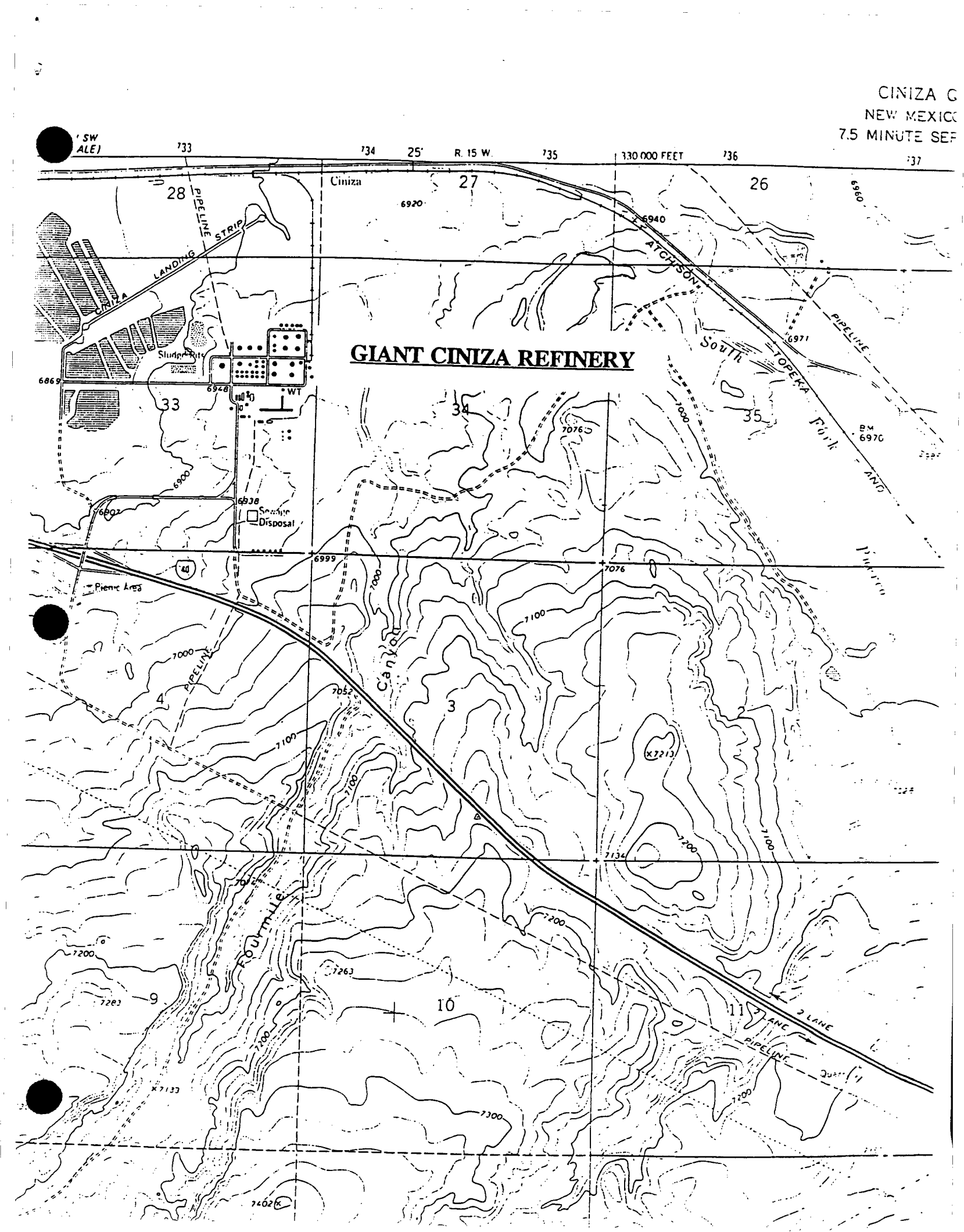
XIX. Comments

Giant requests a Class I RCRA Part A permit modification based on the provisions of 40 CFR 270.42.

Note: Mail completed form to the appropriate EPA Regional or State Office. (Refer to instructions for more information)

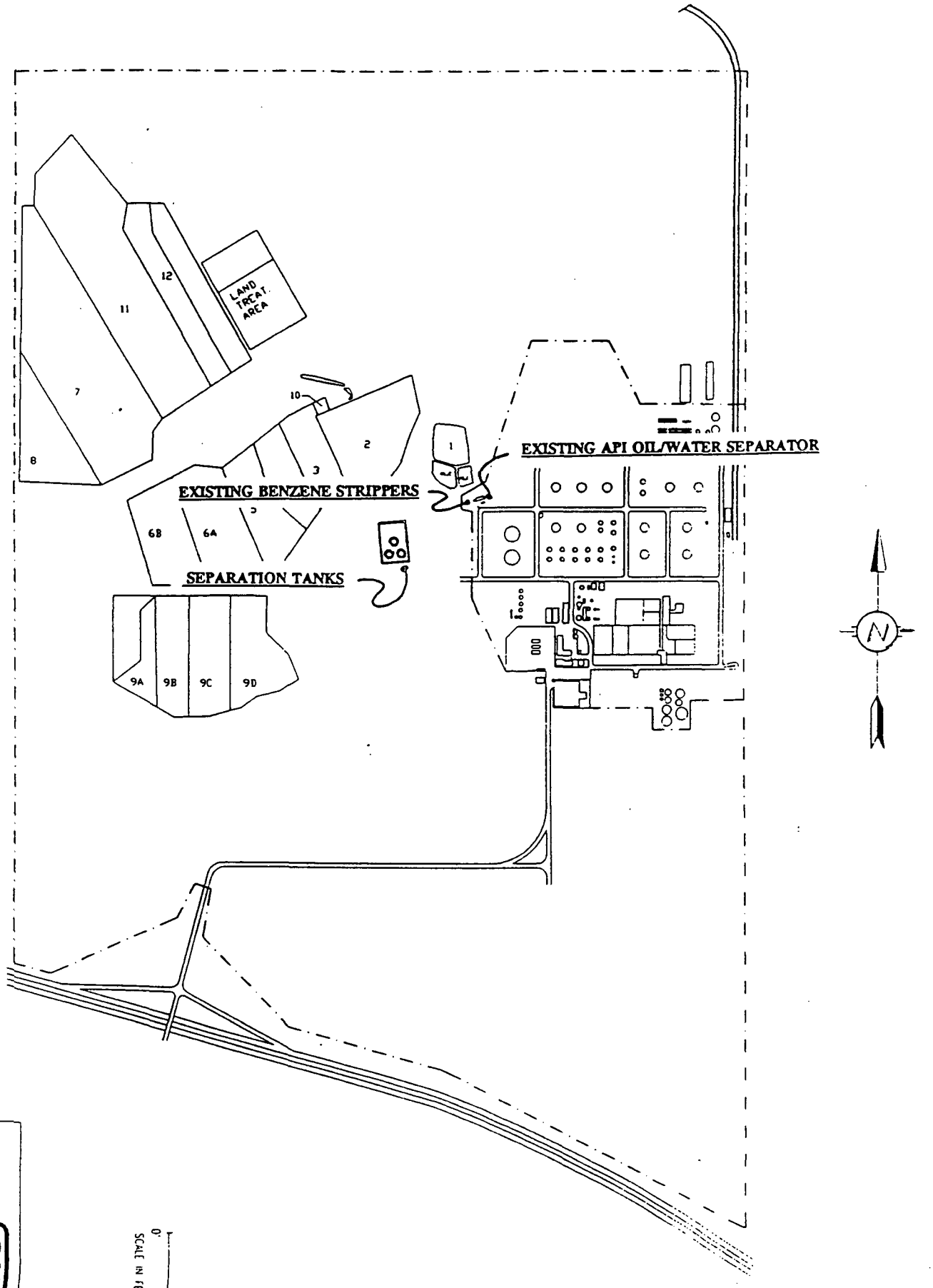
ATTACHMENT A

USGS Quadrangle


CINIZA C
NEW MEXIC
7.5 MINUTE SE
733
734
25'
R. 15 W.
735
330 000 FEET
736
737
Ciniza
28
27
26
PIPELINE STRIP
LANDING
6920
6940
6960
ATCHISON
TOPEKA
South
Fork
PIPELINE
6971
BM 6970
GIANT CINIZA REFINERY
Sludge Pits
6869
6948
WT
33
34
35
7000
7076
6900
6938
Disposal
6902
6999
7076
Picnic Area
7100
Canyon
PIPELINE
4
3
7052
7213
7200
7134
Four Mile
7263
9
10
11
2 LANE
PIPELINE
7133
7300
7262

ATTACHMENT B

Facility Plan



SIZE A | DWG NO

GIANT

PLAN

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 designated as SWMU No. 3 during a Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) conducted at the Giant Refining Company – Ciniza Refinery (Ciniza) in the early 1990s. This investigation focused on soil sampling and analysis. Soil borings were drilled to a depth of 4.5 ft, within the perimeter of the ECSA. Samples were collected from each boring in accordance with 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 Agency (EPA). It was determined that no significant impact had occurred. Based on this, Ciniza recommended no further action (NFA) for this SWMU. In 1994, the EPA concurred with this finding and approved cessation of the investigative process. The survey plat, as required, was submitted to EPA in 1995.

3.1 Site Description and Operational History

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

3.2 Land Use

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.

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

During the initial site investigation, AES collected and analyzed soil samples from within the ECSA. 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 semivolatile organic compounds (SVOCs).

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. 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.

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.

3.4 Site Conceptual Model

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

3.5 Site Assessments

During the week of March 23, 1998, PES performed an on-site inspection. Observations are as follows:

- 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.
- 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 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.

3.6 NFA Proposal

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.

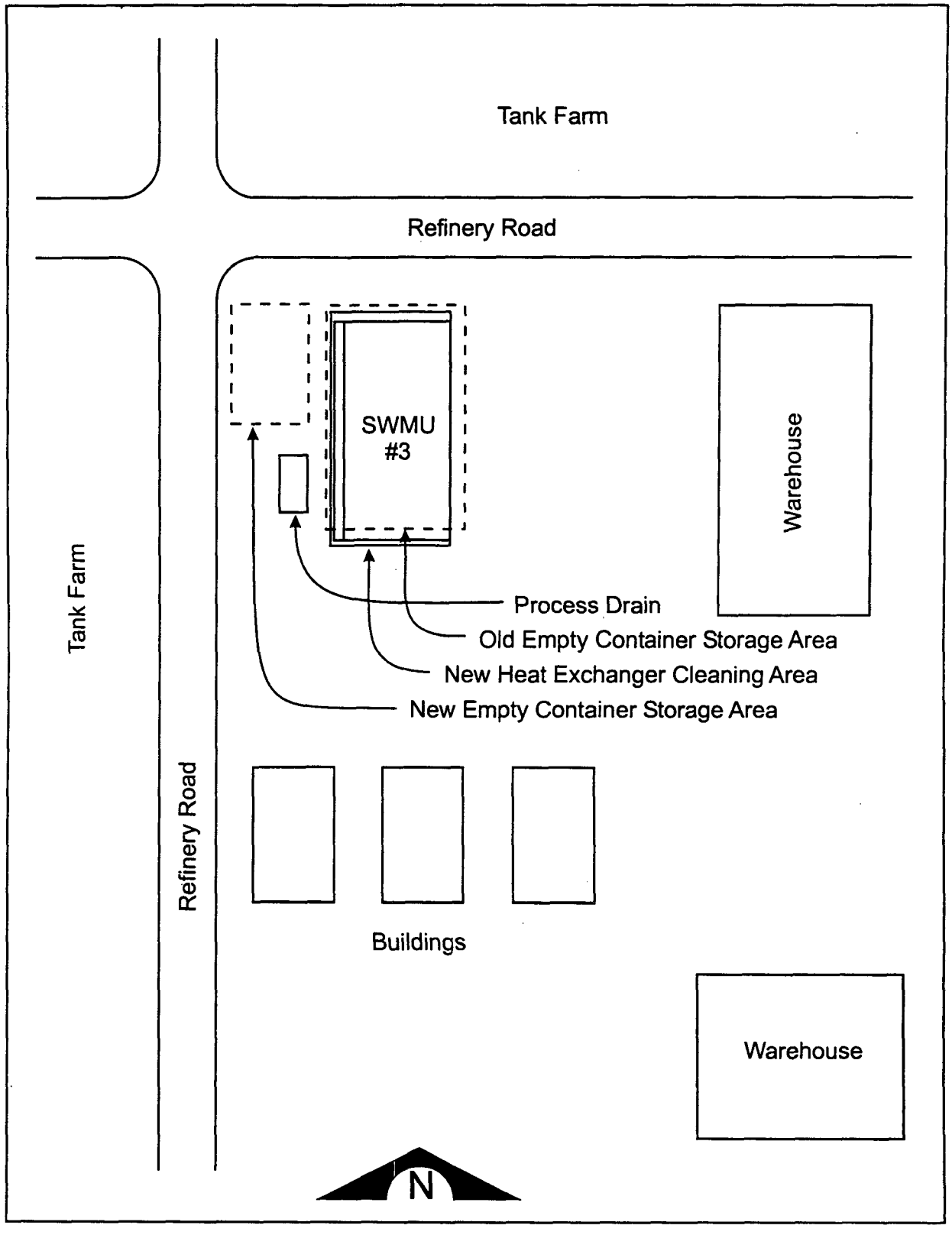
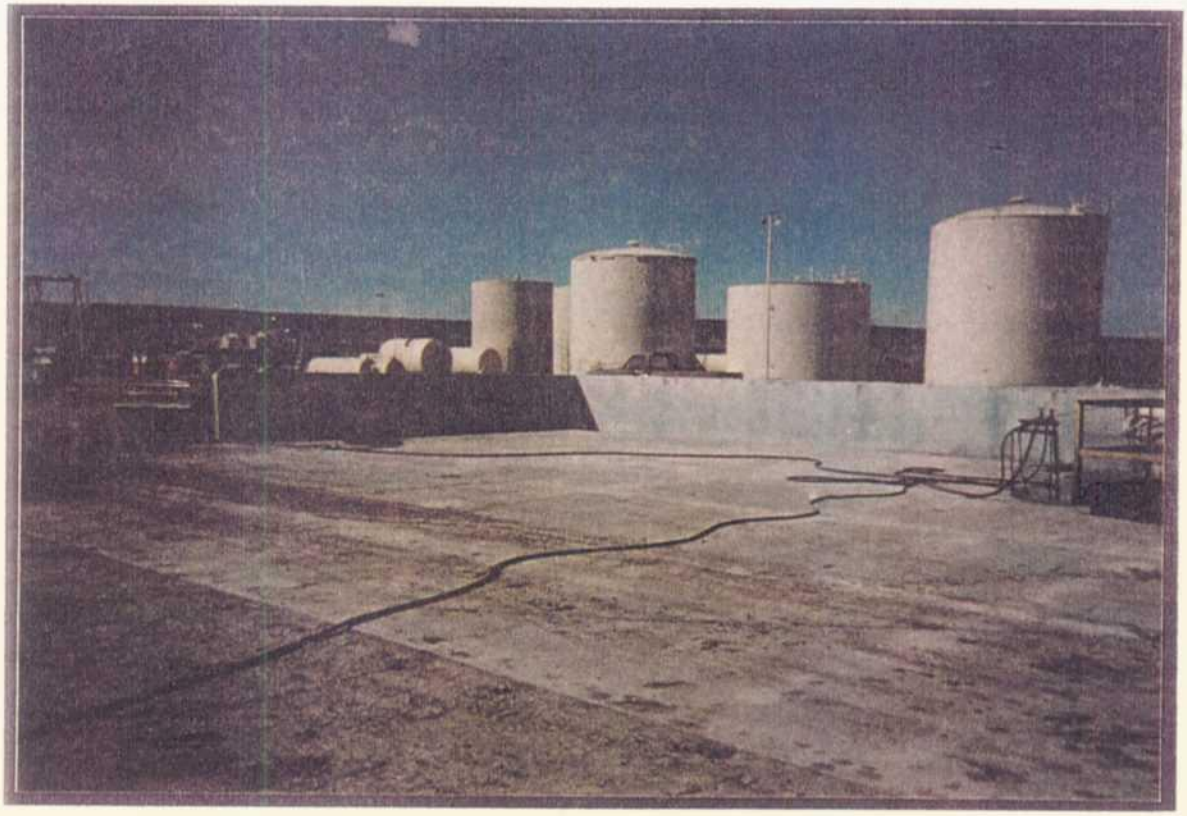


Figure 3-1. SWMU No. 3, Empty Container Storage Area Site

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

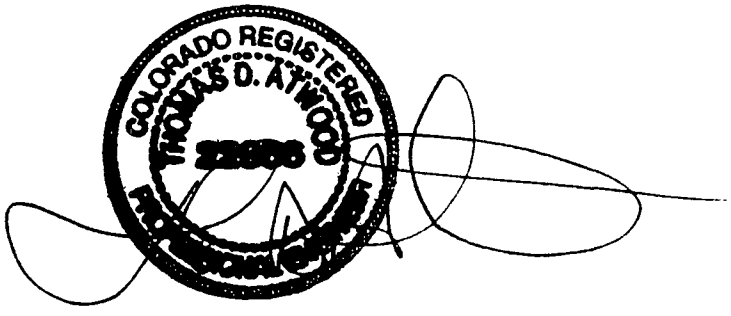
This summary report for SWMU #3 has been prepared under the direct supervision and control of a Registered Professional Engineer.

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

Job No.: 98-205-03

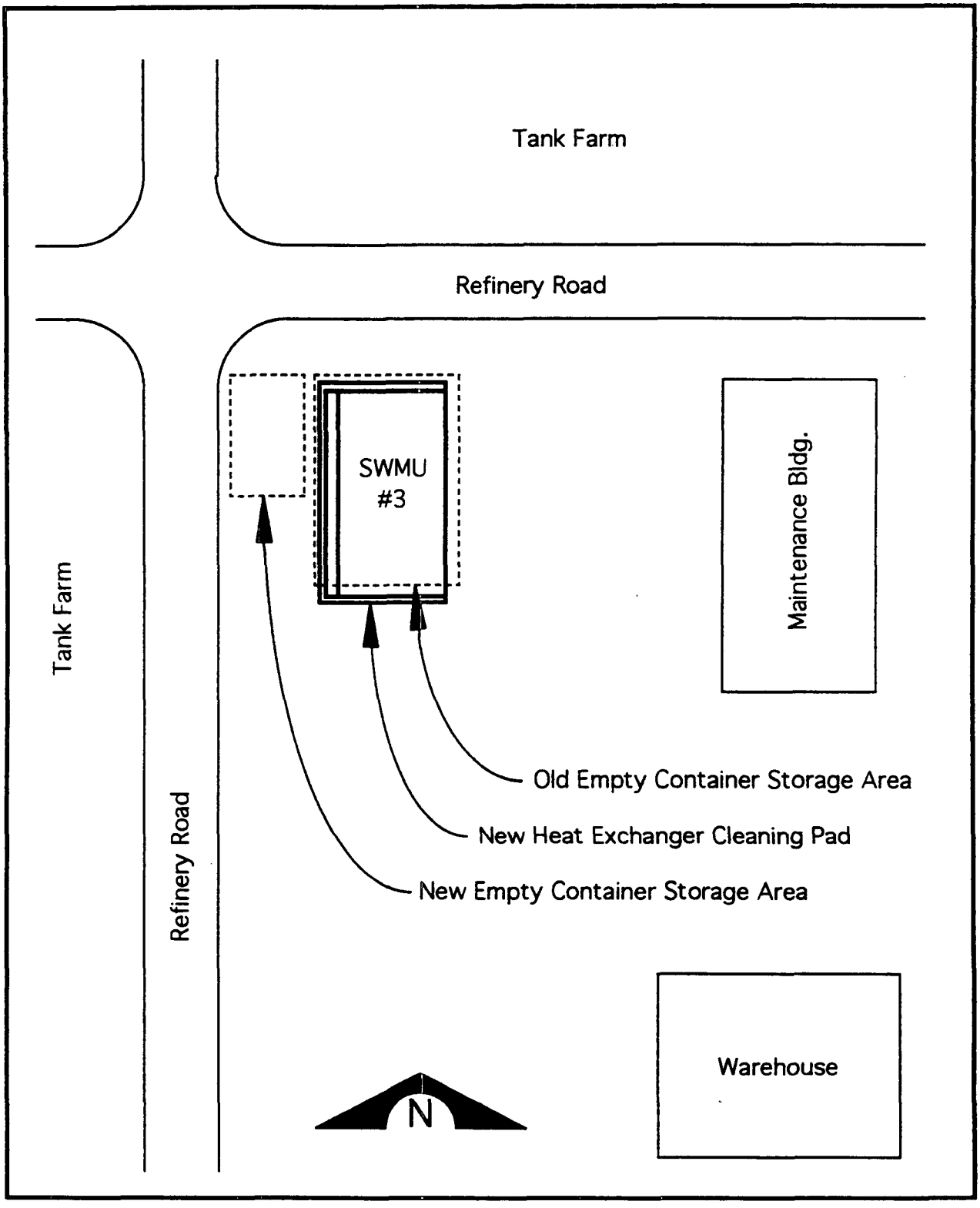
Date: April 23, 1998

Prepared and Certified by:



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

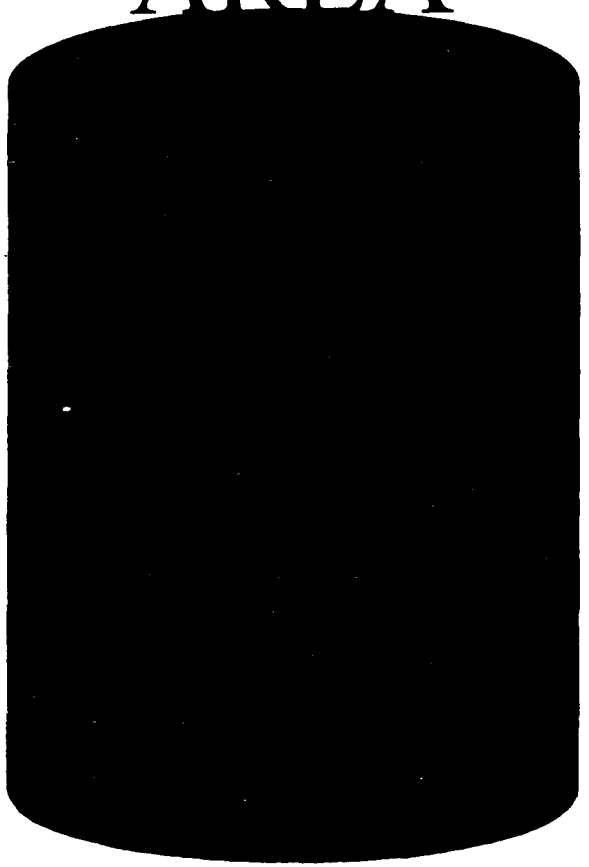
Figure No. 1
Empty Container Storage Area Site



New Empty Container Storage Area

Run-off Collection Trough – New Heat Exchanger Cleaning Pad

SWMU-3 EMPTY CONTAINER STORAGE AREA



SWMU = 3 - EMPTY CONTAINER STORAGE AREA

PARAMETERS - TCLP PRIORITY POLLUTANTS

12 SAMPLES

SWMU # 4 - BURN PIT

PARAMETERS - pH

SKINNER LIST ORGANICS

BACK GROUND METALS

9 SAMPLES

SWMU = 5 - FOUR LAND FILLS

PARAMETERS - 8240 PRIORITY POLLUTANTS

BACKGROUND METALS

pH

-5 SAMPLES

SWMU # 7 - FIRE TRAINING AREA

PARAMETERS - TPH

OIL & GREASE

12 SAMPLES

SWMU # 11 - SECONDARY OIL SKIMMER + ASSC. DITCH

PARAMETERS - SKINNER LIST (ORGANICS CONSTITUENTS)

4 SAMPLES

55 INDIVIDUAL SAMPLES

FACSIMILE TRANSMITTAL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

MULTIMEDIA PERMITTING AND PLANNING DIVISION

NEW MEXICO AND FEDERAL FACILITIES SECTION

PLEASE PRINT IN BLACK INK ONLY

TO:	Ed Horst, Environmental Manager - Giant Refining Company, Ciniza
MACHINE NUMBER: 505.722.0210	VERIFICATION NUMBER: 505.722.0227
FROM: James A. Harris, Jr., RCRA Facility Manager/Geologist	
PHONE: (214) 665-8302	Mail Code: 6PD-N
OFFICE: New Mexico/Federal Facilities Section	PAGES, INCLUDING COVER SHEET: 3
DATE: March 15, 1996	

PLEASE NUMBER ALL PAGES

INFORMATION FOR SENDING FACSIMILE 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 Giant, Ciniza's corrective action progress. Please review and let's discuss it next week. Have a good one.

Thanx,

J. James

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

Prepared by: James A. Harris, Jr.\6HPN as at March 13, 1996

GIANT REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

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 Quarterly Progress Report 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

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

JAN 7 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:

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 Ditta

for 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

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.

SWMU #4, The Fire Training Area

Giant shall complete angled 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.

BORING LOG

PROJECT: 622092005-254 (TBL-A1)
CLIENT:
BORING NUMBER: TBL-A1
EXCAVATED POND: N/A
FIRST ENCOUNTERED WATER: N/A
DATE COMPLETED: 01/28/93

SHEET: 1 of 1
DRILLED BY: Precision Eng.
LOGGED BY: PWC
SURF. ELEV: N/A
TOTAL DEPTH: 6.0'

DESCRIPTION

0-3.0' SANDY CLAY mixed with OILY SLUDGE, stained black by hydrocarbon products, moist, sticky, strong hydrocarbon odor decreasing slightly with depth. PID 25 ppm.

