GRCC04

GIANT
REFINING COMPANY

ROUTE 3 BOX 7
GALLUP
NEW MEXICO 87301

PHONE
505-722-3833
INTERNET
WWW.GIANT.COM

November 29, 2004

Mr. Wayne Price
New Mexico Oil Conservation Division
1220 South Street Francis Drive
Santa Fe, NM 87505

Re: GW-032 Plan Amendments

Dear Wayne,

The following addresses amendments to Giant Ciniza's Discharge Plan (Plan) and also the items you requested in your email dated October 13, 2004.

Summary of Plan Amendments (all revised permit pages can be found in Attachment 1 for insertion into your permit notebook)

Section 2 - Ed Rios has replaced Matt Davis as the refinery manager effective November 15, 2004.

Section 8 – Cooling tower sludge and salt description, storage and disposal procedures were added. This material contains primarily sodium and chloride, is considered non-hazardous and is non-detect for TCLP metals as shown in the lab analysis (Attachment 2). Giant has requested approval from the Northwest New Mexico Regional Solid Waste Authority to dispose of this sludge at their Thoreau landfill (see Attachment 3) but have not yet received a response.

Section 9
Groundwater Monitoring Plan
Item 1 has been revised to reflect the completion of closure for OW-2, 3,7,9, and 24 and SMW-1, 3,and 5.
Items 2 and 3 have been revised to add the nine new BW pond perimeter wells and new borehole (GWM-1) near pond #2. BW-1-A, BW-1B and BW-3A were dry.
Item 4 has been revised to include sampling schedules for the nine new BW pond perimeter wells, new borehole (GWM-1), and the three plant raw water wells.
Item 6 was added to include the sampling of the Pilot Travel Center wastewater.
Item 7 was added to discuss the sampling of the three plant raw water wells. Well #2 will be sampled in 2004 and the results will be forwarded to you.
Item 8 was added to discuss a refinery property perimeter search on a bimonthly basis.

Appendix A
The plant site drawing (see Attachment 4) has been updated to include all of the wells. The raw water wells have been marked by number.

Other Items
BW Pond Perimeter Wells
The original monitor well analysis for well BW-3-C indicated minute amounts of benzene, toluene and xylene and well BW-2-C indicated acetone. The wells were purged and resampled and analysis indicates non-detect for these parameters (see Attachment 5). A drawing can be found in Attachment 4.

RR Rack Lagoon (SWMU 8)
Closure work on the railroad rack lagoon took place on November 11,12,15 and 16. Giant's contractor removed the contaminated soil from the old lagoon and placed it on the OCD Non Haz LTA. Giant worked with NMED's Hope Monzeglio on a sampling and analysis plan approved by both parties. Samples were taken last week and once the results are received they will be forwarded to you and Hope for review before further action is taken. Once closure is completed Giant will follow the guidelines for a Voluntary Action Measure Report provided by Hope.

Great progress has been made this year and Giant appreciates your assistance. If you have any questions regarding these items please contact me at (505) 722-0217.

Sincerely,

Ed Riege
Environmental Superintendent

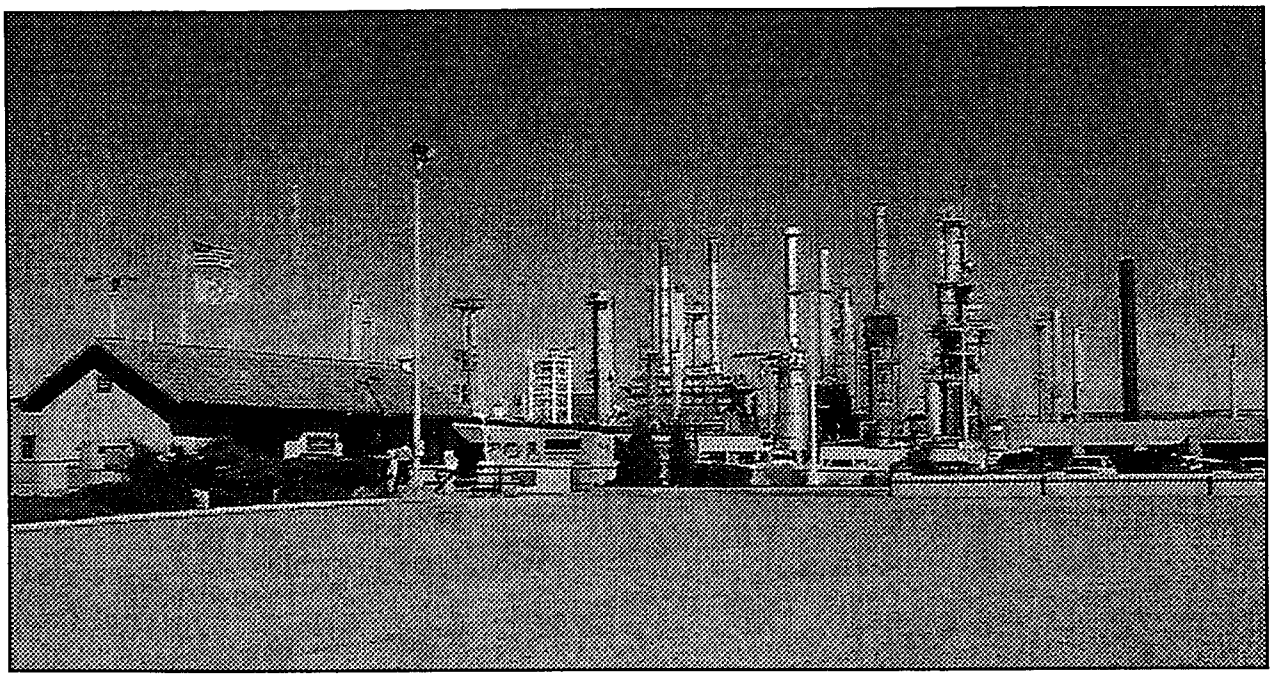
C: Ed Rios w/attachments
Denny Foust, OCD, Aztec Office w/attachments
David Cobrain/Hope Monzeglio, NMED, w/attachments

Attachment 1

OCD Discharge Plan Renewal Application

Giant Refining Company – Ciniza Refinery

McKinley County, New Mexico



Submitted to:

