GW - 40

GENERAL CORRESPONDENCE

YEAR(S): 2007 - 1996

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Revised June 10, 2003

Submit Original
Plus 1 Copy
to Santa Fe
1 Copy to Appropriate
District Office

DISCHARGE PLAN APPLICATION FOR SERVICE COMPANIES,GAS PLANTS, REFINERIES, COMPRESSOR, GEOTHERMAL FACILITES AND CRUDE OIL PUMP STATIONS

(Refer to the OCD Guidelines for assistance in completing the application)

☐ New ☒ Renewal ☐ Modification

1. Type: ____Refinery_____

2. Operator: ____Giant Industries, Inc GW-40

   Address: ____111 County Road 4990, Bloomfield NM 87413_____

   Contact Person: ___Mr. Bill Robertson_____Phone: __505-632-4077_____

3. Location: ____NW 1/4 _____SW 1/4 Section __22 & 27_____ Township ___29N_____ _Range __12W_____
   Submit large scale topographic map showing exact location.

4. Attach the name, telephone number and address of the landowner of the facility site. SECTION 4.0

5. Attach the description of the facility with a diagram indicating location of fences, pits, dikes and tanks on the facility. SECTION 5.0

6. Attach a description of all materials stored or used at the facility. SECTION 6.0

7. Attach a description of present sources of effluent and waste solids. Average quality and daily volume of waste water must be included. SECTION 7.0

8. Attach a description of current liquid and solid waste collection/treatment/disposal procedures. SECTION 8.0

9. Attach a description of proposed modifications to existing collection/treatment/disposal systems. SECTION 9.0

10. Attach a routine inspection and maintenance plan to ensure permit compliance. SECTION 10.0

11. Attach a contingency plan for reporting and clean-up of spills or releases. SECTION 11.0

12. Attach geological/hydrological information for the facility. Depth to and quality of ground water must be included. SECTION 12.0

13. Attach a facility closure plan, and other information as is necessary to demonstrate compliance with any other OCD rules, regulations and/or orders. SECTION 13.0

14. CERTIFICATIONI hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: ____Dave Richards_____ Title: Regulatory Coordinator

Signature: _____ Date: 1/4/07

E-mail Address: drichards@giant.com

ACKNOWLEDGEMENT OF RECEIPT
OF CHECK/CASH

I hereby acknowledge receipt of check No. _____ dated 1/11/07

or cash received on _____ in the amount of $ 100.00

from Grant Industries Inc.

for GW-40

Submitted by: Lawrence Romero Date: 1/19/07

Submitted to ASD by: Lawrence Romero Date: 1/19/07

Received in ASD by: _____ Date: _____

Filing Fee ✓ New Facility _____ Renewal ✓

Modification _____ Other _____

Organization Code 52107 Applicable FY 2004

To be deposited in the Water Quality Management Fund

Full Payment _____ or Annual Increment _____

Lodestar Services, Incorporated PO Box 3861 Farmington, NM 87499-3861 Office (505) 334-2791

January 11, 2007

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

RE: Discharge Plan Renewal DP -040

Dear Mr. Price:

Lodestar Services, Incorporated is pleased to submit the enclosed Discharge Plan Renewal Application on behalf of Giant Industries Arizona, Inc.

Once the discharge permit renewal application is deemed complete by the NMOCD, Giant will provide notice to the general public by publishing in English and Spanish a display advertisement 2" x 3" in area in the local newspaper, The Farmington Daily Times. The advertisement will be posted within 30 days of receiving approval of the renewal application from the NMOCD. Within 15 days of posting the public notice, Giant shall submit proof of the notice to the OCD in the form of a copy of the advertisement.

The notice shall include:
1. Name and address of the discharger
2. Location of the discharge
3. Brief description of the activities that produce the discharge
4. Brief description of the expected quality and volume of the discharge
5. Depth to and total dissolved solids concentration of the groundwater most likely affected by the discharge
6. Address and phone number of project manager
7. A statement that the OCD will accept comments and statements of interest regarding the application and will create facility-specific mailing lists for persons who wish to receive future notices."

Please call Mr. Mr. Bill Robertson of Giant at (505) 632-4001 or myself at (505) 334-2791 with any questions regarding this submittal.

Respectfully Submitted,
Lodestar Services, Inc.

Martin Nee

Cc. Mr. Bill Robertson, Giant
Mr. David Kirby, Giant
Mr. Dave Richards, Giant

RECEIVED

JAN 18 2007

Oil Conservation Division
Environmental Bureau

Discharge Plan
GW 040
Former Giant Bloomfield Refinery

January 6, 2007

Prepared by

Lodestar Services, Incorporated
PO Box 3861 Farmington, NM 87499
Office (505) 334-2791

Discharge Plan
GW 040
Former Giant Bloomfield Refinery

January 6, 2007

Prepared by

Lodestar Services, Incorporated
PO Box 3861 Farmington, NM 87499
Office (505) 334-2791

TABLE OF CONTENTS

1.0 Introduction

Giant Industries Arizona, Inc. proposes discharge of water derived from recovery wells at the inactive former Giant Bloomfield Refinery in San Juan County, New Mexico. The recovery wells were installed as part of a remedial action plan at the site. An annual discharge of approximately 5,000,000 gallons is expected, and the treated water will be discharged into infiltration trenches located within the site.

2.0 Responsible Parties

The operator and legally responsible party is Giant Industries:

Giant Industries Arizona, Inc.
23722 North Scottsdale Road
Post Office Box 12999
Scottsdale, Arizona 85267
Phone: 602-585-8888

Correspondence regarding this discharge plan should be directed to the local representative, Mr. Bill Richardson:

Bill Robertson
Remediation Project Manager
Giant Refining Company
111 County Road 4990
Bloomfield, New Mexico 87413
Phone: 505-632-4077

3.0 Location of Discharge and Facility

The refinery is located in the NW ¼ of Section 27 and the SW ¼ of Section 22, Township 29 N, Range 12W in San Juan County, New Mexico. It is on the corner of Highway 64 and County Road 5569, approximately 5 miles west of the town of Bloomfield, New Mexico. Plate 1 is attached and shows an aerial photograph of the refinery with significant landmarks noted. Figure 1 is a topographic map showing the boundaries of the former refinery, as well as the location of significant water bodies.

4.0 Landowner

The landowner is Giant Industries:

Giant Industries Arizona, Inc.
23722 North Scottsdale Road
Post Office Box 12999
Scottsdale, Arizona 85267
Phone: 602-585-8888

5.0 Facility Description

The facility consists of the former Giant Bloomfield Refinery and associated remedial structures both within and south of the refinery boundary. The refinery operated from 1974 to 1982 and is presently inactive.

A remedial system was installed in stages beginning in 1988 and has gradually been simplified over time. The remediation was designed to treat groundwater affected by various releases during operation of the former refinery and periodic spills at the truck unloading facility. It consists of a series of groundwater recovery wells, water treatment facilities, treated water infiltration trenches and groundwater monitoring wells (Figure 2). These facilities are located both north and south of Highway 64. The system processed approximately 4,655,006 gallons of water in 2005.

Impacted groundwater is pumped from the aquifer through a series of recovery wells located strategically within the affected area. Recovery wells are utilized to recover impacted groundwater from the aquifer and to create a hydraulic barrier to prevent migration of affected water beyond the well. A hydraulic barrier is formed as water is pumped through the recovery well, thereby depressing the water table. Figure 3 illustrates the concept. Sufficient recovery wells are placed throughout the site so that the radii of influence from adjacent wells overlap, and a barrier is formed across the plume to prevent migration of affected water.

Impacted groundwater is collected in Storage Tank 102 and subsequently treated. The method of treatment used at the Giant Bloomfield Refinery is carbon adsorption, where recovered water is pumped into a carbon filtration tank. Inside, volatile and non-volatile organic compounds are adsorbed into a carbon matrix lining the tank.

The treated water is discharged into the aquifer through an infiltration trench. The infiltration trench consists of a subsurface distribution system placed within gravel packs. Water infiltrates the surrounding strata and eventually makes its way back to the aquifer. The return of recovered water to the aquifer serves as a recharge mechanism. Figure 4 is a simplified diagram representation of groundwater recovery, treatment and disposal.

6.0 Materials Stored or Used at the Facility

Affected groundwater obtained through recovery wells is collected and temporarily stored in Tank 102. Tank 102 has a capacity of 500 barrels or 21,000 gallons. It is located within the fenced portion of the site and is bermed (Figure 2). The tank stores water before it is pumped to the carbon filtration unit for treatment. System influent is sampled and analyzed on a quarterly basis throughout the year. Results from 2005 are shown below and represent general characteristics of the recovered water stored in Tank 102.

Table 1. 2005 Analytical Data for System Influent

Month Sampled	Units	January	April	July	October
General Chemistry					
Lab pH		6.6	6.9	6.7	6.9
Lab Conductivity @ 25C	umho	3000	2700	2760	3490
Total Dissolved Solids (Calc)	mg/l	2300	2700	2260	2470
Total Alkalinity as CaCO3	mg/l	390	350	365	241
Total Hardness as CaCO3	mg/l	920	880	778	1200
Bicarbonate as HCO3	mg/l	390	350	365	241
Carbonate as CO3	mg/l	1.0	1.0	1.0	1.0
Hydroxide	mg/l	nd	nd	nd	1.0
Chloride	mg/l	84	81	188	78.7
Sulfate	mg/l	1300	1200	1270	1340
Calcium	mg/l	320	310	270	341
Magnesium	mg/l	29	28	25.4	28.7
Potassium	mg/l	3.8	3.7	6.72	8.9
Sodium	mg/l	420	420	359	420
HALOCARBONS					
Bromodichloromethane	µg/L	nd	nd	nd	nd
Bromoform	µg/L	nd	nd	nd	nd
Bromomethane	µg/L	nd	nd	nd	nd
Carbon Tetrachloride	µg/L	nd	nd	nd	nd
Chloroethane	µg/L	nd	nd	nd	nd
Chloroform	µg/L	nd	nd	nd	nd
Chloromethane	µg/L	nd	nd	nd	nd
Dibromochloromethane	µg/L	nd	nd	nd	nd
1,2-Dibromomethane (EDB)	µg/L	nd	nd	nd	nd
1,2-Dichlorobenzene	µg/L	nd	nd	nd	nd
1,3-Dichlorobenzene	µg/L	nd	nd	nd	nd
1,4-Dichlorobenzene	µg/L	nd	nd	nd	nd
1,1-Dichloroethane	µg/L	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	µg/L	nd	nd	nd	nd
1,1-Dichoroethene	µg/L	nd	nd	nd	nd
trans-1,2-Dichloroethene	µg/L	nd	nd	nd	nd
1,2-Dichloropropane	µg/L	nd	nd	nd	nd
cis-1,-Dichloropropene	µg/L	nd	nd	nd	nd
trans-1,2-Dichloropropene	µg/L	nd	nd	nd	nd
Methylene Chloride	µg/L	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	µg/L	nd	nd	nd	nd
Tetrachloroethane	µg/L	nd	nd	nd	nd
1,1,1-Trichloroethane	µg/L	nd	nd	nd	nd
1,1,2-Trichloroethane	µg/L	nd	nd	nd	nd
Trichloroethene	µg/L	nd	nd	nd	nd
Trichlorofluoromethane	µg/L	nd	nd	nd	nd
Vinyl Chloride	µg/L	nd	nd	nd	nd
AROMATICS					
Benzene	µg/L	nd	nd	nd	nd
Chlorobenzene	µg/L	nd	nd	nd	nd
1,2-Dichlorobenzene	µg/L	nd	nd	nd	nd

1,3-Dichlorobenzene	µg/L	nd	nd	nd	nd
1,4-Dichlorobenzene	µg/L	nd	nd	nd	nd
Ethylbenzene	µg/L	nd	nd	nd	nd
Methyl-t-Butyl Ether	µg/L	nd	nd	nd	nd
Toluene	µg/L	nd	nd	nd	nd
Total Xylenes	µg/L	nd	nd	nd	nd

NOTE: nd: not detected, mg/l: milligrams per liter, µg/L: micrograms per liter

All effluent is treated by activated carbon filtration prior to discharge. This process removes contaminants from the groundwater by forcing it through a tank containing activated carbon treated to attract the contaminants. Figure 5 details the carbon adsorption tank and associated piping used at the refinery. Several pallets of activated carbon media are stored in the building housing the water treatment system.

7.0 Sources and Quantities of Effluent Generated at the Facility

The facility effluent consists of treated water. Effluent is derived from groundwater, which is pumped from a series of recovery wells at each site. Up to 420,000 gallons of water may be treated and discharged per month. Table 2 shows the results of analytical work conducted in 2005 and is representative of effluent quality. General water chemistry, EPA 601, EPA 602 and PAH analysis are all shown. System effluent is sampled on a quarterly basis for general chemistry, halocarbons and aromatics. Semi-annual samples are analyzed for PAHs, and metals are analyzed annually.

Table 2. 2005 Analytical Data for System Effluent

Month Sampled	**Units**	**January**	**April**	**July**	**October**
General Chemistry					
Lab pH		6.7	7.0	6.8	7.0
Lab Conductivity @ 25C	umho	3000	2800	2900	3240
Total Dissolved Solids (Calc)	mg/l	2500	2500	2240	2400
Total Alkalinity as CaCO3	mg/l	330	360	338	273
Total Hardness as CaCO3	mg/l	970	880	868	1050
Bicarbonate as HCO3	mg/l	330	360	336	273
Carbonate as CO3	mg/l	1.0	nd	2.12	1.0
Hydroxide	mg/l	nc	nd	nd	nd
Chloride	mg/l	81	81	108	80.1
Sulfate	mg/l	1300	1200	709	1520
Calcium	mg/l	340	310	301	318
Magnesium	mg/l	29	28	28.4	27.4
Potassium	mg/l	3.8	3.6	7.6	6.34
Sodium	mg/l	410	420	405	410
HALOCARBONS					
Bromodichloromethane	µg/L	nd	nd	nd	nd

Month Sampled	Units	January	April	July	October
Bromoform	µg/L	nd	nd	nd	nd
Bromomethane	µg/L	nd	nd	nd	nd
Carbon Tetrachloride	µg/L	nd	nd	nd	nd
Chloroethane	µg/L	nd	nd	nd	nd
Chloroform	µg/L	nd	nd	nd	nd
Chloromethane	µg/L	nd	nd	nd	nd
Dibromochloromethane	µg/L	nd	nd	nd	nd
1,2-Dibromomethane (EDB)	µg/L	nd	nd	nd	nd
1,2-Dichlorobenzene	µg/L	nd	nd	nd	nd
1,3-Dichlorobenzene	µg/L	nd	nd	nd	nd
1,4-Dichlorobenzene	µg/L	nd	nd	nd	nd
1,1-Dichloroethane	µg/L	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	µg/L	nd	nd	nd	nd
1,1-Dichoroethene	µg/L	nd	nd	nd	nd
trans-1,2-Dichloroethene	µg/L	nd	nd	nd	nd
1,2-Dichloropropane	µg/L	nd	nd	nd	nd
cis-1,-Dichloropropene	µg/L	nd	nd	nd	nd
trans-1,2-Dichloropropene	µg/L	nd	nd	nd	nd
Methylene Chloride	µg/L	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	µg/L	nd	nd	nd	nd
Tetrachloroethane	µg/L	nd	nd	nd	nd
1,1,1-Trichloroethane	µg/L	nd	nd	nd	nd
1,1,2-Trichloroethane	µg/L	nd	nd	nd	nd
Trichloroethene	µg/L	nd	nd	nd	nd
Trichlorofluoromethane	µg/L	nd	nd	nd	nd
Vinyl Chloride	µg/L	nd	nd	nd	nd
AROMATICS					
Benzene	µg/L	nd	nd	nd	nd
Chlorobenzene	µg/L	nd	nd	nd	nd
1,2-Dichlorobenzene	µg/L	nd	nd	nd	nd
1,3-Dichlorobenzene	µg/L	nd	nd	nd	nd
1,4-Dichlorobenzene	µg/L	nd	nd	nd	nd
Ethylbenzene	µg/L	nd	nd	nd	nd
Methyl-t-Butyl Ether	µg/L	nd	nd	nd	nd
Toluene	µg/L	nd	nd	nd	nd
Total Xylenes	µg/L	nd	nd	nd	nd
PAH					
1-Methylnapthalene	µg/L	nd			nd
2-Methylnapthalene	µg/L	nd			nd
Benzo(a)pyrene	µg/L	nd			nd
Napthalene	µg/L	nd			nd
METALS					
Antimony	mg/l	nd			
Arsenic	mg/l	nd			
Beryllium	mg/l	nd			
Cadmium	mg/l	nd			
Chromium	mg/l	nd			
Copper	mg/l	0.022			
Lead	mg/l	nd			

Month Sampled	Units	January	April	July	October
Nickel	mg/l	0.024			
Selenium	mg/l	nd			
Silver	mg/l	nd			
Thallium	mg/l	nd			
Zinc	mg/l	nd			
Mercury	mg/l	nd			

NOTE: nd: not detected, mg/l: milligrams per liter, µg/L: micrograms per liter

Grab samples of effluent water are collected through the sample valve shown in Figure 5. Sample water is collected by filling containers supplied by the laboratory. The pre-cleaned and pre-preserved containers vials are filled and capped with no or minimal air inside to prevent degradation of the sample. Samples are labeled with the date and time of collection, well designation, project name, collector's name and parameters to be analyzed. They are immediately sealed and packed on ice. The samples are shipped to Pinnacle Laboratories in Albuquerque, NM in a sealed cooler via FedEx before designated holding times expire. Proper chain-of-custody (COC) procedures are followed with logs documenting the date and time sampled, sample number, type of sample, sampler's name, preservative used, analyses required and sampler's signatures.

As shown in Table 2, toxic pollutants, as defined by WQCC standards, are absent from the effluent water. Results for most analytes are not detected. When constituents are present, they show up only in trace amounts.

8.0 Description of Liquid Waste Storage and Disposal Procedure

Tank 102 acts an intermediate storage tank for the water treatment system. The tank stores water before it is pumped to the carbon filtration unit for treatment. It has a capacity of 500 barrels or 21,000 gallons. Berms are present around the tank and will contain a volume 1.5 times the volume of the tank itself. Piping and instrumentation associated with Tank 102 is illustrated in Figure 6. Water is pumped from Tank 102 to the carbon filtration unit by Pump #1, P1. Pump operation is based on the level of water in Tank 102. Level switches LS-1 and LS-2 are managed by the Control Panel, located in the old Dispatch Office, to determine the water level and consequently status of pumps. Level safety switches LSH-1 and LSL-1 indicate abnormally high or low water level conditions in Tank 102 and initiate control panel alarm and shutdown functions.

Most water piping was installed in 1990. However, construction of County Road 5569 to the west of the site demanded that all piping under the old road be replaced in 2006. All piping is constructed of PVC or other hydrocarbon and corrosion resistant plastic. The majority of the piping is underground, but water pipes that connect the on-site and off-site systems cross through a culvert under US Highway 64. The highway parallels the southern boundary of the refinery property (Figure 2). The exposed water piping is insulated and further protected from freezing by heat tracing. Hydrostatic testing of all

piping will be conducted on an annual basis in March of each year. All lines will be tested to a pressure ten percent above normal operating pressure for 30 minutes.

After water is treated by carbon adsorption, effluent water is discharged into an infiltration trench within the refinery (Figure 2). The infiltration trench consists of a subsurface distribution system placed within gravel packs. Figure 7 shows details and specifications of typical trench construction and layout.

Lab results detailing the quality of effluent water discharged through the infiltration gallery is shown in Table 2. System effluent is sampled on a quarterly basis for general chemistry, halocarbons and aromatics. Semi-annual samples are analyzed for PAHs, and metals are analyzed annually. Effluent water quality is generally good and analytes are consistently not detected in collected samples. Treated effluent volumes and flow rates are monitored weekly with a water meter that has been installed near the Carbon adsorption tank (Figure 5). These values are recorded and compared with previous readings to ensure normal operation.