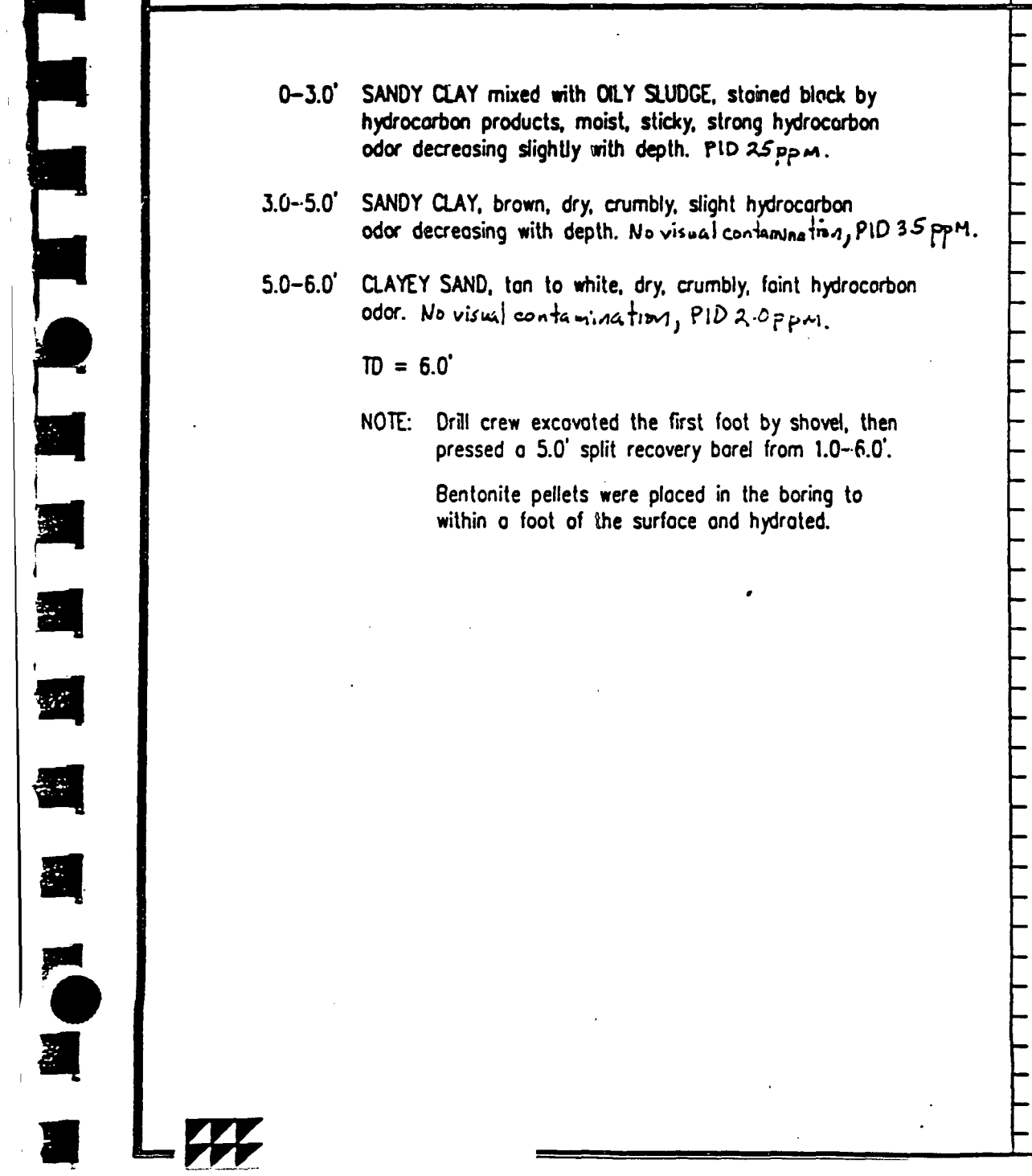
3.0-5.0' SANDY CLAY, brown, dry, crumbly, slight hydrocarbon odor decreasing with depth. No visual contamination, PID 3.5 ppm.

5.0-6.0' CLAYEY SAND, tan to white, dry, crumbly, faint hydrocarbon odor. No visual contamination, PID 2.0 ppm.

TD = 6.0'

NOTE: Drill crew excavated the first foot by shovel, then pressed a 5.0' split recovery barel from 1.0-6.0'.

Bentonite pellets were placed in the boring to within a foot of the surface and hydrated.



INTEROFFICE
MEMORANDUM

GIANT

DATE: February 3, 1994

TO: David Pavlich
Kim Bullerdick

FROM: Lynn Shelton LS

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	11	Secondary Oil Skimmer
12	14	13	Wastewater Collection
13	14	13	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.

SWMU #1 - 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.

SWMU #3 - 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.

SWMU #5 - Landfill Areas

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

SWMU #6 - 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.

SWMU #7 - 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.

SWMU #9 - 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.

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.

SWMU #12 - 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.

SWMU #13 - 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

SWMU #	SAMPLES REQUIRED	ANALYSIS	COST
1	30	8240	$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
4	6	8240	1,800
		8270	2,970
		Metals	2,250
		pH	60
5	21	8240	6,300
		8270	10,395
		Metals	4,830
6	8	BTEX	1,000
7	4	TPH	200
		Oil & Grease	200
8	50	8240	15,000
		8270	24,750
10	18	8240	5,400
		8270	8,910
		Metals	4,140
11	4	8240	1,200
		8270	1,980
13	12	8240	3,600
		8270	5,940
		Total Analytical Cost 1994 Only	$119,245

TABLE 4

BIENNIAL ANALYTICAL COST

SWMU #	SAMPLES REQUIRED	ANALYSIS	COST
1	30	8240	$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
13	12	8240	8,600
		8270	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
	$119,245	$94,600	$213,845

* Including Drilling Rig

IV. Conclusions

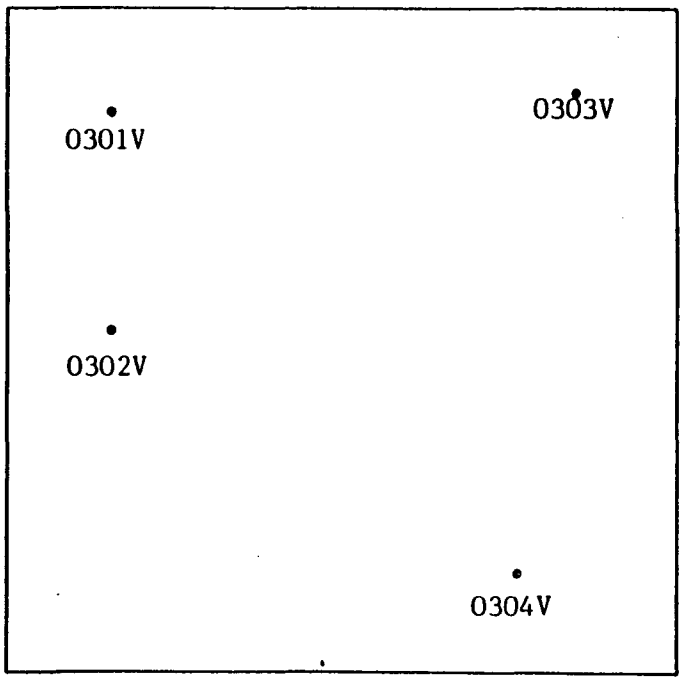
The additional requirements to fully characterize SWMUs #4, 5, 6, 7, 8, 10 and 11 are reasonable. Although expensive, full characterization of potential pollution is the thrust of an RFI project and is Giant's objective.

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.



LEGEND

• Proposed Soil Boring Locations

N

10 5 0 10

Scale In Feet

Applied Earth Sciences		NAME		FIGURE
FILE No. 5202	MADE BY: R.G. DATE: 12-5-89 CHECKED BY: DATE:	GIANT REFINERY Gallup, New Mexico	Empty Container Storage	

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #3- "Barrel Storage Area"

8240-PRIORITY POLLUTANT VOLATILES

SAMPLE POINT		01	01	01	02	02	02
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5'	V0.0'	V3.0'	V4.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
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	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	980	ND	ND
Benzene	ug/kg	340	ND	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND	ND	ND
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	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	ND	ND	ND
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
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5'	V0.0'	V3.0'	V4.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND	ND	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	ND
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	ND	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 (Methyliodide)	ug/kg	ND	ND	ND	ND	ND	ND
Vinyl acetate	ug/kg	ND	ND	ND	ND	ND	ND

Westech Laboratories Inc.

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El Paso • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594

1992

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS
GIANT REFINING CO	Rt 3 BOX 7 GALLUP NM 87301
TELEPHONE: (505) 722 0227	PROJECT: RFI PHASE III
	JOB/P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): Lynn Shelton
SAMPLER (PLEASE PRINT): LYNN SHELTON

Sample Type Codes: S – Soil, G – Sludge, X – Other, W – Water, T – Travel Blank, O – Oil, F – Field Blank

CLIENT SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES 8240 *	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
RFI0301V0.0	5-6-92	8:20	2				S	1	X	* PRIORITY POLLUTANT	9206634
RFI0301V3.0	5-6-92	8:45	BARREL				S	1	X	LIST ATTACHED	9206635
RFI0301V4.5	5-6-92	9:00	STORAGE				S	1	X		9206636
			AREA				~~S~~	~~1~~			
RFI0302V0.0	5-6-92	9:10					S	1	X		9206637
RFI0302V3.0	5-6-92	9:20					S	1	X		9206638
RFI0302V4.5	5-6-92	9:30					S	1	X		9206639
RFI0303V0.0	5-6-92	10:40					S	1	X		9206640
RFI0303V3.0	5-6-92	10:50					S	1	X		9206641
RFI0303V4.5	5-6-92	11:00					S	1	X		9206642
RFI0304V0.0	5-6-92	12:35 PM					S	1	X		9206643
RFI0304V3.0	5-6-92	12:55					S	1	X		9206644
RFI0304V4.5	5-6-92	1:20					S	1	X		9206645 BR

RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	REMARKS
Lynn Shelton	Barbara Sutten	5/8/92	1100	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	

Westech Laboratories Inc.

1992

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El Paso • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS
GIANT REFINING CO	R+ 3 BOX 7 GALLUP NM 87301
TELEPHONE: (505) 722 0227	PROJECT: RFI PHASE III
	JOB/P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): Lynn Shelton
SAMPLER (PLEASE PRINT): LYNN SHELTON

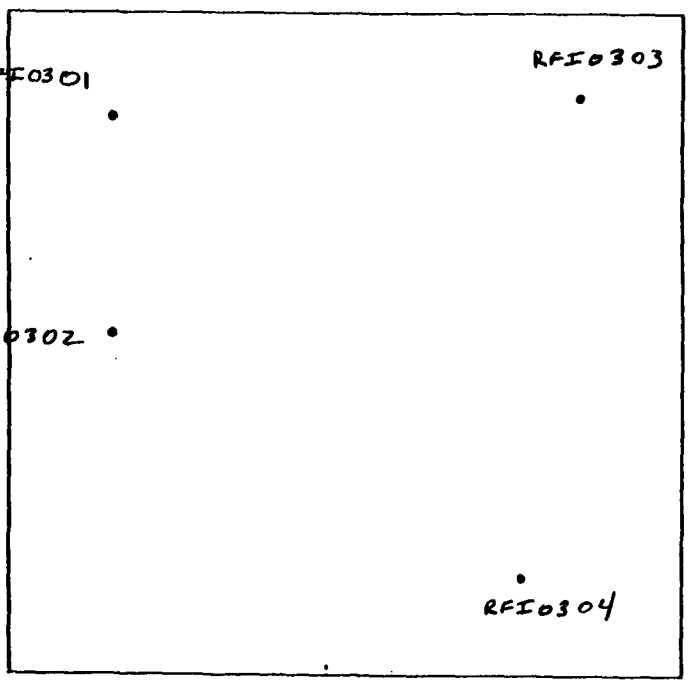
CLIENT SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES 8240*	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
RFI0301V0.0	5-6-92	8:20	2				S	1	X	* PRIORITY POLLUTANT	
RFI0301V3.0	5-6-92	8:45	BARREL				S	1	X	LIST ATTACHED	
RFI0301V4.5	5-6-92	9:00	STORAGE				S	1	X		
			AREA				DUP	DUP			
RFI0302V0.0	5-6-92	9:10					S	1	X		
RFI0302V3.0	5-6-92	9:20					S	1	X		
RFI0302V4.5	5-6-92	9:30					S	1	X		
RFI0303V0.0	5-6-92	10:10					S	1	X		
RFI0303V3.0	5-6-92	10:50					S	1	X		
RFI0303V4.5	5-6-92	11:10					S	1	X		
RFI0304V0.0	5-6-92	12:35 PM					S	1	X		
RFI0304V3.0	5-6-92	12:55					S	1	X		
RFI0304V4.5	5-6-92	1:20					S	1	X		

Sample Type Codes: S – Soil, G – Sludge, X – Other, W – Water, T – Travel Blank, O – Oil, F – Field Blank

RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	REMARKS
Lynn Shelton				
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	

2975 N

RFI0301 V0.0
RFI 0301 V3.0
RFI 0301 V4.5



LEGEND

• Proposed Soil Boring Locations

RFI0302 V0.0
RFI 0302 V3.0
RFI 0302 V4.5

RFI 0303 V0.0
RFI 0303 V 3.0
RFI 0303 V 4.5

1525 W

RFI 0304 V0.0
RFI 0304 V3.0
RFI 0304 V4.5

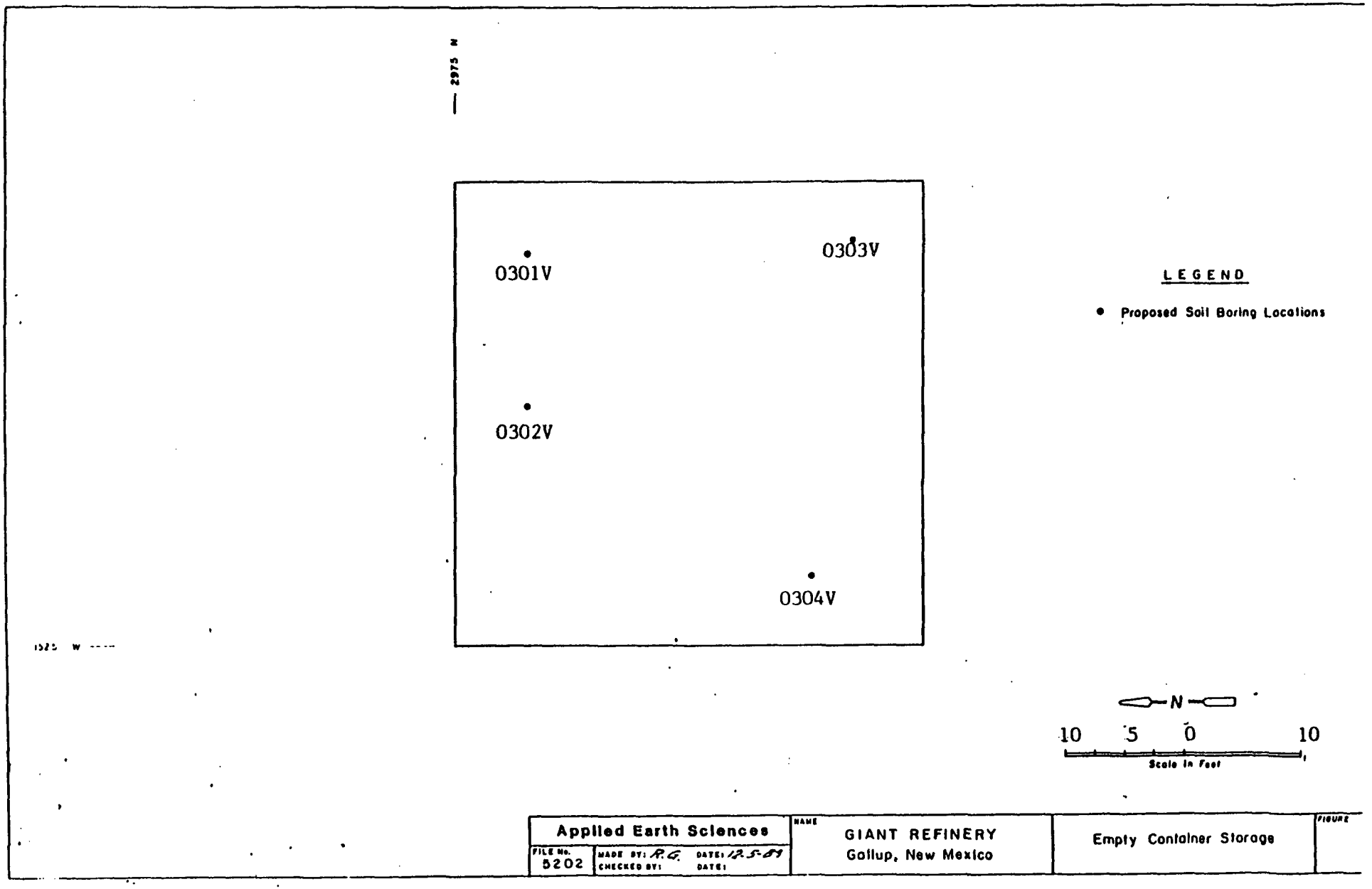
N

10 5 0 10

Scale in Feet

Applied Earth Sciences		NAME		FIGURE
FILE No. 5202	MADE BY: R.G. DATE: 12-5-89 CHECKED BY: TE:	GIANT REFINERY Gallup, New Mexico	Empty Container Storage	

3(h) 3



Applied Earth Sciences	NAME	FIGURE
FILE No. 5202 — MADE BY: A.G. DATE: 12-5-89 — CHECKED BY: DATE:	GIANT REFINERY, Gallup, New Mexico	Empty Container Storage

SWMU # 3 - EMPTY CONTAINER STORAGE AREA

PARAMETERS - 8240 PRIORITY POLLUTANTS

12 SAMPLES

SWMU # 4 - BURN PIT

PARAMETERS - pH

~~[redacted]~~ SKINNER LIST ORGANICS

BACKGROUND METALS

9 SAMPLES

SWMU #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 - ~~[redacted]~~ SKINNER LIST (CONSTITUENTS) ORGANICS

4 SAMPLES

85 INDIVIDUAL SAMPLES

GIANT
REFINING CO.

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.

RFI WORKPLAN PHASE III 1992

May 4, 1992

Training Load Equipment SWMU Site Tour		8:00 - 4:15

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 Training Area	12 Samples
SWMU #11	Secondary Oil Skimmer	4 Samples

May 8, 1992

SWMU #5	Land Fill Area	48 Samples

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: SWMU #3 Sample Date: 5-6-92

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: M. BARNEY, T. ROGERS

Sampling Method: AUGER

Sample No. RFI0301V0.0 Sample Time/Description: 8:20 AM SOIL
PID - 3.2

Sample No. RFI0301V3.0 Sample Time/Description: 8:45 AM SOIL
PID - 0

Sample No. RFI0301V4.5 Sample Time/Description: 9:00 AM SOIL
PID - 0

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: FLAT, GRAVEL + SOIL, BARREN

Weather Conditions: PARTLY SUNNY, 50°F, ESE WIND @ 5 mph

General Field Observations: AUGERING VERY DIFFICULT FOR FIRST 14"

Boring Lithology: 0-1" - UNCONSOLIDATED SOIL, SAND, + GRAVEL. DARK BROWN W/SOME LIGHTER MIXTURE. 1" TO 14" - DISCOLORED SOIL. 14" TO 31" LIGHTER MIXED OR STAINED SOIL. 31" TO 5' RED CLAY W/SOME WHITE SPECKS

DATA MANAGEMENT

Sample Location: SWMU # 3 Sample Date: 5-6-92

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: M. BARNEY, T. ROGERS

Sampling Method: AUGER

Sample No. RFI0302V2.0 Sample Time/Description: 9:10 AM DRY SOIL
PID - 1.2 (0-200 SCALE)

Sample No. RFI0302V3.0 Sample Time/Description: 9:20 AM MOIST SOIL
PID - 0

Sample No. RFI0302V4.5 Sample Time/Description: 9:70 AM MOIST SOIL
PID - 0

Sample No. _____ Sample Time/Description: ~~1130 AM~~

Sample No. _____ Sample Time/Description: _____

Surface Terrain: FLAT, GRAVEL & SOIL, BARREN

Weather Conditions: MOSTLY CLOUDY, 60°F, ESE WIND @ 5mpH.

General Field Observations: AUGERING VERY DIFFICULT FOR THE FIRST 14".

Boring Lithology: 0-1' - DISCOLORED MIXED SOIL / 50% GRAVEL FOR FIRST 8", 1' TO 20" DISCOLORED SOIL, SLIGHTLY MOIST. 20" TO 3' - MOIST RED/GRAY CLAY. NO VERIGATION OR SPOTTING / 25% SAND. 3' TO 5' - RED/GRAY CLAY WITH 25% SAND

DATA MANAGEMENT

Sample Location: SWMU #3 Sample Date: 5-6-92

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: M. BARNEY, T. ROGERS

Sampling Method: AUGER

Sample No. RFI0303V0.0 Sample Time/Description: 10:40 AM DRY SOIL PID-0

Sample No. RFI0303V3.0 Sample Time/Description: 10:50 AM MOIST SOIL PID-0

Sample No. RFI0303V4.5 Sample Time/Description: 11:00 AM MOIST SOIL PID-

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: FLAT, GRAVEL & SOIL, BARREN

Weather Conditions: CLOUDY, SPRINKLES, 60°F, ESE WIND @ 5-10 MPH

General Field Observations: VERY DIFFICULT TO AUGER TO 12".

Boring Lithology: 0-1' - GRAVEL/SOIL MIX, DISCOLORED SOIL, 1' TO 2' - DISCOLORED CLAY/SAND MIX, 2'-3.5' RED CLAY MIX, 3.5 TO 5.0' REDI GRAY CLAY W/SOME ROCK + SAND (5%)

DATA MANAGEMENT

Sample Location: SWMU #3 Sample Date: 5-6-92

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: M. BARNEY, T. ROGERS

Sampling Method: AUGER

Sample No. RFI0304V0.0 Sample Time/Description: 12:35PM DRY SOIL PID - 0

Sample No. RFI0304V3.0 Sample Time/Description: 12:55PM MOIST SOIL PID - 0

Sample No. RFI0304V4.5 Sample Time/Description: 1:20PM MOIST SOIL PID - 0

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: FLAT, GRAVEL & SOIL, BARREN

Weather Conditions: PARTLY CLOUDY, 60°F, E WIND AT 5-10 MPH.

General Field Observations: _____

Boring Lithology: 0-6" - GRAVEL / SOIL 6"-1' DISCOLORED SAND / SOIL. 1'-1.5' - SLIGHTLY DISCOLORED SOIL. 1.5-5.0' RED CLAY WITH SOME GREY SPECKS.

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~~ 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

Sept 14, 1989

APPLIED EARTH SCIENCES

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.

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.

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 SWMU No. 4 during a Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) conducted at the Giant Refining Company – Ciniza Refinery (Ciniza) in the early 1990s. This investigation included soil sampling and analysis, which indicated the presence of trace organics and metals. Based on this investigation, tilling and capping the site was recommended. In 1994, the U.S. Environmental Protection Agency (EPA) requested additional sampling at greater depth. The results confirmed the previous findings. The old burn area was capped in 1997 in conjunction with the closure of SWMU No. 5.

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.

4.2 Land Use

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.

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.

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.

All samples detected trace metals, of which chromium and nickel were detected at levels slightly above 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.

4.4 Site Conceptual Model

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

4.5 Site Assessments

During the week of March 23, 1998, PES performed an on-site inspection. Observations are as follows:

- 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 10^{7} cm/sec.

- 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.

Based on this site assessment, PES determined that containment is the preferred remedy to natural attenuation via tilling and aeration. The detected contaminants are resistant to biodegradation. Therefore, tilling and aeration would expose soil metals to oxidation and precipitation, thereby, mobilizing these contaminants and promoting migration. Isolation and containment are also the preferred remedy for the high levels of chromium and nickel detected. 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 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.

4.6 NFA Proposal

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).

- 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.

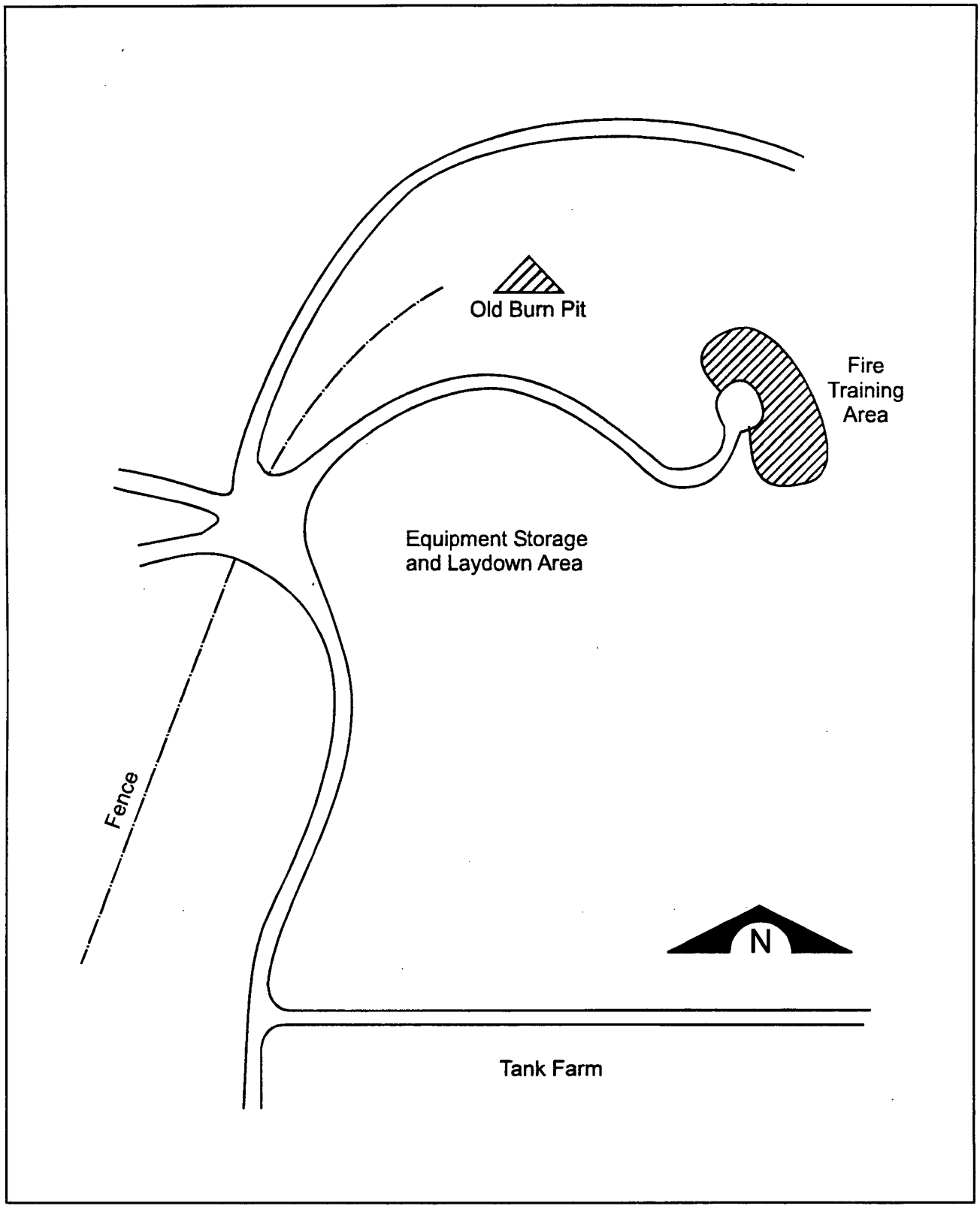


Figure 4-1. SWMU No. 4, Old Burn Pit Area

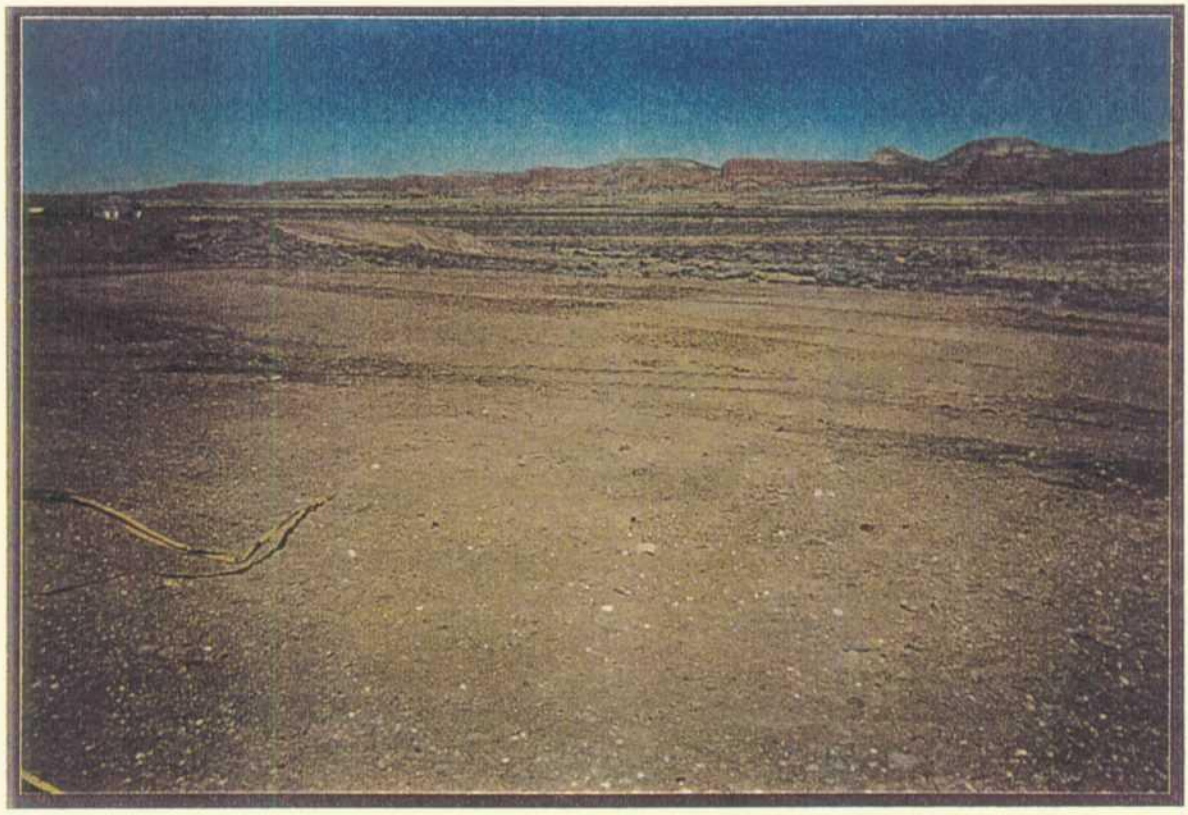
Figure 4-2. SWMU No. 4, Old Burn Pit

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.