State of New Mexico
Oil Conservation Division
1220 South Saint Francis Drive
Santa Fe, New Mexico 87505

Submitted by:

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

Submitted on:

April 28, 2004
Volume I
Revised November 2004

Section 2.0 Name of Operator or Legally Responsible Party or Local Representative

Owner:	Giant Industries Arizona, Inc. 23733 North Scottsdale Road Scottsdale, Arizona 85255	(parent corporation)
Operator:	Giant Refining Company Route 3, Box 7 Gallup, New Mexico 87301	(postal address)
	Giant Refining Company I-40, Exit 39 Jamestown, New Mexico 87347	(physical address)
Key Contact:	Ed Rios, General Manager	
Telephone:	(505) 722-3833	

Waste Management of Arizona
Painted Desert Landfill
9001 North Porter Avenue
Joseph City, Arizona 86032
EPA ID: AZR05B244

Northwest New Mexico Regional Solid Waste Authority
101 Red Mesa Bluffs Drive
Thoreau, New Mexico 87323
Permit No. SWM-172203

Mercury Contaminated Waste Materials

Fluorescent light bulbs, instrument contents, and laboratory waste that contains mercury is handled as a D009 hazardous waste and is typically transported via truck and recycled at:

Recyclights
405 W. 86th Street
Minneapolis, MN 55420
EPA ID: MND000903463

Excess or off-spec chemicals

These materials are typically generated at the quality control laboratory and then placed in lab pack disposal containers. These lab packs are typically disposed by using Rinchem.

Rinchem Co. Inc.
6133 Edith Blvd. NE
Albuquerque, NM 87107
EPA ID: NMD002208627

Asbestos Containing Material

The materials are regulated as a special waste and are stored in doubled plastic bags and then disposed at Keers Environmental.

Keers Environmental, Inc.
Disposal Site
Mountainair, NM 87036
EPA ID: NMD147273528

Cooling Tower Sludge and Salt

This material is generated in the cleaning of cooling towers and contains primarily sodium and chloride. This material is non hazardous and non-detect for TCLP metals. Giant has made application to dispose of this material.

Northwest New Mexico Regional Solid Waste Authority
101 Red Mesa Bluffs Drive
Thoreau, New Mexico 87323
Permit No. SWM-172203

Section 9.0 Modifications

Groundwater Monitoring Plan

On July 23, 2003, a meeting was held at the Ciniza Refinery that included representatives of the refinery, OCD, and NMED. At this meeting, a detailed discussion of the groundwater monitoring plan took place and a consensus agreement was reached in regard to proposed modification of the existing plan. As such, the following changes were made in this application.

1. In the third quarter of 2004, the following existing wells that were technically inadequate or potentially hazardous to groundwater quality were plugged and abandoned: OW-2, 3, 7, 9, and 24, and also SMW-1, 3, and 5. The general procedure for closure was to use a 6% bentonite (montmorillonite clay), and cement slurry as the closing agent. Slurry was injected at the bottom of the wells to displace the water. A minimum of three (3) well volumes of slurry was pressure injected into the well. Slurry weight was approximately thirteen (13) pound per gallon. Once injection was completed the surface finish was demolished and removed from the well location. This concrete will be used for pond rip-rap. The steel protective casing was cut and removed from the concrete and taken to the scrap metal recycling storage area. The well site was re-graded to natural conditions. A closure report indicating slurry volumes and any work performed at the well locations will be placed in the well file. Precision Engineering, Inc. will change databases and electronic files to reflect the well closures and the dates of the closure. Copies of the updated maps have been provided to OCD and NMED.

   OW-16, 17, 25, and 26 were previously plugged and closed and have now been replaced by RW-5 and 6. In addition, OW-20 has been closed and will not be replaced.

2. New groundwater monitoring well installation.

   New groundwater monitoring wells were installed in October and November 2003, and June and July 2004. There are three new sites for these wells located near the northwest corner boundary of the refinery. One site is located generally west of Evaporation Pond Number 8. One is located generally northwest of Evaporation Pond Number 11. One site is located generally north of Evaporation Pond Number 12.

   At each of the three sites, a dedicated well was drilled, installed, sealed, and screened solely within the Sonsela Sandstone Bed artesian reservoir (BW-1-C, BW-2-C, and BW-3-C). These wells shall be used for the purpose of detecting a potential impact to the Sonsela Aquifer.

   At each of the three sites, a dedicated well was drilled, installed, sealed, and screened solely within the alluvial layer that exists immediately above and upon the surface of the Chinle Formation (BW-1-B, BW-2-B, and BW-3-B, **Well B-1-B was dry**). This potential groundwater source is known to be intermittent and variable; these wells shall be used to detect potential contamination within the shallow groundwater layer that exists intermittently above the Chinle Formation aquiclude.

   At each of the three sites, an additional dedicated well was drilled and installed because drilling activity indicated the potential presence of an intermediate water-bearing strata

(e.g. sand lens) located above the Chinle Formation (BW-1-A, BW-2-A, and BW-3-A; **BW-1-A and BW-3-A were dry**.). These wells were installed because it appears likely that a distinct water-bearing layer had been identified and that it could be reliably sampled.

3. A new well (GWM-1)was installed downgradient of the aeration basins in order to monitor for the presence of shallow groundwater and was used to detect potential leakage from the aeration basins. The location of this well was determined in the field after mutual consultation by representatives of the refinery, OCD, and the drilling contractor.

4. The new groundwater monitoring wells described in Item 2 above, plus OW-11, 12, 13, 14, 29, and 30, and MW-1, 4, and 5, and SMW-2 and 4 shall be routinely measured, sampled, and analyzed so as to provide the information necessary to detect an adverse groundwater impact and allow for a timely and effective response.

The observation, measurement, sampling frequency, and type of analysis shall be as follows.