Numerous monitoring wells are located within and south of the refinery (Figure 2) to detect leakage or failure of the remedial system. Monitoring wells within the refinery are identified by the acronym GBR (Giant Bloomfield Refinery) followed by a numerical designation. Monitoring wells located south of the refinery are identified by the acronym SHS (Suburban Heights Subdivision) followed by a number. Monitoring wells are sampled annually according to the sampling matrix attached as Appendix A.

Each well is unique in construction and geology. Drill logs and completion diagrams for all wells have been submitted to the New Mexico Oil Conservation Division in previously submitted reports.

9.0 Proposed Modifications

The treatment system has been simplified since the previous discharge permit was issued. Other steps are being taken to further reduce the facilities in use on site. All tanks, with the exception of Tank 102, have been abandoned in place and are no longer in use at the facility. This includes the long term storage tanks, Tank 22, Tank 21, Tank 101 and Tank 106. The northern most infiltration gallery has been abandoned, as has the air stripper. Gravity separation no longer occurs in Tank 102 since product is not recovered from the wells.

Giant Industries has requested approval from the OCD to plug and abandon nine groundwater monitoring wells and one groundwater recover well located down-gradient of the refinery. Giant understands that the OCD requires the wells to remain until the project is complete. Giant has removed these wells from the sampling matrix and has discontinued pumping well SHS-14 based on the number of clean reporting quarters as noted below. The proposed sampling matrix in Appendix A reflects these changes.

Type of Well	Identification	Years of Monitoring Beneath Standards

Type of Well	Identification	Years of Monitoring Beneath Standards
Monitoring	SHS-3	7
Monitoring	SHS-4	8
Monitoring	SHS-6	8
Monitoring	SHS-10	8
Monitoring	SHS-12	8
Monitoring	SHS-13	8
Recovery	SHS-14	3
Monitoring	SHS-15	8
Monitoring	SHS-16	8
Monitoring	SHS-17	7

10.0 Inspection, Maintenance and Reporting

Inspection, maintenance and reporting are an integral part of the remediation project. Inspection provides information critical to the safe and efficient operation of the system. Maintenance is key in the prevention of undesirable events and excessive downtime. Spills of untreated effluent will be reported to the OCD office when the volume exceeds five barrels.

Regular inspections are performed to assure safe and efficient operation. The system is monitored on a regular basis during the work week. Visual observations are made, leaks are reported, as are equipment malfunctions and the status of the control system. Observations are recorded in a bound field logbook with the date, time and person recording the information noted.

An inspection is made weekly in the control building at Tank 102, the southern infiltration gallery and each recovery well. All equipment is inspected for leaks and malfunctions. The operator is familiar with the location of underground lines and notes any surface indication of underground leaks. Leaks of any size are noted and repaired. Readings from all water meters are observed and recorded in the logbook, and comparisons to previous readings are made. Water levels are recorded on a quarterly basis. This includes both monitoring and recovery wells. An electronic water/oil detection tape is used to determine levels. The data are recorded in a bound logbook.

Maintenance of the system includes replacement of filters in well houses, rotating equipment lubrication, air compressor oil changes, adding nutrients as necessary, listening for unusual pump and motor noise, inspecting the carbon pre-filter and repairing all equipment as required.

Appendix A contains sampling frequency and analytical requirements for applicable wells. Analytical results help determine the effectiveness and progress of remedial efforts. Quarterly potentiometric surface maps are prepared from water level data for inclusion in the annual report. Figure 8 is a potentiometric map for 2005 water levels. The contours on the map represent the elevation of surface of the groundwater. The map is useful in determining direction of groundwater flow and effectiveness of hydraulic control achieved by the recovery well system. Sampling results are reported to the

NMOCD in the annual report submitted each year. A copy of the 2005 annual report is attached in Appendix C.

11.0 Spill and Leak Prevention and Reporting Procedures

Leaks and spills are not likely; however, the potential does exist for these events. Tanks and piping are the most likely locations. Historical monitoring of system influent and effluent indicates that neither recovered nor discharged water contain any toxic pollutants (Tables 1 and 2). A spill at the former refinery would not be a serious threat. Regardless, safeguards are in place to prevent such an occurrence including choice of construction materials, safety and shutdown devices, secondary containment, inspection and security.

All piping is constructed of PVC or other hydrocarbon and corrosion resistant plastic. Material choices for valves and controls include plastic, stainless steel, bronze and cast iron. All are suitable for water and hydrocarbon service. Storage Tank 102 is constructed of steel. Tank 102 has viable earthen secondary containment berms in place. The bermed area has a minimum liquid capacity of 1.5 times the total capacity of the tank contained within it. Berms are monitored and maintained to ensure effectiveness.

The Control Panel, located in the Dispatch Office, serves to monitor and control the operation of the treatment system, while providing alarm and shutdown functions to safeguard against spills and other undesirable events. Safety, alarm and shutdown functions are also initiated by the Control Panel. In the event of a power failure, the system will shut down. It will return to normal operations once power is restored. All storage tanks are equipped with high and low level liquid sensors to detect breaches or overfills.

Regular inspections are performed during the work week. These inspections include looking for visual indications of leaks, checking tank levels, recording and comparing meter readings and checking the condition of pump seals and motors. Unusual conditions are noted in the logbook and reported to the Project Manager.

The facility is entirely fenced with chain link or barbed wire. Gates are locked and access is limited to facility personnel and supervised visitors and contractors.

Should a problem occur, pumps or vacuum trucks are to be used to remove water contained within constructed berms. Leaks outside of tank containment berms should be contained or redirected so that they can be picked up by pumps or vacuum trucks and placed back in storage. In the event of a broken pipe, the leaking section should be isolated by closing necessary valves and shutting down pumps. A red emergency shutdown button is located on the face of the control panel. Depressing the button shuts down all pumps and closes all air-operated valves. It should be used in case of emergency. Any affected soil will be sampled, and if results indicate NMOCD standards have been exceeded, the impacted soil will be excavated and removed from the site.

In the event of an unplanned release of water or hydrocarbon at the facility, the Project Manager should be notified and act as the response coordinator. If the Project Manager is not available, the next person noted in the following list of alternates should be notified.

	Name	Office Phone	Cellular Phone
Project Manager	Bill Robertson	632-4077	320-3415
Environmental Technician	Jeany Overman	632-4018	330-6706
Transportation Safety Manager	Bill Robertson	632-4077	320-3415

If it is determined that the release is 5 barrels or greater, the local NMOCD field office will be notified within 24 hours of the spill and a written report submitted.

12.0 Site Characteristics

The refinery is located within a mile of major water features, including the San Juan River, the Hammond Irrigation Ditch and two dry arroyos. These features are marked on the attached topographic map. There are sixteen water wells located within one-quarter mile of the former refinery. All water wells are domestic and are listed in Appendix B. The use of all domestic water wells downgradient of the Bureau of Land Management's (BLM) Lee Acres Superfund Site (Lee Acres) has been discontinued and a public water supply provided for all residents. This includes all water wells downgradient of the refinery. The BLM has numerous groundwater monitoring wells surrounding the refinery.

The refinery is located on weathered outcrops of Nacimiento Formation, which is comprised of shales, sandstones and siltstones of Cretaceous-Tertiary age. Immediately to the west of the refinery and on Giant's property is a large unnamed arroyo, which is underlain by 30 to 60 feet of Quaternary alluvial sediments (Plate 1). Older Quaternary terrace deposits of cobbles and boulders are observed on the interfluvial ridges adjacent to the arroyo. These terrace deposits may have been utilized as fill on the refinery site. The San Juan River Valley is located south of the site and contains up to several hundred feet of alluvial fill.

The uppermost zone of groundwater in the refinery area is unconfined to partially confined water table unit, which is hosted by the weathered, locally porous sandstones and shales of the Nacimiento Formation and arroyo alluvium. These units merge hydrologically with the San Juan River alluvium to the south. Figure 9 is a generalized east-west cross section through the refinery site showing the relationship of the arroyo alluvium to bedrock. Major hydrogeologic features of the site are:

- An interconnected water table aquifer hosted by both valley and arroyo fill and the upper parts of the Nacimiento Formation;
- Groundwater at a depth of 30 to 70 feet beneath the land surface;

- An upper water table surface generally conforming to topography, with groundwater flow from north or northeast to south (towards the San Juan River) through the refinery area;
- Minor, local zones of perched groundwater lying 5 to 10 feet above the water table.

Water levels were measured in all wells on the refinery property during 2005. A record of these measurements is shown in the attached annual report (Appendix C). A groundwater contour map was prepared based on the static water levels of all the wells at the refinery (Figure 8). This map is representative of static conditions of the aquifer because pumping was not being done at the time. Total dissolved solids (TDS) concentrations of the area groundwater range from 1700 mg/L to 3100 mg/L. TDS concentrations of samples from groundwater monitoring wells are shown on Figure 8. Samples were collected according to the sampling matrix shown in Appendix A.

12.1 Flooding Potential

The greatest threat to flooding of the refinery site are the San Juan River, which is located less than one mile south of the site, and the unnamed arroyo located within the site itself. No other bodies of water or groundwater discharge sites are located within one mile of the perimeter of the facility.

History suggests flooding potential of the San Juan River is small. From 1904 until 1976, only 23 flood events (on individual streams, not concurrent on all streams) have been recorded. According to a study conducted by the New Mexico Floodplain Managers Association (2003), previous floods of the San Juan River resulted from general rainstorms, snowmelt augmented by rain, and from cloudburst storms. Rain floods usually occur during the months of September and October. This type of flood results from prolonged heavy rainfall over tributary areas and is characterized by high peak flows of moderate duration. Major floods (recurrence interval of 100 or more years) result from excessive snowmelt runoff generated in the watershed upstream from Bloomfield. Flood flows generated by snowmelt generally occur during the period from May through July. Snowmelt flooding is characterized by moderate peak flows, large volume and long duration, and marked diurnal fluctuation in flow. The refinery is elevated above the floodplain of the San Juan River, decreasing the chance of a river flood, such as the ones described above, from reaching the site.

The flooding potential of the arroyo is predicted to be low as well. Similar arroyos have been studied in detail near Farmington and are described as ephemeral in character, flowing only during periods of heavy rainfall (New Mexico Floodplain Managers Association, 2003). Furthermore, the arroyo's influence on the refinery site has been decreased due to the construction of a new highway located between the arroyo and the refinery.

13.0 Other Compliance Information

The NMOCD will be notified of any release in accordance with the requirements of NMOCD Rule 116 and WQCC Section 1203. Depending on the size of the release, verbal and written notification will be submitted. A major release is defined as a release in excess of 25 barrels or any amount of release that reaches a water body or causes harm to public health or the environment. A major release requires immediate verbal notice within 24 hours of the spill. Written notice shall be submitted within 15 days of the spill to confirm verbal notification and to detail planned corrective actions. A minor release, defined as less than 5 barrels, shall be reported in a written notice to the NMOCD within 15 days of the spill. All written notices shall include appropriate forms and detailed remediation plans.

The OCD will be notified when operations at the facility are discontinued for a period in excess of six months. Prior to closure of the facility, a closure plan will be submitted to the NMOCD for approval by the Director in accordance with WQCC Section 3107.A.11. Permanent closure will include removing all structures and grading the site to match natural contours. All materials will be salvaged or disposed of in accordance with regulations. Plans for any maintenance and monitoring will be described in the formal closure plan.

14.0 References

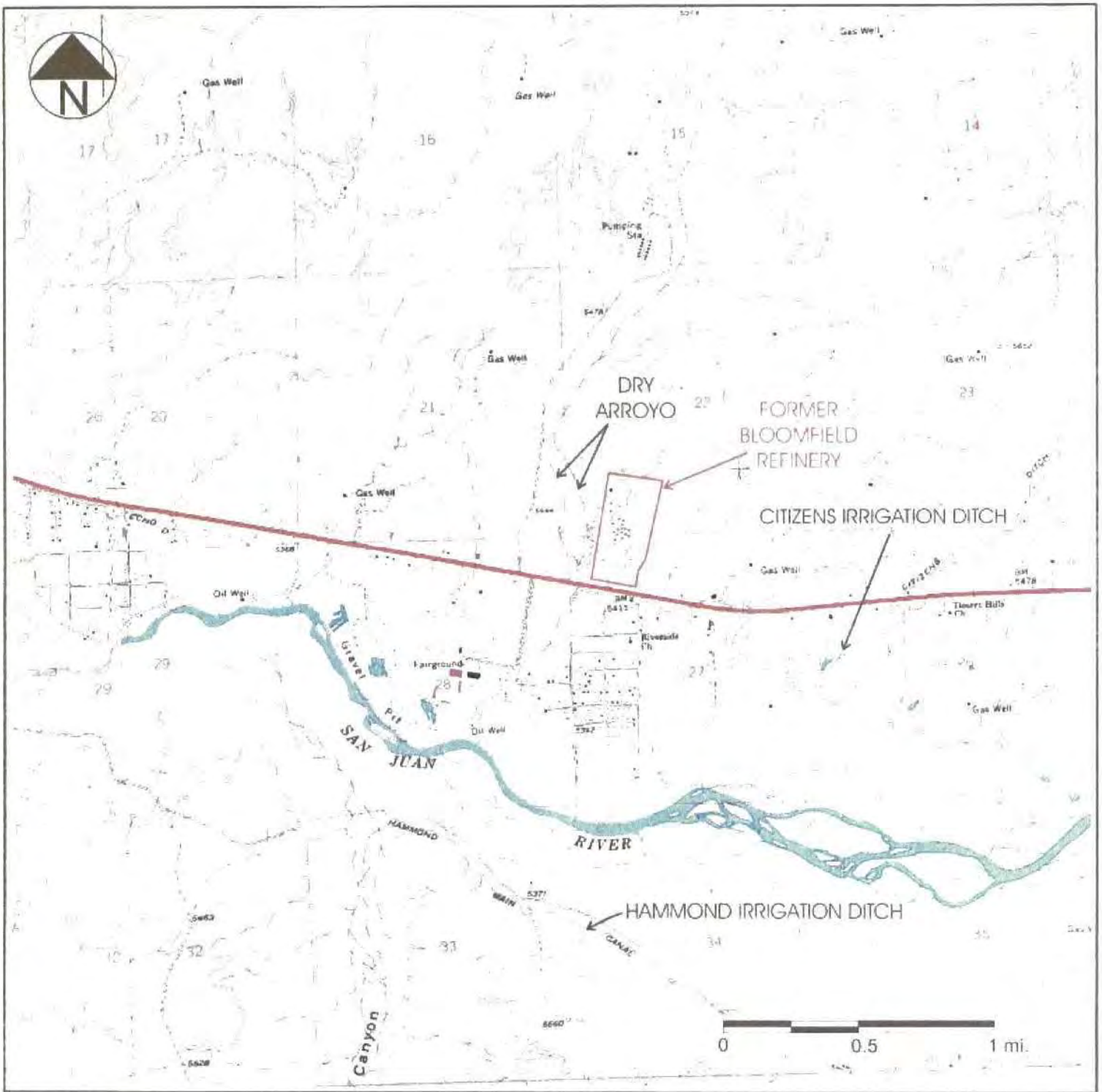
New Mexico Floodplain Managers Association, 2003, A History of Floods and Flood Problems in New Mexico, LA Bond Associates, High Rolls, New Mexico, 144 p.

New Mexico Office of the State Engineer WATERS Database (**http://www.ose.state.nm.us/waters_db_index.html**)

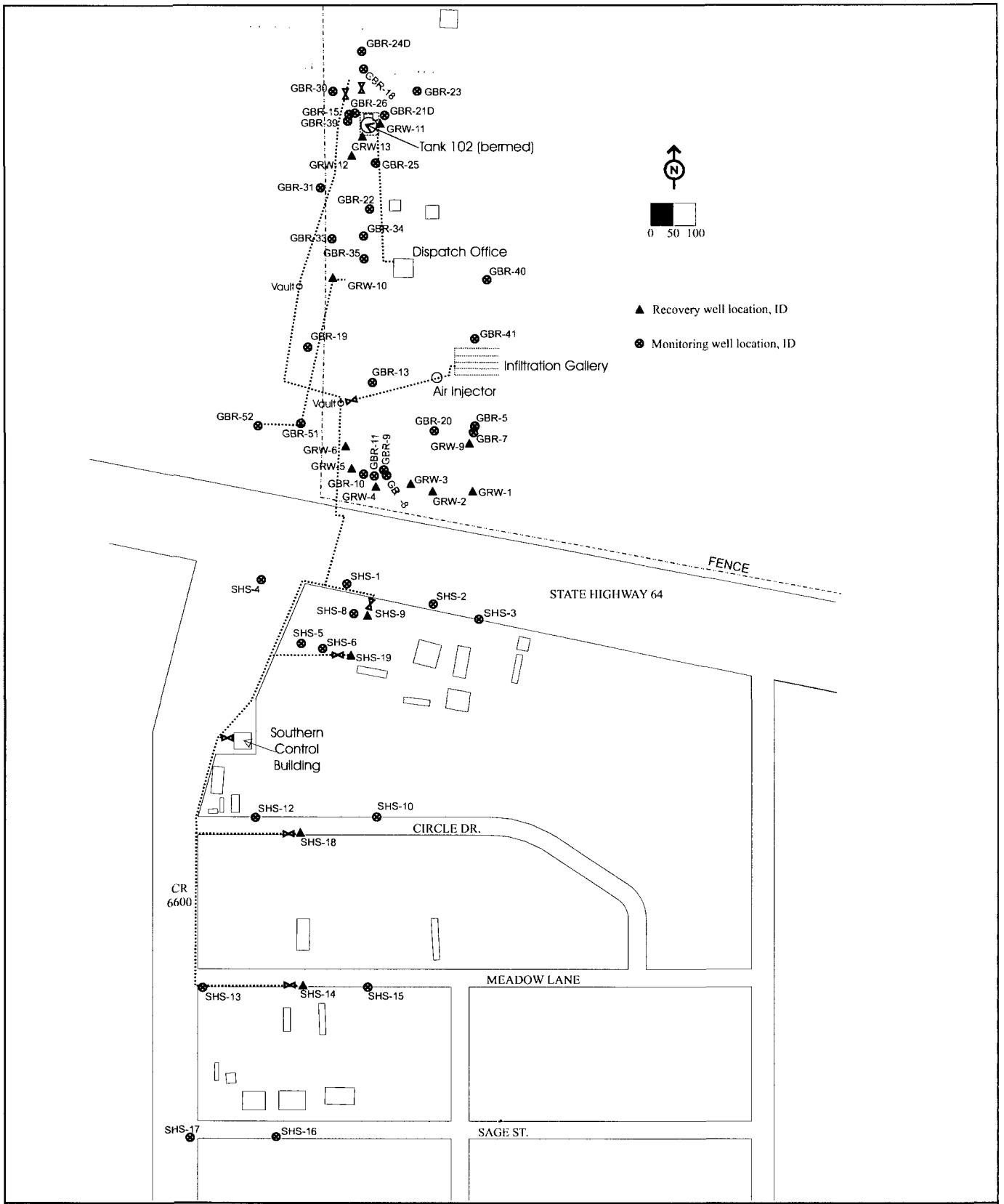
List of Plates

Plate 1: aerial photograph showing the location of the former Giant Bloomfield Refinery and major features adjacent to the site.