- ⇒ 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

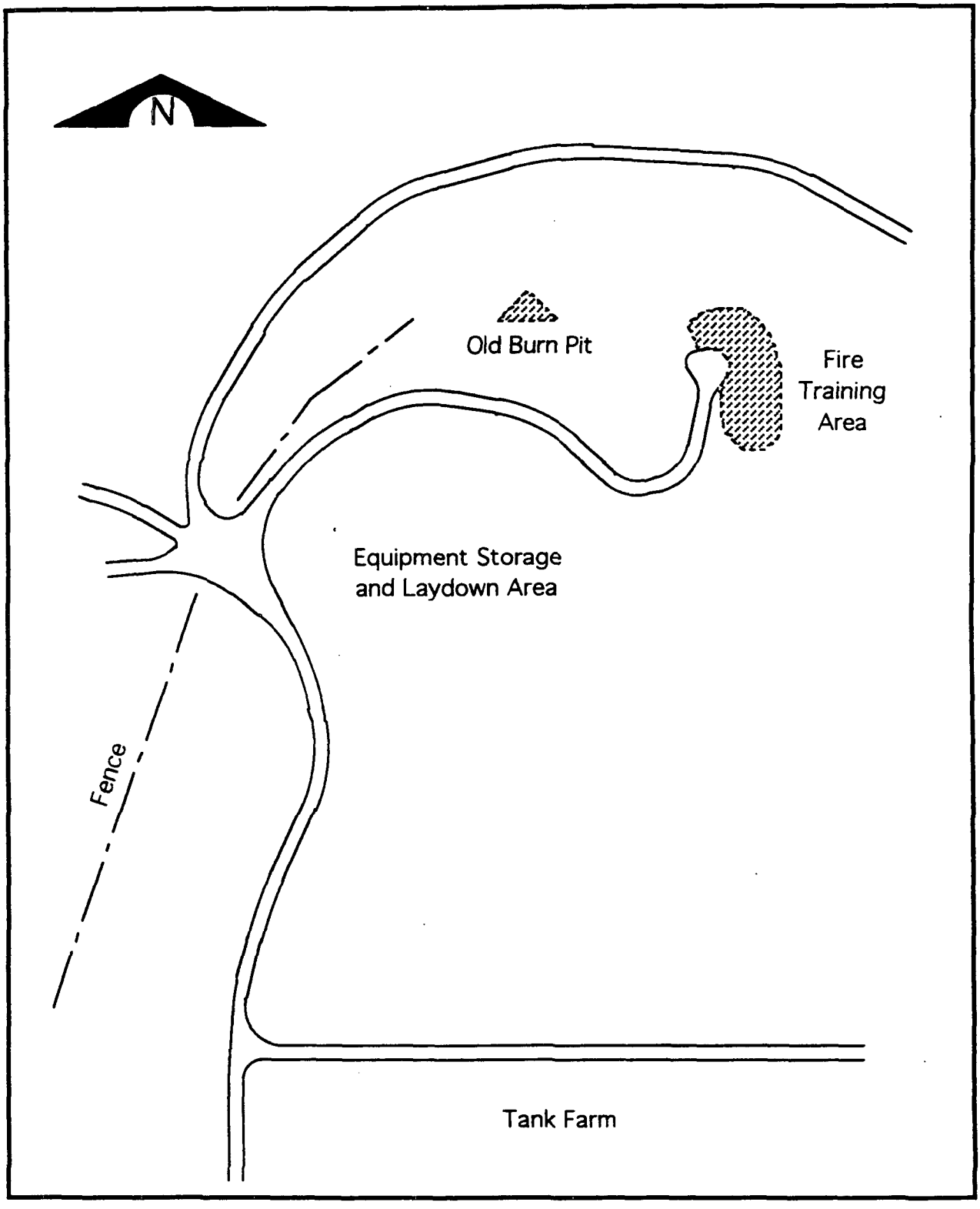
Job No.: 98-205-03

Date: April 23, 1998

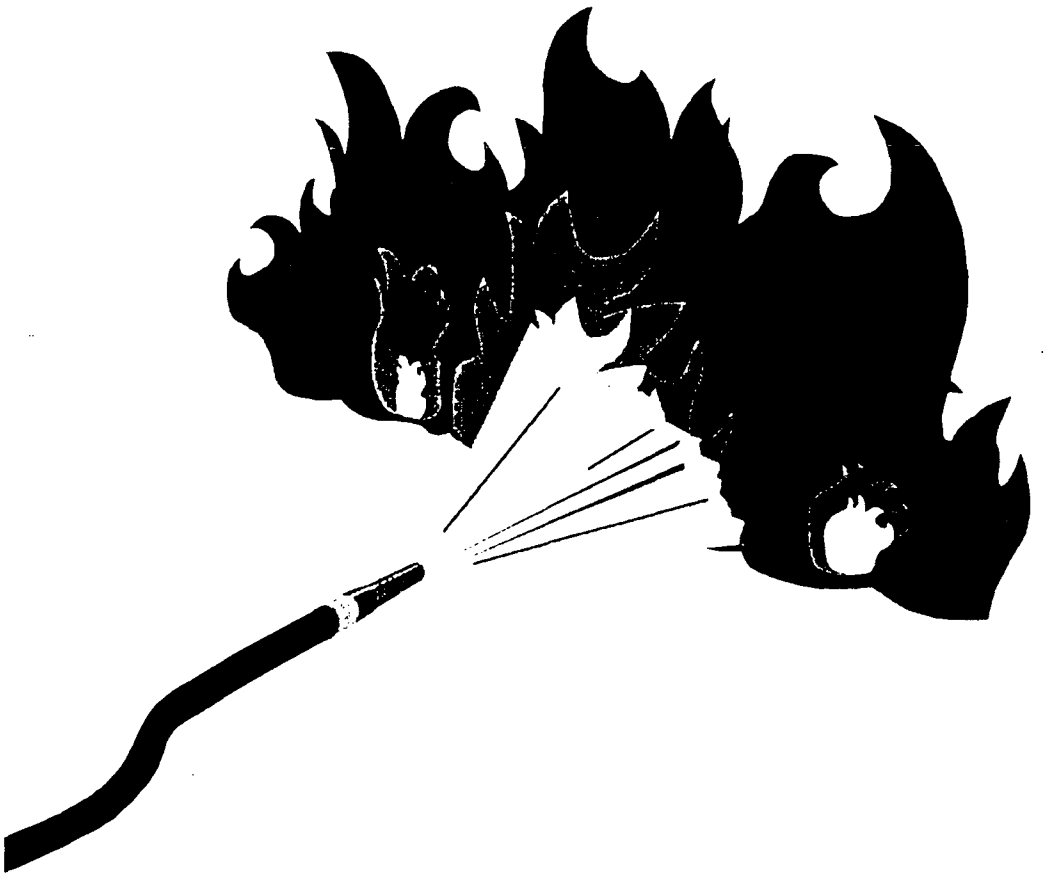
Prepared and Certified by:

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

Figure No. 1
Old Burn Pit Area



SWMU-4 OLD BURN PIT



SWMU # 3 - EMPTY CONTAINER STORAGE AREA

PARAMETERS - 8240 PRIORITY POLLUTANTS

12 SAMPLES

SWMU # 4 - BURN PIT

PARAMETERS - pH

~~[redacted]~~ SKINNER LIST ORGANICS

BACK GROUND METALS

9 SAMPLES

SWMU #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 - ~~[redacted]~~ SKINNER LIST ORGANICS (CONSTITUENTS)

4 SAMPLES

85 INDIVIDUAL SAMPLES

FACSIMILE TRANSMITTAL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

MULTIMEDIA PERMITTING AND PLANNING DIVISION

NEW MEXICO AND FEDERAL FACILITIES SECTION

PLEASE PRINT IN BLACK INK ONLY

TO:	Ed Horst, Environmental Manager - Giant Refining Company, Ciniza
MACHINE NUMBER: 505.722.0210	VERIFICATION NUMBER: 505.722.0227
FROM: James A. Harris, Jr., RCRA Facility Manager/Geologist	
PHONE: (214) 665-8302	Mail Code: 6PD-N
OFFICE: New Mexico/Federal Facilities Section	PAGES, INCLUDING COVER SHEET: 3
DATE: March 15, 1996	

PLEASE NUMBER ALL PAGES

INFORMATION FOR SENDING FACSIMILE 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 Giant, Ciniza's corrective action progress. Please review and let's discuss it next week. Have a good one.

Thanx,

JAmes

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

Prepared by: James A. Harris, Jr.\GWPM as at March 13, 1996

INTEROFFICE
MEMORANDUM

GIANT

DATE: June 28, 1994

TO: David Pavlich

FROM: Lynn Shelton LS

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	Costs: Sampling	Costs: Analysis
3	6.0', 10.0'	$475	$7,026

II. **SWMU #5** **Landfill Areas**

Borings	Depths	Costs: Sampling	Costs: Analysis
9	11.0', 16.0, 20.0'	$2,848	$21,525

III. **SWMU #6** **Tank Farm**

Borings	Depths	Costs: Sampling	Costs: Analysis
8	16.0', 20.0'	$2,531	$1,000

IV. **SWMU #7** **Fire Training Area**

Borings	Depths	Costs: Sampling	Costs: Analysis
2	7.0', 11.0'	$348	$400

V. **SWMU #10** **Sludge Pits**

Borings	Depths	Costs: Sampling	Costs: Analysis
18	19.0', 25.0'	$7,119	$18,450

VI. **SWMU #11 Secondary Oil Skimmer**

Borings	Depths	Costs: Sampling	Costs: Analysis
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

GIANT REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

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 Quarterly Progress Report 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

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

GIANT

DATE: February 3, 1994

TO: David Pavlich
Kim Bullerdick

FROM: Lynn Shelton LS

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	11	Secondary Oil Skimmer
12	14	13	Wastewater Collection
13	14	13	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.

SWMU #1 - 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.

SWMU #3 - 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.

SWMU #5 - Landfill Areas

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

SWMU #6 - 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.

SWMU #7 - 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.

SWMU #9 - 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.

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.

SWMU #12 - 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.

SWMU #13 - 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

SWMU #	SAMPLES REQUIRED	ANALYSIS	COST
1	30	8240	$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
4	6	8240	1,800
		8270	2,970
		Metals	2,250
		pH	60
5	21	8240	6,300
		8270	10,395
		Metals	4,830
6	8	BTEX	1,000
7	4	TPH	200
		Oil & Grease	200
8	50	8240	15,000
		8270	24,750
10	18	8240	5,400
		8270	8,910
		Metals	4,140
11	4	8240	1,200
		8270	1,980
13	12	8240	3,600
		8270	5,940
		Total Analytical Cost 1994 Only	$119,245

TABLE 4

BIENNIAL ANALYTICAL COST

SWMU #	SAMPLES REQUIRED	ANALYSIS	COST
1	30	8240	$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
13	12	8240	8,600
		8270	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
	$119,245	$94,600	$213,845

* Including Drilling Rig

IV. Conclusions

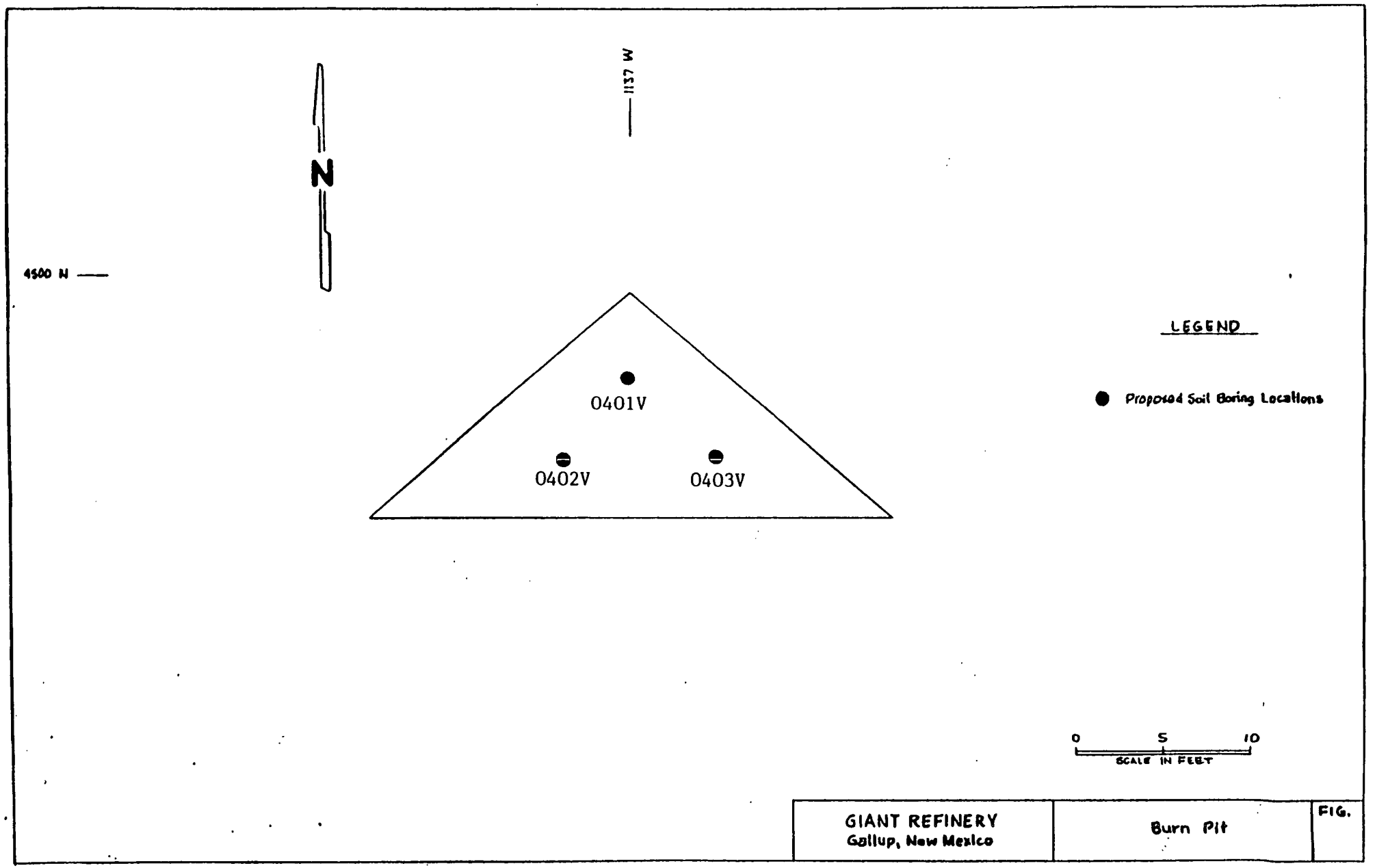
The additional requirements to fully characterize SWMUs #4, 5, 6, 7, 8, 10 and 11 are reasonable. Although expensive, full characterization of potential pollution is the thrust of an RFI project and is Giant's objective.

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.



GIANT REFINERY Gallup, New Mexico	Burn Pit	FIG.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

JAN 7 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:

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 Dinta

for 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

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.

SWMU #4, The Fire Training Area

Giant shall complete angled 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.

BORING LOG

PROJECT: 622092005-254 (TBL-A1)
CLIENT:
BORING NUMBER: TBL-A1
EXCAVATED POND: N/A
FIRST ENCOUNTERED WATER: N/A
DATE COMPLETED: 01/28/93

SHEET: 1 of 1
DRILLED BY: Precision Eng.
LOGGED BY: PWC
SURF. ELEV: N/A
TOTAL DEPTH: 6.0'

DESCRIPTION

0-3.0' SANDY CLAY mixed with OILY SLUDGE, stained black by hydrocarbon products, moist, sticky, strong hydrocarbon odor decreasing slightly with depth. PID 25 ppm.

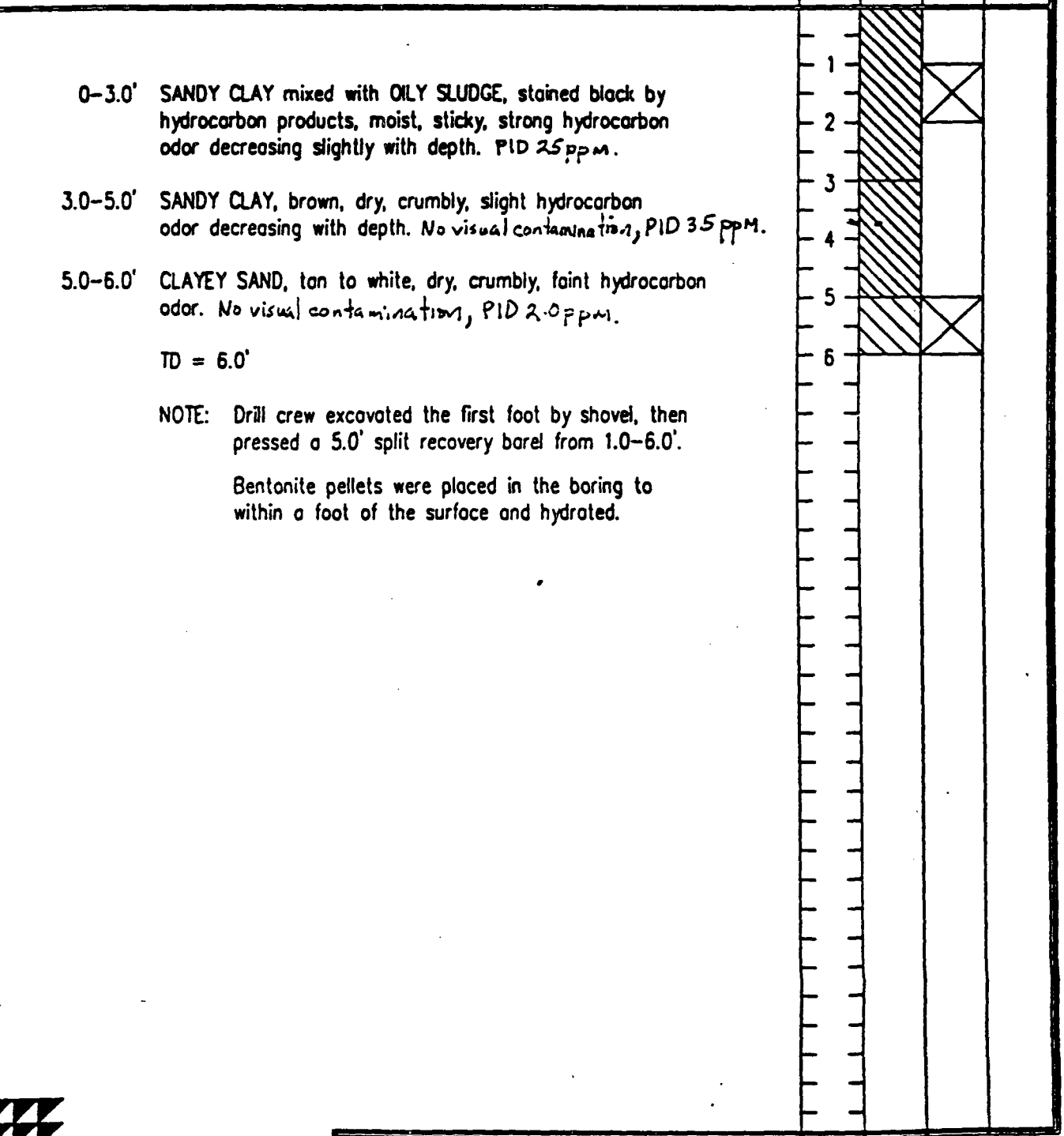
3.0-5.0' SANDY CLAY, brown, dry, crumbly, slight hydrocarbon odor decreasing with depth. No visual contamination, PID 3.5 ppm.

5.0-6.0' CLAYEY SAND, tan to white, dry, crumbly, faint hydrocarbon odor. No visual contamination, PID 2.0 ppm.

TD = 6.0'

NOTE: Drill crew excavated the first foot by shovel, then pressed a 5.0' split recovery barel from 1.0-6.0'.

Bentonite pellets were placed in the boring to within a foot of the surface and hydrated.



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 Neleigh
6h-p Honker
6h 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

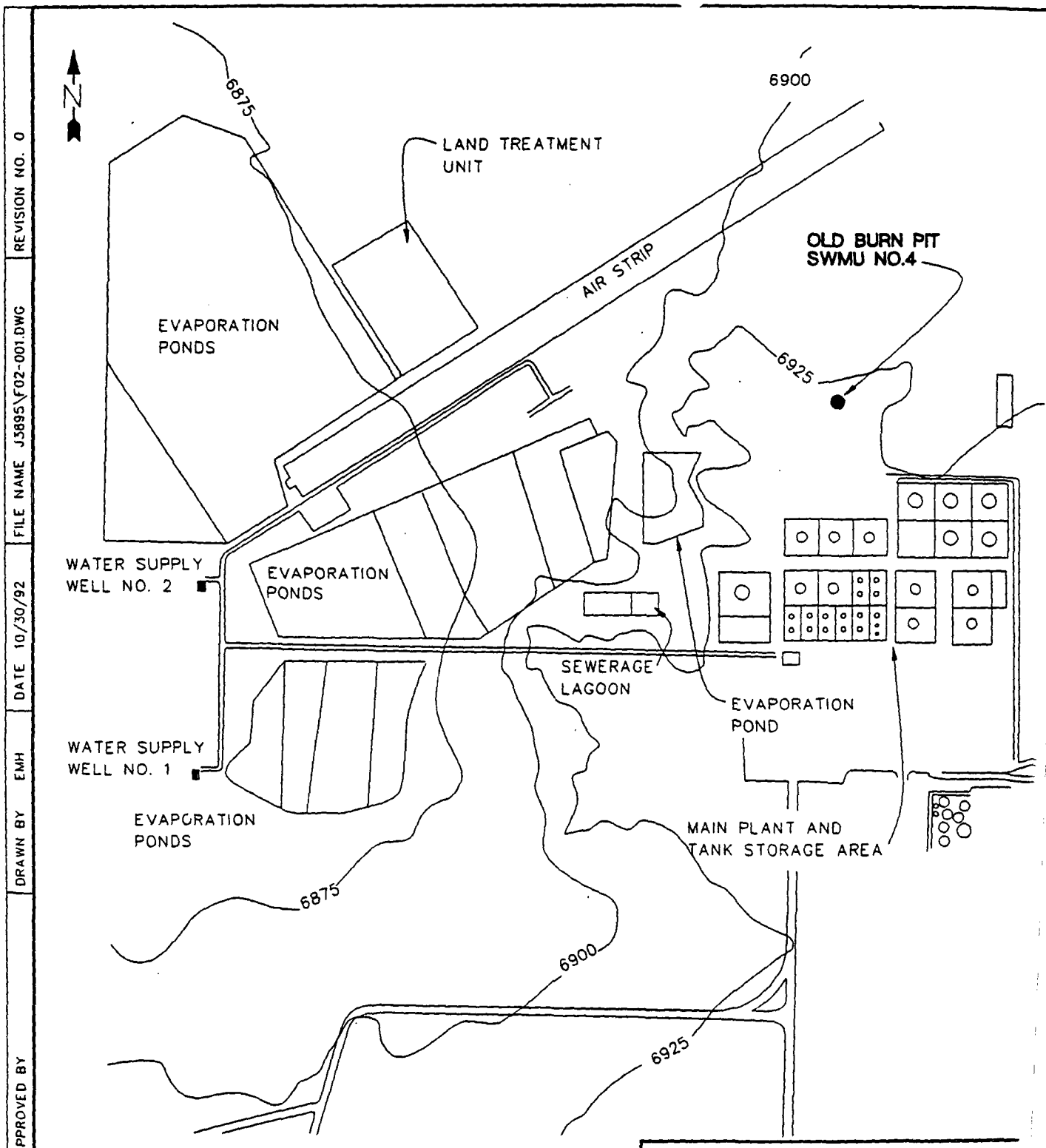
SWMU #4, the Old Burn Pit: Giant shall take soil borings as close as possible to the following sample points (numbers are from previous RFI sampling points, done May of 1992): number's 1, 2, and 3. Sampling intervals shall be at 6 and 10 feet. Sampling procedures and constituents to be analyzed shall 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.