Well ID	Frequency	Measurement[4] / Analysis
OW-1	Quarterly	Visual check for artesian flow conditions
OW-10	Quarterly	Level measurement of the Sonsela Aquifer water table
GWM-1	Quarterly	Check for indication of aeration basin leakage
		General chemistry / VOC / SVOC / BTEX / MTBE / metals
OW-11	Annual	General chemistry / VOC / SVOC / BTEX / MTBE / metals
OW-12	Annual	BTEX / MTBE
OW-13[2]	Annual	BTEX / MTBE
OW-14	Annual	BTEX / MTBE
OW-29	Annual	BTEX / MTBE
OW-30	Annual	BTEX / MTBE
BW-1-A[3]	Annual	General chemistry / VOC / SVOC / BTEX / MTBE / metals
BW-1-B[3]	Annual	General chemistry / VOC / SVOC / BTEX / MTBE / metals
BW-1-C[3]	Annual	General chemistry / VOC / SVOC / BTEX / MTBE / metals
BW-2-A[3]	Annual	General chemistry / VOC / SVOC / BTEX / MTBE / metals
BW-2-B[3]	Annual	General chemistry / VOC / SVOC / BTEX / MTBE / metals
BW-2-C[3]	Annual	General chemistry / VOC / SVOC / BTEX / MTBE / metals
BW-3-A[3]	Annual	General chemistry / VOC / SVOC / BTEX / MTBE / metals
BW-3-B[3]	Annual	General chemistry / VOC / SVOC / BTEX / MTBE / metals
BW-3-C[3]	Annual	General chemistry / VOC / SVOC / BTEX / MTBE / metals
MW-1	Annual	General chemistry / RCRA list constituents[5]

MW-4	Annual	General chemistry / RCRA list constituents[5]
MW-5	Annual	General chemistry / RCRA list constituents[5]
SMW-2	Annual	General chemistry / RCRA list constituents[5]
SMW-4	Annual	General chemistry / RCRA list constituents[5]
RW-1	Annual	Measurement of product layer thickness, if present
RW-2	Annual	Measurement of product layer thickness, if present
RW-5	Annual	Measurement of product layer thickness, if present
RW-6	Annual	Measurement of product layer thickness, if present
#2 (Process)	2004 then every 3 yr starting with 2008	SOCs, VOCs, Heavy Metals, Cyanide, Nitrates
#3 (Drinking/ Process)	Every 3 years starting with 2006	SOCs, VOCs, Heavy Metals, Cyanide, Nitrates
#4 (Process)	Every 3 years starting with 2004	SOCs, VOCs, Heavy Metals, Cyanide, Nitrates

[1] This is the new well installed downgradient of the aeration basins.

[2] When OW-14 is cleaned up, then monitoring of OW-13 shall be discontinued.

[3] These are the new wells installed at the northwest corner boundary of the refinery. BW-1-A BW-1-B,and BW-3-A were dry at the time of drilling.

[4] To the extent practicable, water table depth shall be measured at each well annually.

[5] Frequency of sampling shall be per RCRA post closure schedule.

5. In addition to groundwater monitoring, surface water monitoring shall also be conducted as follows.

   On an annual basis, a grab sample of the inlet water to Pond #2 shall be collected and analyzed for BOD, COD, TDS, BTEX, and MTBE.

   On an annual basis, a grab sample of evaporation pond water shall be collected and analyzed for general chemistry parameters. The evaporation pond selected for sampling shall be the pond, considered by refinery personnel, to most likely contain the highest salinity or TDS. In addition, the selected pond shall be alternated from year-to-year in order to provide a broader indication of analysis.

6. Waste water from Pilot Travel Center and Truck Stop Facility.

Grab samples shall be collected quarterly from the sampling and metering station (triangular notch weir) on the Pilot incoming line. The samples will be analyzed for hazardous characteristics (TCLP) by EPA Method 1311 and B.O.D.

7. Well #4 used for industrial purposes was sampled August 12, 2004 and will be sampled every three years (next in 2007) according to the table in item 4. Industrial Well #2 will be sampled in 2004 and will be sampled every three years beginning in 2008. Well #2, a potable well, is scheduled for sampling in 2006 to meet SDWS, and every three years thereafter.

8. Giant proposes to conduct a perimeter search of the refinery property on a bimonthly basis starting in December 2004. The inspection will focus on hydrocarbon staining or any release that could result in contamination leaving the property boundary. Giant has prepared an inspection checklist to be completed and signed by the environmental employee conducting the inspection. Completed inspection sheets will be maintained onsite.

Surplus Water Sales

Various construction companies have contacted the Giant Refinery and asked to purchase water for use in road construction, soil wetting and compaction, and dust suppression. Ed Horst, former Giant Environmental Manager, requested permission from OCD to allow the sale and use of surplus wastewater from the evaporation ponds for this purpose. Permission was granted in a letter dated July 11, 1996 and various conditions were imposed. Giant is now requesting modification of the OCD Discharge Plan to include the ongoing practice of selling surplus evaporation pond water to construction companies for non domestic beneficial use. The following conditions shall apply to all water sales conducted under this new provision.

1. Only wastewater that is RCRA non hazardous may be offered for sale.

2. Only wastewater that complies with the following conditions may be offered for sale.

   Wastewater shall not exceed RCRA hazardous characteristic criteria including ignitability, corrosivity, reactivity, and toxicity as specified in 40 CFR 261. Wastewater TDS shall not exceed 30,000 ppm. Wastewater TPH shall not exceed 100 ppm using EPA Method 418.1. Wastewater fecal coliform count shall not exceed 500 organisms per 100 ml.

3. The company seeking to purchase the water must first obtain approval from the local OCD District Office and also provide a copy of the correspondence to the OCD Environmental Bureau. In the approval request letter, the company must specify in detail where, how, and when the water will be used. The company must also agree in writing to abide by these conditions.

4. The water shall only be applied or used in a manner that avoids excess water run-off into ditches, arroyos, or any watercourse.

5. At the end of each day's activity, unused water will be stored in trucks or tanks such that the water does not drip or drain onto the ground overnight.

Giant is currently selling evaporation pond water to WW Construction Company of Albuquerque, New Mexico for use in road construction activities. Approximately 160,000 gallons per week have been sold since the summer of 2002 and Giant anticipates continuing this activity for the near term.