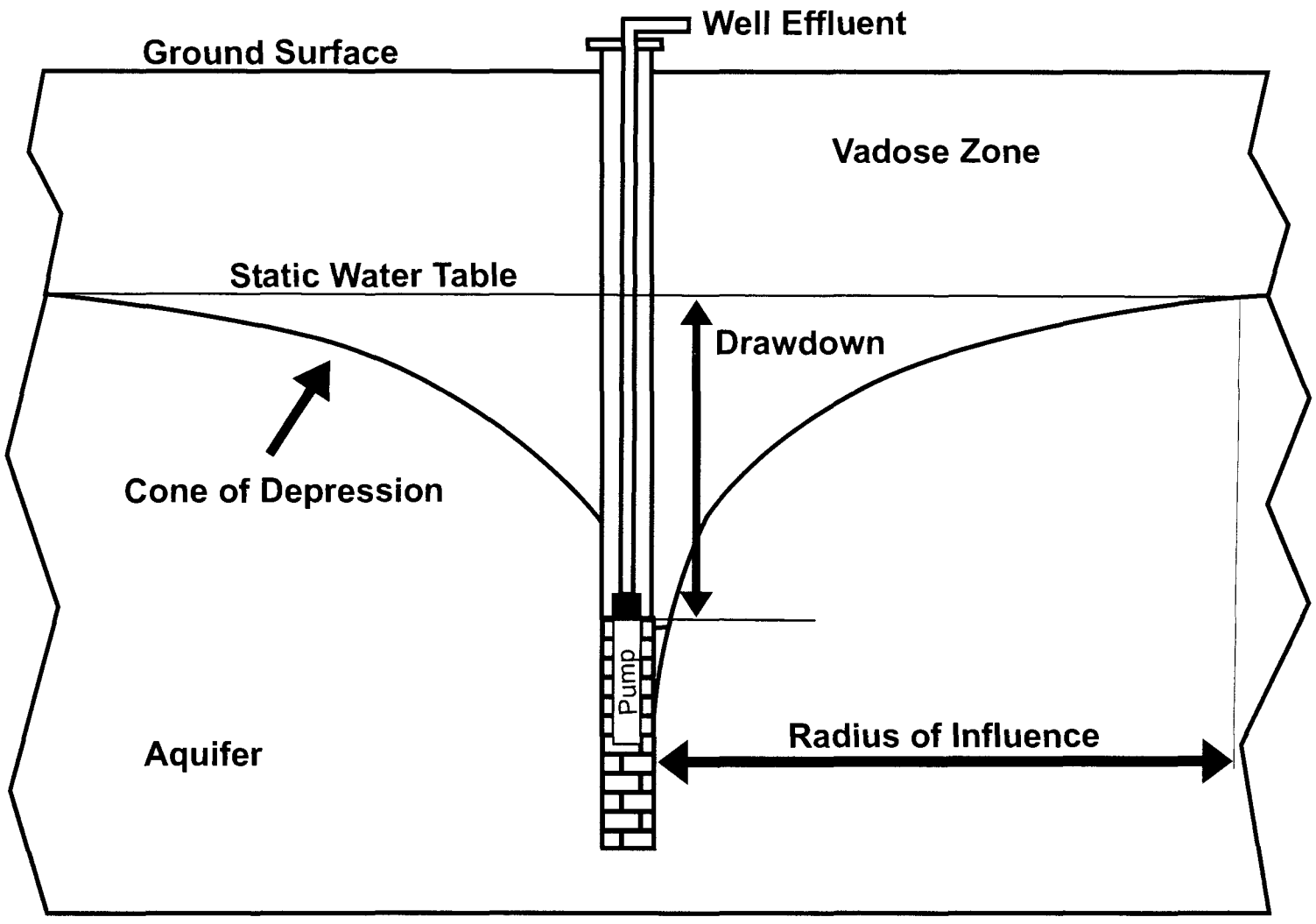
Figures



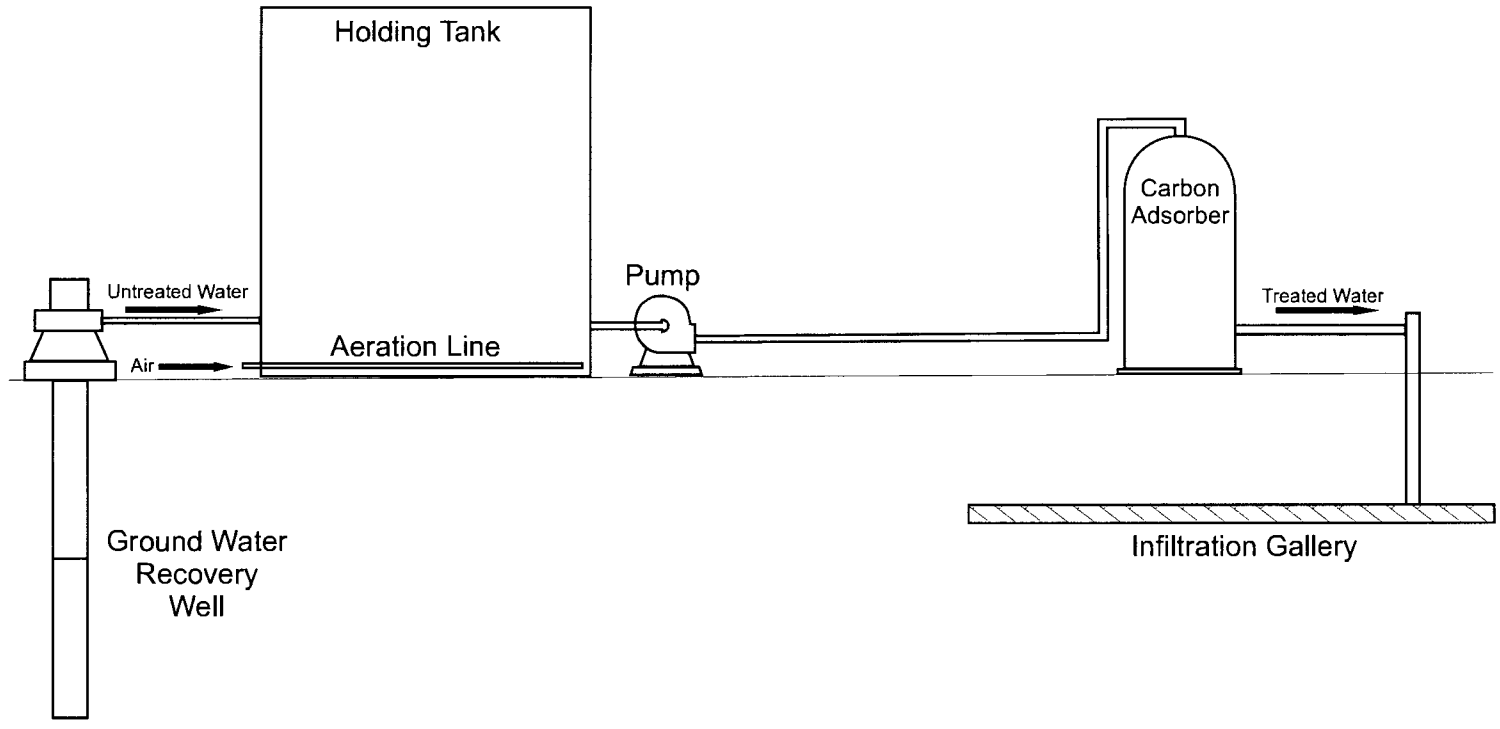
Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	GIANT BLOOMFIELD FORMER REFINERY SAN JUAN COUNTY, NEW MEXICO TOPOGRAPHIC MAP	PROJECT: FORMER REFINERY DISCHARGE PLAN DRAWN BY: ALA REVISED: 01/10/07	FIGURE 1



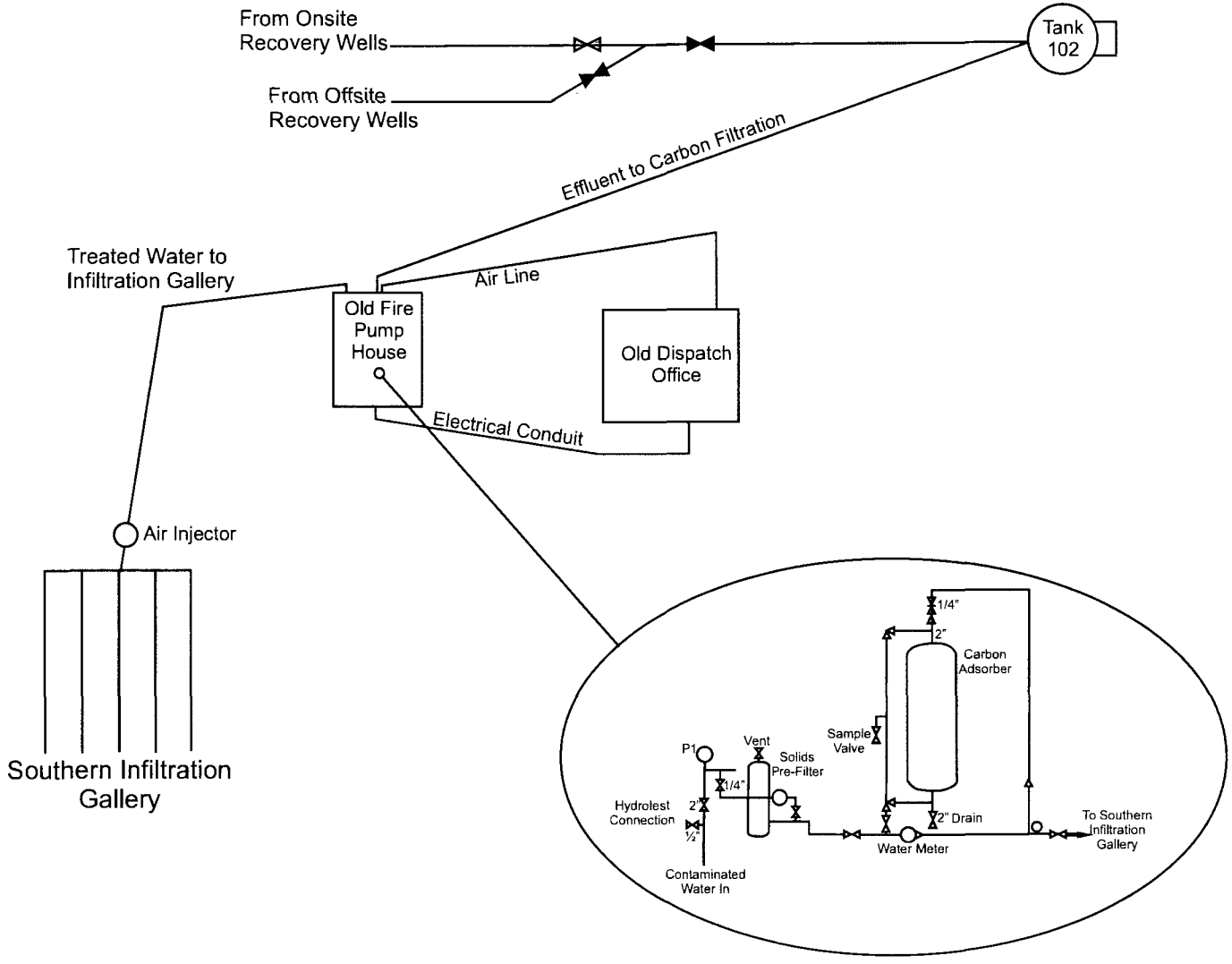
Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	GIANT BLOOMFIELD FORMER REFINERY SITE MAP	PROJECT: FORMER REFINERY DISCHARGE PLAN DRAWN BY: ALA REVISED: 01/10/07	FIGURE 2



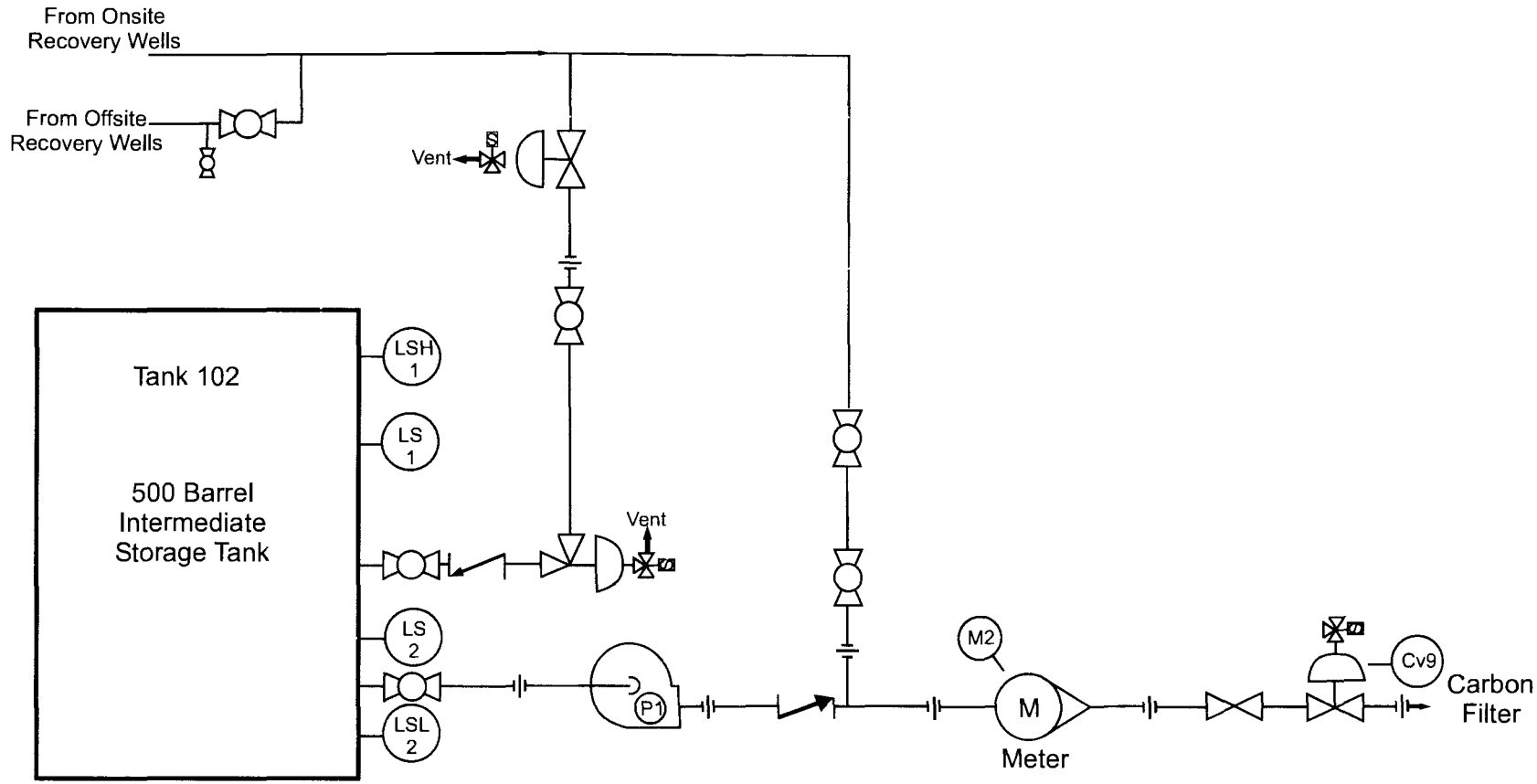
Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	EFFECT OF PUMPING ON AN AQUIFER	PROJECT: FORMER REFINERY DISCHARGE PLAN DRAWN BY: ALA REVISED: 01/10/07	FIGURE 3



Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	SIMPLIFIED REPRESENTATION OF THE GROUNDWATER RECOVERY, TREATMENT AND DISPOSAL SYSTEM	PROJECT: FORMER REFINERY DISCHARGE PLAN DRAWN BY: ALA REVISED: 01/10/07	FIGURE 4

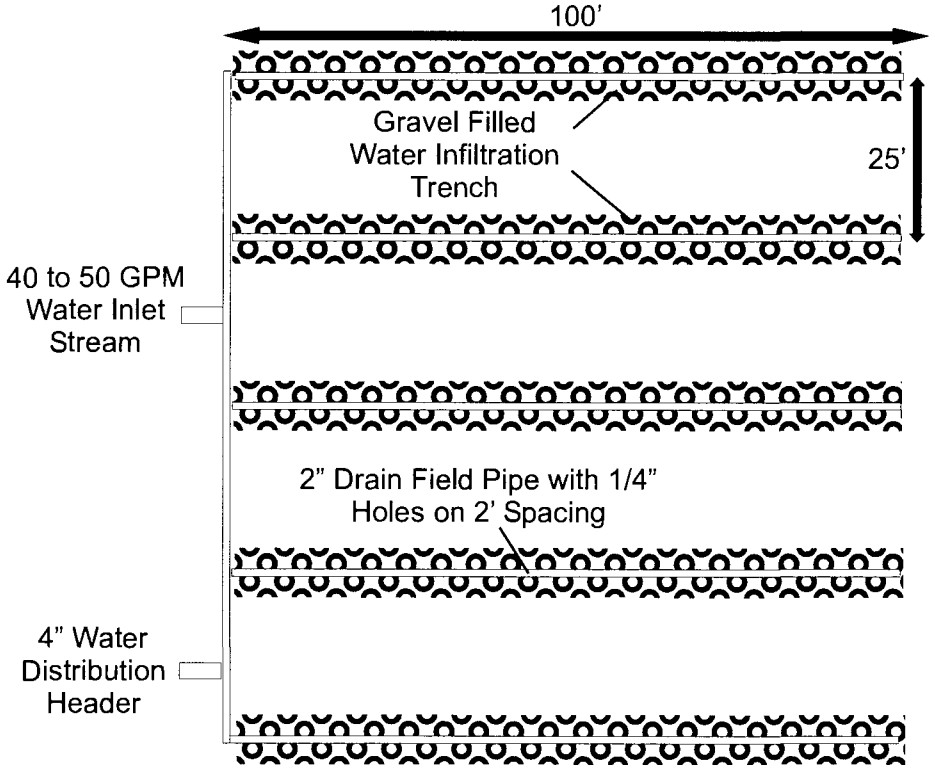


Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	THE CARBON ADSORPTION SYSTEM AT THE FORMER BLOOMFIELD REFINERY	PROJECT: FORMER REFINERY DISCHARGE PLAN DRAWN BY: ALA REVISED: 01/10/07	FIGURE 5

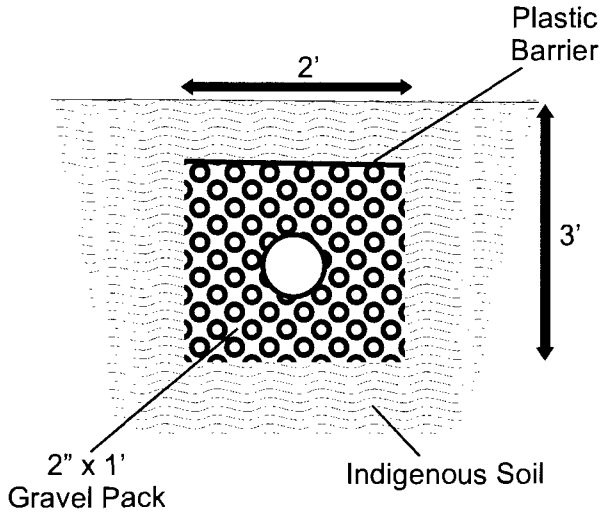


Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	PIPING AND INSTRUMENTATION SCHEMATIC FOR TANK 102	PROJECT: FORMER REFINERY DISCHARGE PLAN DRAWN BY: ALA REVISED: 01/10/07	FIGURE 6