REVISION NO. 0 | FILE NAME J3695\F02-001.DWG | DATE 10/30/92 | DRAWN BY EMH | APPROVED BY | CHECKED BY

FIGURE 4
SITE MAP
SWMU NO.4

CINIZA REFINERY

PREPARED FOR

GIANT REFINING COMPANY
GALLUP, NEW MEXICO

AppliedEnvironme

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.

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.

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.

'92

SWMU # 3 - EMPTY CONTAINER STORAGE AREA

PARAMETERS - 8240 PRIORITY POLLUTANTS

12 SAMPLES

SWMU # 4 - BURN PIT

PARAMETERS - pH

[redacted] SKINNER LIST ORGANICS

BACK GROUND METALS

9 SAMPLES

SWMU #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 - [redacted] SKINNER LIST (ORGANICS CONSTITUENTS)

4 SAMPLES

85 INDIVIDUAL SAMPLES

GIANT REFINING CO.

THIS COPY OF MY LETTER TO KAREN LISTS THE SPECIFIC ANALYSIS BY SWMU.

Lynn

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	12 Samples
	1 Duplicate
	1 Trip Blank
SWMU #4	
pH	9 Samples
Skinner List Organics	1 Duplicate
Background Metals	1 Trip Blank
	1 Equipment Wash
SWMU #5	
pH	48 Samples
8240 Priority Pollutants	3 Duplicates
Background Metals	2 Trip Blanks
	2 Equipment Washes
SWMU #7	
Total Petroleum Hydrocarbon (TPH)	12 Samples
Oil and Grease	1 Duplicate
	1 Trip Blank
SWMU #11	
Skinner List Organics	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 METALS.

THANKS-

Lynn

GIANT
REFINING CO.

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	RFI0510V0.0
RFI0402V4.5	RFI0505V0.0	RFI0510V3.0

RFI0403V0.0	RFI0505V3.0	RFI0510V7.0
RFI0403V3.0	RFI0505V7.0	RFI0510V9.5
RFI0403V4.5	RFI0505V9.5	RFI0511V0.0
RFI0501V0.0	RFI0506V0.0	RFI0511V3.0
RFI0501V3.0	RFI0506V3.0	RFI0511V7.0
RFI0501V7.0	RFI0506V7.0	RFI0511V9.5
RFI0501V9.5	RFI0506V9.5	RFI0512V0.0
RFI0501D9.5	RFI0507V0.0	RFI0512V3.0
RFI0502V0.0	RFI0507V3.0	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,

Lynn Shelton
Environmental Assistant
Ciniza Refinery

TLS:sp

RFI WORKPLAN PHASE III 1992

May 4, 1992

Training Load Equipment SWMU Site Tour		8:00 - 4:15

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 Training Area	12 Samples
SWMU #11	Secondary Oil Skimmer	4 Samples

May 8, 1992

SWMU #5	Land Fill Area	48 Samples

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: SWMU #4 Sample Date: 5-5-92

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: M BARNEY, T. ROGERS

Sampling Method: AUGER

Sample No. RFF04010000 Sample Time/Description: 1:20 PM CLAY
PID Ø

Sample No. RFF04010130 Sample Time/Description: 2:35 PM
PID - Ø

Sample No. RFF04010145 Sample Time/Description: 2:50 PM
PID - 6 OUTSIDE Ø SAMPLE

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: SLOPED, BARREN GROUND

Weather Conditions: OVERCAST, OCCASIONAL SPRINKLES, 65°F, ENE WIND @ 5-10 MPH

General Field Observations: SMOKE FROM FIRE TRAINING AREA HIT ABOUT 2:49 PM WHILE AUGERING AND LASTED FOR 12 MINUTES. PID READING WENT UP ON OUTSIDE AIR, Ø ON SAMPLE.

Boring Lithology: 0-1' SANDY CLAY TURNING TO MOIST RED CLAY. 1-2' VERIGATED CLAY. 2-2.5' LARGE SANDSTONE ROCK + BAKED CLAY. 2.5'-4.5 RED-GRAY CLAY, MOIST.

DATA MANAGEMENT

Sample Location: SWMU 4 Sample Date: 5-5-97

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: M. BARNEY, T. ROGERS

Sampling Method: AUGER

Sample No. RFI040ZV2 Sample Time/Description: 10:30 AM DRY SOIL PID-0

Sample No. RFI040ZV3 Sample Time/Description: 11:10 AM BLACK LAYER PID-4 OUTSIDE 16 SAMPLE

Sample No. RFI040ZV4 Sample Time/Description: 1:00 PID-4 OUT 8.4 SAMPLE

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: STEEP SLOPE, MOSTLY BARE, OCCASIONAL GROWTH TO 15 FT

Weather Conditions: PARTLY SUNNY, 70°F, 10-15 MPH EAST WIND

General Field Observations: STRICT ATTENTION PAID TO PROPER DECONTAMINATION. ALL PID READINGS @ 0-200 RANGE

BLACK LAYER REQUIRED STEAMING, SOLVENT, STEAMING AGAIN AND THEN REGULAR WASHING AND DECONTAMINATION.

Boring Lithology: 0-1' - LOOSE SANDY SOIL - GRAY TO REDDISH BROWN TURNING TO RED CLAY @ .75'. SOME COLOR VERIGATION FROM ROCKS. BLACK LAYER @ 20". SEMI-BRITTLE SOLID W/SOME TAR LIKE MATERIAL TO 39". 39" TO 51" SAND STONE ROCK. 51" TO 54" - LIGHT RED MOIST CLAY W/SOME GRAY COLOR & SOME SAND

DATA MANAGEMENT

Sample Location: SWMU #4 Sample Date: 5-5-92

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: M. BARNEY, T. ROGERS

Sampling Method: AUGER

Sample No. RFI0403VD.0 Sample Time/Description: 3:05 PM SOIL
PID Ø

Sample No. RFI0403V3.0 Sample Time/Description: 3:20 PM SOIL
PID 0-2000 SCALE 3.2 SAMPLE

Sample No. RFI0403V4.0 Sample Time/Description: 3:35 PM SOIL
PID .8 OUTSIDE 12 SAMPLE

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: BROKEN TERRAIN, COARSE VEGETATION

Weather Conditions: OVERCAST, OCCASIONAL SPRINKLES, E WIND @ 5-10 mpH. 60°F.

General Field Observations: SPENT FCC CATALYST HAD BLOWN INTO THE LOWLYING AREA AND WAS SCRAPED BACK TO REVEAL ORIGINAL SURFACE FOR SAMPLING. THE BLACK LAYER REQUIRED STEAMING, SOLVENT STEAMING, AND THEN REGULAR WASHING TO GET AUGERS AND EQUIPMENT CLEAN.

Boring Lithology: 0-1' RED & GRAY SAND/CLAY MIXED. SOME SPENT CATALYST FROM DISPOSAL AREA BLOWN IN AND MIXED WITH SAMPLE. 1'-2' VERIGATED RED SOIL. 2-2.5' ORANGE-RUSTY CLAY. 2.5'-3.25' BLACK LAYER W/SOME TAR LIKE MATERIAL. MIXED BLACK + GRAY SOIL TO 4.5' → SOLID SANDSTONE

TABLE 2

Field Equipment Checklist
Soil and Sludge Sampling

5-5-92

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~~ 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	

JLJ

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #4- "Old Burn Pit"

Total Metals

SAMPLE POINT		01	01	01	02	02	02
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5'	V0.0'	V3.0'	V4.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Arsenic	mg/kg	ND	ND	ND	ND	ND	ND
Barium	mg/kg	380	1300	900	480	360	160
Beryllium	mg/kg	ND	ND	ND	ND	ND	ND
Cadmium	mg/kg	ND	ND	ND	ND	ND	ND
Chromium	mg/kg	9.8	15	6.2	10.0	3.2	17
Lead	mg/kg	9.5	12	10	13.0	16.0	11
Mercury	mg/kg	ND	ND	ND	ND	ND	ND
Nickel	mg/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	mg/kg	ND	ND	ND
Barium	mg/kg	120	290	110
Beryllium	mg/kg	ND	ND	ND
Cadmium	mg/kg	ND	ND	ND
Chromium	mg/kg	19	15	20
Lead	mg/kg	30	27	18
Mercury	mg/kg	ND	ND	ND
Nickel	mg/kg	20	21	36
Vanadium	mg/kg	58	ND	29

PHASE III, RFI 1992
GIANT REFINING
CINIZA

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'	V0.0'	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	ND	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	ND
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	ND
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

SAMPLE POINT		03	03	03
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT
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
1,4-Dioxane	ug/kg	ND	ND	ND
Styrene	ug/kg	ND	ND	ND

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #4- "Old Burn Pit"

8270-Semi-Volatiles

SAMPLE POINT		01	01	01	02	02	02
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5'	V0.0'	V3.0'	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	ND	ND	ND	ND
2,4-Dimethylphenol	ug/kg	ND	ND	ND	ND	ND	ND
Naphthalene	ug/kg	ND	ND	ND	ND	520	ND
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	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

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #4- "Old Burn Pit"

8270-Semi-Volatiles

SAMPLE POINT		03	03	03
SAMPLE DEPTH (feet)		V0.0'	V3.0'	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

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #4- "Old Burn Pit"

pH

SAMPLE POINT		01	01	01	02	02	02
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5'	V0.0'	V3.0'	V4.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
pH	S.U.	7.5	7.2	7.8	8.1	2.2	7.3

pH

SAMPLE POINT		03	03	03
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT
pH	S.U.	2.2	7.1	4.2

Westech Laboratories Inc.

Phoenix • 3737 E. Broadway Rd. • AZ 85040 • (602) 437-1080 • fax 437-8706
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

1992

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS
GIANT REFINING CO.	Rt 3 BOX 7 GALLUP, NM
TELEPHONE: (505) 722 0227	PROJECT: RFI PHASE III
	JOB/P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): Lynn Shelton
SAMPLER (PLEASE PRINT): LYNN SHELTON

Sample Type Codes: S – Soil, G – Sludge, X – Other, W – Water, T – Travel Blank, O – Oil, F – Field Blank

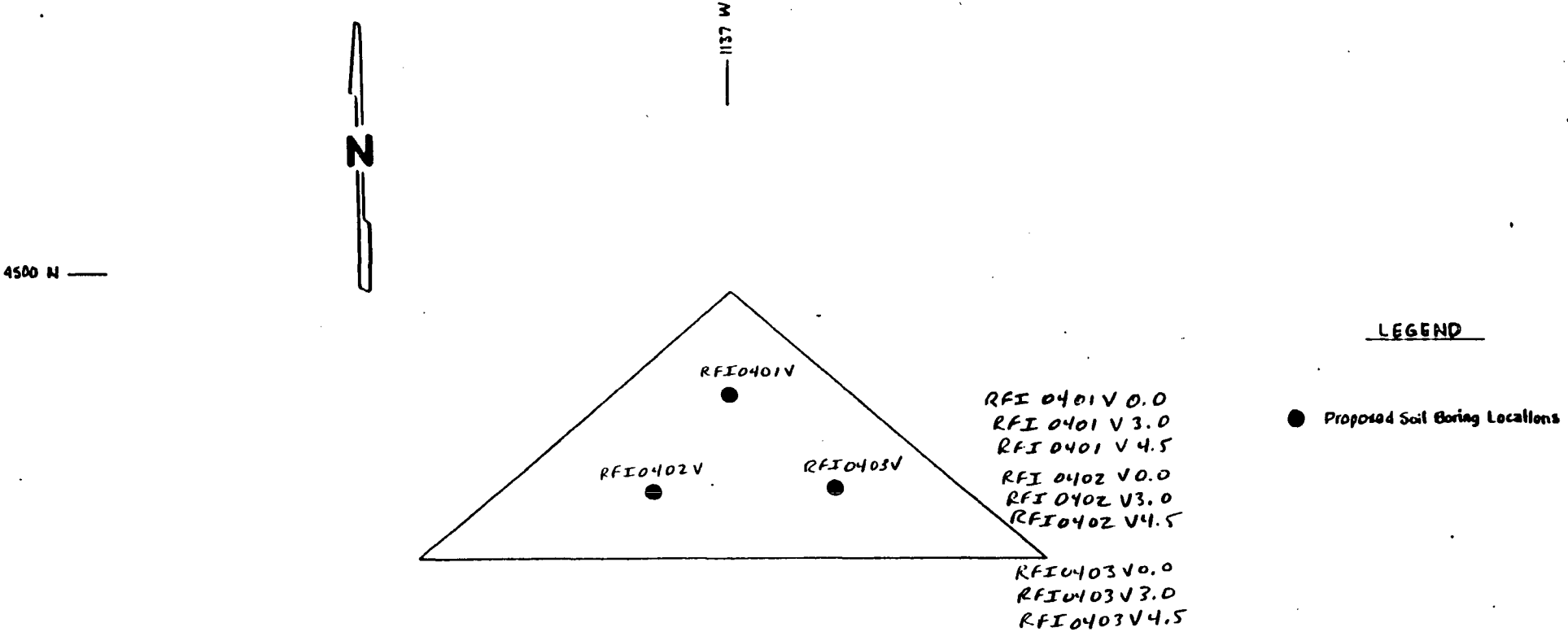
CLIENT SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES: pH	SKINNER LIST	BACKGROUND METALS	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
RFI0401V0.0	5-5	1:20	2				S	1	X	X	X		9206646
RFI0401V3.0	5-5	2:35	OLD				S	1	X	X	X	SEE ATTACHED	9206647
RFI0401V4.5	5-5	2:50	BURN				S	1	X	X	X	LISTS FOR	9206648
RFI0402V0.0	5-5	10:50	PIT				S	1	X	X	X	CONSTITUENTS OF	9206649
RFI0402V3.0	5-5	11:10					S	1	X	X	X	SKINNER LIST	9206650
RFI0402V4.5	5-5	1:00					S	1	X	X	X	AND	9206651
RFI0403V0.0	5-5	3:05					S	1	X	X	X	BACKGROUND	9206652
RFI0403V3.0	5-5	3:20					S	1	X	X	X	METALS.	9206653
RFI0403V4.5	5-5	3:35					S	1	X	X	X		9206654
Travel Blank													9206655

RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	REMARKS
Lynn Shelton	Barbara Patton	5/5/92	1100	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	

622 • White – Laboratory; Yellow – Department Lab File; Pink – Client

12-5-89

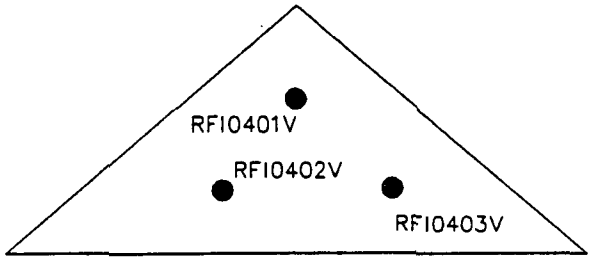
12



GIANT REFINERY Gallup, New Mexico	Burn Pit	FIG.

4(h) 4

REVISION NO. 0
FILE NAME J4211\F01-002.DWG
DATE 10/27/92
DRAWN BY EMH



EXPLANATION

RFI0401V SOIL BORING LOCATIONS

5 0 5 10 FEET

FIGURE 5
SWMU NO.4
OLD BURN PIT

CINIZA REFINERY

PREPARED FOR

GIANT REFINING COMPANY
GALLUP, NEW MEXICO

Applied Environmental

5.1.2 Results

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.

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 Recommendations

Relatively 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

Three soil borings were drilled within the perimeter of the old burn pit using a hand auger to a depth of 4.5 ft (Figure 5). Three soil samples were collected from each of the borings: one was collected from the surface, and one each was sampled from depths of 3 and 4.5 ft.

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.

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 Results

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 (μg/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 μg/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 μg/kg in the 3 and 4.5 ft samples collected from Boring No. 3.

ıd 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.

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 ımples 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 Recommendations

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 SWMU No. 5 LANDFILL AREAS

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,

DATA MANAGEMENT

Sample Location: SWMU #4 Sample Date: 5-5-92

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: M. BARNEY, T. ROGERS

Sampling Method: AUGER

Sample No. RFE0403V0.0 Sample Time/Description: 3:05 PM SOIL
PID 0

Sample No. RFE0403V3.0 Sample Time/Description: 3:20 PM SOIL
PID 0-2000 SCALE 3.2 SAMPLE

Sample No. RFE0403V4.5 Sample Time/Description: 3:35 PM SOIL
PID .8 OUTSIDE 12 SAMPLE

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: BROKEN TERRAIN, SPARSE VEGETATION

Weather Conditions: OVERCAST, OCCASIONAL SPRINKLES, E WIND @ 5-10 mpH. 60°F.

General Field Observations: SPENT FCC CATALYST HAD BLOWN INTO THE LOWLYING AREA AND WAS SCRAPED BACK TO REVEAL ORIGINAL SURFACE FOR SAMPLING. THE BLACK LAYER REQUIRED STEAMING, SOLVENT STEAMING, AND THEN REGULAR WASHING TO GET AUGERS AND EQUIPMENT CLEAN.

Boring Lithology: 0-1' RED & GRAY SAND/CLAY MIXED. SOME SPENT CATALYST FROM DISPOSAL AREA BLOWN IN AND MIXED WITH SAMPLE. 1'-2' VERIGATED RED SOIL. 2-2.5' ORANGE-RUSTY CLAY. 2.5'-3.25' BLACK LAYER W/SOME TAR LIKE MATERIAL. MIXED BLACK & GRAY SOIL TO 4.5' 4.5' → SOLID SANDSTONE

Appendix B

DATA MANAGEMENT

Sample Location: SWMU 4 Sample Date: 5-5-92

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: M. BARNEY, T. ROGERS

Sampling Method: AUGER

Sample No. RFI0402V2 Sample Time/Description: 10:20 AM DRY SOIL PID-0

Sample No. RFI0402V3 Sample Time/Description: 11:10 AM BLACK LAYER PID-4 OUTSIDE 16 SAMPLE

Sample No. RFI0402V4.5 Sample Time/Description: 1:00 PID-4 CUT 84 SAMPLE

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: STEEP SLOPE, MOSTLY RAGE, OCCASIONAL GRADIENT TO 1.5 FT

Weather Conditions: PARTLY SUNNY, 70°F, 10-15 MPH EAST WIND

General Field Observations: STRICT ATTENTION PAID TO PROPER DECONTAMINATION. ALL PID READINGS @ 0-200 RANGE

BLACK LAYER REQUIRED STEAMING, SOLVENT, STEAMING AGAIN AND THEN REGULAR WASHING AND DECONTAMINATION.

Boring Lithology: 0-1' - LOOSE SANDY SOIL - GRAY TO REDDISH BROWN TURNING TO RED CLAY @ .75'. SOME COLOR VERIGATION FROM ROCKS. BLACK LAYER @ 28". SEMI-BRITTLE SOLID W/SOME TAR LIKE MATERIAL TO 39". 39" TO 51" SAND STONE ROCK. 51" TO 54" - LIGHT RED MOIST CLAY W/SOME GRAY COLOR & SOME SAND

DATA MANAGEMENT

Sample Location: SWMU #4 Sample Date: 5-5-92

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: M RAENEY, T ROGERS

Sampling Method: AUGER

Sample No. RFE4010800 Sample Time/Description: 1:20 Pm CLAY
PID 0

Sample No. RFE4010150 Sample Time/Description: 2:35 Pm
PID - 0

Sample No RFE4010145 Sample Time/Description: 2:50 PM
PID - 6 OUTSIDE 0 SAMPLE

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: SLOPED, BARREN GROUND

Weather Conditions: OVERCAST, OCCASIONAL SPRINKLES, 65°F, ENE WIND @ 5-10 MPH

General Field Observations: SMOKE FROM FIRE TRAINING AREA HIT ABOUT 2:49 PM WHILE AUGERING AND LASTED FOR 12 MINUTES. PID READING WENT UP ON OUTSIDE AIR, 0 ON SAMPLE.

Boring Lithology: 0-1' SANDY CLAY TURNING TO MOIST RED CLAY. 1-2' VERIGATED CLAY. 2-2.5' LARGE SANDSTONE ROCK + BAKED CLAY. 2.5'-4.5 RED-GRAY CLAY, MOIST.

Appendix B

TABLE 5.2.2.2

Metals Exceedances Detected in Soil
SWMU NO. 4
Ciniza Refinery

		Metals, Exceedances (%)				
Sample Number	Depth (Ft)	Barium	Chromium	Lead	Nickel	Vanadium
RFI0401V0.0	Surface	--	+17	--	--	--
RFI0401V3.0	3	+218	+80	--	--	--
RFI0401V4.5	4.5	+120	--	--	--	--
RFI0402V0.0	Surface	+17	+20	--	--	--
RFI0402V3.0	3	--	--	--	--	--
RFI0402V4.5	4.5	--	+104	--	+36	--
RFI0403V0.0	Surface	--	+128	+64	+60	+186
RFI0403V3.0	3	--	+80	+48	+68	--
RFI0403V4.5	4.5	--	+140	--	+188	+38

-- Concentrations are within tolerance limit based on statistical analysis of background metals concentrations in the Ciniza Refinery area.

1 Arsenic, Beryllium, Cadmium, and Mercury concentrations were all within the tolerance limit for soil samples analyzed from SWMU No. 4. No 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	1	2	2	2	3	3	3
Sample Depth (ft)	V0.0	V3.0	V4.5	V0.0	V3.0	V4.5	V0.0	V3.0	V4.5
VOCs (µg/kg)									
Toluene	ND	ND	ND	ND	70	ND	ND	67	87
Ethylbenzene	ND	ND	ND	ND	1,000	ND	ND	910	510
Total tylenes	ND	ND	ND	ND	2,100	ND	ND	2,200	1,100
Styrene	ND	ND	ND	ND	420	ND	ND	ND	ND
SVOCs (µg/kg)									
Napthalene	ND	ND	ND	ND	520	ND	ND	ND	ND
Dimethyl phthalate	ND	ND	ND	ND	ND	890	ND	18,000	18,000
Phenanthrene	ND	ND	ND	ND	670	ND	ND	ND	ND
Di-n-bentyl Phthlate	1,500	2,700	1,300	3,000	ND	1,800	ND	ND	ND
Bis (2-ethylhexyl) phthalate	ND	ND	ND	400	ND	ND	ND	ND	ND

ND Not Detected

J4211\102792.T1

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 NMD.....211

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.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

JAN 7 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:

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 Dinita

for 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.

#4

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

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.

SWMU #4, The Fire Training Area

Giant shall complete angled 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

GIANT

DATE: February 3, 1994

TO: David Pavlich
Kim Bullerdick

FROM: Lynn Shelton LS

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	11	Secondary Oil Skimmer
12	14	13	Wastewater Collection
13	14	13	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

GIANT REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

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 Quarterly Progress Report 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

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

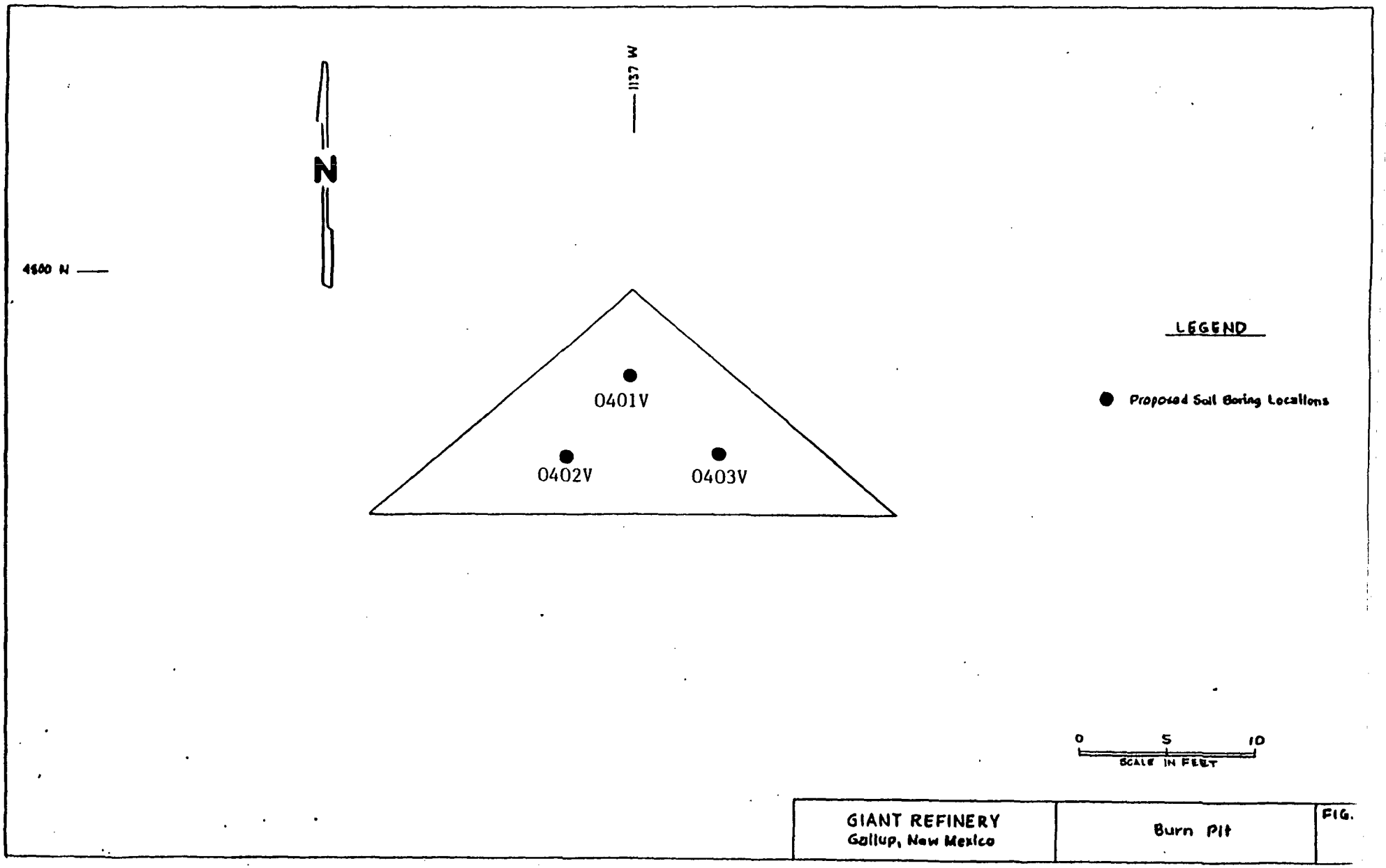
Sincerely,

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



GIANT REFINERY Gallup, New Mexico	Burn Pit	FIG.