Temporary Landfarm

A temporary landfarm unit has been created and is now being used on an interim basis to treat the ongoing generation of non hazardous oily waste at the refinery. With this application, Giant is requesting a modification to the OCD Discharge Plan to include this temporary landfarm as a permitted treatment unit. The location of the temporary landfarm is as shown on the plant site drawing in Appendix A. This landfarm is now designated as the "Northeast OCD Land Treatment Area" and its dimensions are approximately 300 feet by 75 feet. The operation of this new landfarm will follow the same requirements as are in current use for the existing OCD landfarm, which shall now be designated as the "Central OCD Land Treatment Area." These operational requirements are described in the Giant-OCD correspond-ence contained in Appendix F, and include the following items:

1. The landfarm shall have a perimeter fence, access gate, and identification sign.
2. The landfarm shall have a perimeter berm to control precipitation run-on and run-off.
3. Material delivered to the landfarm for treatment shall be spread within 72 hours of receipt.
4. Material shall be spread in lifts of six inches or less.
5. Material shall be tilled at least once per month in order to enhance biodegradation.
6. New material shall not be added to the landfarm until the preceding lift/soil matrix has been analyzed and it has been determined that TPH is less than 100 ppm, total BTEX is less than 50 ppm, and benzene is less than 10 ppm.
7. Material that is RCRA hazardous (either listed or characteristic) shall not be received or treated at the landfarm.
8. Moisture shall be added to the landfarm as necessary to enhance biodegradation. Excess moisture or ponding shall be removed or absorbed by the soil within 72 hours.
9. Chemical agents, microbes, or other foreign substances used to enhance biodegradation shall be approved in advance by OCD.
10. No material containing free liquids shall be accepted or treated at the landfarm.

11. Periodic soil sampling and analysis shall be performed in order to ascertain potential impact to native subsurface soil beneath the landfarm. On a quarterly basis, a soil grab sample shall be collected from a random location within the central zone of the landfarm at a depth of 2 to 3 feet below ground surface. The sample shall be analyzed for TPH and BTEX. In addition, on an annual basis, this sample shall also be analyzed for general chemistry parameters and total metals.

12. Analytical results shall be submitted to OCD annually.

Aeration Basin Biotreatment

In prior years, a dense sludge was found to accumulate at the bottom of the aeration basins and this necessitated periodic cleanout. During 2002, Giant conducted a pilot test of a new bio-treatment additive that the manufacturer indicated would inhibit the formation of this sludge. This test proved to be successful and Giant is now requesting a modification to the OCD Discharge Plan to include the use of this additive on an ongoing basis. Additional information regarding this additive is included in Appendix D.

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

Attachment 2

COVER LETTER

July 21, 2004

Dorinda Mancini
Giant Refining Co
Rt. 3 Box 7
Gallup, NM 87301
TEL: (505) 722-0227
FAX (505) 722-0210

RE: 2004 Cooling Tower Sludge

Order No.: 0407021

Dear Dorinda Mancini:

Hall Environmental Analysis Laboratory received 1 sample on 7/2/2004 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent.

Reporting limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Business Manager
Nancy McDuffie, Laboratory Manager

4901 Hawkins NE ■ Suite D ■ Albuquerque, NM 87109
505.345.3975 ■ Fax 505.345.4107
www.hallenvironmental.com

Hall Environmental Analysis Laboratory

Date: *21-Jul-04*

CLIENT: Giant Refining Co
Lab Order: 0407021
Project: 2004 Cooling Tower Sludge
Lab ID: 0407021-01

Client Sample ID: Cooling Tower Sludge
Collection Date: 6/28/2004 9:10:00 AM
Matrix: SOLID

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: **MAP**
Fluoride	ND	150		mg/Kg	500	7/20/2004 7:59:22 PM
Chloride	510000	1500		mg/Kg	5000	7/21/2004
Nitrogen, Nitrate (As N)	ND	150		mg/Kg	500	7/20/2004 7:59:22 PM
Sulfate	ND	750		mg/Kg	500	7/20/2004 7:59:22 PM
Nitrogen, Nitrite (As N)	ND	150		mg/Kg	500	7/20/2004 7:59:22 PM
Phosphorus, Orthophosphate (As P)	ND	750		mg/Kg	500	7/20/2004 7:59:22 PM
MERCURY, TCLP LEACHED						Analyst: **IC**
Mercury	0.041	0.040		mg/L	20	7/12/2004
EPA METHOD 6010C: SOIL METALS						Analyst: **NMO**
Calcium	960	25		mg/Kg	1	7/9/2004 2:15:40 PM
Iron	620	10		mg/Kg	10	7/12/2004 1:55:51 PM
Magnesium	130	25		mg/Kg	1	7/9/2004 2:15:40 PM
Manganese	70	0.10		mg/Kg	1	7/9/2004 2:15:40 PM
Potassium	860	50		mg/Kg	1	7/9/2004 2:15:40 PM
Sodium	450000	2500		mg/Kg	100	7/12/2004 1:52:23 PM
Zinc	ND	2.5		mg/Kg	1	7/9/2004 2:15:40 PM
EPA METHOD 6010C: TCLP METALS						Analyst: **NMO**
Arsenic	ND	5.0		mg/L	5	7/9/2004 9:32:03 AM
Barium	ND	100		mg/L	5	7/9/2004 9:32:03 AM
Cadmium	ND	1.0		mg/L	5	7/9/2004 9:32:03 AM
Chromium	ND	5.0		mg/L	5	7/9/2004 9:32:03 AM
Lead	ND	5.0		mg/L	5	7/9/2004 9:32:03 AM
Selenium	ND	1.0		mg/L	5	7/9/2004 9:32:03 AM
Silver	ND	5.0		mg/L	5	7/9/2004 9:32:03 AM

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *21-Jul-04*

CLIENT: Giant Refining Co
Work Order: 0407021
Project: 2004 Cooling Tower Sludge

QC SUMMARY REPORT
Method Blank

Sample ID **MB-6124** Batch ID: **6124** Test Code: **E300** Units: **mg/Kg** Analysis Date **7/19/2004 9:43:40 PM** Prep Date **7/15/2004**
Client ID: Run ID: **LC_040719A** SeqNo: **288696**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	ND	0.3									
Chloride	0.7154	0.3									
Nitrogen, Nitrate (As N)	ND	0.3									
Sulfate	ND	1.5									
Nitrogen, Nitrite (As N)	ND	0.3									
Phosphorus, Orthophosphate (As P)	ND	1.5									