Trench Top View Cut Away at the Infiltration Line Depth

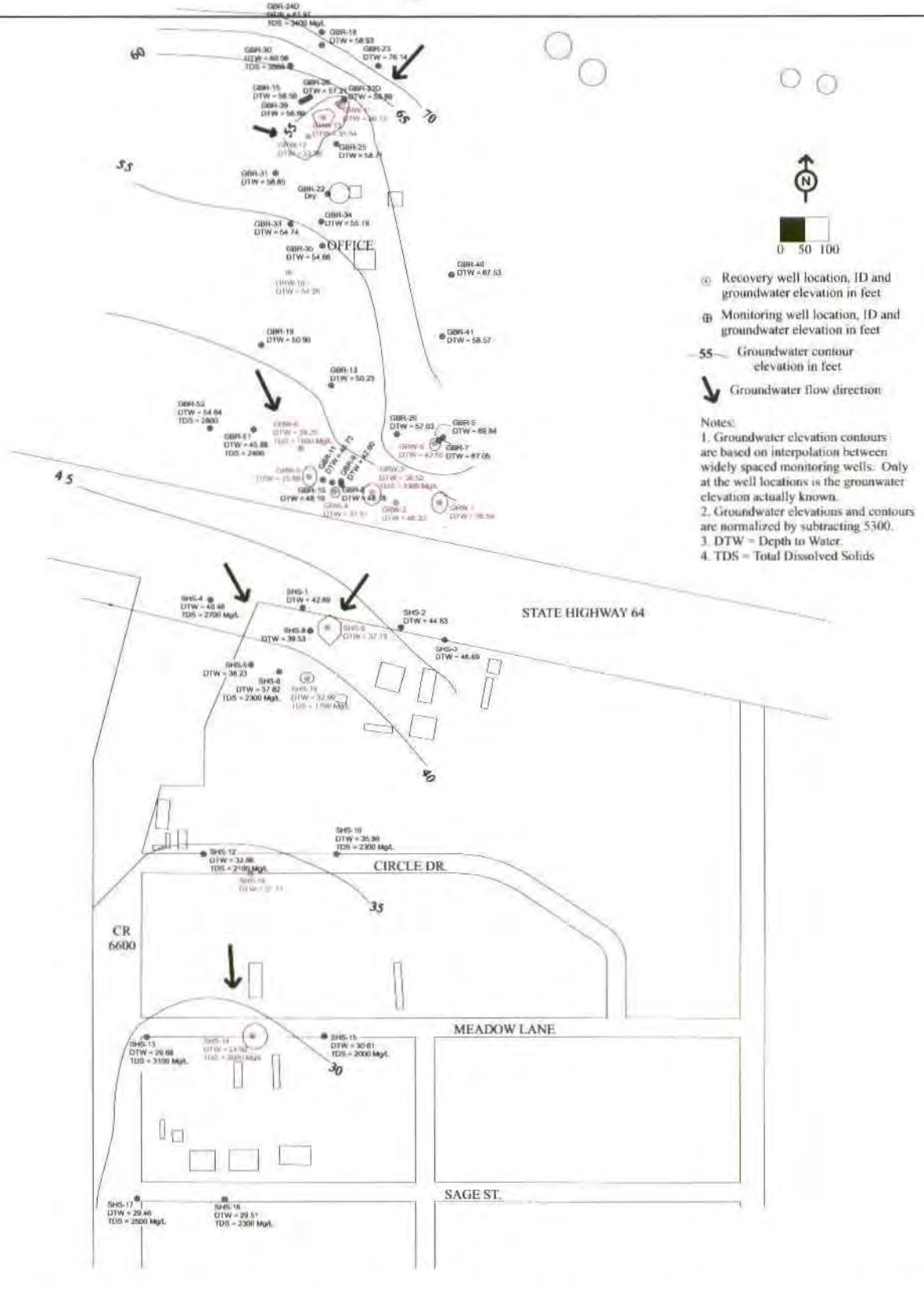


Cross Section of a Typical Infiltration Trench

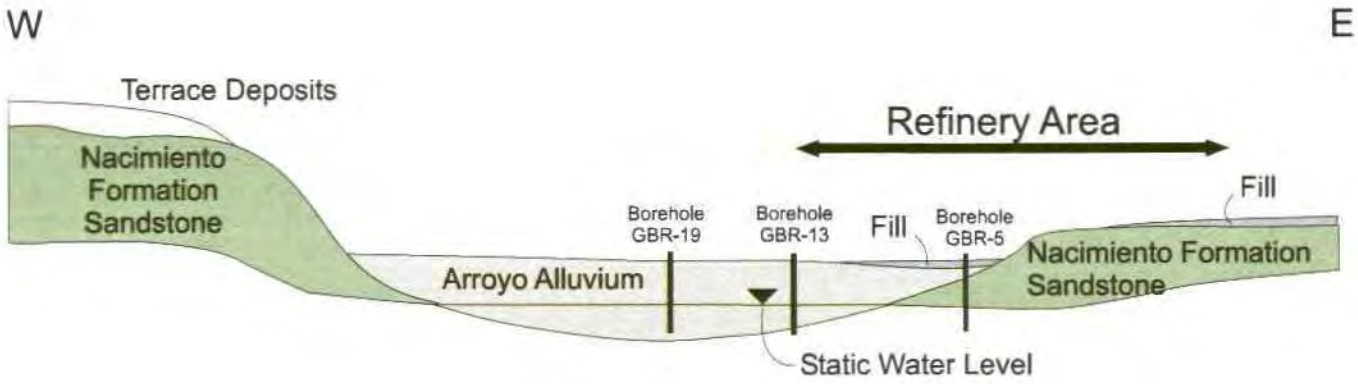


2" infiltration lines are designed to handle approximately 10 gal/min each with a maximum length of 100'

Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	INFILTRATION TRENCH DESIGN AND CONSTRUCTION SPECIFICATIONS	PROJECT: FORMER REFINERY DISCHARGE PLAN DRAWN BY: ALA REVISED: 01/10/07	FIGURE 7



Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	GROUNDWATER POTENTIOMETRIC SURFACE MAP	PROJECT: FORMER REFINERY DISCHARGE PLAN DRAWN BY: ALA REVISED: 01/05/05	FIGURE 8



Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	GENERALIZED EAST-WEST HYDROGEOLOGIC CROSS-SECTION ACROSS THE REFINERY SITE	PROJECT: FORMER REFINERY DISCHARGE PLAN DRAWN BY: ALA REVISED: 01/10/07	FIGURE 9

Appendix A

Appendix A

Appendix A

GIANT INDUSTRIES, INC.
BLOOMFIELD REFINERY

SAMPLE MATRIX
Revised 10/10/05

LOCATION	MONTHLY	QUARTERLY	SEMI-ANNUALLY	ANNUALLY
System Influent		601 602 GWC	601 602 GWC	601 602 GWC
System Effluent		601 602 GWC	601 602 GWC	601 602 GWC Metals PAH
GRW-3				601 602 GWC PAH
GRW-6				601 602 GWC PAH
GRW-13				
GBR-15				
GBR-17				601 602 GWC PAH
GBR-24D				601 602 GWC PAH
GBR-30				601 602 GWC PAH
GBR-31				601 602 GWC PAH
SHS-3				

LOCATION	MONTHLY	QUARTERLY	SEMI-ANNUALLY	ANNUALLY
SHS-4				
SHS-6				
SHS-10				
SHS-12				
SHS-13				
SHS-14				
SHS-15				
SHS-16				
SHS-17				
SHS-7				601 602 GWC
SHS-9				
SHS-18				601 602 GWC
GBR-51				601 602 GWC
GBR-52				601 602 GWC
GBR-32				601 602 GWC Metals
GBR-48				601 602 GWC Metals
GBR-49				601 602 GWC Metals
GBR-50				601 602 GWC Metals

NOTES: All wells will have water elevations determined on a quarterly basis.

Appendix B

Appendix B

Appendix B

Water Wells Located Within a Quarter Mile Radius of the Former Refinery.

OWNER	COUNTY	WELL NO.	USE	T	R	S	Q	Q	Q (Quarters are 1=NW, 2=NE, 3=SW, 4=SE)	START DATE	FINISH DATE	WELL DEPTH (FT)	WATER DEPTH (FT)
WINDELL D. WILLIAMS	San Juan	00991	Domestic	29N	12W	22	1	3					
RAYMOND M. STALLINGS	San Juan	00663	Domestic	29N	12W	28	4	2	2				
RUSS RATEY	San Juan	02047	Domestic	29N	12W	28	4	2		04/29/1986	04/30/1986	40	25
SAM ESPINOZA	San Juan	02061	Domestic	29N	12W	28	4	2		06/21/1986	06/23/1986	39	23
ROBERT W. JONES	San Juan	02345	Domestic	29N	12W	28	1	2	2				
ALBINO BARELA	San Juan	02864	Domestic	29N	12W	28	4	2	2				50
JOE BENCOMO	San Juan	00572	Domestic	29N	12W	27	3	1		03/01/1978	03/21/1978	35	28
RONALD REYNOLDS	San Juan	00726	Domestic	29N	12W	27	1	3	1	07/22/1978	07/24/1978	50	30
REYNALDO W. ORELLANO	San Juan	00904	Domestic	29N	12W	27	3	1	1	04/01/1979	04/05/1979	32	14
DORIS CLARK	San Juan	01690	Domestic	29N	12W	27	3	1	1	04/02/1983	04/04/1983	25	10
DOUGLAS A. HARMON	San Juan	01700	Domestic	29N	12W	27	3	1		05/07/1983	05/09/1983	87	48
CHARLIE W. PALMER	San Juan	01728	Domestic	29N	12W	27	3	1		05/25/1983	05/27/1983	25	11
THORNTON L. ASHBROOK	San Juan	02118	Domestic	29N	12W	27	1			06/17/1987	06/18/1987	29	6
BONNIE R. MONTOYA	San Juan	02654	Domestic	29N	12W	27	1	3	1	07/30/1995	08/12/1995	32	62
HAROLD STUBBLEFIELD	San Juan	02183	Domestic	29N	12W	27	4	1		05/05/1988	05/05/1988	40	26
MILTON C. BLACK	San Juan	02743	Domestic	29N	12W	27	4	1					

Source: New Mexico Office of the State Engineer WATERS Database (http://www.ose.state.nm.us/waters_db_index.html)

Appendix C

Appendix C

ANNUAL DATA REPORT

GIANT BLOOMFIELD REFINERY

March 2006

Prepared By:

GIANT REFINING COMPANY
111 County Road 4990
Bloomfield, NM 87413
(505) 632-8006
FAX (505) 632-4021

TABLE OF CONTENTS

INTRODUCTION AND SUMMARY
ANNUAL REPORT
2005

1.0 INTRODUCTION AND METHODOLOGY

Introduction

The following annual report describes work completed at Giant Industries, Inc.'s (Giant's) former refinery in Bloomfield, New Mexico since the previous annual report submitted in March 2005. The report contains data collected during that time including:

- Analytical data from ground water sampling;
- Ground water elevations;
- Tank volume data;
- Product levels from monitoring wells.

The refinery is located in the NW ¼ of Section 27 and the SW ¼ of Section 22, Township 29 N, Range 12W in San Juan County, New Mexico. It is approximately 5 miles west of the town of Bloomfield, New Mexico. The facility consists of the Giant Bloomfield Refinery and associated remedial equipment both within and south of the refinery boundary. The refinery operated from 1974 to 1982 and is presently inactive.

A remedial system was installed in stages beginning in 1988 and has gradually been simplified over time. The remediation was designed to treat ground water affected by various releases during operation of the former refinery and periodic spills at the truck unloading facility. It consists of a series of ground water monitoring wells, ground water recovery wells, water treatment facilities and treated water infiltration trenches (Figure 1). These facilities are located both north and south of Highway 64. The system processed approximately 4,655,006 gallons of water in 2005.

Methodology

Figure 2 is a simplified diagram representation of ground water recovery, treatment and disposal at the site. Recovery wells are utilized to recover free-floating product and impacted ground water from the aquifer and to create a hydraulic barrier to prevent migration of impacted water beyond the well. Impacted ground water is pumped from the aquifer through the recovery wells, which are located strategically throughout the site. The water is collected in Storage Tank 102 and subsequently treated by carbon adsorption. The water is discharged into the aquifer through an infiltration trench. Influent and effluent water quality is monitored quarterly to verify compliance with New Mexico Water Quality Control Commission (NMWQCC) standards. All water was

treated by the carbon filter unit exclusively. All treated water was discharged into the southern infiltration field. Additionally, oil absorbent socks are installed in all monitoring wells showing free-phase hydrocarbons. These socks are checked quarterly and replaced as necessary.

Monitoring consists of regular inspections and maintenance of facilities, as well as consistent ground water evaluations. Numerous monitor wells are located within and south of the refinery (Figure 1). Water samples are collected and analyzed on a regular basis. Lab results are presented in Section 2. In addition to sampling, water and product levels in each well are determined quarterly. Water levels are included in Section 3. Product levels are also shown. Section 5 contains sampling frequency and analytical requirements for applicable wells.

Modifications to the Treatment System

Giant Industries requested approval from the New Mexico Oil Conservation Division (NMOCD) to plug and abandon nine ground water monitoring wells and one ground water recovery well located down gradient of the refinery. The NMOCD did not approve of this proposal. Subsequently, Giant submitted a revised sample schedule in Discharge Plan GW040 in 2005 to remove the wells listed below from the sampling matrix and discontinue pumping well SHS-14 based on the number of clean reporting quarters, as noted.

Type of Well	Identification	Years of Monitoring Beneath Standards
Monitoring	SHS-3	7
Monitoring	SHS-4	8
Monitoring	SHS-6	8
Monitoring	SHS-10	8
Monitoring	SHS-12	8
Monitoring	SHS-13	8
Recovery	SHS-14	3
Monitoring	SHS-15	8
Monitoring	SHS-16	8
Monitoring	SHS-17	7

Surrounding Construction

Construction of county road 350 adjacent to the refinery was ongoing during 2005. Construction resulted in removal of the tops of well casings for monitoring wells GBR-19, GBR-31 and GBR-33. New casing elevations for GBR-19 and GBR-31 have been applied to the ground water elevation data. The amount of casing removed from GBR-33 was not recorded; therefore, ground water levels from the well were not used to calculate ground water elevation at the site.

2.0 ANNUAL ANALYTICAL RESULTS

Section 2 contains a summary of the 2005 analytical results. Raw data, as received from the laboratory, is available on request as a supplement to the annual report.

The following pages show the annual analytical data for the Giant Refining Remediation Project. The data are broken down into units as described below.

	Unit of Measure
Total dissolved solids (180)	mg/l
Total dissolved solids (calc)	mg/l
Total alkalinity as CaCO3	mg/l
Total hardness as CaCO3	mg/l
Bicarbonate as HCO3	mg/l
Carbonate as CO3	mg/l
Chloride	mg/l
Sulfate	mg/l
Calcium	mg/l
Magnesium	mg/l
Potassium	mg/l
Sodium	mg/l
Laboratory Conductivity	umhos/cm

The remainder of the data is measured in ug/l. Monitoring well GBR-31 inaccessible during January 2005 due to the construction of County Road 350 and was not sampled.

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	**APR**	**JUL**	**OCT**	**DEC**
SYSTEM EFFLUENT					
Lab pH	6.7	7.0	6.8	7.0	
Lab Conductivity@25C	3000	2800	2900	3240	
Total Dissolved Solids (Calc)	2500	2500	2240	2400	
Total Alkalinity as CaCO3	330	360	338	273	
Total Hardness as CaCO3	970	880	868	1050	
Bicarbonate as HCO3	330	360	336	273	
Carbonate as CO3	1.0	nd	2.12	1.0	
Hydroxide	nc	nd	nd	nd	
Chloride	81	81	108	80.1	
Sulfate	1300	1200	709	1520	
Calcium	340	310	301	318	
Magnesium	29	28	28.4	27.4	
Potassium	3.8	3.6	7.6	6.34	
Sodium	410	420	405	410	
HALOCARBONS					
Bromodichloromethane	nd	nd	nd	nd	
Bromoform	nd	nd	nd	nd	
Bromomethane	nd	nd	nd	nd	
Carbon Tetrachloride	nd	nd	nd	nd	
Chloroethane	nd	nd	nd	nd	
Chloroform	nd	nd	nd	nd	
Chloromethane	nd	nd	nd	nd	
Dibromochloromethane	nd	nd	nd	nd	
1,2-Dibromomethane (EDB)	nd	nd	nd	nd	
1,2-Dichlorobenzene	nd	nd	nd	nd	
1,3-Dichlorobenzene	nd	nd	nd	nd	
1,4-Dichlorobenzene	nd	nd	nd	nd	
1,1-Dichloroethane	nd	nd	nd	nd	
1,2-Dichloroethane (EDC)	nd	nd	nd	nd	
1,1-Dichoroethene	nd	nd	nd	nd	
trans-1,2-Dichloroethene	nd	nd	nd	nd	
1,2-Dichloropropane	nd	nd	nd	nd	
cis-1,3-Dichloropropene	nd	nd	nd	nd	
trans-1,3-Dichloropropene	nd	nd	nd	nd	
Methylene Chloride	nd	nd	nd	nd	
1,1,2,2-Tetrachloroethane	nd	nd	nd	nd	
Tetrachloroethane	nd	nd	nd	nd	
1,1,1-Trichloroethane	nd	nd	nd	nd	
1,1,2-Trichloroethane	nd	nd	nd	nd	
Trichloroethene	nd	nd	nd	nd	
Trichlorofluoromethane	nd	nd	nd	nd	
Vinyl Chloride	nd	nd	nd	nd	

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	**APR**	**JUL**	**OCT**	**DEC**
AROMATICS					
Benzene	nd	nd	nd	nd	
Chlorobenzene	nd	nd	nd	nd	
1,2-Dichlorobenzene	nd	nd	nd	nd	
1,3-Dichlorobenzene	nd	nd	nd	nd	
1,4-Dichlorobenzene	nd	nd	nd	nd	
Ethylbenzene	nd	nd	nd	nd	
Methyl-t-Butyl Ether	nd	nd	nd	nd	
Toluene	nd	nd	nd	nd	
Total Xylenes	nd	nd	nd	nd	
PAH					
1-Methylnapthalene	nd			nd	
2-Methylnapthalene	nd			nd	
Benzo(a)pyrene	nd			nd	
Napthalene	nd			nd	
METALS (mg/l)					
Antimony	nd				
Arsenic	nd				
Beryllium	nd				
Cadmium	nd				
Chromium	nd				
Copper	0.022				
Lead	nd				
Nickel	0.024				
Selenium	nd				
Silver	nd				
Thallium	nd				
Zinc	nd				
Mercury	nd				
SYSTEM INFLUENT					
Lab pH	6.6	6.9	6.7	6.9	
Lab Conductivity@25C	3000	2700	2760	3490	
Total Dissolved Solids (Calc)	2300	2700	2260	2470	
Total Alkalinity as CaCO3	390	350	365	241	
Total Hardness as CaCO3	920	880	778	1200	
Bicarbonate as HCO3	390	350	365	241	
Carbonate as CO3	1.0	1.0	1.0	1.0	
Hydroxide	nd	nd	nd	1.0	
Chloride	84	81	188	78.7	
Sulfate	1300	1200	1270	1340	
Calcium	320	310	270	341	
Magnesium	29	28	25.4	28.7	
Potassium	3.8	3.7	6.72	8.9	