PHASE III, RFI 1992
GIANT REFINING
CINIZA

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'	V0.0'	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	ND	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	ND
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	ND
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

SAMPLE POINT		03	03	03
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT
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
1,4-Dioxane	ug/kg	ND	ND	ND
Styrene	ug/kg	ND	ND	ND

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #4- "Old Burn Pit"

8270-Semi-Volatiles

SAMPLE POINT		01	01	01	02	02	02
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5'	V0.0'	V3.0'	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	ND	ND	ND	ND
2,4-Dimethylphenol	ug/kg	ND	ND	ND	ND	ND	ND
Naphthalene	ug/kg	ND	ND	ND	ND	520	ND
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	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

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #4- "Old Burn Pit"

8270-Semi-Volatiles

SAMPLE POINT		03	03	03
SAMPLE DEPTH (feet)		V0.0'	V3.0'	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

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #4- "Old Burn Pit"

Total Metals

SAMPLE POINT		01	01	01	02	02	02
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5'	V0.0'	V3.0'	V4.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Arsenic	mg/kg	ND	ND	ND	ND	ND	ND
Barium	mg/kg	380	1300	900	480	360	160
Beryllium	mg/kg	ND	ND	ND	ND	ND	ND
Cadmium	mg/kg	ND	ND	ND	ND	ND	ND
Chromium	mg/kg	9.8	15	6.2	10.0	3.2	17
Lead	mg/kg	9.5	12	10	13.0	16.0	11
Mercury	mg/kg	ND	ND	ND	ND	ND	ND
Nickel	mg/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	mg/kg	ND	ND	ND
Barium	mg/kg	120	290	110
Beryllium	mg/kg	ND	ND	ND
Cadmium	mg/kg	ND	ND	ND
Chromium	mg/kg	19	15	20
Lead	mg/kg	30	27	18
Mercury	mg/kg	ND	ND	ND
Nickel	mg/kg	20	21	36
Vanadium	mg/kg	58	ND	29

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #4- "Old Burn Pit"

pH

SAMPLE POINT		01	01	01	02	02	02
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5'	V0.0'	V3.0'	V4.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
pH	S.U.	7.5	7.2	7.8	8.1	2.2	7.3

pH

SAMPLE POINT		03	03	03
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT
pH	S.U.	2.2	7.1	4.2

Westech Laboratories Inc.

1992

Phoenix • 3737 E. Broadway Rd. • AZ 85040 • (602) 437-1080 • fax 437-8706
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

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS
GIANT REFINING CO.	Rt 3 BOX 7 GALLUP, NM
TELEPHONE: (505) 72[illegible]47	PROJECT: RFI PHASE III
	JOB / P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): Lynn Shelton
SAMPLER (PLEASE PRINT): LYNN SHELTON

SAMPLE TYPE CODES: S – Soil, W – Water, O – Oil, G – Sludge, T – Travel Blank, F – Field Blank, X – Other

CLIENT SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES: pH	SKINNER LIST	BACKGROUND METALS	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
RFI0401V0.0	5-5	1:20	)				S	1	X	X	X		
RFI0401V3.0	5 5	2:35	OLD				S	1	X	X	X	SEE ATTACHED	
RFI0401V4.5	5-5	2:50	BURN				S	1	X	X	X	LISTS FOR	
RFI0402V0.0	5-5	10:50	PIT				S	1	X	X	X	CONSTITUENTS OF	
RFI0402V3.0	5-5	11:10					S	1	X	X	X	SKINNER LIST	
RFI0402V4.5	5-5	1:00					S	1	X	X	X	AND	
RFI0403V0.0	5-5	3:05					S	1	X	X	X	BACKGROUND	
RFI0403V3.0	5-5	3:20					S	1	X	X	X	METALS.	
RFI0403V4.5	5 5	3:35					S	1	X	X	X		

RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	REMARKS
Lynn Shelton				
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SI[redacted]E)	RECEIVED BY (SIGNATURE)	DA[redacted]	TIME	

Westech Laboratories Inc.

1992

CHAIN OF CUSTODY RECORD

Phoenix • 3737 E. Broadway Rd. • AZ 85040 • (602) 437-1080 • fax 437-8706
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

CLIENT	ADDRESS
GIANT REFINING CO.	Rt 3 BOX 7
TELEPHONE	GALLUP, NM
(505) 722 0227	PROJECT: RFI PHASE III / JOB/P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): Lynn Shelton
SAMPLER (PLEASE PRINT): LYNN SHELTON

Sample Type Codes: S – Soil, G – Sludge, X – Other, W – Water, T – Travel Blank, O – Oil, F – Field Blank

CLIENT SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES: pH	SKINNER LIST	BACKGROUND METALS	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
RFI0401V0.0	5-5	1:20	2				S	1	X	X	X		9206646
RFI0401V3.0	5-5	2:35	OLD				S	1	X	X	X	SEE ATTACHED	9206647
RFI0401V4.5	5-5	2:50	BURN				S	1	X	X	X	LISTS FOR	9206648
RFI0402V0.0	5-5	10:50	PIT				S	1	X	X	X	CONSTITUENTS OF	9206649
RFI0402V3.0	5-5	11:10					S	1	X	X	X	SKINNER LIST	9206650
RFI0402V4.5	5-5	1:00					S	1	X	X	X	AND	9206651
RFI0403V0.0	5-5	3:05					S	1	X	X	X	BACKGROUND	9206652
RFI0403V3.0	5-5	3:20					S	1	X	X	X	METALS.	9206653
RFI0403V4.5	5-5	3:35					S	1	X	X	X		9206654
Travel Blank													9206655

RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	REMARKS
Lynn Shelton	Barbara Sutton	5/5/92	1100	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	

623 • White • to Laboratory; Yellow - Department Job File; Pink - Client

INTEROFFICE
MEMORANDUM

GIANT

Date: June 16, 1992

To: Zeke Sherman

From: Lynn Shelton LS

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

RFI WORKPLAN PHASE III 1992

May 4, 1992

Training Load Equipment SWMU Site Tour		8:00 - 4:15

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 Training Area	12 Samples
SWMU #11	Secondary Oil Skimmer	4 Samples

May 8, 1992

SWMU #5	Land Fill Area	48 Samples

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: SWMU #4 Sample Date: 5-5-92

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: M BARNEY, T. ROGERS

Sampling Method: AUGER

Sample No. RFI04OI1W0.0 Sample Time/Description: 1:20 PM CLAY
PID 0

Sample No. RFI04OIV3.0 Sample Time/Description: 2:35 PM
PID - 0

Sample No RFI04OIV4.5 Sample Time/Description: 2:50 PM
PID - 6 OUTSIDE 0 SAMPLE

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: SLOPED, BARREN GROUND

Weather Conditions: OVERCAST, OCCASIONAL SPRINKLES, 65°F, ENE WIND @ 5-10 MPH

General Field Observations: SMOKE FROM FIRE TRAINING AREA HIT ABOUT 2:49 PM WHILE AUGERING AND LASTED FOR 12 MINUTES. PID READING WENT UP ON OUTSIDE AIR, 0 ON SAMPLE.

Boring Lithology: 0-1' SANDY CLAY TURNING TO MOIST RED CLAY. 1-2' VERIGATED CLAY. 2-2.5' LARGE SANDSTONE ROCK + BAKED CLAY. 2.5'-4.5 RED-GRAY CLAY, MOIST.

DATA MANAGEMENT

Sample Location: SUMP 4 Sample Date: 5-5-92

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: M BARNEY, T. ROGERS

Sampling Method: AUGER

Sample No. RFI040ZV2 Sample Time/Description: 10:30 AM DRY SOIL PID-0

Sample No. RFI040ZV3 Sample Time/Description: 11:10 AM BLACK LAYER PID - 4 OUTSIDE 16 SAMPLE

Sample No. RFI040ZV4 Sample Time/Description: 1:00 PID-4 OUT 8.4 SAMPLE

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: STEEP SLOPE, MOSTLY BARE, OCCASIONAL GROWTH TO 1' FT

Weather Conditions: PARTLY SUNNY, 70°F, 10-15 MPH EAST WIND

General Field Observations: STRICT ATTENTION PAID TO PROPER DECONTAMINATION. ALL PID READINGS @ 0-200 RANGE

BLACK LAYER REQUIRED STEAMING, SOLVENT, STEAMING AGAIN AND THEN REGULAR WASHING AND DECONTAMINATION.

Boring Lithology: 0-1' - LOOSE SANDY SOIL - GRAY TO REDDISH BROWN TURNING TO RED CLAY @ .75'. SOME COLOR VERIGATION FROM ROCKS. BLACK LAYER @ 20". SEMI-BRITTLE SOLID W/SOME TAR LIKE MATERIAL TO 39". 39" TO 51" SAND STONE ROCK. 51" TO 54" - LIGHT RED MOIST CLAY W/SOME GRAY COLOR & SOME SAND

DATA MANAGEMENT

Sample Location: SWMU #4 Sample Date: 5-5-92

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: M. BARNEY, T. ROGERS

Sampling Method: AUGER

Sample No. RFI0403V0.0 Sample Time/Description: 3:05 PM SOIL
PID 0

Sample No. RFI0403V3.0 Sample Time/Description: 2:20 PM SOIL
PID 0-2000 SCALE 3.2 SAMPLE

Sample No. RFI0403V4.3 Sample Time/Description: 3:35 PM SOIL
PID .8 OUTSIDE 12 SAMPLE

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: BROKEN TERRAIN, COARSE VEGETATION

Weather Conditions: OVERCAST, OCCASIONAL SPRINKLES, E WIND @ 5-10 mph. 60°F.

General Field Observations: SPENT FCC CATALYST HAD BLOWN INTO THE LOWLYING AREA AND WAS SCRAPED BACK TO REVEAL ORIGINAL SURFACE FOR SAMPLING. THE BLACK LAYER REQUIRED STEAMING, SOLVENT STEAMING, AND THEN REGULAR WASHING TO GET AUGERS AND EQUIPMENT CLEAN.

Boring Lithology: 0-1' RED & GRAY SAND/CLAY MIXED. SOME SPENT CATALYST FROM DISPOSAL AREA BLOWN IN AND MIXED WITH SAMPLE. 1'-2' VERIGATED RED SOIL. 2-2.5' ORANGE-RUSTY CLAY. 2.5'-3.25' BLACK LAYER W/SOME TAR LIKE MATERIAL. MIXED BLACK & GRAY SOIL TO 4.5' 4.5' → SOLID SANDSTONE

TABLE 2

Field Equipment Checklist
Soil and Sludge Sampling

5-5-92

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~~ 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	

JLS

GIANT REFINING CO.

THIS COPY OF MY LETTER TO KAREN LISTS THE SPECIFIC ANALYSIS BY SWMU.

Lynn

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	12 Samples
	1 Duplicate
	1 Trip Blan
SWMU #4	
pH	9 Samples
Skinner List Organics	1 Duplicate
Background Metals	1 Trip Blar
	1 Equipment
SWMU #5	
pH	48 Samples
8240 Priority Pollutants	3 Duplicat
Background Metals	2 Trip Bla
	2 Equipmen
SWMU #7	
Total Petroleum Hydrocarbon (TPH)	12 Samples
Oil and Grease	1 Duplicate
	1 Trip Blank
SWMU #11	
Skinner List Organics	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-

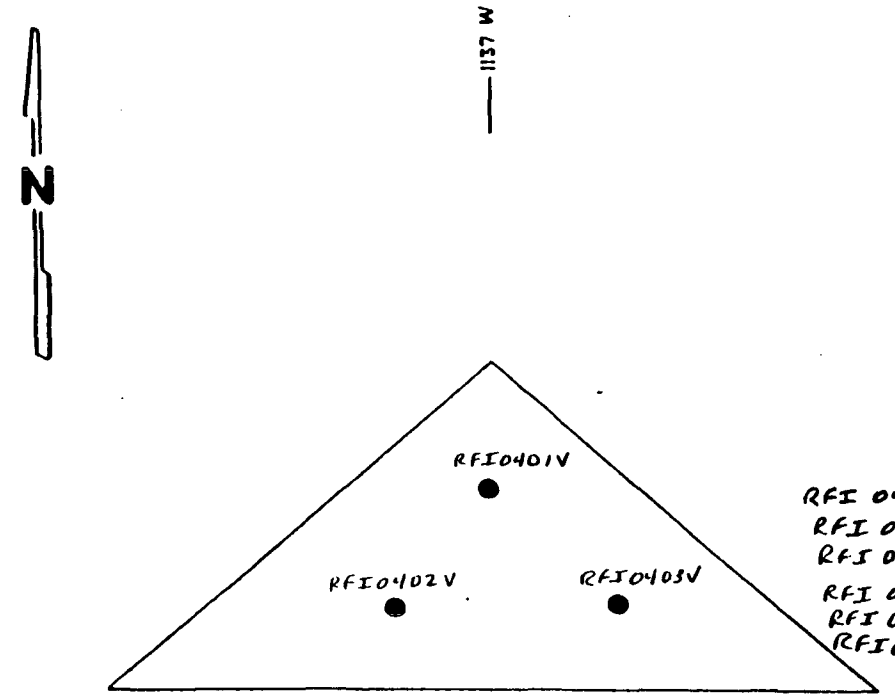
I'VE ATTACHED LISTS OF SPECIFIC CONSTITUENTS FOR THE SKINNER LIST, PRIORITY POLLUTANTS, AND BACK GROUND METALS.

THANKS-

Lynn

12-5-89

12



RFI 0401 V 0.0
RFI 0401 V 3.0
RFI 0401 V 4.5
RFI 0402 V 0.0
RFI 0402 V 3.0
RFI 0402 V 4.5
RFI 0403 V 0.0
RFI 0403 V 3.0
RFI 0403 V 4.5

LEGEND

● Proposed Soil Boring Locations

0 5 10
SCALE IN FEET

GIANT REFINERY Gallup, New Mexico	Burn Pit	FIG.

4 (4) 4

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.

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.

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

GIANT

DATE: June 28, 1994

TO: David Pavlich

FROM: Lynn Shelton LLS

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	Costs Sampling	Analysis
3	6.0', 10.0'	$475	$7,026

II. **SWMU #5 Landfill Areas**

Borings	Depths	Costs Sampling	Analysis
9	11.0', 16.0, 20.0'	$2,848	$21,525

III. **SWMU #6 Tank Farm**

Borings	Depths	Costs Sampling	Analysis
8	16.0', 20.0'	$2,531	$1,000

IV. **SWMU #7 Fire Training Area**

Borings	Depths	Costs Sampling	Analysis
2	7.0', 11.0'	$348	$400

V. **SWMU #10 Sludge Pits**

Borings	Depths	Costs Sampling	Analysis
18	19.0', 25.0'	$7,119	$18,450

VI. **SWMU #11 Secondary Oil Skimmer**

Borings	Depths	Costs: Sampling	Costs: Analysis
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

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.

SWMU #1 - 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.

SWMU #3 - 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.

SWMU #5 - Landfill Areas

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

SWMU #6 - 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.

SWMU #7 - 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.

SWMU #9 - 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

1994 Analytical Costs

SWMU #	SAMPLES REQUIRED	ANALYSIS	COST
1	30	8240	$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
4	6	8240	1,800
		8270	2,970
		Metals	2,250
		pH	60
5	21	8240	6,300
		8270	10,395
		Metals	4,830
6	8	BTEX	1,000
7	4	TPH	200
		Oil & Grease	200
8	50	8240	15,000
		8270	24,750
10	18	8240	5,400
		8270	8,910
		Metals	4,140
11	4	8240	1,200
		8270	1,980
13	12	8240	3,600
		8270	5,940
		Total Analytical Cost 1994 Only	$119,245

TABLE 4

BIENNIAL ANALYTICAL COST

SWMU #	SAMPLES REQUIRED	ANALYSIS	COST
1	30	8240	$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
13	12	8240	8,600
		8270	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
	$119,245	$94,600	$213,845

* 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.

1994

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 Methods

Three soil borings were drilled within the perimeter of the old burn pit using a CME drilling rig with a 2¼" 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

List); and Total Metals. Analytical results are summarized below and are also presented in tabulated form in the appendices.

4.1.2 Results

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 Recommendations

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 SWMU No. 5 - Landfill Areas

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 Methods

Seven soil borings were drilled, as extensions of previous RFI borings, with a CME drilling rig using a 2½" 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 Results

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 Recommendations

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 Methods

Seven borings were made, as extension of previous RFI borings, with a CME drilling rig using a 2½" 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 Results

Elevated levels of VOCs were detected in most samples. Two tanks in particular showed high 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. As previously mentioned, 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 Recommendations

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 SWMU No. 7 - Fire Training Area

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 Methods

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 Results

No VOCs were detected in SWMU No. 7. An SVOC (di-n-butyl phthalate) was detected in two samples (RFI 0705A11.OD and RFI 0706A7.0). No concentrations of Total Petroleum Hydrocarbon or Oil & Grease were detected in this SWMU.

4.4.3 Recommendations

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 SWMU No. 10 - Sludge Pits

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 Methods

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 2½" 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 Results

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, and nickel 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 Recommendations

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.

4.6 SWMU No. 11 - Secondary Skimmer

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 Methods

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 2½" 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 Results

Two VOCs (ethylbenzene and xylenes) were detected in two borings: RFI 1104V6.0 and RFI 1104V10.0. No SVOCs were detected.

4.6.3 Recommendations

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.

RFI COMPLIANCE DATA GIANT REFINING COMPANY – CINIZA

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

PARAMETER	DETECTION LIMIT	CORING NUMBER 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	2.5	<2.5	<2.5	<2.5
Chromium	2.5	5.2	10	9.9
Lead	5.0	12	15	13
Mercury	0.25	<0.25	<0.25	<0.25
Arsenic	2.5	<2.5	<2.5	<2.5
Barium	5.0	230	150	220
Beryllium	2.5	<2.5	<2.5	<2.5
Nickel	2.5	9.2	18	9.5
Vanadium	2.5	4.0	6.4	4.6

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GIANT REFINING COMPANY CINIZA

SWMU #4 8240/8260 SKINNER LIST

PARAMETER	DETECTION LIMIT	CORING NUMBER 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

PARAMETER	DETECTION LIMIT	05V10.0	06V6.0	06V10.0
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

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GIANT REFINING COMPANY CINIZA

SWMU #4 8270 SKINNER LIST

PARAMETER	DETECTION LIMIT	CORING NUMBER 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) 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

TLS 9/94

GIANT REFINING COMPANY CINIZA

SWMU #4 8270 SKINNER LIST, cont.

PARAMETER	DETECTION LIMIT	05V10.0	06V6.0	06V10.0
Anthracene	5.0	<5.0	<5.0	<5.0
Benzenethiol	5.0	<5.0	<5.0	<5.0
Benzo(a)anthracene	5.0	<5.0	<5.0	<5.0
Benzo(b)flouranthene	5.0	<5.0	<5.0	<5.0
Benzo(k)flouranthene	5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene	5.0	<5.0	<5.0	<5.0
Bis(2-ethylhexyl) phthalate	5.0	<5.0	<5.0	<5.0
Butyl Benzyl phthalate	5.0	<5.0	<5.0	<5.0
Chrysene	5.0	<5.0	<5.0	<5.0
Dibenz(a,j)acridine	5.0	<5.0	<5.0	<5.0
Dibenzo(a,h)anthracene	5.0	<5.0	<5.0	<5.0
Di-n-btyl phthalate	5.0	<5.0	<5.0	<5.0
1,2-Dichlorobenzene	5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene	5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene	5.0	<5.0	<5.0	<5.0
Diethyl phthalate	5.0	<5.0	<5.0	<5.0
7,12-Dimethylbenz(a) anthracene	5.0	<5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0	<5.0
Dimethyl phthalate	5.0	<5.0	<5.0	<5.0
2,4-Dinitrophenol	25.0	<25.0	<25.0	<25.0
Di-n-octyl phthalate	5.0	<5.0	<5.0	<5.0
Flouranthene	5.0	<5.0	<5.0	<5.0
Indene	5.0	<5.0	<5.0	<5.0
Methylchrysene	5.0	<5.0	<5.0	<5.0
1-Methylnaphthalene	5.0	<5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0	<5.0
3-Methylphenol	5.0	<5.0	<5.0	<5.0
4-Methylphenol	5.0	<5.0	<5.0	<5.0
Naphthalene	5.0	<5.0	<5.0	<5.0
4-Nitrophenol	25.0	<25.0	<25.0	<25.0
Phenanthrene	5.0	<5.0	<5.0	<5.0
Phenol	5.0	<5.0	<5.0	<5.0
Pyrene	5.0	<5.0	<5.0	<5.0
Pyroline	10.0	<10.0	<10.0	<10.0
Quinoline	25.0	<25.0	<25.0	<25.0

TLS 9/94

SWMU No. 5, *Landfill Areas*

In 1987, five inactive solid waste landfill areas were identified as a solid waste management unit (SWMU) during a Resource Conservation and Recovery Act (RCRA) facility assessment (RFA) conducted at the Giant Refining Company—Ciniza Refinery (Ciniza). No further action was recommended at one site, but further evaluation was required at the other four landfill areas. In the early 1990s, a subsequent RCRA facility investigation (RFI) designated these four inactive solid waste landfill 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. Environmental Protection Agency (EPA) requested additional sampling at greater depth. Results confirmed previous findings.

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.

5.1 Site Description and Operational History

SWMU No. 5, Landfill Areas, (Figure 5-1, 5-2, 5-3) is located northwest of the Ciniza tank farm, approximately 500 feet from Tank 337 (midway between the tank farm and airstrip). Three of the landfill areas are contiguous, and the fourth is located approximately 50 feet north of the main landfill area. 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. Photographs of the landfill areas, taken during the 1998 site inspection performed by Practical 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.

5.2 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.

5.3 Investigation Activities

Applied Earth Sciences (AES) investigated the landfill areas during the early 1990s. 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 indicated levels slightly above ambient background concentration. One surface soil sample indicated an elevated chromium concentration. As a result of the investigation, AES recommended capping these areas.

5.4 Site Conceptual Model

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

5.5 Site Assessments

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 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 a 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 that 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 that routes 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 feet in other areas.

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:

- 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.
- A post-closure care program is being implemented.

5.6 NFA Proposal

Ciniza is proposing that no further action is required for SWMU No. 5 based on the following criteria:

- 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 (closed) 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 supporting this proposal for NFA is based on the Landfill Areas – SWMU No. 5 Closure 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 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 these 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 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.

Ciniza continues to maintain the closed site based on the post-closure care program:

- 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.

At the end of the five year post-closure care period, the site shall be inspected to confirm compliance with regulations and successful reclamation.

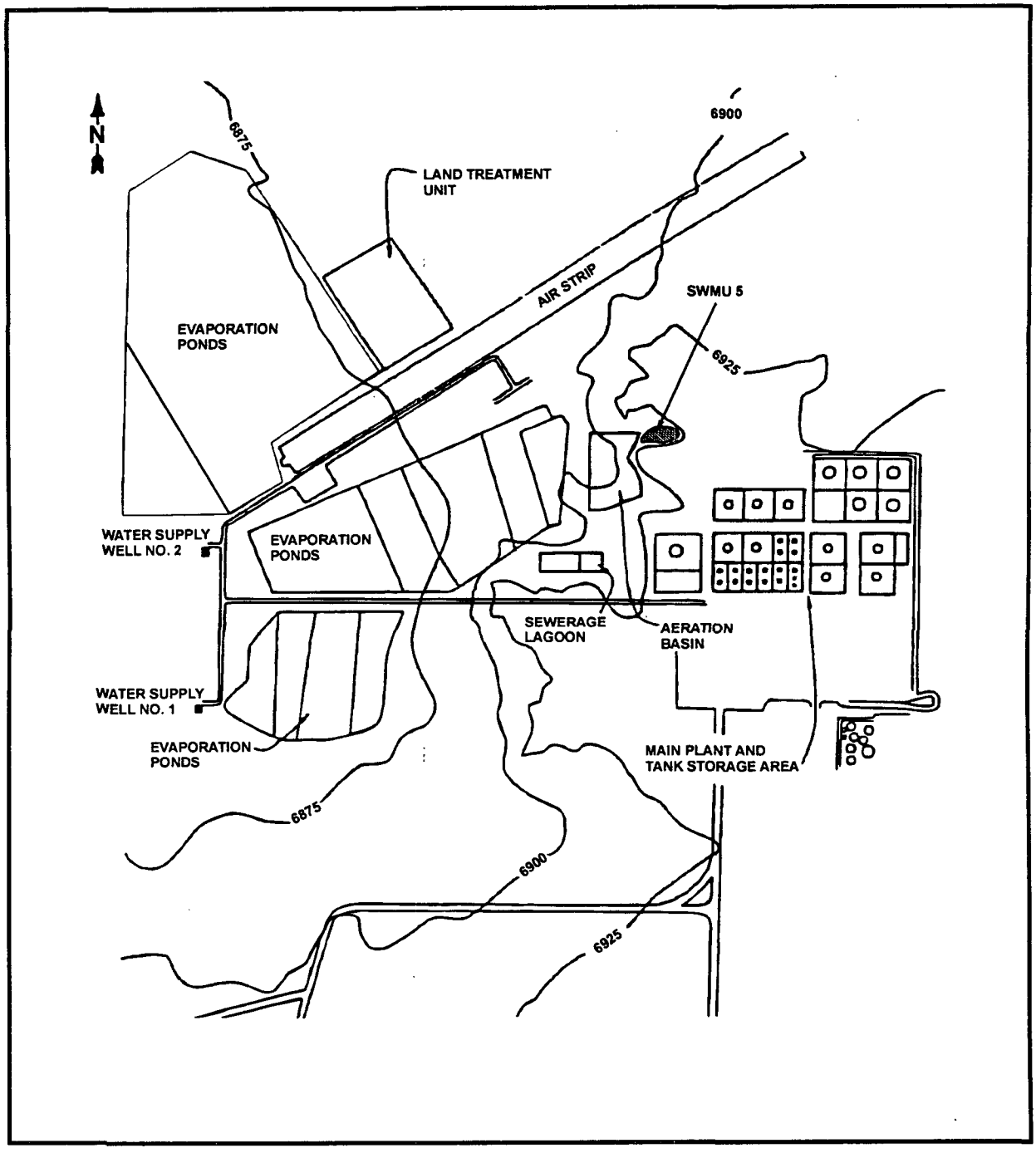


Figure 5-1. SWMU No. 5, Landfill Areas

Figure 5-2. SWMU No. 5, Landfill Area

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.