Sample ID **MB-6089** Batch ID: **6089** Test Code: **SW7470** Units: **mg/L** Analysis Date **7/12/2004** Prep Date **7/12/2004**
Client ID: Run ID: **MI-LA254_040712A** SeqNo: **286208**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.02									

Sample ID **MB-6069** Batch ID: **6069** Test Code: **SW6010A** Units: **mg/Kg** Analysis Date **7/9/2004 11:20:30 AM** Prep Date **7/7/2004**
Client ID: Run ID: **ICP_040709B** SeqNo: **285877**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	25									
Iron	ND	1									
Magnesium	ND	25									
Manganese	ND	0.1									
Potassium	ND	50									
Sodium	ND	25									
Zinc	ND	2.5									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Giant Refining Co
Work Order: 0407021
Project: 2004 Cooling Tower Sludge

QC SUMMARY REPORT

Method Blank

Sample ID **MB-6073** Batch ID: **6073** Test Code: **SW1311/6010** Units: **mg/L** Analysis Date **7/9/2004 8:19:52 AM** Prep Date **7/7/2004**

Client ID: Run ID: **ICP_040709A** SeqNo: **285705**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	5									
Barium	ND	100									
Cadmium	ND	1									
Chromium	ND	5									
Lead	ND	5									
Selenium	ND	1									
Silver	ND	5									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Hall Environmental Analysis Laboratory

Date: *21-Jul-04*

CLIENT: Giant Refining Co
Work Order: 0407021
Project: 2004 Cooling Tower Sludge

QC SUMMARY REPORT

Sample Duplicate

Sample ID **0407021-01A** Batch ID: **6124** Test Code: **E300** Units: **mg/Kg** Analysis Date **7/20/2004 8:32:58 PM** Prep Date **7/15/2004**

Client ID: **Cooling Tower SI** Run ID: **LC_040720A** SeqNo: **289125**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	ND	150	0	0	0	0	0	0			
Nitrogen, Nitrate (As N)	ND	150	0	0	0	0	0	0			
Sulfate	287.3	750	0	0	0	0	0	0			J
Nitrogen, Nitrite (As N)	ND	150	0	0	0	0	0	0			
Phosphorus, Orthophosphate (As P)	ND	750	0	0	0	0	0	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Hall Environmental Analysis Laboratory

Date: *21-Jul-04*

CLIENT: Giant Refining Co
Work Order: 0407021
Project: 2004 Cooling Tower Sludge

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID **LCS-6124** Batch ID: **6124** Test Code: **E300** Units: **mg/Kg** Analysis Date **7/19/2004 10:00:28 PM** Prep Date **7/15/2004**
Client ID: Run ID: **LC_040719A** SeqNo: **288697**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	1.443	0.3	1.5	0	96.2	90	110	0			
Chloride	16.05	0.3	15	0.7154	102	90	110	0			B
Nitrogen, Nitrate (As N)	7.744	0.3	7.5	0	103	90	110	0			
Sulfate	31.7	1.5	30	0	106	90	110	0			
Nitrogen, Nitrite (As N)	3.186	0.3	3	0	106	90	110	0			
Phosphorus, Orthophosphate (As P)	15.18	1.5	15	0	101	90	110	0			

Sample ID **LCS-6089** Batch ID: **6089** Test Code: **SW7470** Units: **mg/L** Analysis Date **7/12/2004** Prep Date **7/12/2004**
Client ID: Run ID: **MI-LA254_040712A** SeqNo: **286209**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.004998	0.002	0.005	0	100	80	120	0			

Sample ID **LCSD-6089** Batch ID: **6089** Test Code: **SW7470** Units: **mg/L** Analysis Date **7/12/2004** Prep Date **7/12/2004**
Client ID: Run ID: **MI-LA254_040712A** SeqNo: **286220**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.004533	0.002	0.005	0	90.7	80	120	0.004998	9.75	20	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

1

CLIENT: Giant Refining Co
Work Order: 0407021
Project: 2004 Cooling Tower Sludge

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID **LCS-6069** Batch ID: **6069** Test Code: **SW6010A** Units: **mg/Kg** Analysis Date **7/9/2004 11:23:20 AM** Prep Date **7/7/2004**
Client ID: Run ID: **ICP_040709B** SeqNo: **285878**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	2364	25	2500	0	94.6	80	120	0			
Iron	32.01	1	25	0	128	80	120	0			S
Magnesium	2418	25	2500	0	96.7	80	120	0			
Manganese	24.71	0.1	25	0	98.8	80	120	0			
Potassium	2452	50	2500	0	98.1	80	120	0			
Sodium	2723	25	2500	0	109	80	120	0			
Zinc	ND	2.5	25	0	0	80	120	0			S

Sample ID **LCSD-6069** Batch ID: **6069** Test Code: **SW6010A** Units: **mg/Kg** Analysis Date **7/9/2004 11:26:32 AM** Prep Date **7/7/2004**
Client ID: Run ID: **ICP_040709B** SeqNo: **285879**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	2429	25	2500	0	97.1	80	120	2364	2.71	20	
Iron	29.74	1	25	0	119	80	120	32.01	7.36	20	
Magnesium	2477	25	2500	0	99.1	80	120	2418	2.38	20	
Manganese	25.24	0.1	25	0	101	80	120	24.71	2.12	20	
Potassium	2484	50	2500	0	99.4	80	120	2452	1.31	20	
Sodium	2729	25	2500	0	109	80	120	2723	0.215	20	
Zinc	ND	2.5	25	0	0	80	120	0	0	20	S

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Giant Refining Co
Work Order: 0407021
Project: 2004 Cooling Tower Sludge

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID **LCS-6073** Batch ID: **6073** Test Code: **SW1311/6010** Units: **mg/L** Analysis Date **7/9/2004 8:22:43 AM** Prep Date **7/7/2004**
Client ID: Run ID: **ICP_040709A** SeqNo: **285706**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.4585	0.4	0.5	0	91.7	80	120	0			
Barium	0.4732	0.4	0.5	0	94.6	80	120	0			
Cadmium	0.4502	0.4	0.5	0	90.0	80	120	0			
Chromium	0.4818	0.4	0.5	0	96.4	80	120	0			
Lead	0.4668	0.4	0.5	0	93.4	80	120	0			
Selenium	0.3995	0.2	0.5	0	79.9	80	120	0			S
Silver	0.4658	0.4	0.5	0	93.2	80	120	0			