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	**APR**	**JUL**	**OCT**	**DEC**
Sodium	420	420	359	420	
HALOCARBONS					
Bromodichloromethane	nd	nd	nd	nd	
Bromoform	nd	nd	nd	nd	
Bromomethane	nd	nd	nd	nd	
Carbon Tetrachloride	nd	nd	nd	nd	
Chloroethane	nd	nd	nd	nd	
Chloroform	nd	nd	nd	nd	
Chloromethane	nd	nd	nd	nd	
Dibromochloromethane	nd	nd	nd	nd	
1,2-Dibromomethane (EDB)	nd	nd	nd	nd	
1,2-Dichlorobenzene	nd	nd	nd	nd	
1,3-Dichlorobenzene	nd	nd	nd	nd	
1,4-Dichlorobenzene	nd	nd	nd	nd	
1,1-Dichloroethane	nd	nd	nd	nd	
1,2-Dichloroethane (EDC)	nd	nd	nd	nd	
1,1-Dichoroethene	nd	nd	nd	nd	
trans-1,2-Dichloroethene	nd	nd	nd	nd	
1,2-Dichloropropane	nd	nd	nd	nd	
cis-1,-Dichloropropene	nd	nd	nd	nd	
trans-1,2-Dichloropropene	nd	nd	nd	nd	
Methylene Chloride	nd	nd	nd	nd	
1,1,2,2-Tetrachloroethane	nd	nd	nd	nd	
Tetrachloroethane	nd	nd	nd	nd	
1,1,1-Trichloroethane	nd	nd	nd	nd	
1,1,2-Trichloroethane	nd	nd	nd	nd	
Trichloroethene	nd	nd	nd	nd	
Trichlorofluoromethane	nd	nd	nd	nd	
Vinyl Chloride	nd	nd	nd	nd	
AROMATICS					
Benzene	nd	nd	nd	nd	
Chlorobenzene	nd	nd	nd	nd	
1,2-Dichlorobenzene	nd	nd	nd	nd	
1,3-Dichlorobenzene	nd	nd	nd	nd	
1,4-Dichlorobenzene	nd	nd	nd	nd	
Ethylbenzene	nd	nd	nd	nd	
Methyl-t-Butyl Ether	nd	nd	nd	nd	
Toluene	nd	nd	nd	nd	
Total Xylenes	nd	nd	nd	nd	
GRW-3					
Lab pH	6.8				
Lab Conductivity@25C	4100				
Total Dissolved Solids (Calc)	3300				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	APR	JUL	OCT	DEC
Total Alkalinity as CaCO3	250				
Total Hardness as CaCO3	1100				
Bicarbonate as HCO3	250				
Carbonate as CO3	nd				
Hydroxide	nd				
Chloride	36				
Sulfate	2000				
Calcium	390				
Magnesium	20				
Potassium	6.8				
Sodium	620				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	APR	JUL	OCT	DEC
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
PAH					
1-Methylnapthalene	nd				
2-Methylnapthalene	nd				
Benzo(a)pyrene	nd				
Napthalene	nd				
GRW-6					
Lab pH	6.8				
Lab Conductivity@25C	2400				
Total Dissolved Solids (Calc)	1600				
Total Alkalinity as CaCO3	720				
Total Hardness as CaCO3	440				
Bicarbonate as HCO3	720				
Carbonate as CO3	nd				
Hydroxide	nd				
Chloride	96				
Sulfate	440				
Calcium	140				
Magnesium	22				
Potassium	1.8				
Sodium	420				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	**APR**	**JUL**	**OCT**	**DEC**
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
PAH					
1-Methylnapthalene	nd				
2-Methylnapthalene	nd				
Benzo(a)pyrene	nd				
Napthalene	nd				
GBR-17					
Lab pH					7.4
Lab Conductivity@25C					2900
Total Dissolved Solids (Calc)					2200
Total Alkalinity as CaCO3					210
Total Hardness as CaCO3					970
Bicarbonate as HCO3					210
Carbonate as CO3					nd
Hydroxide					nd
Chloride					48
Sulfate					1000
Calcium					340
Magnesium					30
Potassium					4.4
Sodium					300
HALOCARBONS					
Bromodichloromethane					nd

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	APR	JUL	OCT	DEC
Bromoform					nd
Bromomethane					nd
Carbon Tetrachloride					nd
Chloroethane					nd
Chloroform					nd
Chloromethane					nd
Dibromochloromethane					nd
1,2-Dibromomethane (EDB)					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
1,1-Dichloroethane					nd
1,2-Dichloroethane (EDC)					nd
1,1-Dichoroethene					nd
trans-1,2-Dichloroethene					nd
1,2-Dichloropropane					nd
cis-1,-Dichloropropene					nd
trans-1,2-Dichloropropene					nd
Methylene Chloride					nd
1,1,2,2-Tetrachloroethane					nd
Tetrachloroethane					nd
1,1,1-Trichloroethane					nd
1,1,2-Trichloroethane					nd
Trichloroethene					nd
Trichlorofluoromethane					nd
Vinyl Chloride					nd
AROMATICS					
Benzene					nd
Chlorobenzene					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
Ethylbenzene					nd
Methyl-t-Butyl Ether					nd
Toluene					nd
Total Xylenes					nd
GBR-24D					
Lab pH	7.0				
Lab Conductivity@25C	4300				
Total Dissolved Solids (Calc)	3400				
Total Alkalinity as CaCO3	260				
Total Hardness as CaCO3	1500				
Bicarbonate as HCO3	260				
Carbonate as CO3	1				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	APR	JUL	OCT	DEC
Hydroxide	nd				
Chloride	310				
Sulfate	1900				
Calcium	520				
Magnesium	47				
Potassium	9.2				
Sodium	560				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	0.8				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	0.5				
1,2-Dichloroethane (EDC)	18				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	0.6				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	0.9				
Methyl-t-Butyl Ether	nd				
Toluene	nd				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	**APR**	**JUL**	**OCT**	**DEC**
Total Xylenes	nd				
PAH					
1-Methylnapthalene	5.4				
2-Methylnapthalene	nd				
Benzo(a)pyrene	nd				
Napthalene	nd				
GBR-30					
Lab pH	7.3				
Lab Conductivity@25C	4600				
Total Dissolved Solids (Calc)	3500				
Total Alkalinity as CaCO3	220				
Total Hardness as CaCO3	1400				
Bicarbonate as HCO3	220				
Carbonate as CO3	<1				
Hydroxide	<1				
Chloride	35				
Sulfate	1800				
Calcium	500				
Magnesium	47				
Potassium	6.8				
Sodium	610				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	APR	JUL	OCT	DEC
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	0.8				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
PAH					
1-Methylnapthalene	nd				
2-Methylnapthalene	nd				
Benzo(a)pyrene	nd				
Napthalene	nd				
GBR-31					
Lab pH					
Lab Conductivity@25C					
Total Dissolved Solids (Calc)					
Total Alkalinity as CaCO3					
Total Hardness as CaCO3					
Bicarbonate as HCO3					
Carbonate as CO3					
Hydroxide					
Chloride					
Sulfate					
Calcium					
Magnesium					
Potassium					
Sodium					
HALOCARBONS					
Bromodichloromethane					
Bromoform					
Bromomethane					
Carbon Tetrachloride					
Chloroethane					

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	APR	JUL	OCT	DEC
Chloroform					
Chloromethane					
Dibromochloromethane					
1,2-Dibromomethane (EDB)					
1,2-Dichlorobenzene					
1,3-Dichlorobenzene					
1,4-Dichlorobenzene					
1,1-Dichloroethane					
1,2-Dichloroethane (EDC)					
1,1-Dichoroethene					
trans-1,2-Dichloroethene					
1,2-Dichloropropane					
cis-1,-Dichloropropene					
trans-1,2-Dichloropropene					
Methylene Chloride					
1,1,2,2-Tetrachloroethane					
Tetrachloroethane					
1,1,1-Trichloroethane					
1,1,2-Trichloroethane					
Trichloroethene					
Trichlorofluoromethane					
Vinyl Chloride					
AROMATICS					
Benzene					
Chlorobenzene					
1,2-Dichlorobenzene					
1,3-Dichlorobenzene					
1,4-Dichlorobenzene					
Ethylbenzene					
Methyl-t-Butyl Ether					
Toluene					
Total Xylenes					
PAH					
1-Methylnapthalene					
2-Methylnapthalene					
Benzo(a)pyrene					
Napthalene					
GBR-32					
Lab pH					7.3
Lab Conductivity@25C					7300
Total Dissolved Solids (Calc)					4400
Total Alkalinity as CaCO3					240
Total Hardness as CaCO3					1600

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	APR	JUL	OCT	DEC
Bicarbonate as HCO3					240
Carbonate as CO3					nd
Hydroxide					nd
Chloride					520
Sulfate					1700
Calcium					550
Magnesium					57
Potassium					9.0
Sodium					800
HALOCARBONS					
Bromodichloromethane					nd
Bromoform					nd
Bromomethane					nd
Carbon Tetrachloride					nd
Chloroethane					nd
Chloroform					nd
Chloromethane					nd
Dibromochloromethane					nd
1,2-Dibromomethane (EDB)					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
1,1-Dichloroethane					nd
1,2-Dichloroethane (EDC)					nd
1,1-Dichoroethene					nd
trans-1,2-Dichloroethene					nd
1,2-Dichloropropane					nd
cis-1,-Dichloropropene					nd
trans-1,2-Dichloropropene					nd
Methylene Chloride					nd
1,1,2,2-Tetrachloroethane					nd
Tetrachloroethane					nd
1,1,1-Trichloroethane					nd
1,1,2-Trichloroethane					nd
Trichloroethene					nd
Trichlorofluoromethane					nd
Vinyl Chloride					nd
AROMATICS					
Benzene					nd
Chlorobenzene					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
Ethylbenzene					nd

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	**APR**	**JUL**	**OCT**	**DEC**
Methyl-t-Butyl Ether					nd
Toluene					nd
Total Xylenes					nd
GBR-48					
Lab pH					7.2
Lab Conductivity@25C					5700
Total Dissolved Solids (Calc)					3400
Total Alkalinity as CaCO3					230
Total Hardness as CaCO3					1200
Bicarbonate as HCO3					230
Carbonate as CO3					nd
Hydroxide					nd
Chloride					420
Sulfate					1300
Calcium					390
Magnesium					44
Potassium					10
Sodium					660
HALOCARBONS					
Bromodichloromethane					nd
Bromoform					nd
Bromomethane					nd
Carbon Tetrachloride					nd
Chloroethane					nd
Chloroform					nd
Chloromethane					nd
Dibromochloromethane					nd
1,2-Dibromomethane (EDB)					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
1,1-Dichloroethane					nd
1,2-Dichloroethane (EDC)					nd
1,1-Dichoroethene					nd
trans-1,2-Dichloroethene					nd
1,2-Dichloropropane					nd
cis-1,-Dichloropropene					nd
trans-1,2-Dichloropropene					nd
Methylene Chloride					nd
1,1,2,2-Tetrachloroethane					nd
Tetrachloroethane	+				2.3
1,1,1-Trichloroethane					nd
1,1,2-Trichloroethane					nd
Trichloroethene					0.9

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	**APR**	**JUL**	**OCT**	**DEC**
Trichlorofluoromethane					nd
Vinyl Chloride					nd
AROMATICS					
Benzene					nd
Chlorobenzene					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
Ethylbenzene					nd
Methyl-t-Butyl Ether					nd
Toluene					nd
Total Xylenes					nd
GBR-49					
Lab pH					6.9
Lab Conductivity@25C					7900
Total Dissolved Solids (Calc)					4900
Total Alkalinity as CaCO3					290
Total Hardness as CaCO3					1900
Bicarbonate as HCO3					290
Carbonate as CO3					nd
Hydroxide					nd
Chloride					530
Sulfate					1900
Calcium					670
Magnesium					61
Potassium					<20
Sodium					850
HALOCARBONS					
Bromodichloromethane					nd
Bromoform					nd
Bromomethane					nd
Carbon Tetrachloride					nd
Chloroethane					nd
Chloroform					nd
Chloromethane					nd
Dibromochloromethane					nd
1,2-Dibromomethane (EDB)					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
1,1-Dichloroethane					nd
1,2-Dichloroethane (EDC)					nd
1,1-Dichoroethene					nd

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	APR	JUL	OCT	DEC
trans-1,2-Dichloroethene					nd
1,2-Dichloropropane					nd
cis-1,-Dichloropropene					nd
trans-1,2-Dichloropropene					nd
Methylene Chloride					nd
1,1,2,2-Tetrachloroethane					nd
Tetrachloroethane					0.6
1,1,1-Trichloroethane					nd
1,1,2-Trichloroethane					nd
Trichloroethene					nd
Trichlorofluoromethane					nd
Vinyl Chloride					nd
AROMATICS					
Benzene					nd
Chlorobenzene					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
Ethylbenzene					nd
Methyl-t-Butyl Ether					nd
Toluene					nd
Total Xylenes					nd
GBR-50					
Lab pH					7.3
Lab Conductivity@25C					3800
Total Dissolved Solids (Calc)					2700
Total Alkalinity as CaCO3					210
Total Hardness as CaCO3					1100
Bicarbonate as HCO3					210
Carbonate as CO3					nd
Hydroxide					nd
Chloride					51
Sulfate					1300
Calcium					400
Magnesium					35
Potassium					10
Sodium					420
HALOCARBONS					nd
Bromodichloromethane					nd
Bromoform					nd
Bromomethane					nd
Carbon Tetrachloride					nd
Chloroethane					nd

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	APR	JUL	OCT	DEC
Chloroform					nd
Chloromethane					nd
Dibromochloromethane					nd
1,2-Dibromomethane (EDB)					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
1,1-Dichloroethane					nd
1,2-Dichloroethane (EDC)					nd
1,1-Dichoroethene					nd
trans-1,2-Dichloroethene					nd
1,2-Dichloropropane					nd
cis-1,-Dichloropropene					nd
trans-1,2-Dichloropropene					nd
Methylene Chloride					nd
1,1,2,2-Tetrachloroethane					nd
Tetrachloroethane					nd
1,1,1-Trichloroethane					nd
1,1,2-Trichloroethane					nd
Trichloroethene					nd
Trichlorofluoromethane					nd
Vinyl Chloride					nd
AROMATICS					
Benzene					nd
Chlorobenzene					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
Ethylbenzene					nd
Methyl-t-Butyl Ether					nd
Toluene					nd
Total Xylenes					nd
GBR-51					
Lab pH	7.8				
Lab Conductivity@25C	3000				
Total Dissolved Solids (Calc)	2400				
Total Alkalinity as CaCO3	220				
Total Hardness as CaCO3	1100				
Bicarbonate as HCO3	220				
Carbonate as CO3	1				
Hydroxide	<1				
Chloride	61				
Sulfate	1400				
Calcium	400				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	**APR**	**JUL**	**OCT**	**DEC**
Magnesium	31				
Potassium	1.4				
Sodium	310				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	5.2				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
GBR-52					
Lab pH	6.9				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	**APR**	**JUL**	**OCT**	**DEC**
Lab Conductivity@25C	3200				
Total Dissolved Solids (Calc)	2800				
Total Alkalinity as CaCO3	200				
Total Hardness as CaCO3	1400				
Bicarbonate as HCO3	200				
Carbonate as CO3	nd				
Hydroxide	nd				
Chloride	67				
Sulfate	1700				
Calcium	520				
Magnesium	36				
Potassium	2.0				
Sodium	330				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	**APR**	**JUL**	**OCT**	**DEC**
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
SHS-4					
Lab pH	7.3				
Lab Conductivity@25C	3200				
Total Dissolved Solids (Calc)	2700				
Total Alkalinity as CaCO3	210				
Total Hardness as CaCO3	1400				
Bicarbonate as HCO3	210				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	63				
Sulfate	1600				
Calcium	490				
Magnesium	39				
Potassium	5.1				
Sodium	320				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	APR	JUL	OCT	DEC
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
SHS-6					
Lab pH	7.2				
Lab Conductivity@25C	2900				
Total Dissolved Solids (Calc)	2300				
Total Alkalinity as CaCO3	230				
Total Hardness as CaCO3	1100				
Bicarbonate as HCO3	230				
Carbonate as CO3	nd				
Hydroxide	nd				
Chloride	61				
Sulfate	1300				
Calcium	390				
Magnesium	32				
Potassium	3.1				
Sodium	300				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				

TABLE 2.1
GIANT INDUSTRIES, INC.
ONSITE REMEDIATION PROJECT
2005 ANNUAL ANALYTICAL DATA SUMMARY

	JAN	APR	JUL	OCT	DEC
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
SHS-19					
Lab pH	7.3				
Lab Conductivity@25C	2600				
Total Dissolved Solids (Calc)	1700				
Total Alkalinity as CaCO3	660				
Total Hardness as CaCO3	630				
Bicarbonate as HCO3	660				
Carbonate as CO3	2.0				
Hydroxide	nd				
Chloride	110				
Sulfate	580				
Calcium	210				
Magnesium	26				
Potassium	2.5				
Sodium	390				
HALOCARBONS					
Bromodichloromethane	nd				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	**APR**	**JUL**	**OCT**	**DEC**
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	1.2				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
SHS-10					
Lab pH	7.2				
Lab Conductivity@25C	3100				
Total Dissolved Solids (Calc)	2300				
Total Alkalinity as CaCO3	440				
Total Hardness as CaCO3	950				
Bicarbonate as HCO3	430				
Carbonate as CO3	1.0				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	APR	JUL	OCT	DEC
Hydroxide	nd				
Chloride	100				
Sulfate	1100				
Calcium	290				
Magnesium	55				
Potassium	12				
Sodium	390				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	APR	JUL	OCT	DEC
Total Xylenes	1.0				
SHS-12					
Lab pH	7.1				
Lab Conductivity@25C	2900				
Total Dissolved Solids (Calc)	2100				
Total Alkalinity as CaCO3	470				
Total Hardness as CaCO3	840				
Bicarbonate as HCO3	470				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	96				
Sulfate	1000				
Calcium	300				
Magnesium	22				
Potassium	1.8				
Sodium	420				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	APR	JUL	OCT	DEC
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
SHS-13					
Lab pH	6.8				
Lab Conductivity@25C	3900				
Total Dissolved Solids (Calc)	3100				
Total Alkalinity as CaCO3	650				
Total Hardness as CaCO3	1600				
Bicarbonate as HCO3	650				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	170				
Sulfate	1500				
Calcium	550				
Magnesium	54				
Potassium	3.2				
Sodium	410				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	1.5				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	APR	JUL	OCT	DEC
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
SHS-14					
Lab pH	7.3				
Lab Conductivity@25C	2500				
Total Dissolved Solids (Calc)	2000				
Total Alkalinity as CaCO3	290				
Total Hardness as CaCO3	1400				
Bicarbonate as HCO3	290				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	51				
Sulfate	1100				
Calcium	490				
Magnesium	49				
Potassium	5.2				
Sodium	210				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	**APR**	**JUL**	**OCT**	**DEC**
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
SHS-15					
Lab pH	7.2				
Lab Conductivity@25C	2500				
Total Dissolved Solids (Calc)	2000				
Total Alkalinity as CaCO3	280				
Total Hardness as CaCO3	1200				
Bicarbonate as HCO3	280				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	53				
Sulfate	1100				
Calcium	400				
Magnesium	42				
Potassium	2.9				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	APR	JUL	OCT	DEC
Sodium	220				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
SHS-16					
Lab pH	7.3				
Lab Conductivity@25C	2700				
Total Dissolved Solids (Calc)	2300				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	APR	JUL	OCT	DEC
Total Alkalinity as CaCO3	400				
Total Hardness as CaCO3	1000				
Bicarbonate as HCO3	400				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	44				
Sulfate	1300				
Calcium	360				
Magnesium	35				
Potassium	2.9				
Sodium	220				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	APR	JUL	OCT	DEC
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
SHS-17					
Lab pH	7.2				
Lab Conductivity@25C	3400				
Total Dissolved Solids (Calc)	2500				
Total Alkalinity as CaCO3	310				
Total Hardness as CaCO3	1100				
Bicarbonate as HCO3	300				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	260				
Sulfate	1100				
Calcium	380				
Magnesium	46				
Potassium	4.5				
Sodium	320				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				

TABLE 2.1 GIANT INDUSTRIES, INC. ONSITE REMEDIATION PROJECT 2005 ANNUAL ANALYTICAL DATA SUMMARY					
	JAN	APR	JUL	OCT	DEC
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				

3.0 POTENTIOMETRIC SURFACE MAPS

Potentiometric surface maps, as well as the adjusted water surface elevation and product thickness for each well, are included in Section 3.