- ⇒ 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.
- ⇒ 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 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

Landfill Location Reference – Tank Farm

Landfill Site Prior To Cap Installation

Side Slope Construction

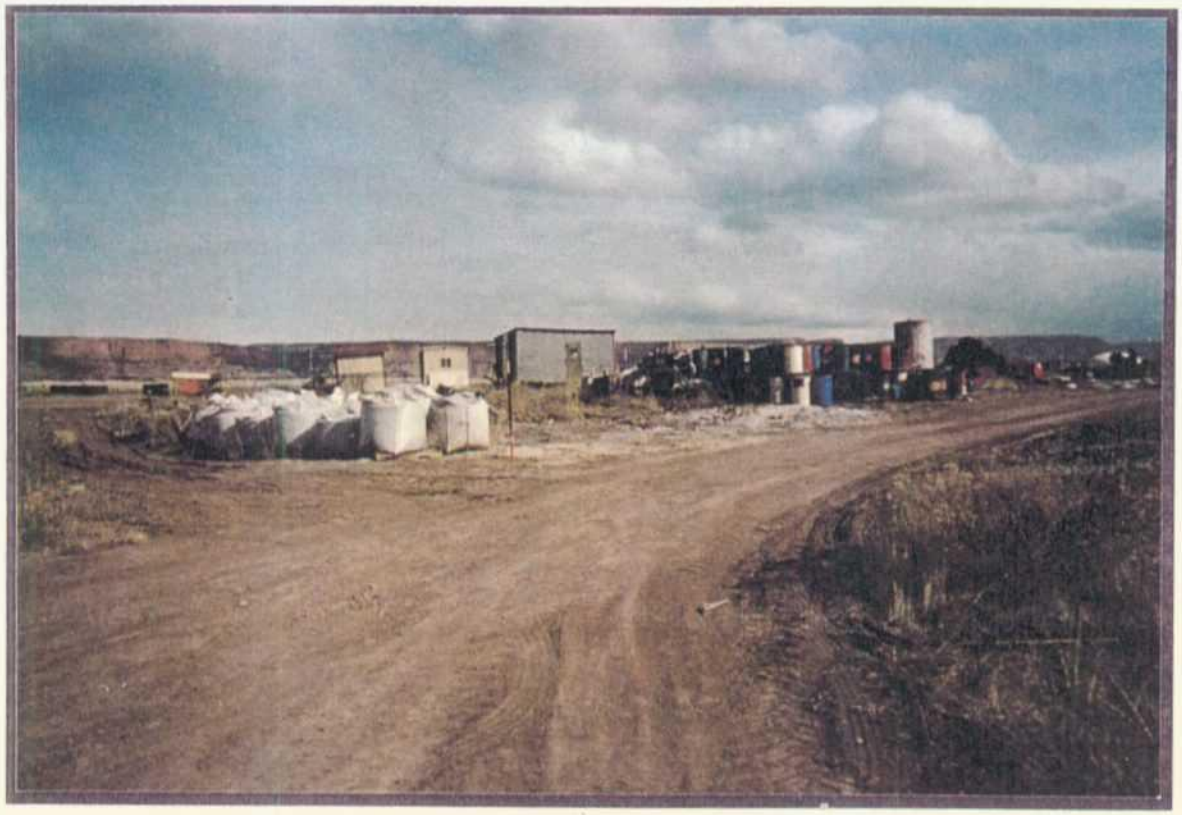
Side Slope Profile

Clean Soil Being Trucked To Site

Soil Layer Placement

Access Road Being Removed From Site

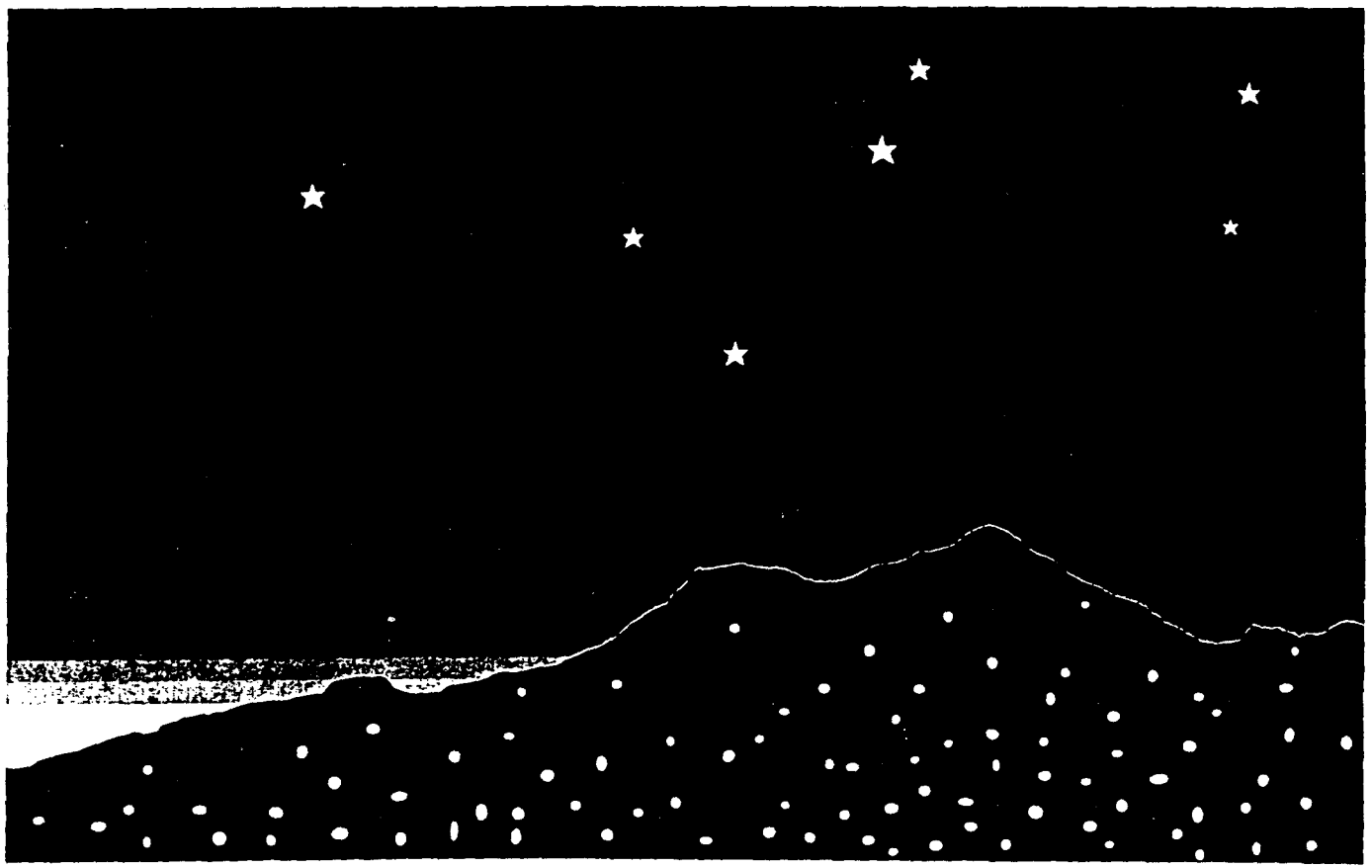
View of Landfill Site From Lower Flat



View of Adjacent Equipment Laydown Area

View of Storage Trailers

SWMU-5 LANDFILL AREA



SWMU # 3 - EMPTY CONTAINER STORAGE AREA

PARAMETERS - 8240 PRIORITY POLLUTANTS

12 SAMPLES

SWMU # 4 - BURN PIT

PARAMETERS - pH

[redacted] SKINNER LIST ORGANICS

BACK GROUND METALS

9 SAMPLES

SWMU #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 - [redacted] SKINNER LIST (CONSTITUENTS ORGANICS)

4 SAMPLES

85 INDIVIDUAL SAMPLES

FACSIMILE TRANSMITTAL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

MULTIMEDIA PERMITTING AND PLANNING DIVISION

NEW MEXICO AND FEDERAL FACILITIES SECTION

PLEASE PRINT IN BLACK INK ONLY

TO:	Ed Horst, Environmental Manager - Giant Refining Company, Ciniza
MACHINE NUMBER: 505.722.0210	VERIFICATION NUMBER: 505.722.0227
FROM: James A. Harris, Jr., RCRA Facility Manager/Geologist	
PHONE: (214) 665-8302	Mail Code: 6PD-N
OFFICE: New Mexico/Federal Facilities Section	PAGES, INCLUDING COVER SHEET: 3
DATE: March 15, 1996	

PLEASE NUMBER ALL PAGES

INFORMATION FOR SENDING FACSIMILE 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 Giant, Ciniza's corrective action progress. Please review and let's discuss it next week. Have a good one.

Thanx,

JAMES

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

Prepared by: James A. Harris, Jr.\6WPH as at March 15, 1996

GIANT
INDUSTRIES, INC.

Route 3, Box 7
Gallup, New Mexico
87301

January 6, 1995

FILE COPY

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 Generic Sampling Plan (May 17, 1990). 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.

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.

Response:

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.

Response:

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.

Response:

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.

Response:

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.

Response:

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 Report on the Additional RFI Sampling, October, 1994. 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

TLS\WH-RCRA

BORING LOG
RFI Project 1995
Boring ID Number:
Date:

GIANT – CINIZA
Logged by:
Drilled by:
Total Depth:

Description (Include odors and discoloration of soil)	Depth	Symbol	Sample	PID (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			
	24.0			
	26.0			
	28.0			
	30.0			
	32.0			
	34.0			
	36.0			
	38.0			
	40.0			

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

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,

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.

GIANT
INDUSTRIES, INC.

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 J. Stokes
Refinery Manager

JJS:tls

cc: Kim Bullerdick, Corporate Counsel
Giant Industries Arizona, Inc.
David Pavlich, HSE Manager
Giant Refining Co.

INTEROFFICE
MEMORANDUM

GIANT

DATE: June 28, 1994

TO: David Pavlich

FROM: Lynn Shelton LLS

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	Costs: Sampling	Costs: Analysis
3	6.0', 10.0'	$475	$7,026

II. **SWMU #5 Landfill Areas**

Borings	Depths	Costs: Sampling	Costs: Analysis
9	11.0', 16.0, 20.0'	$2,848	$21,525

III. **SWMU #6 Tank Farm**

Borings	Depths	Costs: Sampling	Costs: Analysis
8	16.0', 20.0'	$2,531	$1,000

IV. **SWMU #7 Fire Training Area**

Borings	Depths	Costs: Sampling	Costs: Analysis
2	7.0', 11.0'	$348	$400

V. **SWMU #10 Sludge Pits**

Borings	Depths	Costs: Sampling	Costs: Analysis
18	19.0', 25.0'	$7,119	$18,450

VI. **SWMU #11 Secondary Oil Skimmer**

Borings	Depths	Costs: Sampling	Costs: Analysis
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

GIANT REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

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 Quarterly Progress Report 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

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

GIANT

DATE: February 3, 1994

TO: David Pavlich
Kim Bullerdick

FROM: Lynn Shelton LHS

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	11	Secondary Oil Skimmer
12	14	13	Wastewater Collection
13	14	13	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.

SWMU #1 - 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.

SWMU #3 - 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.

SWMU #5 - Landfill Areas

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

SWMU #6 - 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.

SWMU #7 - 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.

SWMU #9 - 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.

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.

SWMU #12 - 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.

SWMU #13 - 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

SWMU #	SAMPLES REQUIRED	ANALYSIS	COST
1	30	8240	$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
4	6	8240	1,800
		8270	2,970
		Metals	2,250
		pH	60
5	21	8240	6,300
		8270	10,395
		Metals	4,830
6	8	BTEX	1,000
7	4	TPH	200
		Oil & Grease	200
8	50	8240	15,000
		8270	24,750
10	18	8240	5,400
		8270	8,910
		Metals	4,140
11	4	8240	1,200
		8270	1,980
13	12	8240	3,600
		8270	5,940
		Total Analytical Cost 1994 Only	$119,245

TABLE 4

BIENNIAL ANALYTICAL COST

SWMU #	SAMPLES REQUIRED	ANALYSIS	COST
1	30	8240	$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
13	12	8240	8,600
		8270	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
	$119,245	$94,600	$213,845

* 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

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,

Jack Dinita

for 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

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.

SWMU #4, The Fire Training Area

Giant shall complete angled 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

GIANT

DATE: June 28, 1994

TO: David Pavlich

FROM: Lynn Shelton LLS

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	Costs: Sampling	Costs: Analysis
3	6.0', 10.0'	$475	$7,026

II. **SWMU #5** **Landfill Areas**

Borings	Depths	Costs: Sampling	Costs: Analysis
9	11.0', 16.0, 20.0'	$2,848	$21,525

III. **SWMU #6** **Tank Farm**

Borings	Depths	Costs: Sampling	Costs: Analysis
8	16.0', 20.0'	$2,531	$1,000

IV. **SWMU #7** **Fire Training Area**

Borings	Depths	Costs: Sampling	Costs: Analysis
2	7.0', 11.0'	$348	$400

V. **SWMU #10** **Sludge Pits**

Borings	Depths	Costs: Sampling	Costs: Analysis
18	19.0', 25.0'	$7,119	$18,450

VI. **SWMU #11 Secondary Oil Skimmer**

Borings	Depths	Costs: Sampling	Costs: Analysis
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

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.

SWMU #4, The Fire Training Area

Giant shall complete angled 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.

BORING LOG

PROJECT: 622092005-254 (TBL-A1)
CLIENT:
BORING NUMBER: TBL-A1
EXCAVATED POND: N/A
FIRST ENCOUNTERED WATER: N/A
DATE COMPLETED: 01/28/93

SHEET: 1 of 1
DRILLED BY: Precision Eng.
LOGGED BY: PWC
SURF. ELEV: N/A
TOTAL DEPTH: 6.0'

DESCRIPTION

0-3.0' SANDY CLAY mixed with OILY SLUDGE, stained black by hydrocarbon products, moist, sticky, strong hydrocarbon odor decreasing slightly with depth. PID 25 ppm.

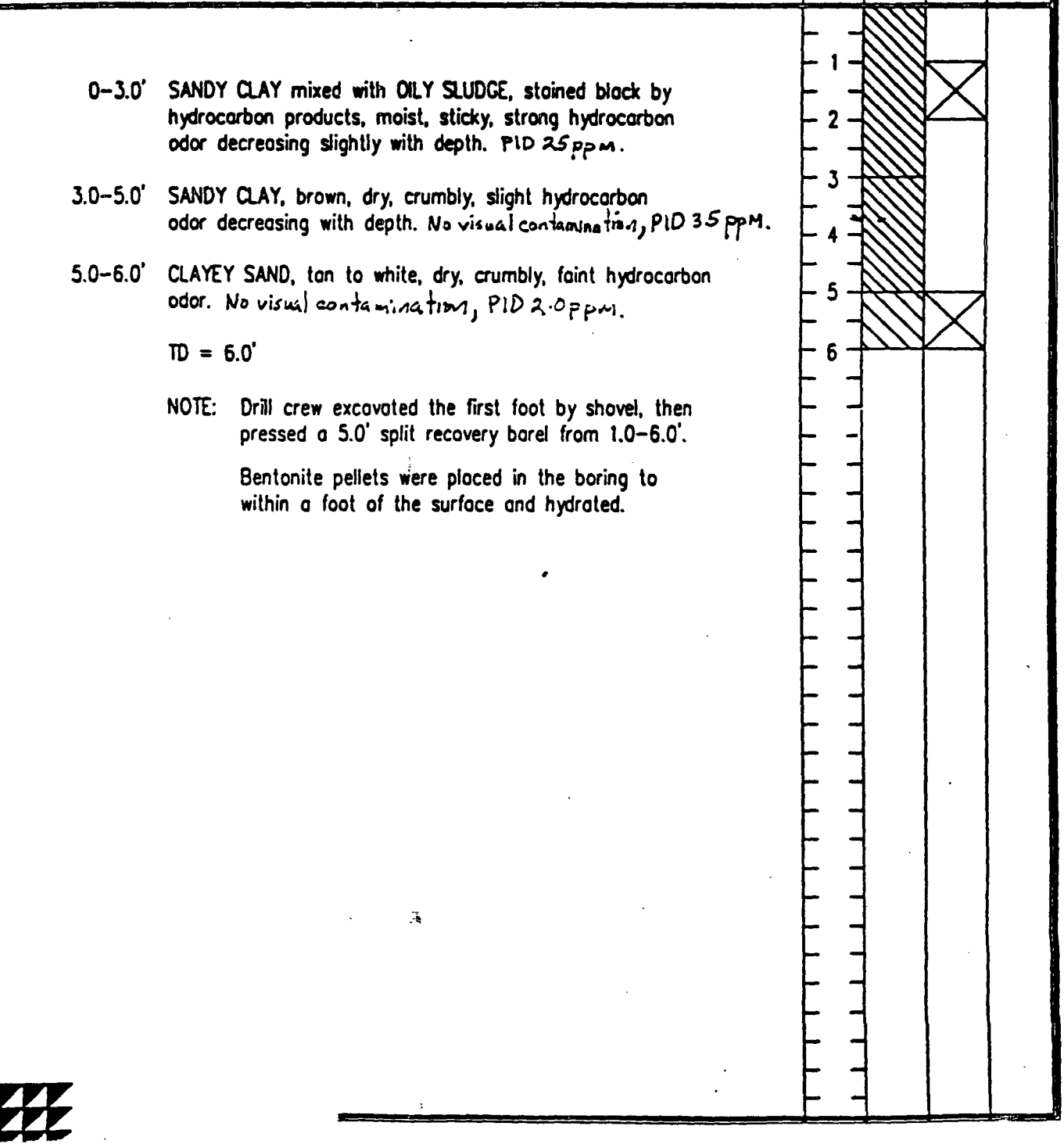
3.0-5.0' SANDY CLAY, brown, dry, crumbly, slight hydrocarbon odor decreasing with depth. No visual contamination, PID 35 ppm.

5.0-6.0' CLAYEY SAND, tan to white, dry, crumbly, faint hydrocarbon odor. No visual contamination, PID 2.0 ppm.

TD = 6.0'

NOTE: Drill crew excavated the first foot by shovel, then pressed a 5.0' split recovery barel from 1.0-6.0'.

Bentonite pellets were placed in the boring to within a foot of the surface and hydrated.



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 NMD.....211

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

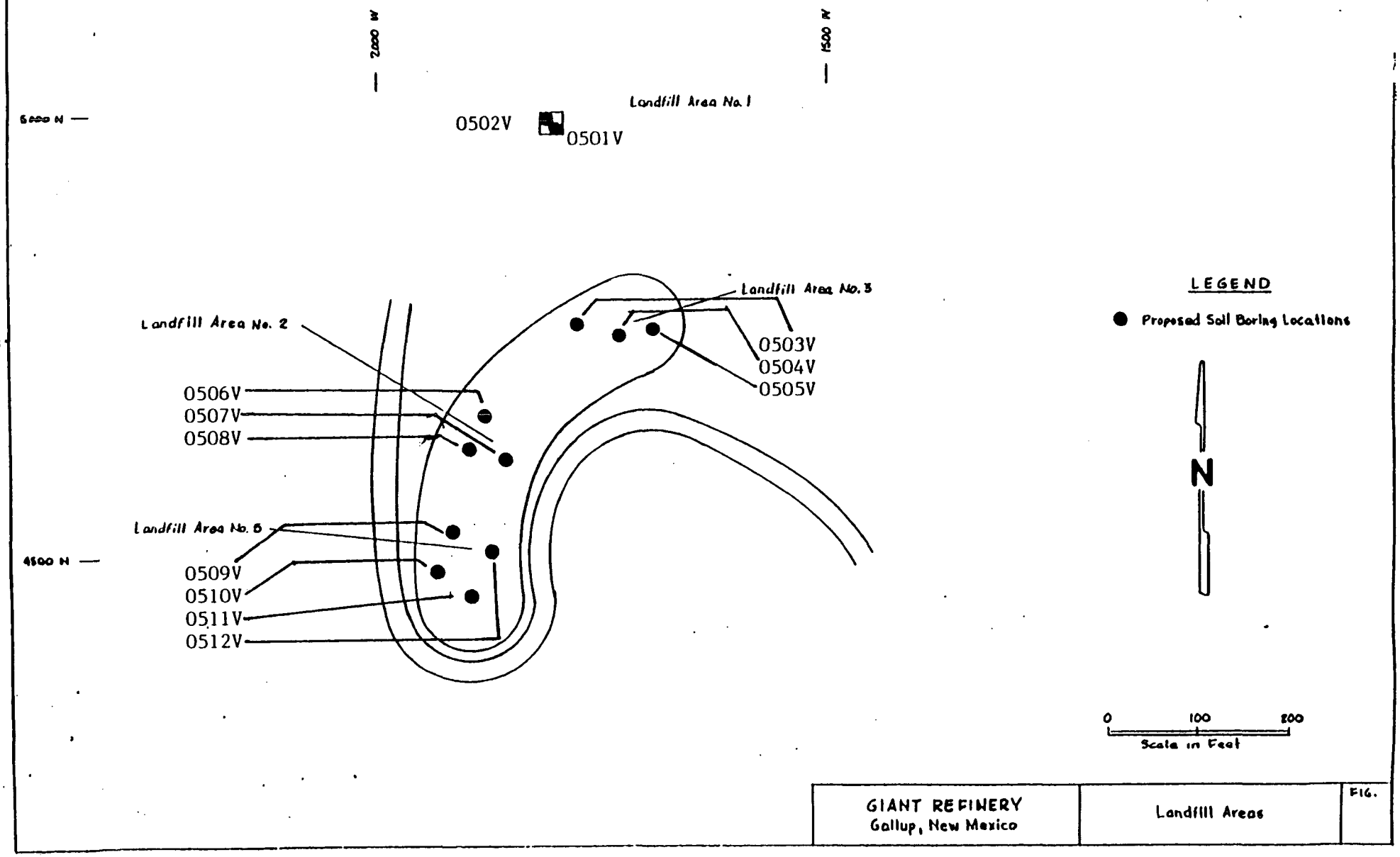
SWMU #4, the Old Burn Pit: Giant shall take soil borings as close as possible to the following sample points (numbers are from previous RFI sampling points, done May of 1992): number's 1, 2, and 3. Sampling intervals shall be at 6 and 10 feet. Sampling procedures and constituents to be analyzed shall 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.



GIANT REFINERY Gallup, New Mexico	Landfill Areas	FIG.

GIANT
REFINING CO.

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

GIANT

Date: June 16, 1992

To: Zeke Sherman

From: Lynn Shelton LS

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

GIANT
REFINING CO.

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	RFI0510V0.0
RFI0402V4.5	RFI0505V0.0	RFI0510V3.0

RFI0403V0.0	RFI0505V3.0	RFI0510V7.0
RFI0403V3.0	RFI0505V7.0	RFI0510V9.5
RFI0403V4.5	RFI0505V9.5	RFI0511V0.0
RFI0501V0.0	RFI0506V0.0	RFI0511V3.0
RFI0501V3.0	RFI0506V3.0	RFI0511V7.0
RFI0501V7.0	RFI0506V7.0	RFI0511V9.5
RFI0501V9.5	RFI0506V9.5	RFI0512V0.0
RFI0501D9.5	RFI0507V0.0	RFI0512V3.0
RFI0502V0.0	RFI0507V3.0	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,

Lynn Shelton
Environmental Assistant
Ciniza Refinery

TLS:sp

GIANT
REFINING CO.