Sample ID **LCSD-6073** Batch ID: **6073** Test Code: **SW1311/6010** Units: **mg/L** Analysis Date **7/9/2004 8:25:57 AM** Prep Date **7/7/2004**
Client ID: Run ID: **ICP_040709A** SeqNo: **285707**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.4691	0.4	0.5	0	93.8	80	120	0.4585	2.28	20	
Barium	0.4712	0.4	0.5	0	94.2	80	120	0.4732	0.425	20	
Cadmium	0.45	0.4	0.5	0	90.0	80	120	0.4502	0.0554	20	
Chromium	0.4803	0.4	0.5	0	96.1	80	120	0.4818	0.300	20	
Lead	0.4665	0.4	0.5	0	93.3	80	120	0.4668	0.0654	20	
Selenium	0.3982	0.2	0.5	0	79.6	80	120	0.3995	0.317	20	S
Silver	0.4652	0.4	0.5	0	93.0	80	120	0.4658	0.140	20	

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Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Hall Environmental Analysis Laboratory

Sample Receipt Checklist

Client Name GIANTREFIN | Date and Time Received: 7/2/2004

Work Order Number 0407021 | Received by AT

Checklist completed by _____ 7/2/04
Signature | Date

Matrix | Carrier name FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑	Not Shipped ☐
Custody seals intact on sample bottles?	Yes ☐	No ☑	N/A ☐	
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Water - VOA vials have zero headspace?	No VOA vials submitted ☑	Yes ☐	No ☐	
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑	

Container/Temp Blank temperature? **3°** *4° C ± 2 Acceptable*
If given sufficient time to cool.

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

Corrective Action _____

Anne, Nancy or Kelly

CHAIN-OF-CUSTODY RECORD

HALL ENVIRONMENTAL ANALYSIS LABORATORY
4901 Hawkins NE, Suite A
Albuquerque, New Mexico 87109
Tel. 505.345.3975 Fax 505.345.4107
www.hallenvironmental.com

Client: Ciniza Refinery, Giant Refining Co

Address: Rt 3, Box 7, Gallup, NM, 87301

Phone #: 505-722-3833

Fax #: 505-722-0210

Project Name: 2004 Cooling Tower Sludge

Project #: Waste + Disposal Determination

Project Manager:

Sampler: Ed Riegel

Samples Cold?: ☒ Yes ☐ No 3°

ANALYSIS REQUEST

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative: $HgCl_2$	Preservative: HCl	Preservative:	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gasoline Only)	TPH Method 8015B MOD (Gas/Diesel)	TPH (Method 418.1)	Volatiles Full List (8021)	EDB (Method 504.1)	EDC (Method 8021)	8310 (PNA or PAH)	RCRA 8 Metals TCLP	Cations (Na, K, Ca, Mg), Zn, Mn	Anions (F, Cl, NO_3, NO_2, PO_4, SO_4)	8081 Pesticides / PCB's (8082)	~~8260 (VOA)~~ Fe	~~8270 (Semi-VOA)~~	Zinc, Manganese	Total Metals	Air Bubbles or Headspace (Y or N)
6-28-04	0910	solid	Cooling Tower sludge					0407021-1									X	X	X						

Date	Time	Relinquished By: (Signature)	Received By: (Signature)
6-28-04	0830	to Fed Ex	
Date:	Time:	Relinquished By: (Signature)	Received By: (Signature) 7/2/04 1320

Remarks: May have pathogens (biological) ~~where~~ gloves + HEPA Mask. Wear

GIANT
INDUSTRIES, INC.

Route 3, Box 7
Gallup, New Mexico
87301

Attachment 3

August 30, 2004

Mr. Joe Murrietta, Executive Director
NWNM Regional Solid Waste Authority
PO Box 1330
Thoreau, NM 87323

RE: Disposal of Cooling Tower Basin Residue and Coarse Salt

Dear Mr. Murrietta:

Giant Refining Company – Ciniza Refinery would like to dispose of the above-mentioned waste at your Red Rocks Facility.

Enclosed you will find analytical results on the material from the Cooling Tower cleanup.

In addition to the material from the Cooling Tower, there is a significant amount of coarse salt from the Brine Tank cleanout. These were placed in the same containment area and became mixed. We would like to dispose of them together in the same roll off bins as there is no way to separate them now.

The salt from the brine tank is used for water treatment and is just regular salt (Na Cl). It came into contact with water and nothing more.

If you have any questions or concerns, please give me a call at 505-722-0258.

Sincerely,

Steve Morris
Environmental Engineer
Giant Refining Co. – Ciniza Refinery

Enc.

CC: Wayne Price, Oil Conservation Division (w/enc.)

Attachment
1-1

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Attachment 5

COVER LETTER

November 04, 2004

Steve Morris
Giant Refining Co
Rt. 3 Box 7
Gallup, NM 87301
TEL: (505) 722-3833
FAX (505) 722-0210

RE: Boundry Well October 2004 Order No.: 0410281

Dear Steve Morris:

Hall Environmental Analysis Laboratory received 2 samples on 10/29/2004 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent.