Table 3.1
Giant Refining Company
Bloomfield Refinery
Quarterly Potentiometric Surface
January 2005

Well #	Wellhead Elevation (ft)	Depth to Water (ft)	Depth to Product (ft)	Product Thickness (ft)	Adjusted WSEL* (ft)
GRW-1	5394.30	56.85	56.85	0.00	5337.45
GRW-2	5391.28	49.35	49.35	0.00	5341.93
GRW-3	5388.77	53.74	53.74	0.00	5335.03
GRW-4	5390.02	56.10	56.10	0.00	5333.92
GRW-5	5390.56	63.22	63.22	0.00	5327.34
GRW-6	5390.81	53.44	53.44	0.00	5337.37
GRW-10	5395.02	56.16	56.16	0.00	5338.86
GRW-11	5397.85	56.60	56.60	0.00	5341.25
GRW-12	5397.24	45.70	45.70	0.00	5351.54
GRW-13	5396.90	57.35	57.35	0.00	5339.55
GBR-5	5395.07	25.04	25.04	0.00	5370.03
GBR-6	5395.70	52.35	52.35	0.00	5343.35
GBR-7	5395.85	29.08	29.08	0.00	5366.77
GBR-8	5390.50	42.90	42.90	0.00	5347.60
GBR-9	5389.92	47.93	47.93	0.00	5341.99
GBR-10	5390.57	42.49	42.49	0.00	5348.08
GBR-11	5389.43	42.98	42.98	0.00	5346.45
GBR-13	5393.04	43.40	43.40	0.00	5349.64
GBR-15	5397.99	41.78	41.78	0.00	5356.21
GBR-18	5421.68	35.60	35.60	0.00	5386.08
GBR-19	5393.83	43.56	43.52	0.04	5350.34
GBR-20	5393.47	36.24	36.24	0.00	5357.23
GBR-21S	5400.65	26.80	26.80	0.00	5373.85
GBR-21D	5400.19	41.17	41.17	0.00	5359.02
GBR-22	5395.91	DRY	DRY	0.00	5395.91
GBR-23	5403.72	29.25	29.25	0.00	5374.47
GBR-24S	5396.08	33.56	33.54	0.02	5362.56
GBR-24D	5396.77	41.17	41.17	0.00	5355.60
GBR-25	5396.72	40.85	38.68	2.17	5359.78
GBR-26	5395.59	38.32	38.32	0.00	5357.27
GBR-30	5396.58	36.49	36.49	0.00	5360.09
GBR-31	5394.86	NA	NA	NA	NA
GBR-33	5396.28	41.78	41.78	0.00	5354.50
GBR-34	5394.00	39.65	39.65	0.00	5354.35

Table 3.1
Giant Refining Company
Bloomfield Refinery
Quarterly Potentiometric Surface
January 2005

Well #	Wellhead Elevation (ft)	Depth to Water (ft)	Depth to Product (ft)	Product Thickness (ft)	Adjusted WSEL* (ft)
GBR-35	5393.66	35.98	35.75	0.23	5358.09
GBR-39	5397.55	40.67	40.67	0.00	5356.88
GBR-40	5400.76	33.84	33.84	0.00	5366.92
GBR-41	5396.35	27.91	27.91	0.00	5368.44
GBR-51	5389.68	44.02	44.02	0.00	5345.66
GBR-52	5387.74	42.62	42.62	0.00	5345.12
SHS-1	5383.54	40.30	40.30	0.00	5343.24
SHS-2	5381.66	36.80	36.80	0.00	5344.86
SHS-3	5383.33	36.64	36.64	0.00	5346.69
SHS-4	5383.62	43.00	43.00	0.00	5340.62
SHS-5	5378.36	38.80	38.80	0.00	5339.56
SHS-6	5378.17	40.10	40.10	0.00	5338.07
SHS-8	5380.25	40.48	40.48	0.00	5339.77
SHS-9	5380.79	41.90	41.90	0.00	5338.89
SHS-10	5373.80	38.25	38.25	0.00	5335.55
SHS-12	5373.94	41.10	41.10	0.00	5332.84
SHS-13	5367.81	37.65	37.65	0.00	5330.16
SHS-14	5367.07	42.40	42.40	0.00	5324.67
SHS-15	5366.21	34.80	34.80	0.00	5331.41
SHS-16	5362.58	32.48	32.48	0.00	5330.10
SHS-17	5364.35	34.90	34.90	0.00	5329.45
SHS-18	5373.64	41.90	41.90	0.00	5331.74
SHS-19	5378.89	44.70	44.70	0.00	5334.19

*WSEL = Water Surface Elevation Adjusted for Product Depth

Table 3.2
Giant Refining Company
Bloomfield Refinery
Quarterly Potentiometric Surface
April 2005

Well #	Wellhead Elevation (ft)	Depth to Water (ft)	Depth to Product (ft)	Product Thickness (ft)	Adjusted WSEL* (ft)
GRW-1	5394.30	61.60	61.60	0.00	5332.70
GRW-2	5391.28	47.78	47.78	0.00	5343.50
GRW-3	5388.77	53.15	53.15	0.00	5335.62
GRW-4	5390.02	48.85	48.85	0.00	5341.17
GRW-5	5390.56	65.54	65.54	0.00	5325.02
GRW-6	5390.81	43.30	43.30	0.00	5347.51

Table 3.2
Giant Refining Company
Bloomfield Refinery
Quarterly Potentiometric Surface
April 2005

Well #	Wellhead Elevation (ft)	Depth to Water (ft)	Depth to Product (ft)	Product Thickness (ft)	Adjusted WSEL* (ft)
GRW-10	5395.02	51.92	51.82	0.10	5343.18
GRW-11	5397.85	57.80	57.80	0.00	5340.05
GRW-12	5397.24	44.70	44.70	0.00	5352.54
GRW-13	5396.90	55.22	55.22	0.00	5341.68
GBR-5	5395.07	24.84	24.84	0.00	5370.23
GBR-6	5395.70	50.40	50.40	0.00	5345.30
GBR-7	5395.85	28.46	28.46	0.00	5367.39
GBR-8	5390.50	41.70	41.70	0.00	5348.80
GBR-9	5389.92	46.52	46.52	0.00	5343.40
GBR-10	5390.57	42.46	42.46	0.00	5348.11
GBR-11	5389.43	42.46	42.46	0.00	5346.97
GBR-13	5393.04	42.25	42.25	0.00	5350.79
GBR-15	5397.99	41.20	41.20	0.00	5356.79
GBR-18	5421.68	35.34	35.34	0.00	5386.34
GBR-19	5393.83	cannot access	cannot access	NA	NA
GBR-20	5393.47	35.75	35.75	0.00	5357.72
GBR-21S	5400.65	27.00	27.00	0.00	5373.65
GBR-21D	5400.19	40.90	40.90	0.00	5359.29
GBR-22	5395.91	DRY	DRY	NA	NA
GBR-23	5403.72	30.04	30.04	0.00	5373.68
GBR-24S	5396.08	33.86	33.86	0.00	5362.22
GBR-24D	5396.77	34.83	34.83	0.00	5361.94
GBR-25	5396.72	39.82	39.82	0.00	5356.90
GBR-26	5395.59	38.25	38.25	0.00	5357.34
GBR-30	5396.58	36.50	36.50	0.00	5360.08
GBR-31	5394.86	cannot access	cannot access	NA	NA
GBR-33	5396.28	42.31	42.31	0.00	5353.97
GBR-34	5394.00	39.48	39.48	0.00	5354.52
GBR-35	5393.66	39.62	39.60	0.02	5354.06
GBR-39	5397.55	40.68	40.68	0.00	5356.87
GBR-40	5400.76	32.00	32.00	0.00	5368.76
GBR-41	5396.35	26.70	26.70	0.00	5369.65
GBR-51	5389.68	43.85	43.85	0.00	5345.83
GBR-52	5387.74	42.47	42.47	0.00	5345.27
SHS-1	5383.54	40.90	40.90	0.00	5342.64
SHS-2	5381.66	36.72	36.72	0.00	5344.94
SHS-3	5383.33	cannot access	cannot access	NA	NA
SHS-4	5383.62	43.00	43.00	0.00	5340.62
SHS-5	5378.36	39.80	39.80	0.00	5338.56
SHS-6	5378.17	40.00	40.00	0.00	5338.17

Table 3.2
Giant Refining Company
Bloomfield Refinery
Quarterly Potentiometric Surface
April 2005

Well #	Wellhead Elevation (ft)	Depth to Water (ft)	Depth to Product (ft)	Product Thickness (ft)	Adjusted WSEL* (ft)
SHS-8	5380.25	40.44	40.44	0.00	5339.81
SHS-9	5380.79	44.75	44.75	0.00	5336.04
SHS-10	5373.80	37.98	37.98	0.00	5335.82
SHS-12	5373.94	40.67	40.67	0.00	5333.27
SHS-13	5367.81	37.11	37.11	0.00	5330.70
SHS-14	5367.07	42.15	42.14	0.01	5324.93
SHS-15	5366.21	34.30	34.30	0.00	5331.91
SHS-16	5362.58	31.93	31.93	0.00	5330.65
SHS-17	5364.35	33.82	33.82	0.00	5330.53
SHS-18	5373.64	40.75	40.75	0.00	5332.89
SHS-19	5378.89	52.60	52.60	0.00	5326.29

*WSEL = Water Surface Elevation Adjusted for Product Depth

Table 3.3
Giant Refining Company
Bloomfield Refinery
Quarterly Potentiometric Surface
July 2005

Well #	Wellhead Elevation (ft)	Depth to Water (ft)	Depth to Product (ft)	Product Thickness (ft)	Adjusted WSEL* (ft)
GRW-1	5394.30	58.31	58.31	0.00	5335.99
GRW-2	5391.28	48.75	48.75	0.00	5342.53
GRW-3	5388.77	53.80	53.80	0.00	5334.97
GRW-4	5390.02	46.10	46.10	0.00	5343.92
GRW-5	5390.56	66.35	66.35	0.00	5324.21
GRW-6	5390.81	43.23	43.23	0.00	5347.58
GRW-10	5395.02	53.76	53.70	0.06	5341.31
GRW-11	5397.85	61.66	61.66	0.00	5336.19
GRW-12	5397.24	44.70	44.70	0.00	5352.54
GRW-13	5396.90	56.90	56.90	0.00	5340.00
GBR-5	5395.07	25.87	24.84	1.03	5370.02
GBR-6	5395.70	51.15	51.15	0.00	5344.55
GBR-7	5395.85	28.04	28.04	0.00	5367.81
GBR-8	5390.50	41.65	41.65	0.00	5348.85
GBR-9	5389.92	44.27	44.27	0.00	5345.65
GBR-10	5390.57	42.51	42.51	0.00	5348.06
GBR-11	5389.43	42.42	42.42	0.00	5347.01
GBR-13	5393.04	42.42	42.42	0.00	5350.62

Table 3.3
Giant Refining Company
Bloomfield Refinery
Quarterly Potentiometric Surface
July 2005

Well #	Wellhead Elevation (ft)	Depth to Water (ft)	Depth to Product (ft)	Product Thickness (ft)	Adjusted WSEL* (ft)
GBR-15	5397.99	41.30	41.30	0.00	5356.69
GBR-18	5421.68	36.26	36.26	0.00	5385.42
GBR-19	5393.83	42.82	42.82	0.00	5351.01
GBR-20	5393.47	36.08	36.08	0.00	5357.39
GBR-21S	5400.65	26.02	26.02	0.00	5374.63
GBR-21D	5400.19	41.55	41.55	0.00	5358.64
GBR-22	5395.91	DRY	DRY	NA	NA
GBR-23	5403.72	30.05	30.05	0.00	5373.67
GBR-24S	5396.08	33.75	33.75	0.00	5362.33
GBR-24D	5396.77	34.96	34.96	0.00	5361.81
GBR-25	5396.72	39.58	39.52	0.06	5357.19
GBR-26	5395.59	36.56	36.26	0.30	5359.27
GBR-30	5396.58	36.57	36.57	0.00	5360.01
GBR-31	5394.86	37.86	37.86	0.00	5357.00
GBR-33	5396.28	42.30	42.30	0.00	5353.98
GBR-34	5394.00	39.85	39.85	0.00	5354.15
GBR-35	5393.66	40.32	40.32	0.00	5353.34
GBR-39	5397.55	40.67	40.67	0.00	5356.88
GBR-40	5400.76	32.05	32.05	0.00	5368.71
GBR-41	5396.35	27.16	27.16	0.00	5369.19
GBR-51	5389.68	43.60	43.60	0.00	5346.08
GBR-52	5387.74	42.57	42.57	0.00	5345.17
SHS-1	5383.54	40.68	40.68	0.00	5342.86
SHS-2	5381.66	36.36	36.36	0.00	5345.30
SHS-3	5383.33	DRY	DRY	NA	NA
SHS-4	5383.62	42.96	42.96	0.00	5340.66
SHS-5	5378.36	39.80	39.80	0.00	5338.56
SHS-6	5378.17	40.09	40.09	0.00	5338.08
SHS-8	5380.25	40.48	40.48	0.00	5339.77
SHS-9	5380.79	43.50	43.50	0.00	5337.29
SHS-10	5373.80	37.70	37.70	0.00	5336.10
SHS-12	5373.94	40.93	40.93	0.00	5333.01
SHS-13	5367.81	37.45	37.45	0.00	5330.36
SHS-14	5367.07	41.10	41.10	0.00	5325.97
SHS-15	5366.21	35.86	35.46	0.40	5331.07
SHS-16	5362.58	32.36	32.36	0.00	5330.22
SHS-17	5364.35	34.21	24.21	10.00	5348.14
SHS-18	5373.64	41.40	41.40	0.00	5332.24
SHS-19	5378.89	50.62	50.62	0.00	5328.27

Table 3.3
Giant Refining Company
Bloomfield Refinery
Quarterly Potentiometric Surface
July 2005

Well #	Wellhead Elevation (ft)	Depth to Water (ft)	Depth to Product (ft)	Product Thickness (ft)	Adjusted WSEL* (ft)

*WSEL = Water Surface Elevation Adjusted for Product Depth

Table 3.4
Giant Refining Company
Bloomfield Refinery
Quarterly Potentiometric Surface
October 2005

Well #	Wellhead Elevation (ft)	Depth to Water (ft)	Depth to Product (ft)	Product Thickness (ft)	Adjusted WSEL* (ft)
GRW-1	5394.30	59.50	59.50	0.00	5334.80
GRW-2	5391.28	49.45	49.45	0.00	5341.83
GRW-3	5388.77	53.80	53.80	0.00	5334.97
GRW-4	5390.02	59.20	59.20	0.00	5330.82
GRW-5	5390.56	67.04	67.04	0.00	5323.52
GRW-6	5390.81	43.82	43.82	0.00	5346.99
GRW-10	5395.02	56.64	56.60	0.04	5338.41
GRW-11	5397.85	59.07	59.07	0.00	5338.78
GRW-12	5397.24	water below pump	water below pump	NA	NA
GRW-13	5396.90	56.52	56.52	0.00	5340.38
GBR-5	5395.07	30.50	30.50	0.00	5364.57
GBR-6	5395.70	52.27	52.27	0.00	5343.43
GBR-7	5395.85	31.83	31.83	0.00	5364.02
GBR-8	5390.50	43.17	43.17	0.00	5347.33
GBR-9	5389.92	47.87	47.87	0.00	5342.05
GBR-10	5390.57	42.50	42.50	0.00	5348.07
GBR-11	5389.43	43.15	43.15	0.00	5346.28
GBR-13	5393.04	43.73	43.73	0.00	5349.31
GBR-15	5397.99	40.56	40.56	0.00	5357.43
GBR-18	5421.68	36.20	36.20	0.00	5385.48
GBR-19**	5393.13	42.83	42.83	0.00	5350.30
GBR-20	5393.47	39.25	39.25	0.00	5354.22
GBR-21S	5400.65	25.60	25.60	0.00	5375.05
GBR-21D	5400.19	40.79	40.79	0.00	5359.40
GBR-22	5395.91	DRY	DRY	NA	NA
GBR-23	5403.72	29.52	29.52	0.00	5374.20
GBR-24S	5396.08	32.78	32.78	0.00	5363.30
GBR-24D	5396.77	34.17	34.17	0.00	5362.60
GBR-25	5396.72	37.44	37.44	0.00	5359.28

Table 3.4
Giant Refining Company
Bloomfield Refinery
Quarterly Potentiometric Surface
October 2005

Well #	Wellhead Elevation (ft)	Depth to Water (ft)	Depth to Product (ft)	Product Thickness (ft)	Adjusted WSEL* (ft)
GBR-26	5395.59	37.60	37.60	0.00	5357.99
GBR-30	5396.58	35.78	35.78	0.00	5360.80
GBR-31**	5393.69	37.10	37.10	0.00	5356.59
GBR-33†	5396.28	38.72	38.72	0.00	5357.56
GBR-34	5394.00	38.42	38.42	0.00	5355.58
GBR-35	5393.66	38.75	38.75	0.00	5354.91
GBR-39	5397.55	40.00	40.00	0.00	5357.55
GBR-40	5400.76	32.88	32.88	0.00	5367.88
GBR-41	5396.35	29.85	29.85	0.00	5366.50
GBR-51	5389.68	43.83	43.83	0.00	5345.85
GBR-52	5387.74	42.38	42.38	0.00	5345.36
SHS-1	5383.54	40.75	40.75	0.00	5342.79
SHS-2	5381.66	36.95	36.95	0.00	5344.71
SHS-3	5383.33	cannot access	cannot access	NA	NA
SHS-4	5383.62	43.00	43.00	0.00	5340.62
SHS-5	5378.36	39.89	39.89	0.00	5338.47
SHS-6	5378.17	40.12	40.12	0.00	5338.05
SHS-8	5380.25	40.54	40.54	0.00	5339.71
SHS-9	5380.79	40.84	40.84	0.00	5339.95
SHS-10	5373.80	37.65	37.65	0.00	5336.15
SHS-12	5373.94	41.04	41.04	0.00	5332.90
SHS-13	5367.81	97.56	97.56	0.00	5330.20
SHS-14	5367.07	43.05	43.05	0.00	5324.02
SHS-15	5366.21	34.90	34.90	0.00	5331.31
SHS-16	5362.58	32.45	32.45	0.00	5330.13
SHS-17	5364.35	34.32	34.32	0.00	5330.03
SHS-18	5373.64	41.30	41.30	0.00	5332.34
SHS-19	5378.89	43.00	43.00	0.00	5335.89

*WSEL = Water Surface Elevation Adjusted for Product Depth
** Wellhead elevations have been corrected after road construction.
† Wellhead elevation has not been corrected after road construction.

TABLE 3.5
Giant Refining Company
Bloomfield Refinery
2005 Product Levels

Well #	Product Level (ft) Apr 2005	Product Level (ft) July 2005	Product Level (ft) October 2005	Product Level (ft) January 2006
GBR-10	0	0	0	0

TABLE 3.5 Giant Refining Company Bloomfield Refinery 2005 Product Levels				
GBR-7	0	0	0	0
GBR-11	0	0	0	0
GBR-13	0	0	0	0
GBR-19	NO ACCESS	NO ACCESS	NO ACCESS	**0.38**
GBR-20	0	0	0	0
GBR-23	0	0	0	0
GBR-21S	0	0	0	0
GBR-21D	0	0	0	0
GBR-24D	0	0	0	0
GBR-24S	0	0	0	0
GBR-25	0	**0.05**	**0.03**	0
GBR-34	**0.01**	0	0	**0.03**
GBR-35	**0.07**	0	0	**0.03**
SHS-1	0	0	0	0
SHS-8	0	0	0	0

4.0 TOTAL VOLUME HISTORY

Section 4 illustrates the volume of ground water managed for the year. Total volume pumped from each well, current tank volumes and the re-injection volume is reported. Tanks 21, 22, 101, and 106 are no longer in use for water storage.