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

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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

SOLID WASTE MANAGEMENT UNIT #5-"Old Land Fills"-

8260 VOLATILES

SAMPLE POINT NUMBER		01	01	01	01	01
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'	D9.5'
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	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

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'	V7.0'	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	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

PHASE III, RFI 1992
GIANT REFINING
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SOLID WASTE MANAGEMENT UNIT #5-"Old Land Fills"

8260 VOLATILES

SAMPLE POINT NUMBER		03	03	03	03	03
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'	D9.5'
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	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-Dichlcroethene	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

PHASE III, RFI 1992
GIANT REFINING
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SOLID WASTE MANAGEMENT UNIT #5-"Old Land Fills"

8260 VOLATILES

SAMPLE POINT NUMBER		04	04	04	04	04
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	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	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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GIANT REFINING
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SOLID WASTE MANAGEMENT UNIT #5-"Old Land Fills"

8260 VOLATILES

SAMPLE POINT NUMBER		05	05	05	05
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	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
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
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

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SOLID WASTE MANAGEMENT UNIT #5-"Old Land Fills"

8260 VOLATILES

SAMPLE POINT NUMBER		06	06	06	06
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	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
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
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

PHASE III, RFI 1992
GIANT REFINING
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SOLID WASTE MANAGEMENT UNIT #5-"Old Land Fills" -

8260 VOLATILES

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	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	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

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5-"Old Land Fills"

8260 VOLATILES

SAMPLE POINT NUMBER		08	08	08	08	08
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'	D9.5'
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	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"

8260 VOLATILES

SAMPLE POINT NUMBER		09	09	09	09	09
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	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	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

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5-"Old Land Fills"

8260 VOLATILES

SAMPLE POINT NUMBER		10	10	10	10
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	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
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
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

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5-"Old Land Fills"

8260 VOLATILES

SAMPLE POINT NUMBER		11	11	11	11
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	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
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
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

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5-"Old Land Fills"

8260 VOLATILES

SAMPLE POINT NUMBER		12	12	12	12	12
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'	D9.5'
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	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

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

TOTAL METALS

SAMPLE POINT NUMBER		01	01	01	01	01
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'	D9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
Arsenic	mg/kg	4.3	14	9.4	6.6	2.7
Barium	mg/kg	290	240	270	120	290
Beryllium	mg/kg	ND	ND	ND	ND	ND
Cadmium	mg/kg	ND	ND	ND	ND	ND
Chrome	mg/kg	8.7	6.8	8.3	27	12
Lead	mg/kg	10	8.1	6.5	10	11
Mercury	mg/kg	ND	ND	ND	ND	ND
Nickel	mg/kg	6.8	4.9	6.1	14	10
Vanadium	mg/kg	8.1	6.3	7.0	5.1	4.6

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GIANT REFINING
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SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

pH

SAMPLE POINT NUMBER		01	01	01	01	01
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'	D9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
ph	S.U.	7.3	7.4	8.3	9.2	9.5

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

TOTAL METALS

SAMPLE POINT NUMBER		02	02	02	02
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
Arsenic	mg/kg	12	6.7	9.6	7.8
Barium	mg/kg	340	380	130	290
Beryllium	mg/kg	ND	ND	ND	ND
Cadmium	mg/kg	ND	ND	ND	ND
Chrome	mg/kg	8.2	5.7	16	8.5
Lead	mg/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	mg/kg	8.1	8.6	7.3	4.7

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CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

pH

SAMPLE POINT NUMBER		02	02	02	02
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
ph	S.U.	8.4	9.2	7.7	8.6

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GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

TOTAL METALS

SAMPLE POINT NUMBER		03	03	03	03	03
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'	D9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
Arsenic	mg/kg	19	16	15	23	22
Barium	mg/kg	260	110	170	130	200
Beryllium	mg/kg	ND	ND	ND	ND	ND
Cadmium	mg/kg	ND	ND	ND	ND	ND
Chrome	mg/kg	110	10	12	11	5.8
Lead	mg/kg	21	9.4	18	ND	6.1
Mercury	mg/kg	ND	ND	ND	ND	ND
Nickel	mg/kg	46	8.8	9.7	10	8.6
Vanadium	mg/kg	10	5.9	6.7	5.1	6.4

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GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

pH

SAMPLE POINT NUMBER		03	03	03	03	03
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'	D9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
ph	S.U.	8.1	8.8	9.1	9.0	8.8

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

TOTAL METALS

SAMPLE POINT NUMBER		04	04	04	04
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
Arsenic	mg/kg	8.5	22	14	24
Barium	mg/kg	460	230	170	320
Beryllium	mg/kg	ND	ND	ND	ND
Cadmium	mg/kg	ND	ND	ND	ND
Chrome	mg/kg	21	270	8.9	31
Lead	mg/kg	16	9.6	9.0	16
Mercury	mg/kg	0.31	ND	ND	ND
Nickel	mg/kg	23	83	9.7	13
Vanadium	mg/kg	9.6	13	6.7	5.3

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GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

pH

SAMPLE POINT NUMBER		04	04	04	04
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
ph	S.U.	9.2	8.1	8.5	9.4

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

TOTAL METALS

SAMPLE POINT NUMBER		05	05	05	05
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
Arsenic	mg/kg	22	20	18	35
Barium	mg/kg	200	730	410	220
Beryllium	mg/kg	ND	ND	ND	ND
Cadmium	mg/kg	ND	ND	ND	ND
Chrome	mg/kg	9.3	10	9.0	9.8
Lead	mg/kg	6.4	9.2	7.8	9.3
Mercury	mg/kg	ND	ND	ND	ND
Nickel	mg/kg	9.0	11	11	12
Vanadium	mg/kg	28	9.1	5.7	6.3

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GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

pH

SAMPLE POINT NUMBER		05	05	05	05
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
ph	S.U.	9.3	7.5	8.0	7.9

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

TOTAL METALS

SAMPLE POINT NUMBER		06	06	06	06
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
Arsenic	mg/kg	ND	21	25	20
Barium	mg/kg	390	140	56	89
Beryllium	mg/kg	ND	ND	ND	ND
Cadmium	mg/kg	ND	ND	ND	ND
Chrome	mg/kg	9.6	12	8.7	6.4
Lead	mg/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	mg/kg	11	5.7	5	3.9

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

pH

SAMPLE POINT NUMBER		06	06	06	06
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
ph	S.U.	8.7	8.8	8.9	9.3

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

TOTAL METALS

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	RESULT
Arsenic	mg/kg	7.3	6.1	4.2	4.1	3.7
Barium	mg/kg	720	340	300	520	760
Beryllium	mg/kg	ND	ND	ND	ND	ND
Cadmium	mg/kg	ND	ND	ND	ND	ND
Chrome	mg/kg	5.6	6.1	5.1	7.8	5.2
Lead	mg/kg	ND	7.0	9.5	6.0	9.0
Mercury	mg/kg	ND	ND	ND	ND	ND
Nickel	mg/kg	5.8	7.5	3.6	9.2	5.9
Vanadium	mg/kg	8.7	7.1	6.6	8.2	6.4

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GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

pH

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	RESULT
ph	S.U.	8.8	8.2	9.1	8.6	8.4

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

TOTAL METALS

SAMPLE POINT NUMBER		08	08	08	08	08
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'	D9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
Arsenic	mg/kg	ND	3.4	5.5	ND	ND
Barium	mg/kg	590	440	150	700	490
Beryllium	mg/kg	ND	ND	ND	ND	ND
Cadmium	mg/kg	ND	ND	ND	ND	ND
Chrome	mg/kg	7.2	10	4.7	7.1	8.3
Lead	mg/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

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SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

pH

SAMPLE POINT NUMBER		08	08	08	08	08
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'	D9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
ph	S.U.	8.2	8.5	7.7	9.1	9.0

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

TOTAL METALS

SAMPLE POINT NUMBER		09	09	09	09
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
Arsenic	mg/kg	ND	ND	ND	ND
Barium	mg/kg	600	680	370	130
Beryllium	mg/kg	ND	ND	ND	ND
Cadmium	mg/kg	ND	ND	ND	ND
Chrome	mg/kg	15	7.3	7.2	4.1
Lead	mg/kg	17	6.2	ND	ND
Mercury	mg/kg	ND	ND	ND	ND
Nickel	mg/kg	13	7.1	8.6	5.0
Vanadium	mg/kg	14	13	8.2	5.9

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GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

pH

SAMPLE POINT NUMBER		09	09	09	09
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
ph	S.U.	8.7	7.9	8.3	8.8

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GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

TOTAL METALS

SAMPLE POINT NUMBER		10	10	10	10
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
Arsenic	mg/kg	ND	3.6	5.4	2.6
Barium	mg/kg	280	300	370	100
Beryllium	mg/kg	ND	ND	ND	ND
Cadmium	mg/kg	ND	ND	ND	ND
Chrome	mg/kg	8.8	5.6	10	6.2
Lead	mg/kg	7.6	5.0	12	7.7
Mercury	mg/kg	ND	ND	ND	ND
Nickel	mg/kg	8.0	5.6	5.7	6.9
Vanadium	mg/kg	11	6.4	8.2	27

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GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

pH

SAMPLE POINT NUMBER		10	10	10	10
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
ph	S.U.	7.5	7.7	7.9	8.2

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

TOTAL METALS

SAMPLE POINT NUMBER		11	11	11	11
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
Arsenic	mg/kg	ND	ND	ND	ND
Barium	mg/kg	850	1600	710	780
Beryllium	mg/kg	ND	ND	ND	ND
Cadmium	mg/kg	ND	ND	ND	ND
Chrome	mg/kg	7.4	9.1	6.1	7.2
Lead	mg/kg	6.1	9.8	6.2	9.5
Mercury	mg/kg	ND	ND	ND	ND
Nickel	mg/kg	7.8	7.2	5.4	5.2
Vanadium	mg/kg	12	6.5	6.6	11

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

pH

SAMPLE POINT NUMBER		11	11	11	11
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT
ph	S.U.	8.2	7.8	8.3	8.7

PHASE III, RFI 1992
GIANT REFINING
CINIZA

SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

TOTAL METALS

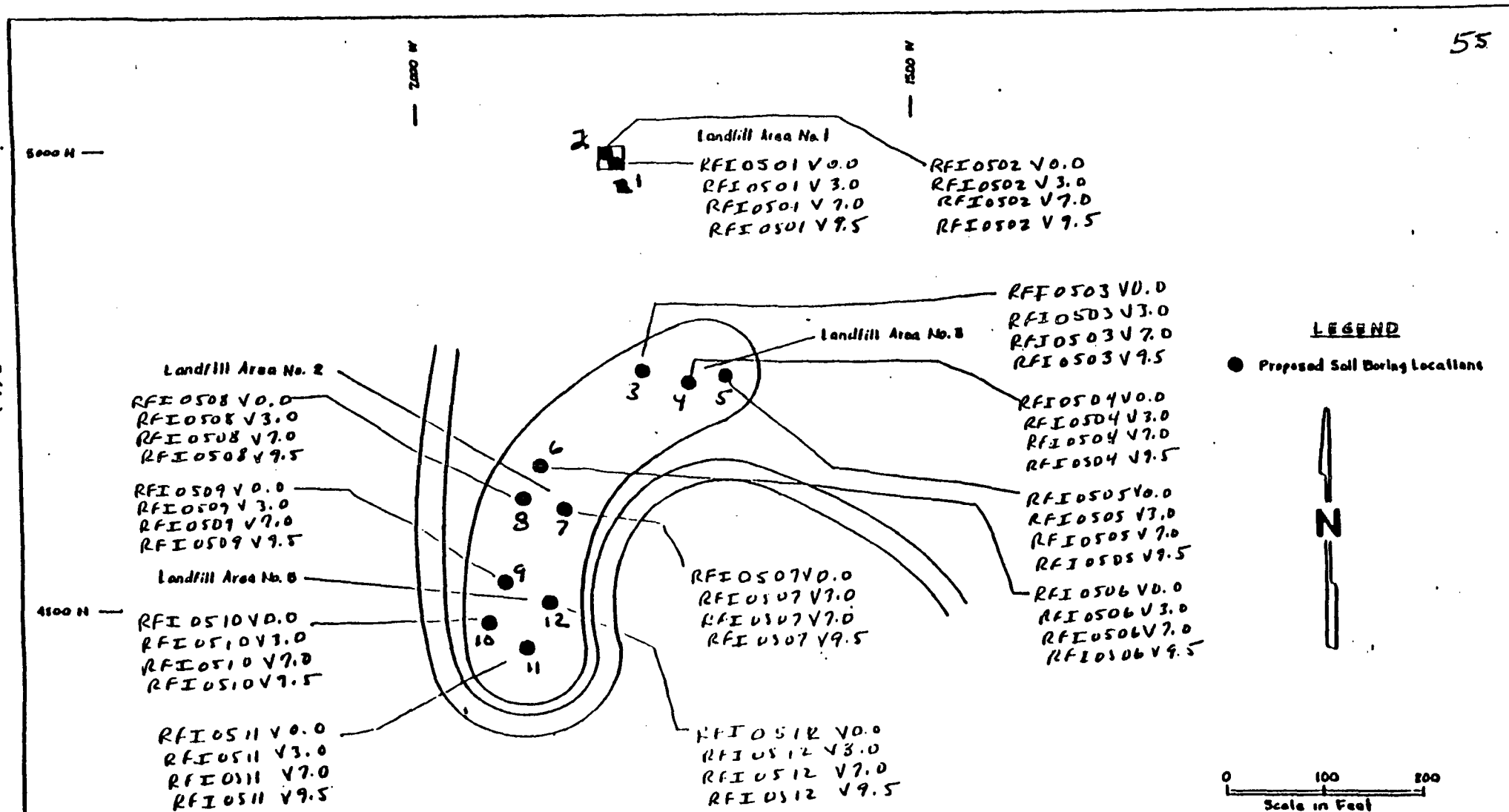
SAMPLE POINT NUMBER		12	12	12	12	12
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'	D9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
Arsenic	mg/kg	ND	ND	ND	6.7	2.7
Barium	mg/kg	460	310	420	190	200
Beryllium	mg/kg	ND	ND	ND	ND	ND
Cadmium	mg/kg	ND	ND	ND	ND	ND
Chrome	mg/kg	8.5	6.7	7.5	6.6	7.1
Lead	mg/kg	5.5	6.4	11	6.3	6.0
Mercury	mg/kg	ND	ND	ND	ND	ND
Nickel	mg/kg	6.6	4.5	6.2	7.0	7.6
Vanadium	mg/kg	9.4	4.8	9.2	4.9	4.2

PHASE III, RFI 1992
GIANT REFINING
CINIZA

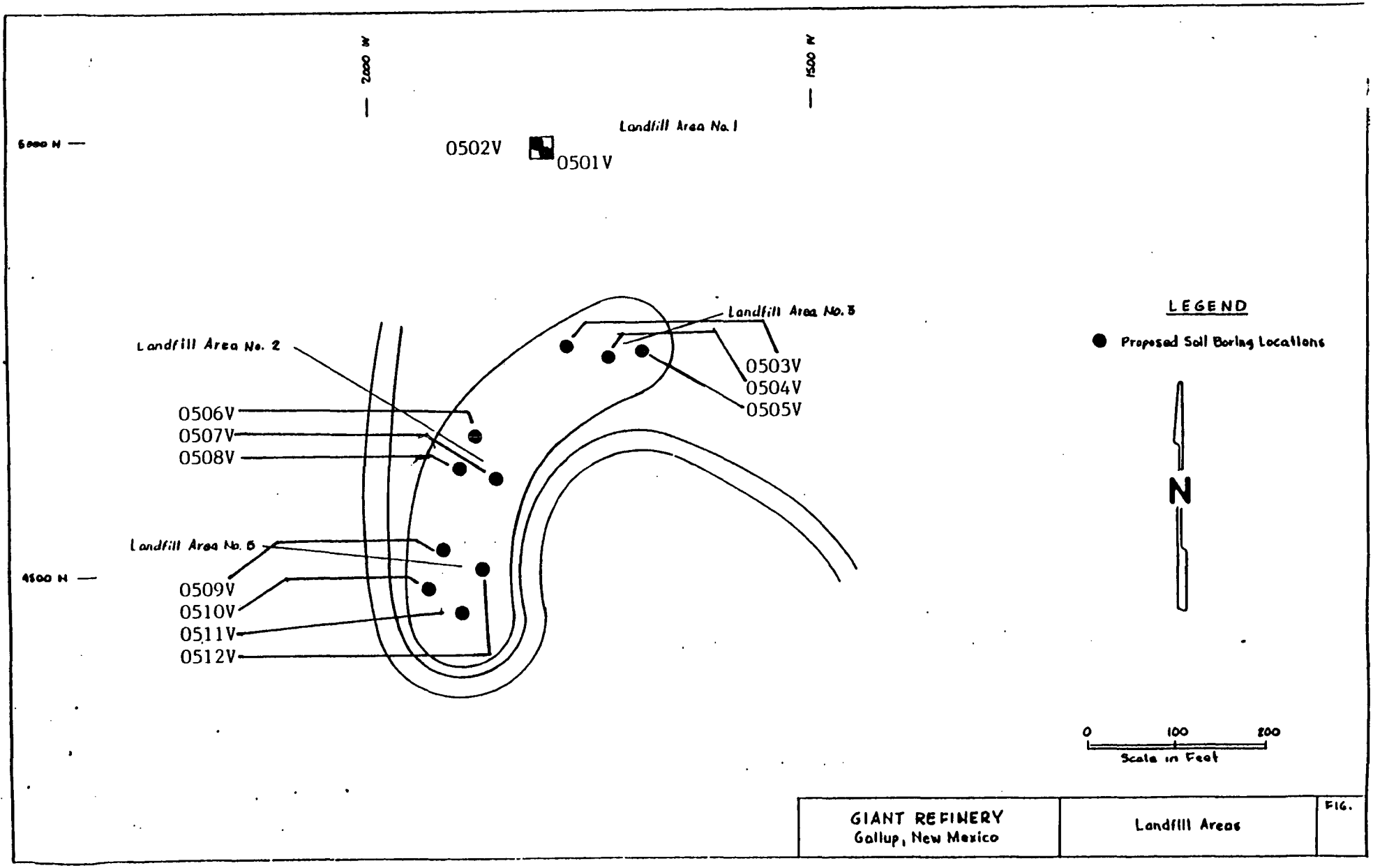
SOLID WASTE MANAGEMENT UNIT #5- "Old Land Fills"

pH

SAMPLE POINT NUMBER		12	12	12	12	12
SAMPLE DEPTH NUMBER		V0.0'	V3.0'	V7.0'	V9.5'	D9.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
ph	S.U.	8.3	7.9	8.3	8.5	8.6



GIANT REFINERY Gallup, New Mexico	Landfill Areas	FIG.



GIANT REFINERY Gallup, New Mexico	Landfill Areas	FIG.

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1992

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El Paso • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS
GIANT REFINING CO	RT 3 BOX 7 GALLUP NM 87301
TELEPHONE: (505) 722 0227	PROJECT: PHASE II RFI
	JOB/P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): Lynn Shelton
SAMPLER (PLEASE PRINT): LYNN SHELTON

SAMPLE TYPE CODES: S – SOIL, G – SLUDGE, X – OTHER, W – WATER, T – TRAVEL BLANK, O – OIL, F – FIELD BLANK

CLIENT SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES: PH	8240 PRIORITY POLLUTANTS	BACKGROUND METALS	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
RFI0506V0.0	5-12-92	2:30 PM	2 OLD LAND FILLS		X		S	1	X	X	X	SEE ATTACHED LISTS FOR SPECIFIC PARAMETERS	
RFI0506V3.0		2:45			X		S	1	X	X	X		
RFI0506V7.0		3:00			X		S	1	X	X	X		
RFI0506V9.5		3:10			X		S	1	X	X	X		
RFI0507V0.0	5-12-92	12:50			X		S	1	X	X	X		
RFI0507V3.0		1:00			X		S	1	X	X	X		
RFI0507V7.0		1:20			X		S	1	X	X	X		
RFI0507V9.5		1:40			X		S	1	X	X	X		
RFI0507D9.5		1:40			X		S	1	X	X	X		
RFI0508V0.0	5-12-92	3:20			X		S	1	X	X	X		
RFI0508V3.0		3:25			X		S	1	X	X	X		
RFI0508V7.0		3:35			X		S	1	X	X	X		
RFI0508V9.5		3:50			X		S	1	X	X	X		
RFI0508D9.5		3:50			X		S	1	X	X	X		

RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	REMARKS
Lynn Shelton				
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	

White – Laboratory · Yellow – Department Job File · Pink – Client

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El Paso • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS
GIANT REFINING CO	RT 3 BOX 7 GALLUP, NM 87301
TELEPHONE	PROJECT / JOB/P.O. NO.
(505) 722 0227	PHASE III RFI

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): Lynn Shelton
SAMPLER (PLEASE PRINT): LYNN SHELTON

Sample Type Codes: S – Soil, G – Sludge, X – Other, W – Water, T – Travel Blank, O – Oil, F – Field Blank

CLIENT SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES: pH	8240 PRIORITY POLLUTANTS	BACKGROUND METALS	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
RFI0502V9.5	5-13-92	10:20	OLD LAND		X		S	1	X	X	X	SEE ATTACHED	
RFI0512D9.5	5-13-92	10:20	FILLS		X		S	1	X	X	X	LISTS FOR	
												SPECIFIC	
TRIP BLANK							W	1		X		PARAMETERS	

RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	REMARKS
Lynn Shelton				
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	

623 White – Laboratory; Yellow – Department Job File; Pink – Client

Westech Laboratories Inc.

1992

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El Paso • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS
GIANT REFINING CO	RT 3 BOX 7 GALLUP, NM 87301
TELEPHONE	PROJECT / JOB/P.O. NO.
(505) 722 0227	PHASE III RFI

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): Lynn Shelton

SAMPLER (PLEASE PRINT): LYNN SHELTON

Sample Type Codes: S – Soil; W – Water; O – Oil; G – Sludge; T – Travel Blank; F – Field Blank; X – Other

CLIENT SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES: TPH	8240 PRIORITY POLLUTANTS	BACKGROUND METALS	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
RFI0509V0.0	5-13-92	10:40	2 OLD LAND FILLS		X		S	1	X	X	X	SEE ATTACHED LISTS FOR SPECIFIC PARAMETERS	
RFI0509V3.0		10:50			X		S	1	X	X	X		
RFI0509V7.0		11:00			X		S	1	X	X	X		
RFI0509V9.5		11:10			X		S	1	X	X	X		
RFI0509E9.5		11:20					W	2		X	X		
RFI0510V0.0	5-14-92	10:10			X		S	1	X	X	X		
RFI0510V3.0		10:20			X		S	1	X	X	X		
RFI0510V7.0		10:30			X		S	1	X	X	X		
RFI0510V9.5		10:40			X		S	1	X	X	X		
RFI0511V0.0	5-13-92	8:30			X		S	1	X	X	X		
RFI0511V3.0		8:45			X		S	1	X	X	X		
RFI0511V7.0		9:00			X		S	1	X	X	X		
RFI0511V9.5		9:05			X		S	1	X	X	X		
RFI0512V0.0		9:15			X		S	1	X	X	X		
RFI0512V3.0		9:50			X		S	1	X	X	X		
RFI0512V7.0		10:10			X		S	1	X	X	X		

RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	REMARKS
Lynn Shelton				
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	

White – Laboratory; Yellow – Department Job File; Pink – Client

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El Paso • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS
CIINNT REFINING CO	RT 3 BOX 7 GALLUP, NM 87301
TELEPHONE (505) 722 0227	PROJECT PHASE III RFI
	JOB/P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): LYNN SHELTON

SAMPLER (PLEASE PRINT): Lynn Shelton

SAMPLE TYPE CODES: S – Soil, G – Sludge, X – Other, W – Water, T – Travel Blank, O – Oil, F – Field Blank

CLIENT SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES: pH	8240 PRIORITY POLLUTANTS*	BACKGROUND METALS*	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
RFI0501V0.0	5-15-92	8:30			X		S	1	X	X	X	* SEE ATTACHED LISTS FOR SPECIFIC PARAMETERS	
RFI0501V3.0		8:40			X		S	1	X	X	X		
RFI0501V7.0		8:50	OLD LAND FILLS		X		S	1	X	X	X		
RFI0501V9.5		9:00			X		S	1	X	X	X		
RFI0501D9.5		9:00			X		S	1	X	X	X		
RFI0502V0.0		9:10			X		S	1	X	X	X		
RFI0502V3.0		9:20			X		S	1	X	X	X		
RFI0502V7.0		9:30			X		S	1	X	X	X		
RFI0502V9.5		9:40			X		S	1	X	X	X		
RFI0502E9.5		9:45					W	2		X			
RFI0503V0.0	5-14-92	11:15			X		S	1	X	X	X		
RFI0503V3.0		11:25			X		S	1	X	X	X		
RFI0503V7.0		11:35			X		S	1	X	X	X		
RFI0503V9.5		11:45			X		S	1	X	X	X		
RFI0503D9.5		11:45			X		S	1	X	X	X		

RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	REMARKS
Lynn Shelton				
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	

633 White – Lab; Yellow – Department Job File; Pink – Client

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El Paso • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS
GIANT REFINING CO	RT 3 BOX 7 GALLUP, NM 87301
TELEPHONE: (505) 722 0227	PROJECT: PHASE III RFI
	JOB/P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): Lynn Shelton
SAMPLER (PLEASE PRINT): LYNN SHELTON

Sample Type Codes: S – Soil; W – Water; O – Oil; G – Sludge; T – Travel Blank; F – Field Blank; X – Other

CLIENT SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES: pH	8240 PRIORITY POLLUTANTS	BACKGROUND METALS *	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
RFIOSO4V0.0	5-11-92	1:00	OLD LANDFILLS		X		S	1	X	X	X		
RFIOSO4V3.0		1:10			X		S	1	X	X	X	*SEE ATTACHED LIST FOR SPECIFIC PARAMETERS	
RFIOSO4V7.0		1:20			X		S	1	X	X	X		
RFIOSO4V9.5		1:30			X		S	1	X	X	X		
RFIOSO4E9.5		1:35					W	2		X			
RFIOSO5V0.0	5-14-92	1:40			X		S	1	X	X	X		
RFIOSO5V3.0		1:50			X		S	1	X	X	X		
RFIOSO5V7.0		2:00			X		S	1	X	X	X		
RFIOSO5V9.5		2:10			X		S	1	X	X	X		
IRIC BLANK							W	1		X			

RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	REMARKS
Lynn Shelton				
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	

White – Testing Laboratory; Yellow – Department Job File; Pink – Client

RFI WORKPLAN PHASE III 1992

May 4, 1992

Training Load Equipment SWMU Site Tour		8:00 - 4:15

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 Training Area	12 Samples
SWMU #11	Secondary Oil Skimmer	4 Samples

May 8, 1992

SWMU #5	Land Fill Area	48 Samples

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: SWMU #5 Sample Date: 5-14-92

Sample Type: SOIL

Team Leader: L SHELTON

Sample Personnel: M BARNEY, T ROGERS

Sampling Method: AUGER

Sample No. REI0502V0.0 Sample Time/Description: 9:00 AM DRY SOIL PID-0

Sample No. 0502V3.0 Sample Time/Description: 9:20 AM DAMP SOIL PID-0

Sample No. 0502V7.0 Sample Time/Description: 9:30 AM MOIST SOIL PID-0

Sample No. 0502V9.5 Sample Time/Description: 9:40 AM MOIST SOIL PID-0

Sample No. 0502E9.5 Sample Time/Description: 9:45 AM WATER

Surface Terrain: FLAT DENSE SURFACE VEGETATION, BRUSH AROUND PERIMETER TO 4'.

Weather Conditions: CLEAR, 65°F, ESE WIND @ 2-3 mph.

General Field Observations:

Boring Lithology: 0-1.5' RED CLAY. 1.5-3.5' MULTICOLORED SOIL W/SOME DEBRIS. 3.5-7' RED/GRAY CLAY. 7'-8' GRAVEL W/SOME WATER. 8'-9.5' RED/GRAY CLAY. DISTINCT GRAY BAND AT 9.0', 3" THICK.

DATA MANAGEMENT

Sample Location: SWMU #5 Sample Date: 5-14-92

Sample Type: SOIL

Team Leader: L SHELTON

Sample Personnel: M BARNEY, T ROGERS

Sampling Method: AUGER

Sample No. RFI0510V0.0 Sample Time/Description: 10:10 Am DRY SOIL PID-0

Sample No. 0510V3.0 Sample Time/Description: 10:20 Am DAMP SOIL PID 0

Sample No. 0510V7.0 Sample Time/Description: 10:30 Am DAMP SOIL PID 0

Sample No. 0510V9.5 Sample Time/Description: 10:40 DAMP SOIL PID

Sample No. _____ Sample Time/Description: _____

Surface Terrain: OPEN, MOSTLY FLAT, SCATTERED DEBRIS

Weather Conditions: CLEAR, 70°F, W WIND @ 5mpH

General Field Observations: _____

Boring Lithology: 0-1.5' MIXED SOIL AND DEBRIS, 1.5'-5' RED CLAY/SAND MIX SOME DEBRIS. 5-5.5' ROCK/GRAVEL/SAND LAYER 5.5-6.5' RED CLAY/SAND. 6.5-7.0' ROCK/GRAVEL/SAND LAYER. 7.0-9.5' RED CLAY/SAND.

DATA MANAGEMENT

Sample Location: SWMU #5 Sample Date: 5-14-92

Sample Type: SOIL

Team Leader: L SHELTON

Sample Personnel: M BARNEY, T ROGERS

Sampling Method: AUGER

Sample No. REF0503V00 Sample Time/Description: 11:15 AM DRY SOIL PID-0

Sample No. 0503V3.0 Sample Time/Description: 11:25 AM DRY SOIL PID-0

Sample No. 0503V7.0 Sample Time/Description: 11:35 AM DRY SOIL PID-0

Sample No. 0503V9.5 Sample Time/Description: 10:45 AM DRY SOIL PID-0

Sample No. 0503D9.5 Sample Time/Description: 11:45 AM DRY SOIL PID-0

Surface Terrain: FLAT, SURFACE GROWTH TO 1½'.