Reporting limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Business Manager
Nancy McDuffie, Laboratory Manager

4901 Hawkins NE ■ Suite D ■ Albuquerque, NM 87109
505.345.3975 ■ Fax 505.345.4107
www.hallenvironmental.com

Hall Environmental Analysis Laboratory

Date: *04-Nov-04*

CLIENT: Giant Refining Co
Lab Order: 0410281
Project: Boundry Well October 2004
Lab ID: 0410281-01

Client Sample ID: BW-2C
Collection Date: 10/28/2004 9:30:00 AM
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: KTM
Acetone	ND	10		µg/L	1	11/3/2004
Surr: 1,2-Dichloroethane-d4	97.3	70.6-124		%REC	1	11/3/2004
Surr: 4-Bromofluorobenzene	91.8	76.4-130		%REC	1	11/3/2004
Surr: Dibromofluoromethane	91.3	87.2-131		%REC	1	11/3/2004
Surr: Toluene-d8	101	82.1-123		%REC	1	11/3/2004

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *04-Nov-04*

CLIENT: Giant Refining Co
Lab Order: 0410281
Project: Boundry Well October 2004
Lab ID: 0410281-02

Client Sample ID: BW-3C
Collection Date: 10/28/2004 2:00:00 PM
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: KTM
Benzene	ND	1.0		µg/L	1	11/3/2004
Toluene	ND	1.0		µg/L	1	11/3/2004
Xylenes, Total	ND	1.0		µg/L	1	11/3/2004
Surr: 1,2-Dichloroethane-d4	99.9	82.1-124		%REC	1	11/3/2004
Surr: 4-Bromofluorobenzene	95.6	76.2-122		%REC	1	11/3/2004
Surr: Dibromofluoromethane	92.6	67.2-131		%REC	1	11/3/2004
Surr: Toluene-d8	107	82.1-123		%REC	1	11/3/2004

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Well Closure Report

PRECISION ENGINEERING, INC.

505-523-7674

Well Identification: OW-2

Date of Closure: 9-28-04 Water Depth at Closure: 30' 6"

Length of Casing Extracted: 0 ft Interval: _____ to _____

Length of Perforated Casing: 20' ft Interval: 40' to 60'

Length of Screen Extracted: 0 ft Interval: _____ to _____

Well Diameter: 4" in Interval: 0 to 58' 3"

_____ in Interval: _____ to _____

_____ in Interval: _____ to _____

_____ in Interval: _____ to _____

Gravel or Sand Pack Length: 40' ft Interval: 20' to 60'

_____ ft Interval: _____ to _____

_____ ft Interval: _____ to _____

_____ ft Interval: _____ to _____

Estimated Sand/Gravel Pack Void Ratio: 0.35

Estimated Total Well Volume (Including Sand/Gravel Pack: _____ ft^3

Volume of Grout: 1) 19.7 ft^3 Type: 6% Bentonite/Cement

Interval: 0 to 58' 3"

Tremmie Depth: 58' 3"

2) _____ ft^3 Type: _____

Interval: _____ to _____

Tremmie Depth: _____

3) _____ ft^3 Type: _____

Interval: _____ to _____

Tremmie Depth: _____

Total Grout Volume: 19.7 ft^3 Crew Foreman: WHK

Notes: _____

Well Closure Report

PRECISION ENGINEERING, INC.

505-523-7674

Well Identification: OW-3

Date of Closure: 9-28-04 Water Depth at Closure: 33' 7'

Length of Casing Extracted: 0 ft Interval: _____ to _____

Length of Perforated Casing: 20' ft Interval: 20' to 60'

Length of Screen Extracted: 0 ft Interval: _____ to _____

Well Diameter: 4" in Interval: 0 to 66'

_____ in Interval: _____ to _____

_____ in Interval: _____ to _____

_____ in Interval: _____ to _____

Gravel or Sand Pack Length: 40' ft Interval: 26' to 66'

_____ ft Interval: _____ to _____

_____ ft Interval: _____ to _____

_____ ft Interval: _____ to _____

Estimated Sand/Gravel Pack Void Ratio: 0.35

Estimated Total Well Volume (Including Sand/Gravel Pack: _____ ft^3

Volume of Grout: 1) 19.4 ft^3 Type: 6% Bentonite/Cement

Interval: 0 to 66'

Tremmie Depth: 66'

2) _____ ft^3 Type: _____

Interval: _____ to _____

Tremmie Depth: _____

3) _____ ft^3 Type: _____

Interval: _____ to _____

Tremmie Depth: _____

Total Grout Volume: 19.4 ft^3 Crew Foreman: WHK

Notes: _____

Well Closure Report

PRECISION ENGINEERING, INC.

505-523-7674

Well Identification: OW-7

Date of Closure: 10-1-04 Water Depth at Closure: 5' 9"

Length of Casing Extracted: 0 ft Interval: _____ to _____

Length of Perforated Casing: 20' ft Interval: 50' to 70'

Length of Screen Extracted: 0 ft Interval: _____ to _____

Well Diameter: 4" in Interval: 0 to 72' 3"

_____ in Interval: _____ to _____

_____ in Interval: _____ to _____

_____ in Interval: _____ to _____

Gravel or Sand Pack Length: 25' ft Interval: 45' to 70'

_____ ft Interval: _____ to _____

_____ ft Interval: _____ to _____

_____ ft Interval: _____ to _____

Estimated Sand/Gravel Pack Void Ratio: 0.35

Estimated Total Well Volume (Including Sand/Gravel Pack: _____ ft^3

Volume of Grout: 1) 23.4 ft^3 Type: 6% Bentonite/Cement

Interval: 0 to 72' 3"

Tremmie Depth: 72' 3"

2) _____ ft^3 Type: _____

Interval: _____ to _____

Tremmie Depth: _____

3) _____ ft^3 Type: _____

Interval: _____ to _____

Tremmie Depth: _____

Total Grout Volume: 23.4 ft^3 Crew Foreman: WHK

Notes: _____

Well Closure Report

PRECISION ENGINEERING, INC.

505-523-7674

Well Identification: OW-9

Date of Closure: 9-29-04 Water Depth at Closure: 4' 6"

Length of Casing Extracted: 10 ft Interval: 0 to 10

Length of Perforated Casing: 20' ft Interval: 40' to 60'

Length of Screen Extracted: 0 ft Interval: _____ to _____

Well Diameter: 4" in Interval: 0 to 46' 0"

_____ in Interval: _____ to _____

_____ in Interval: _____ to _____

_____ in Interval: _____ to _____

Gravel or Sand Pack Length: 40' ft Interval: 20' to 60'

_____ ft Interval: _____ to _____

_____ ft Interval: _____ to _____

_____ ft Interval: _____ to _____

Estimated Sand/Gravel Pack Void Ratio: 0.35

Estimated Total Well Volume (Including Sand/Gravel Pack: _____ ft^3

Volume of Grout: 1) 16.0 ft^3 Type: 6% Bentonite/Cement

Interval: 0 to 46' 0"

Tremmie Depth: 46' 0"

2) _____ ft^3 Type: _____

Interval: _____ to _____

Tremmie Depth: _____

3) _____ ft^3 Type: _____

Interval: _____ to _____

Tremmie Depth: _____

Total Grout Volume: 16.0 ft^3 Crew Foreman: WHK

Notes: _____

Well Closure Report

PRECISION ENGINEERING, INC.