TABLE 4.1
Giant Refining Company
Bloomfield Refinery
2005 Tank Volume Change

Tank Number	Beginning Volume (Gallons)	Ending Volume (Gallons)	Change (Gallons)
102	14,984	11,670	3,314
106	0	0	0
21	0	0	0
22	0	0	0
		Total Net Volume Change:	**3,314**

TABLE 4.2
Giant Refining Company
Bloomfield Refinery
2005 Recovery Well Volume Tabulation

Well	Jan-Jul	Jul-Dec	Total
GRW-1	61,650	24,490	86,140
GRW-2	27,880	19,190	47,070
GRW-3	63,930	52,610	116,540
GRW-4	61,310	36,110	97,420
GRW-5	144,860	158,640	303,500
GRW-6	43,490	44,020	87,510
GRW-9	84,310	41,030	125,340
GRW-10	1,552,450	1,245,700	2,798,150
GRW-11	132,600	146,100	159,360
GRW-12	960	20	980
GRW-13	20,710	20,290	40,991
SHS-9	7,883	1,591	9,494
SHS-14	66,055	24,086	90,140
SHS-18	3	932	935
SHS-19	442,946	245,176	688,122
		Total Volume Pumped in Gallons:	**4,651,692**

TABLE 4.3 Giant Refining Company Bloomfield Refinery 2005 Total Volume Summary	
Total Volume of Water Recovered:	4,651,692 gallons
Net Change in Storage Volume:	3,314 gallons
Total Water Treated and Pumped to the Infiltration Gallery:	4,655,006 gallons

5.0 SAMPLE SCHEDULE

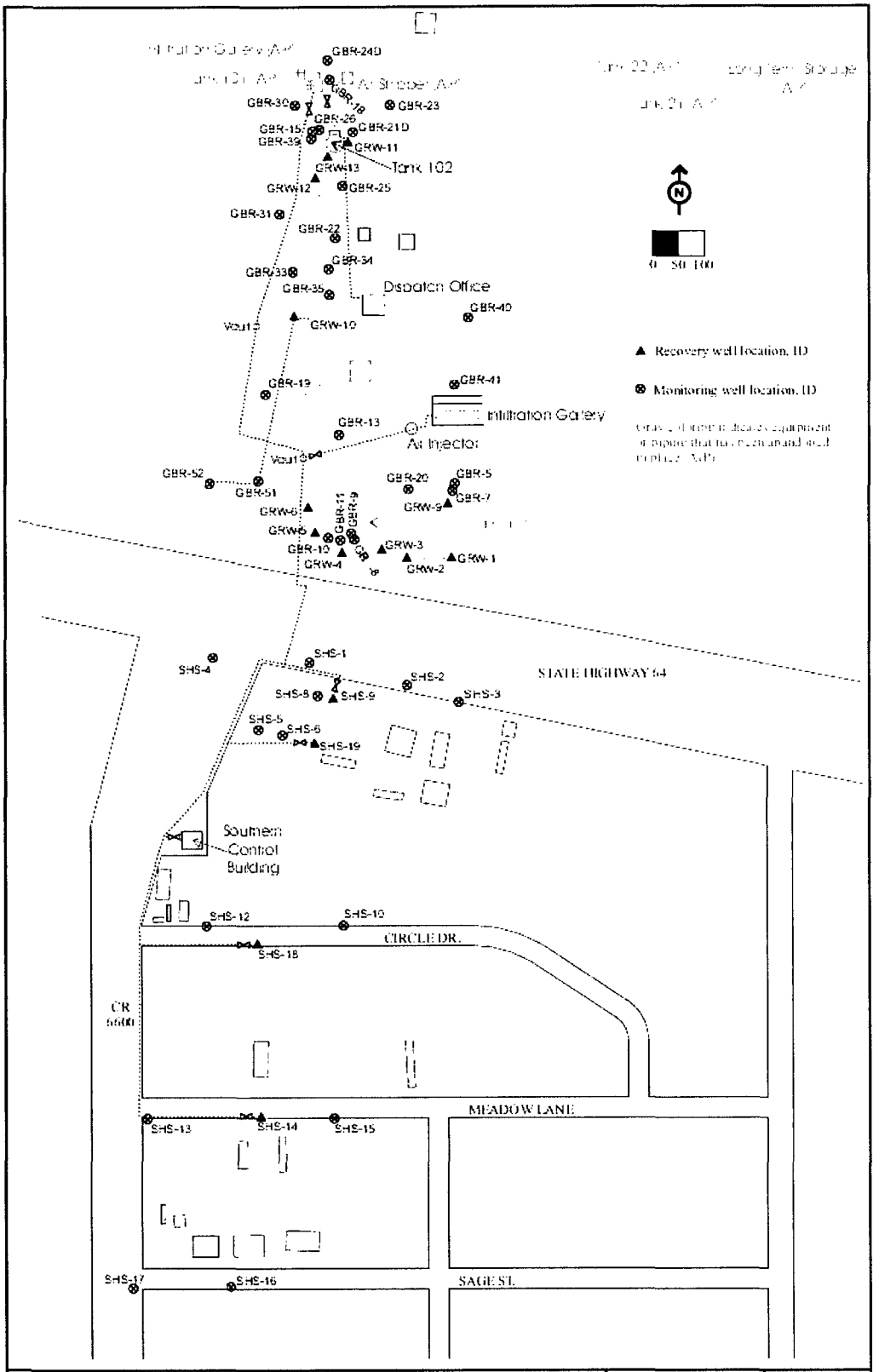
GIANT INDUSTRIES, INC. BLOOMFIELD REFINERY SAMPLE SCHEDULE, Revised 04/2006

LOCATION	MONTHLY	QUARTERLY	SEMI-ANNUALLY	ANNUALLY
System Influent		601 602 GWC	601 602 GWC	601 602 GWC
System Effluent		601 602 GWC	601 602 GWC	601 602 GWC Metals PAH
GRW-3				601 602 GWC PAH
GRW-6				601 602 GWC PAH
GRW-13				
GBR-15				
GBR-17				601 602 GWC PAH
GBR-24D				601 602 GWC PAH
GBR-30				601 602 GWC PAH
GBR-31				601 602 GWC PAH
SHS-3				
SHS-4				
SHS-6				
SHS-10				
SHS-12				
SHS-13				
SHS-14				
SHS-15				

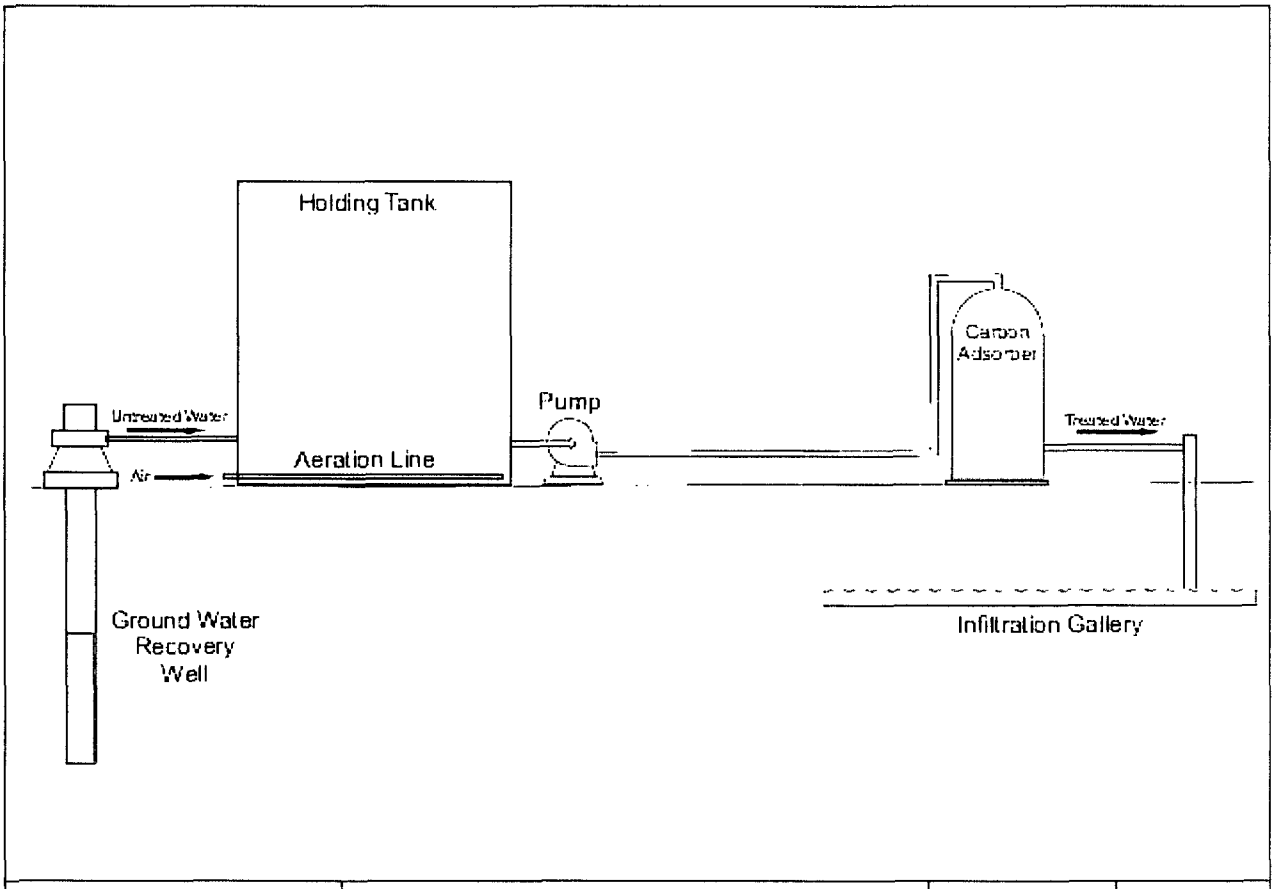
LOCATION	MONTHLY	QUARTERLY	SEMI-ANNUALLY	ANNUALLY
SHS-16				
SHS-17				
SHS-7				601 602 GWC
SHS-9				
SHS-18				601 602 GWC
GBR-51				601 602 GWC
GBR-52				601 602 GWC
GBR-32				601 602 GWC Metals
GBR-48				601 602 GWC Metals
GBR-49				601 602 GWC Metals
GBR-50				601 602 GWC Metals

NOTES: All wells will have water and free product elevations determined on a quarterly basis. Wells exhibiting free product will not be sampled.

6.0 FIGURES



Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	Bloomfield Refinery Remediation Project Site Map	DRWN BY: AA CHKD BY: MN APPVD BY: MN DATE: 07/11/05	Figure 1



Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	Simplified Representation of a Ground Water Recovery, Treatment and Disposal System	DRWN BY: AA CHKD BY: MN APPVD BY: MN DATE: 06/16/05	Figure 2

GW040

VonGonten, Glenn, EMNRD

From: VonGonten, Glenn, EMNRD
Sent: Wednesday, December 27, 2006 4:50 PM
To: 'drichards@giant.com'
Subject: Discharge Permit GW040
Attachments: Renewal WQCC Notice Regs.pdf; Discharge Plan App Form.pdf; Guidelines For Discharge Plans.pdf; PN Flow Chart.20.6.2renewal.pdf

Dave,

Oil Conservation Division (OCD) records indicate that your discharge plan has expired. New Mexico Water Quality Control Commission regulations (WQCC) Section 3106.F (20.6.2.3106.F NMAC) specifies that if a discharger submits a discharge plan renewal application at least 120 days before the discharge plan expires and is in compliance with the approved plan, then the existing discharge plan will not expire until the application for renewal has been approved or disapproved. Our records indicate that Tim Kinney submitted an electronic discharge permit renewal application on October 11, 2005. However, Giant did not submit the required $100 filling fee. Therefore, Giant is currently operating without a permit. Please submit a revised permit renewal application (hardcopy) with a filing fee (20.6.2.3114 NMAC) of $100.00 by January 12, 2007. Please make all checks payable to the **Water Quality Management Fund** and addressed to the OCD Santa Fe Office. There is also a discharge plan permit fee, based on the type of facility, which OCD will assess after processing your application. An application form and guidance document is attached in order to assist in expediting this process.

In accordance with the public notice requirements (Subsection A of 20.6.2.3108 NMAC) of the newly revised (July 2006) WQCC regulations, "...to be deemed administratively complete, an application shall provide all of the information required by Paragraphs (1) through (5) of Subsection F of 20.6.2.3108 NMAC and shall indicate, for department approval, the proposed locations and newspaper for providing notice required by Paragraphs (1) through (4) of Subsection B or Paragraph (2) of Subsection C of 20.6.2.3108 NMAC." You are required to provide the information specified above in your permit renewal application submittal. Attached are a flow chart and the regulatory language pertaining to the new WQCC public notice requirements for your convenience. After the application is deemed administratively complete, the revised public notice requirements of 20.6.2.3108 NMAC must be satisfactory demonstrated to OCD. OCD will provide public notice pursuant to the revised WQCC notice requirements of 20.6.2.3108 NMAC to determine if there is any public interest.

Please contact me by phone at 505-476-3488 or email glenn.vongonten@state.nm.us if you have any questions regarding this matter.

Glenn von Gonten
Senior Hydrologist

VonGonten, Glenn, EMNRD

From: Tim Kinney [takinney@giant.com]
Sent: Tuesday, October 11, 2005 3:28 PM
To: VonGonten, Glenn, EMNRD
Subject: Discharge Plan
Attachments: Tim Kinney (E-mail).vcf; Discharge Plan 101005.doc; Discharge Plan Application 1005.pdf

Attached is the plan application for the former refinery for your review. At what point do we send the fee and what is the amount due?

Tim Kinney
General Manager
Giant Transportation
(505)632-4001
takinney@giant.com

GW 040

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Revised June 10, 2003

Submit Original
Plus 1 Copy
to Santa Fe
1 Copy to Appropriate
District Office

DISCHARGE PLAN APPLICATION FOR SERVICE COMPANIES,GAS PLANTS, REFINERIES, COMPRESSOR, GEOTHERMAL FACILITES AND CRUDE OIL PUMP STATIONS

(Refer to the OCD Guidelines for assistance in completing the application)

☐ New ☒ Renewal ☐ Modification

1. Type: REFINERY Submitted via Email from
2. Operator: Giant Industries, Inc. Tim Kinney @ 10/11/2005

   Address: 111 County Road 4990, Bloomfield, NM, 87413 Former Bloomfield Refinery

   Contact Person: Mr. Tim Kinney -> Dave Richards Phone: 505-632-8006

3. Location: NW/4 SW/4 Section 22 & 27 Township 29N Range 12W

   Submit large scale topographic map showing exact location.

4. Attach the name, telephone number and address of the landowner of the facility site. *Section 2.0*

5. Attach the description of the facility with a diagram indicating location of fences, pits, dikes and tanks on the facility. *Sections 3.0 and 4.0, Figure 1 and Plate 1*

6. Attach a description of all materials stored or used at the facility. *Section 7.0.*

7. Attach a description of present sources of effluent and waste solids. Average quality and daily volume of waste water must be included. *Section 7.1.1.*

8. Attach a description of current liquid and solid waste collection/treatment/disposal procedures. *Section 7.0.*

9. Attach a description of proposed modifications to existing collection/treatment/disposal systems. *Section 10.0*

10. Attach a routine inspection and maintenance plan to ensure permit compliance. *Section 8.0.*

11. Attach a contingency plan for reporting and clean-up of spills or releases. *Section 11.0.*

12. Attach geological/hydrological information for the facility. Depth to and quality of ground water must be included. *Section 5.0 and Appendix A.*

13. Attach a facility closure plan, and other information as is necessary to demonstrate compliance with any other OCD rules, regulations and/or orders. *Section 13.0.*

14. CERTIFICATION I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: Tim Kinney Title: Refinery Remediation Project Manager

Signature: /Tim Kinney/ Date: 10/10/05

E-mail Address: tkinney@giant.com

Dave Richards

DRichards@Giant.com (CC)

Discharge Plan
for the
Former Giant Bloomfield Refinery

October 11, 2005

Prepared By:
Lodestar Services, Incorporated
PO Box 3861 Farmington, NM 87499-3861 Office (505) 334-2791

TABLE OF CONTENTS

1.0 Introduction

Giant Industries Arizona, Inc. proposes discharge of water derived from recovery wells at the inactive former Giant Bloomfield Refinery in San Juan County, New Mexico. The recovery wells were installed as part of a remedial action plan at the site. An annual discharge of approximately 5,000,000 gallons is expected, and the treated water will be discharged into infiltration trenches located within the site.

2.0 Responsible Parties

The landowner, operator and legally responsible party is Giant Industries:

Giant Industries Arizona, Inc.
23722 North Scottsdale Road
Post Office Box 12999
Scottsdale, Arizona 85267
Phone: 602-585-8888

Correspondence regarding this discharge plan should be directed to the local representative, Mr. Timothy Kinney:

Timothy A. Kinney
Remediation Project Manager
Giant Refining Company
111 County Road 4990
Bloomfield, New Mexico 87413
Phone: 505-632-8006

3.0 Location of Discharge and Facility

The refinery is located in the NW ¼ of Section 27 and the SW ¼ of Section 22, Township 29 N, Range 12W in San Juan County, New Mexico. It is approximately 5 miles west of the town of Bloomfield, New Mexico. Plate 1 is attached and shows an aerial view of the refinery with significant landmarks noted.

4.0 Facility

The facility consists of the Giant Bloomfield Refinery and associated remedial equipment both within and south of the refinery boundary. The refinery operated from 1974 to 1982 and is presently inactive.

A remedial system was installed in stages beginning in 1988 and has gradually been simplified over time. The remediation was designed to treat ground water affected by various releases during operation of the former refinery and periodic spills at the truck unloading facility.

It consists of a series of ground water monitoring wells, ground water recovery wells, water treatment facilities and treated water infiltration trenches (Figure 1). These

facilities are located both north and south of Highway 64. The system processed approximately 4,873,917 gallons of water last year.

5.0 Site Characteristics

The refinery is located on weathered outcrops of Nacimiento Formation, which is comprised of shales, sandstones and siltstones of Cretaceous-Tertiary age. Immediately to the west of the refinery and on Giant's property is a large unnamed arroyo, which is underlain by 30 to 60 feet of Quaternary alluvial sediments (Plate 1). Older Quaternary terrace deposits of cobbles and boulders are observed on the interfluvial ridges adjacent to the arroyo. These terrace deposits may have been utilized as fill on the refinery site. The San Juan River Valley is located south of the site and contains up to several hundred feet of alluvial fill.

The uppermost zone of ground water in the refinery area is unconfined to partially confined water table unit, which is hosted by the weathered, locally porous sandstones and shales of the Nacimiento Formation and arroyo alluvium. These units merge hydrologically with the San Juan River alluvium to the south. Figure 2 is a generalized east-west cross section through the refinery site showing the relationship of the arroyo alluvium to bedrock. Major hydrogeologic features of the site are:

- An interconnected water table aquifer hosted by both valley and arroyo fill and the upper parts of the Nacimiento Formation;
- Ground water at a depth of 30 to 70 feet beneath the land surface;
- An upper water table surface generally conforming to topography, with ground water flow from north or northeast to south (towards the San Juan River) through the refinery area;
- Minor, local zones of perched ground water lying 5 to 10 feet above the water table.

Water levels and floating product thicknesses were measured in all wells on the refinery property during 2004. A record of these measurements in shown in Appendix A. A ground water contour map was prepared based on the static water levels of all the wells at the refinery (Figure 3). This map is representative of static conditions of the aquifer because pumping was not being done at the time. Where floating product was encountered, the product thickness has been multiplied by 0.8 and added to the measured water elevation. This calculation corrects for the difference in density between floating product and water.

5.1 Flooding Potential

The greatest threat to flooding of the refinery site are the San Juan River, which is located less than one mile south of the site, and the unnamed arroyo located within the site itself.

History suggests flooding potential of the San Juan River is small. From 1904 until 1976, only 23 flood events (on individual streams, not concurrent on all streams) have been recorded. According to a study conducted by the New Mexico Floodplain Managers Association (2003), previous floods of the San Juan River resulted from general

rainstorms, snowmelt augmented by rain, and from cloudburst storms. Rain floods usually occur during the months of September and October. This type of flood results from prolonged heavy rainfall over tributary areas and is characterized by high peak flows of moderate duration. Major floods (recurrence interval of 100 or more years) result from excessive snowmelt runoff generated in the watershed upstream from Bloomfield. Flood flows generated by snowmelt generally occur during the period from May through July. Snowmelt flooding is characterized by moderate peak flows, large volume and long duration, and marked diurnal fluctuation in flow. The refinery is elevated above the floodplain of the San Juan River, decreasing the chance of a river flood, such as the ones described above, from reaching the site.

The flooding potential of the arroyo is predicted to be low as well. Similar arroyos have been studied in detail near Farmington and are described as ephemeral in character, flowing only during periods of heavy rainfall (New Mexico Floodplain Managers Association, 2003). Furthermore, the arroyo's influence on the refinery site has been decreased due to the construction of a new highway located between the arroyo and the refinery.