Weather Conditions: CLEAR, 75°F, W WIND @ 5-10 mph

General Field Observations:

Boring Lithology: 0-3' DEBRIS/SOIL. 3' TO 5' MIXED RED/WHITE CLAY W/SOME DEBRIS AND ROCK. 5'-9.5' RED CLAY

DATA MANAGEMENT

Sample Location: SWMU #5 Sample Date: 5-13-92

Sample Type: SOIL

Team Leader: L SHELTON

Sample Personnel: M BARNEY, T ROGERS

Sampling Method: AUGER

Sample No. RFI0504V0.0 Sample Time/Description: 1:00 DRY SOIL
PID - Ø

Sample No. 0504V3.0 Sample Time/Description: 1:10 DRY SOIL
PID - .01

Sample No. 0504V7.0 Sample Time/Description: 1:20 DRY SOIL
PID - Ø

Sample No. 0504V9.5 Sample Time/Description: 1:30 DRY SOIL
PID - .4

Sample No. 0504E9.5 Sample Time/Description: WATER

Surface Terrain: FLAT, SURFACE GROWTH TO 1½'

Weather Conditions: CLEAR, 75°F, W WIND @ 5-10 MPH

General Field Observations: SIDES OF HOLE ARE SLOUGHING BADLY BETWEEN 1 & 7'. STRONG CHANCE OF SOME CROSS CONTAMINATION.

Boring Lithology: 0-1' - CLAY/SAND MIX. 1' - 7' DEBRIS & DISCOLORED SOIL (RUSTY & BROWN). 7' - 8' MIXED SOIL & CONCRETE. 8' - 9.5' RED CLAY

DATA MANAGEMENT

Sample Location: SWMU #5 Sample Date: 5-14-92

Sample Type: SOIL

Team Leader: L SHELTON

Sample Personnel: M BARNEY, T ROGERS

Sampling Method: AUGER

Sample No. RFI0505V0.0 Sample Time/Description: 1:40 DRY SOIL PID - Ø

Sample No. RFI0505V3.0 Sample Time/Description: 1:50 SOIL PID - Ø

Sample No. RFI0505V7.0 Sample Time/Description: 2:00 SOIL PID - Ø

Sample No. RFI0505V9.5 Sample Time/Description: 2:10 SOIL PID - Ø

Sample No. ~~RFI0505V0.0~~ Sample Time/Description:

Surface Terrain: SHALLOW SLOPE, SURFACE VEGETATION TO 1 1/2'

Weather Conditions: CLEAR, 75°F, W WIND @ 5-10 mpH

General Field Observations:

Boring Lithology: 0-1' MIXED CLAY/SAND. 1-1.5' BAND OF SOIL & DEBRIS. 1.5-6' - RED CLAY W/SOME SAND. 6'-7' SLIGHTLY RUSTY BAND. 7-9.5' DENSE RED CLAY

DATA MANAGEMENT

Sample Location: SUMMIT #5 Sample Date: 5-15-92

Sample Type: SOIL

Team Leader: L SHELTON

Sample Personnel: M BARNEY, T ROGERS

Sampling Method: AUGER

Sample No. RFI0501V0.0 Sample Time/Description: 8:30 Am DRY SOIL PID - 0

Sample No. 0501V3.0 Sample Time/Description: 8:40 Am DAMP SOIL PID - 0

Sample No. 0501V7.0 Sample Time/Description: 8:50 Am MOIST SOIL PID - 0

Sample No. 0501V9.5 Sample Time/Description: 9:00 Am MOIST SOIL PID - 0

Sample No. 0501D9.5 Sample Time/Description: 9:00 Am MOIST SOIL PID - 0

Surface Terrain: FLAT, HEAVY SURFACE VEGETATION. AROUND PERIMETER IS BRUSH 3-4' HIGH

Weather Conditions: CLEAR, 65°F, E WIND @ 2-5 mph

General Field Observations:

Boring Lithology: 0-1' RED CLAY, 1'-3' MULTICOLORED SOIL W/SOME METAL DEBRIS. RUSTY, 3'-7' RED CLAY. VERY MOIST @ 7'-7.5' WITH MOSTLY GRAVEL LAYER. 7.5'-9.0' RED CLAY W/SOME GRAY STREAKING.

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~~ 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	

MAY 14, 1992

L Slate

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~~ 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 JJS

DATA MANAGEMENT

Sample Location: SWMU #5 **Sample Date:** 5-13-92

Sample Type: SOIL

Team Leader: L SHELTON

Sample Personnel: M BARNEY, T ROGERS

Sampling Method: AUGER

Sample No. RFI0509V0.0 **Sample Time/Description:** 10:40 AM DRY SOIL PID-Ø

Sample No. 0509V3.0 **Sample Time/Description:** 10:50 AM DRY SOIL PID-Ø

Sample No. 0509V7.0 **Sample Time/Description:** 11:00 AM DRY SOIL PID-Ø

Sample No. 0509V9.5 **Sample Time/Description:** 11:10 AM DRY SOIL PID-Ø

Sample No. 0509E9.5 **Sample Time/Description:** 11:20 AM WATER

Surface Terrain: FLAT, SCATTERED SURFACE GROWTH

Weather Conditions: CLEAR, 70°F, W WINDS @ 5-10 mpH

General Field Observations:

Boring Lithology: 0-5' RED CLAY w/SOME SAND 5-7.5' MIXED SOIL & ROCK. 7.5-8.5' ROCK w SOME SOIL (GRAVEL) 8.5-9.5 RED CLAY.

0-.5' MIXED SOIL & DEBRIS 1/4" LAYER OF BLACK CARBON MATERIAL @ .5'. .5-7.0' MIXED RED/GRAY CLAY.

DATA MANAGEMENT

Sample Location: SWMU # 5 **Sample Date:** 5-13-92

Sample Type: SOIL

Team Leader: L SHELTON

Sample Personnel: M BARNEY, T ROGERS

Sampling Method: AUGER

Sample No. RFI0511V0.0 **Sample Time/Description:** 8:30 AM DRY SOIL PID - Ø

Sample No. RFI0511V3.0 **Sample Time/Description:** 8:45 AM MOIST SOIL PID - Ø

Sample No. 0511V7.0 **Sample Time/Description:** 9:00 AM MOIST SOIL PID - Ø

Sample No. 0511V9.5 **Sample Time/Description:** 9:05 AM DRY SOIL PID - Ø

Sample No. _____ **Sample Time/Description:** _____

Surface Terrain: SLOPE, OPEN GROUND IN LANDFILL

Weather Conditions: CLEAR, 60°F, NNW WIND @ 5 mph

General Field Observations: _____

Boring Lithology: 0-2' RED/WHITE CLAY W/SOME SAND.
2-7' RED CLAY, SOME THIN LAYERS OF ROCK OR GRAVEL.
7-9.5' BROKEN ROCK/UNCONSOLIDATED SOIL.

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~~ 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	

5-13-92 JLS

DATA MANAGEMENT

Sample Location: SWMU #5 **Sample Date:** 5-13-92

Sample Type: SOIL

Team Leader: LSHELTON

Sample Personnel: M BARNEY, T ROGERS

Sampling Method: AUGER

Sample No. 2FI0512V0.0 **Sample Time/Description:** 9:15 AM PID - Ø DRY SOIL

Sample No. 0512V3.0 **Sample Time/Description:** 9:50 AM PID - Ø MOIST SOIL

Sample No. 0512V7.0 **Sample Time/Description:** 10:10 AM PID - Ø DRY SOIL

Sample No. 0512V9.5 **Sample Time/Description:** 10:20 AM PID - Ø DRY SOIL

Sample No. 0512D9.5 **Sample Time/Description:** 10:20 AM PID - Ø DRY SOIL

Surface Terrain: FLAT, OPEN BOTTOM OF LANDFILL, SCATTERED SURFACE GROWTH

Weather Conditions: CLEAR, 60°F, WNW WIND @ 5 mph

General Field Observations:

Boring Lithology: 0-3' RED CLAY/SAND, 3'-5' RED/WHITE CLAY MIX (W/SOME ROCK & SAND, 5-7.5' MIXED SOIL & ROCK (60-40 MIX) 7.5-8.5' ROCKY LAYER, RUSTY COLOR W/SOME SOIL (80-20 MIX) 8.5-9.5' RED CLAY.

DATA MANAGEMENT

Sample Location: SWMU #5 Sample Date: 5-12-92

Sample Type: SOIL

Team Leader: L SHELTON

Sample Personnel: M BARNEY, T ROGERS

Sampling Method: AUGER

Sample No. RFI0507V0.0 Sample Time/Description: 12:50 PM DRY SOIL PID-Ø

Sample No. 0507V3.0 Sample Time/Description: 1:00 PM DRY SOIL PID-Ø

Sample No. 0507V7.0 Sample Time/Description: 1:20 PM DRY SOIL PID-Ø

Sample No. 0507V9.5 Sample Time/Description: 1:40 PM DRY SOIL PID-Ø

Sample No. 0507D9.5 Sample Time/Description: 1:40 PM DRY SOIL PID-Ø

Surface Terrain: OPEN, SHALLOW SLOPE, SPARSE SURFACE VEGETATION

Weather Conditions: CLEAR, 70°F, W WIND @ 5 mpH (GUSTS TO 10-15 mpH)

General Field Observations:

Boring Lithology: 0-.5' CLAY/SAND/ROCKS, .5-3.5' DARKER BROWN CLAY/WITH WHITE (OR GRAY) CLAY MIXED, 3.5'-5.0'-RED CLAY W/SOME LIGHTER SPECKS, 5.0-7.0' - CLAY/SAND MIX WITH 60% ROCK, GRAVEL, AND RUSTY MATERIAL, 7'-9.5' MOSTLY RED CLAY W/SOME LIGHTER COLORING

DATA MANAGEMENT

Sample Location: SWMU #5 Sample Date: 5-12-92

Sample Type: SOIL

Team Leader: L SHELTON

Sample Personnel: M BARNEY, T ROGERS

Sampling Method: AUGER

Sample No. REF0506V0.0 Sample Time/Description: 2:30 PM DRY SOIL PID - Ø

Sample No. 0506V3.0 Sample Time/Description: 2:45 PM MOIST SOIL PID - Ø

Sample No. 0506V7.0 Sample Time/Description: 3:00 PM MOIST SOIL PID - Ø

Sample No. 0506V9.5 Sample Time/Description: 3:10 PM MOIST SOIL PID - Ø

Sample No. _____ Sample Time/Description: _____

Surface Terrain: OPEN, SLIGHT SLOPE, SCATTERED SURFACE VEGETATION

Weather Conditions: CLEAR, 75°F, WNW WIND @ 5-10 mpH

General Field Observations: _____

Boring Lithology: 0-2.5' MIXED CLAY/SAND 2.5'-7.5' RED CLAY W/ MIXED ROCK AND GRAY CLAY. 2" LAYER OF SAND AT 6.0'. 7.5' TO 9.0' UNCONSOLIDATED CLAY/SAND/ROCK WITH 3 NARROW COLOR BANDS (RUSTY). 9.0-9.5' DENSE RED CLAY.

DATA MANAGEMENT

Sample Location: SWMU #5 **Sample Date:** 5-12-92

Sample Type: SOIL

Team Leader: L SHELTON

Sample Personnel: M BARNEY, T ROGERS

Sampling Method: AUGER

Sample No. REI0508V0.0 **Sample Time/Description:** 3:20 PM DAMP SOIL PID-0

Sample No. 0508V3.0 **Sample Time/Description:** 3:25 PM DRY SOIL PID-0

Sample No. 0508V7.0 **Sample Time/Description:** 3:35 PM DRY SOIL PID-0

Sample No. 0508V9.5 **Sample Time/Description:** 3:50 PM DRY SOIL PID-0

Sample No. 0508D9.5 **Sample Time/Description:** 3:50 PM DRY SOIL PID-0

Surface Terrain: SLOPE, HEAVY GROWTH.

Weather Conditions: CLEAR, 75°F, W WIND @ 10 MPH

General Field Observations:

Boring Lithology: 0-1.5' - CLAY/SAND MIX. 1.5-4.0' WHITE/RED CLAY MIX WITH SOME ROCK. 4.0-5.0' MIXED COLORED SOIL. 5.0-7.5' MOSTLY RED CLAY/SAND. 7.5-9.5' MIXED CLAY/SAND/ROCK.

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~~ PROPANOL (IN COMBUSTIBLE WAREHOUSE)	
✓	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	

5-12-92
JLS

GIANT REFINING CO.

THIS COPY OF MY LETTER TO KAREN LISTS THE SPECIFIC ANALYSIS BY SWMU.

Lynn

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	12 Samples
	1 Duplicate
	1 Trip Blank
SWMU #4	
pH	9 Samples
Skinner List Organics	1 Duplicate
Background Metals	1 Trip Blank
	1 Equipment Wash
SWMU #5	
pH	48 Samples
8240 Priority Pollutants	3 Duplicates
Background Metals	2 Trip Blanks
	2 Equipment Washes
SWMU #7	
Total Petroleum Hydrocarbon (TPH)	12 Samples
Oil and Grease	1 Duplicate
	1 Trip Blank
SWMU #11	
Skinner List Organics	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

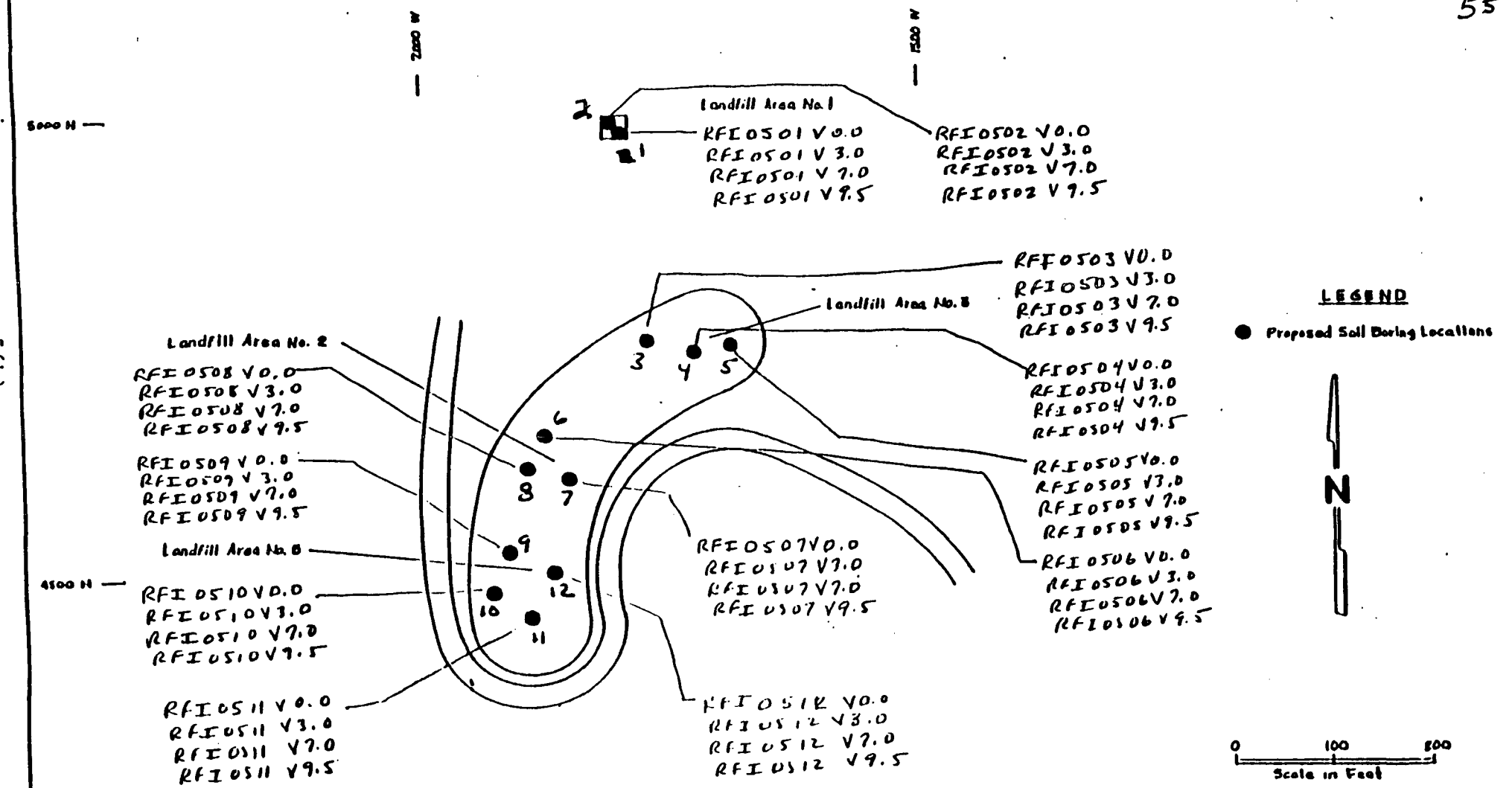
TLS:sp

KAREN-

I'VE ATTACHED LISTS OF SPECIFIC CONSTITUENTS FOR THE SKINNER LIST, PRIORITY POLLUTANTS, AND BACK GROUND METALS.

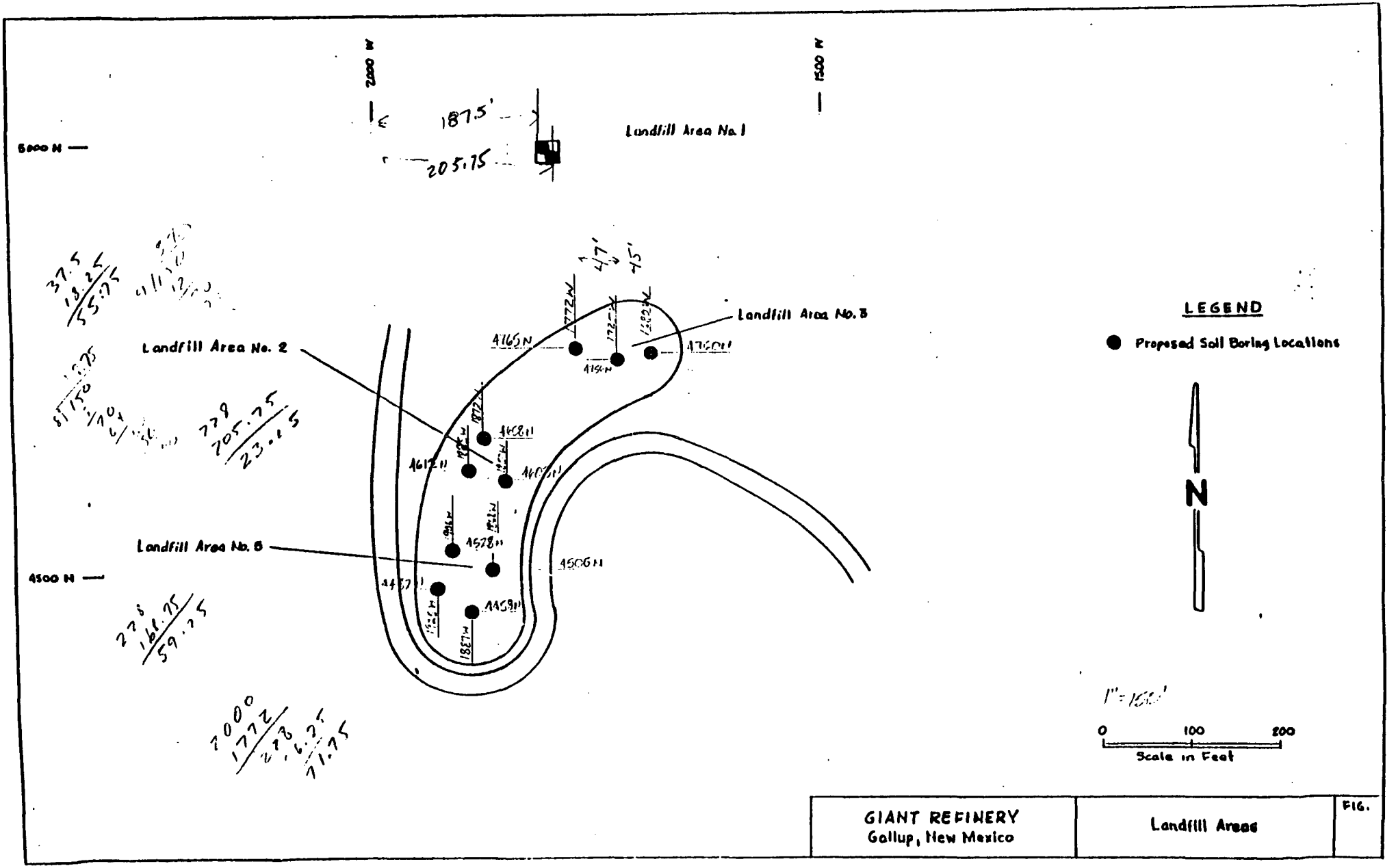
THANKS-

Lynn



GIANT REFINERY Gallup, New Mexico	Landfill Areas	FIG.

5(h)

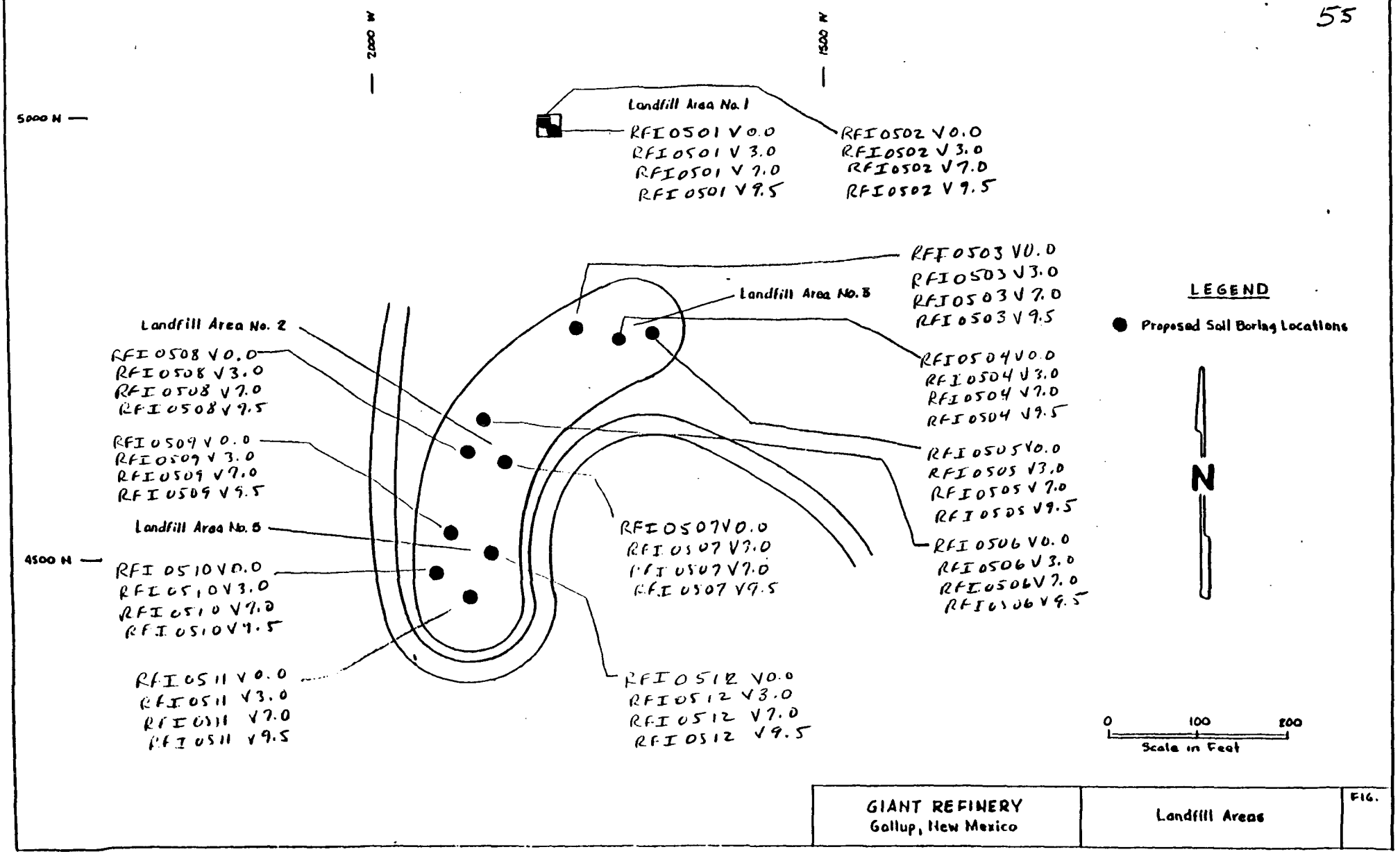


GIANT REFINERY Gallup, New Mexico	Landfill Areas	FIG.

5(h)

12-5-89

55



GIANT REFINERY Gallup, New Mexico	Landfill Areas	FIG.

Sept. 14, 1989

APPLIED EARTH SCIENCES

RELEASE VERIFICATION

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 chemicals:	wastes, including possible laboratory 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 chemicals:	wastes, including possible laboratory 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. 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.

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:

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 chemicals:	wastes, including possible laboratory 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 chemicals:	wastes, including possible laboratory Unknown

MIGRATION AND DISPERSAL CHARACTERISTICS:

The potential for soil contamination exists under the landfills.

C I N I Z A R E F I N E R Y S I T E M A P

PRECISION ENGINEERING, INC.

DRAWN BY: GWG

SWMU 1 – Aeration basin
SWMU 2 – Evaporation Ponds
SWMU 3 – Empty Cobntainer Storage Area
SWMU 4 – Old Burn Pit
SWMU 5 – Land Fill Area
SWMU 6 – Tank Farm
SWMU 7 – Fire Training Area
SWMU 8 – Railroad Rack Lagoon
SWMU 9 – Drainage Ditch Near Inactive Land Farm
SWMU 10 – Sludge Pits
SWMU 11 – Secondary Oil Skimmer
SWMU 12 – Contact Waste Water Collection System
SWMU 13 – Drainage Ditch Between API Evaporation Ponds and Neutralization Tank Evaporation Ponds

EXIT 39
EAST I-40
WEST I-40

SWMU 2
SWMU 11
SWMU 10
SWMU 6
SWMU 3
SWMU 13
SWMU 1
SWMU 12
SWMU 5
SWMU 7
SWMU 4
SWMU 9
SWMU 8
LAND TREATMENT AREA
OCD LTA
89° 57' 30"
90° 02' 30"

5000' W
4500' W
4000' W
3500' W
3000' W
2500' W
2000' W
1500' W
1000' W
500' W
0.00' W
0.00' N
500' N
1000' N
1500' N
2000' N
2500' N
3000' N
3500' N
4000' N
4500' N
5000' N
5500' N
6000' N
6500' N

MARKED ROCK IN ROCK MOUND
SE CORNER OF SECTION 33, T15N, R15W

N. 6589.30'
W. 0.00'
2" IP SET IN CONCRETE, NE CORNER OF PROPERTY

COLOR CODE: SONSELA WELLS
CHINLE/ALLUVIUM INTERFACE WELLS
UPPER SAND WELLS
ALL OTHER EXPLORATORY BORINGS

1" = 300'