505-523-7674

Well Identification: OW-24

Date of Closure: 9-29-04 Water Depth at Closure: 22' 0"

Length of Casing Extracted: 0 ft Interval: _____ to _____

Length of Perforated Casing: 20' ft Interval: 41' to 61'

Length of Screen Extracted: 0 ft Interval: _____ to _____

Well Diameter: 2" in Interval: 0 to 55' 1"

_____ in Interval: _____ to _____

_____ in Interval: _____ to _____

_____ in Interval: _____ to _____

Gravel or Sand Pack Length: 33' ft Interval: 28' to 61'

_____ ft Interval: _____ to _____

_____ ft Interval: _____ to _____

_____ ft Interval: _____ to _____

Estimated Sand/Gravel Pack Void Ratio: 0.35

Estimated Total Well Volume (Including Sand/Gravel Pack: _____ ft^3

Volume of Grout: 1) 22.0 ft^3 Type: 6% Bentonite/Cement

Interval: 0 to 55' 1"

Tremmie Depth: 55' 1"

2) _____ ft^3 Type: _____

Interval: _____ to _____

Tremmie Depth: _____

3) _____ ft^3 Type: _____

Interval: _____ to _____

Tremmie Depth: _____

Total Grout Volume: 22.0 ft^3 Crew Foreman: WHK

Notes: _____

Well Closure Report

PRECISION ENGINEERING, INC.

505-523-7674

Well Identification: SMW- 1

Date of Closure: 10-1-04 Water Depth at Closure: 22' 0"

Length of Casing Extracted: 20 ft Interval: 0 to 20

Length of Perforated Casing: 20' ft Interval: 26' to 46'

Length of Screen Extracted: 0 ft Interval: _____ to _____

Well Diameter: 2" in Interval: 0 to 46' 0"

_____ in Interval: _____ to _____

_____ in Interval: _____ to _____

_____ in Interval: _____ to _____

Gravel or Sand Pack Length: 22' 0" ft Interval: 24' 0" to 46' 0"

_____ ft Interval: _____ to _____

_____ ft Interval: _____ to _____

_____ ft Interval: _____ to _____

Estimated Sand/Gravel Pack Void Ratio: 0.35

Estimated Total Well Volume (Including Sand/Gravel Pack: _____ ft^3

Volume of Grout: 1) 8.5 ft^3 Type: 6% Bentonite/Cement

Interval: 0 to 46' 0"

Tremmie Depth: 46' 0"

2) _____ ft^3 Type: _____

Interval: _____ to _____

Tremmie Depth: _____

3) _____ ft^3 Type: _____

Interval: _____ to _____

Tremmie Depth: _____

Total Grout Volume: 8.5 ft^3 Crew Foreman: WHK

Notes: _____

Well Closure Report

PRECISION ENGINEERING, INC.
505-523-7674

Well Identification: SMW-3

Date of Closure: 10-1-04 Water Depth at Closure: 8' 0"

Length of Casing Extracted: 20 ft Interval: 0 to 20

Length of Perforated Casing: 20' ft Interval: 24' to 44' 0"

Length of Screen Extracted: 0 ft Interval: _____ to _____

Well Diameter: 2" in Interval: 0 to 44' 0"

_____ in Interval: _____ to _____

_____ in Interval: _____ to _____

_____ in Interval: _____ to _____

Gravel or Sand Pack Length: 22' 0" ft Interval: 22' 0" to 44' 0"

_____ ft Interval: _____ to _____

_____ ft Interval: _____ to _____

_____ ft Interval: _____ to _____

Estimated Sand/Gravel Pack Void Ratio: 0.35

Estimated Total Well Volume (Including Sand/Gravel Pack: _____ ft^3

Volume of Grout: 1) 8.6 ft^3 Type: 6% Bentonite/Cement

Interval: 0 to 44' 0"

Tremmie Depth: 44' 0"

2) _____ ft^3 Type: _____

Interval: _____ to _____

Tremmie Depth: _____

3) _____ ft^3 Type: _____

Interval: _____ to _____

Tremmie Depth: _____

Total Grout Volume: 8.6 ft^3 Crew Foreman: WHK

Notes: 20 feet of screen

Well Closure Report

PRECISION ENGINEERING, INC.

505-523-7674

Well Identification: SMW- 5

Date of Closure: 10-1-04 Water Depth at Closure: 31' 3"

Length of Casing Extracted: 20 ft Interval: 0 to 20

Length of Perforated Casing: 20' ft Interval: 52' 6" to 72' 6"

Length of Screen Extracted: 0 ft Interval: _____ to _____

Well Diameter: 2" in Interval: 0 to 72' 6"

_____ in Interval: _____ to _____

_____ in Interval: _____ to _____

_____ in Interval: _____ to _____

Gravel or Sand Pack Length: 22' 0" ft Interval: 50' 6" to 72' 6"

_____ ft Interval: _____ to _____

_____ ft Interval: _____ to _____

_____ ft Interval: _____ to _____

Estimated Sand/Gravel Pack Void Ratio: 0.35

Estimated Total Well Volume (Including Sand/Gravel Pack: _____ ft^3

Volume of Grout: 1) 10.7 ft^3 Type: 6% Bentonite/Cement

Interval: 0 to 72' 6"

Tremmie Depth: 72' 6"

2) _____ ft^3 Type: _____

Interval: _____ to _____

Tremmie Depth: _____

3) _____ ft^3 Type: _____

Interval: _____ to _____

Tremmie Depth: _____

Total Grout Volume: 10.7 ft^3 Crew Foreman: WHK

Notes: _____

TO VIEW THE MAP AND/OR MAPS WITH THIS DOCUMENT, PLEASE CALL THE HAZARDOUS WASTE BUREAU AT 505-476-6000 TO MAKE AN APPOINTMENT