6.0 Water Treatment System Overview

At the Giant Bloomfield Refinery, impacted ground water is pumped from the aquifer through a series of recovery wells located strategically within the plume. The water is collected in Storage Tank 102 and subsequently treated by carbon adsorption. The water is discharged into the aquifer through an infiltration trench. Figure 4 is a simplified diagram representation of ground water recovery, treatment and disposal.

Recovery wells are utilized to recover free-floating product and impacted ground water from the aquifer and to create a hydraulic barrier to prevent migration of the plume beyond the well. The hydraulic barrier is formed by pumping the recovery well and depressing the water table. Figure 5 illustrates the concept. If sufficient recovery wells are placed so that the radii of influence from adjacent wells overlap, a barrier can be formed across the plume to prevent migration.

Recovered water exhibiting dissolved phase and/or free phase hydrocarbons above New Mexico WQCC ground water regulatory levels require treatment to within applicable guidelines prior to discharge. The method of treatment used at the Giant Bloomfield Refinery is carbon adsorption, where recovered water is pumped into a carbon filtration tank. Inside, volatile and non-volatile organic compounds are adsorbed into a carbon matrix lining the tank.

Treated water is discharged to an infiltration trench located within the refinery. Infiltration trenches consist of subsurface distribution systems placed within gravel packs. Water infiltrates the surrounding strata and eventually makes its way to the aquifer. Figure 6 illustrates a typical infiltration gallery. The return of recovered water to the aquifer serves to recharge the aquifer.

7.0 Water Treatment System Equipment and Operation

Figure 4 illustrates the basic process of the treatment system. Water is pumped out of recovery wells and stored in Tank 102. The water is then pumped to a carbon adsorption unit where it is treated and discharged into an infiltration trench.

7.1 Effluent

The facility effluent consists of treated water. Effluent is derived from ground water, which is pumped from a series of recovery wells at each site. Up to 420,000 gallons of water may be treated and discharged per month. Appendix A shows the results of analytical work conducted in 2004 and is representative of effluent quality. General water chemistry, EPA 601, EPA 602 and PAH analysis are all shown. See Appendix A for sampling frequency, methods and procedures. Major variations in effluent volumes and quality are not expected.

7.1.1 Effluent Disposal

Effluent water is discharged into an infiltration trench within the refinery. Figure 6 shows details of typical trench construction. All water is treated prior to discharge. Effluent quality is monitored quarterly to verify compliance with WQCC standards. Treated effluent volumes are metered and reported. Approximately 4,873,917 gallons of treated water were discharged at the site last year.

7.2 Monitor Wells

Numerous monitor wells are located within and south of the refinery (Figure 1). Monitor wells within the refinery are identified by the acronym GBR (Giant Bloomfield Refinery) followed by a numerical designation. Monitor wells located south of the refinery are identified by the acronym SHS (Suburban Heights Subdivision) followed by a number. Each well is unique in construction and geology. Drill logs and completion diagrams for all wells have been submitted to the New Mexico Oil Conservation Division in previously submitted reports.

Appendix A contains sampling frequency and analytical requirements for applicable wells. Analytical results help determine the effectiveness and progress of remedial efforts. In addition to sampling, the water level in each well is determined quarterly. This information is tabulated and utilized to prepare potentiometric surface maps. Figure 3 is a potentiometric map for 2004 water levels. The contours on the map represent the elevation of surface of the ground water. The map is useful in determining direction of ground water flow and effectiveness of hydraulic control achieved by the recovery well system.

7.3 Recovery Wells

Recovery wells are an integral part of the containment and remediation system. Locations of recovery wells are shown in Figure 1. Recovery wells north of Highway 64 are identified by the acronym GRW (Giant Recovery Well) followed by a numerical designation. Recovery wells south of the highway are identified by SHS and a number. Water samples are collected and analyzed on a regular basis. Sampling frequency,

methods and results are shown in Appendix A. Water volumes from each recovery well are metered. Metered water volumes, as well as water levels, indicate the effectiveness of the well pump and controls. Effort is made to maintain consistent pumping rates to maximize the effectiveness of the hydraulic containment barrier. There are solid filters in each recovery well enclosure and in the southern control building to control deposition of solid contaminants in the system. Each well employs a check valve.

7.4 Water Treatment

A carbon adsorption process is utilized for water treatment. All effluent is treated by carbon adsorption prior to discharge. This process removes contaminants from the ground water by forcing it through tanks containing activated carbon treated to attract the contaminants. Figure 7 details the carbon adsorption tank and associated piping used at the refinery.

7.4.1 Tank 102

Tank 102 acts an intermediate storage tank for the water treatment system. It has a capacity of 500 barrels or 21,000 gallons. The tank stores water before it is pumped to the carbon filtration unit for treatment. Piping and instrumentation associated with Tank 102 is illustrated in Figure 8. Water is pumped from Tank 102 to the carbon filtration unit by Pump #1, P1. Pump operation is based on the level of water in Tank 102. Level switches LS-1 and LS-2 are managed by the Control Panel, located in the old Dispatch Office, to determine the water level and consequently status of pumps. Level safety switches LSH-1 and LSL-1 indicate abnormally high or low water level conditions in Tank 102 and initiate control panel alarm and shutdown functions.

7.4.2 Control Panel

The Control Panel, located in the Dispatch Office, serves to monitor and control the operation of the treatment system, while providing alarm and shutdown functions to safeguard against spills and other undesirable events. Safety, alarm and shutdown functions are also initiated by the Control Panel. In the event of a power failure, the system will shut down. It will return to normal operations once power is restored.

7.4.3 Heat Tracing

Water pipes, which connect the On-Site and Off-Site systems, cross through a culvert under US Highway 64. The highway parallels the southern boundary of the refinery property (Figure 1). The exposed water piping is insulated and further protected from freezing by heat tracing.

8.0 Inspection, Maintenance and Reporting

Inspection, maintenance and reporting are an integral part of the remediation project. Inspection provides information critical to the safe and efficient operation of the system. Maintenance is key in the prevention of undesirable events and excessive downtime. Spills of untreated effluent are reported to the OCD office when the volume exceeds five barrels.

Regular inspections are performed to assure safe and efficient operation. The system is monitored on a regular basis during the work week. Visual observations are made, leaks are reported, as are equipment malfunctions and the status of the control system. Observations are recorded in a bound field logbook with the date, time and person recording the information noted.

An inspection is made weekly in the control building at each tank, the southern area and each recovery well. All equipment is inspected for leaks and malfunctions. The operator is familiar with the location of underground lines and notes any surface indication of underground leaks. Leaks of any size are noted and repaired. Readings from all water meters are observed and recorded in the logbook regularly, and comparisons to previous readings are made. Abnormal meter readings can indicate problems within the system. On a quarterly basis, the level of water and product is determined for each well. This includes both monitoring and recovery wells. An electronic water/oil detection tape is used to determine levels. The data are recorded in a logbook.

Maintenance of the system includes replacement of filters in well houses, rotating equipment lubrication, air compressor oil changes, adding nutrients as necessary, listening for unusual pump and motor noise, inspecting the carbon pre-filter and repairing all equipment as required.

9.0 Spill and Leak Prevention and Monitoring

Leaks and spills are not likely; however, the potential does exist for these events. Tanks and piping are the most likely locations. Safeguards in place in the refinery include choice of construction materials, safety and shutdown devices, secondary containment, inspection and security.

9.1 Construction Materials

All piping is constructed of PVC or other hydrocarbon and corrosion resistant plastic. Material choices for valves and controls include plastic, stainless steel, bronze and cast iron. All are suitable for water and hydrocarbon service. Storage Tank 102 is constructed of steel.

9.2 Safety and Shutdown Devices

A microprocessor-based central control and safety shutdown panel monitors and shuts down the water treatment system based on the occurrence of abnormal conditions as indicated by equipment sensors. All storage tanks are equipped with high and low level liquid sensors to detect breaches or overfills.

9.3 Secondary Containment

Tank 102 has viable earthen secondary containment berms in place. The bermed area has a minimum liquid capacity of 1.5 times the total capacity of the tank contained within it. Berms are monitored and maintained to ensure effectiveness.

9.4 Inspection

Regular inspections are performed during the work week. These inspections include looking for visual indications of leaks, checking tank levels, recording and comparing meter readings and checking the condition of pump seals and motors. Unusual conditions are noted in the logbook and reported to the Project Manager.

9.5 Security

The facility is entirely fenced with chain link or barbed wire. Gates are locked and access is limited to facility personnel and supervised visitors and contractors.

10.0 Modifications to the Treatment System

The treatment system has been simplified since the previous discharge permit was issued. Other steps are being taken to further reduce the facilities in use on site.

10.1 Abandoned Structures

All tanks, with the exception of Tank 102, have been abandoned in place and are no longer in use at the facility. This includes the long term storage tanks, Tank 22, Tank 21, Tank 101 and Tank 106. The northern most infiltration gallery has been abandoned, as has the air stripper. Gravity separation no longer occurs in Tank 102 since product is not recovered from the wells.

10.2 Ground Water Wells

Giant Industries has requested approval from the OCD to plug and abandon nine ground water monitoring wells and one ground water recover well located down-gradient of the refinery. Giant understands that the OCD will not approve of this proposal. As an alternative Giant proposes to remove these wells from the sampling matrix and discontinue pumping well SHS-14 based on the number of clean reporting quarters as noted below.

Type of Well	Identification	Years of Monitoring Beneath Standards
Monitoring	SHS-3	7
Monitoring	SHS-4	8
Monitoring	SHS-6	8
Monitoring	SHS-10	8
Monitoring	SHS-12	8
Monitoring	SHS-13	8
Recovery	SHS-14	3
Monitoring	SHS-15	8
Monitoring	SHS-16	8
Monitoring	SHS-17	7

11.0 Emergency Response and Notification

In the event of an unplanned release of water or hydrocarbon at the facility, the Project Manager should be notified and act as the response coordinator. If the Project Manager is not available, the next person noted in the following list of alternates should be notified.

	Name	Office Phone	Cellular Phone
Project Manager	Tim Kinney	632-8006	320-0207
Environmental Technician	Jeany Overman	632-4018	330-6706
Transportation Safety Manager	Bill Robertson	632-4077	320-3415

If it is determined that the release is 5 barrels or greater, the OCD will be notified and a written report submitted.

Leaks occurring outside of tank containment berms should be contained or redirected so that they can be picked up by pumps or vacuum trucks and placed back in storage. In the event of a broken pipe, the leaking section should be isolated by closing necessary valves and shutting down pumps.

A red emergency shutdown button is located on the face of the control panel. Depressing the button shuts down all pumps and closes all air-operated valves. It should be used in case of emergency.

12.0 Reporting

A report of activities at the facility is prepared annually. The report includes an update of operations, analytical results, water levels, a potentiometric surface map, volume history and specific tracking.

13.0 Closure Plan

The OCD will be notified when operations at the facility are discontinued for a period in excess of six months. Prior to closure of the facility, a closure plan will be submitted for approval by the Director. Closure and waste disposal will be in accordance with the statutes, rules and regulations in effect at the time of closure.

14.0 Sample Matrix

GIANT INDUSTRIES, INC.
BLOOMFIELD REFINERY

SAMPLE MATRIX
Revised 10/10/05

LOCATION	MONTHLY	QUARTERLY	SEMI-ANNUALLY	ANNUALLY
System Influent		601 602 GWC	601 602 GWC	601 602 GWC
System Effluent		601 602 GWC	601 602 GWC	601 602 GWC Metals PAH
GRW-3				601 602 GWC PAH
GRW-6				601 602 GWC PAH
GRW-13				
GBR-15				
GBR-17				601 602 GWC PAH
GBR-24D				601 602 GWC PAH
GBR-30				601 602 GWC PAH

LOCATION	MONTHLY	QUARTERLY	SEMI-ANNUALLY	ANNUALLY
GBR-31				601 602 GWC PAH
SHS-3				
SHS-4				
SHS-6				
SHS-10				
SHS-12				
SHS-13				
SHS-14				
SHS-15				
SHS-16				
SHS-17				
SHS-7				601 602 GWC
SHS-9				

LOCATION	MONTHLY	QUARTERLY	SEMI-ANNUALLY	ANNUALLY
SHS-18				601 602 GWC
GBR-51				601 602 GWC
GBR-52				601 602 GWC
GBR-32				601 602 GWC Metals
GBR-48				601 602 GWC Metals
GBR-49				601 602 GWC Metals
GBR-50				601 602 GWC Metals

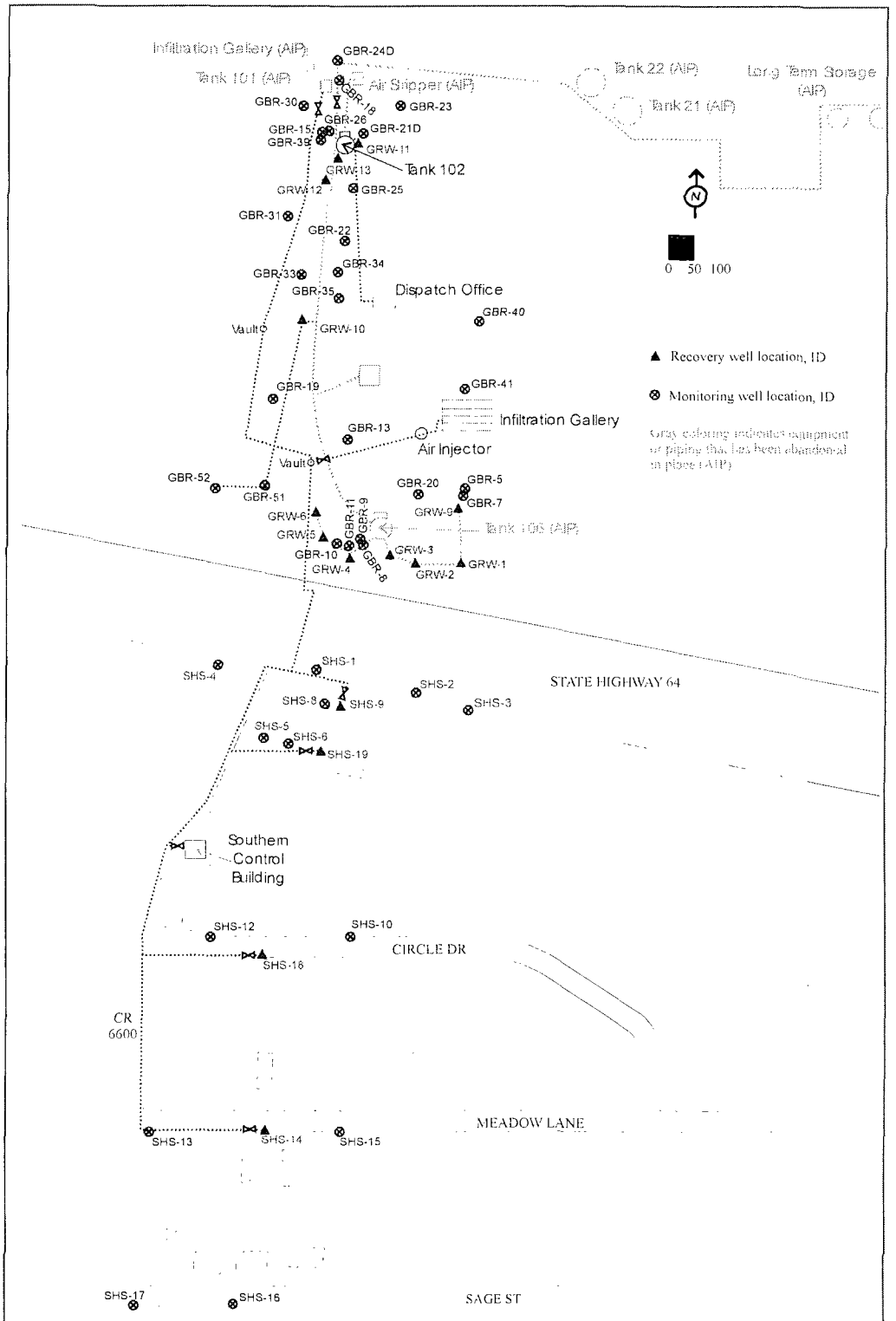
NOTES: All wells will have water and free product elevations determined on a monthly basis.

Wells exhibiting free product will not be sampled.

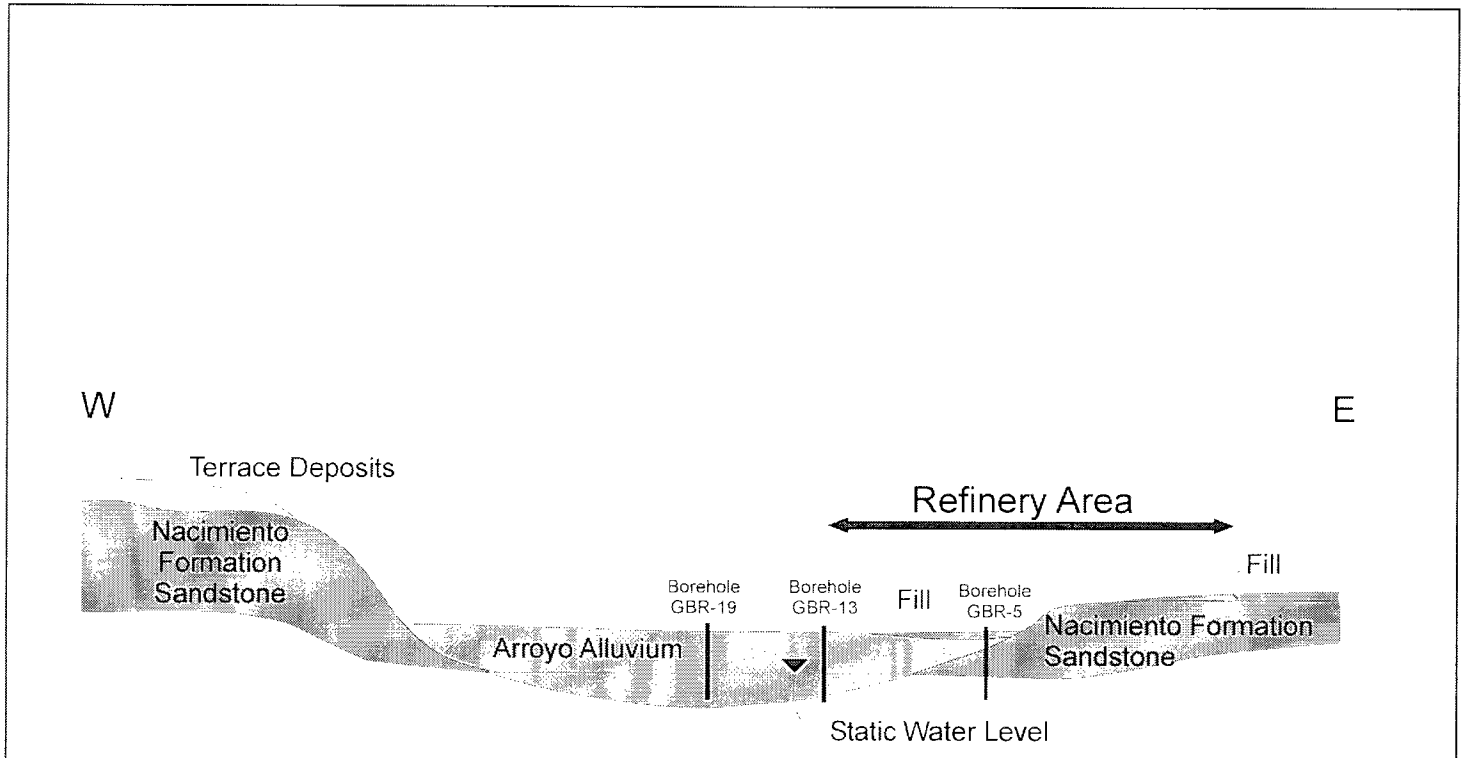
15.0 References

New Mexico Floodplain Managers Association, 2003, A History of Floods and Flood Problems in New Mexico, LA Bond Associates, High Rolls, New Mexico, 144 p.

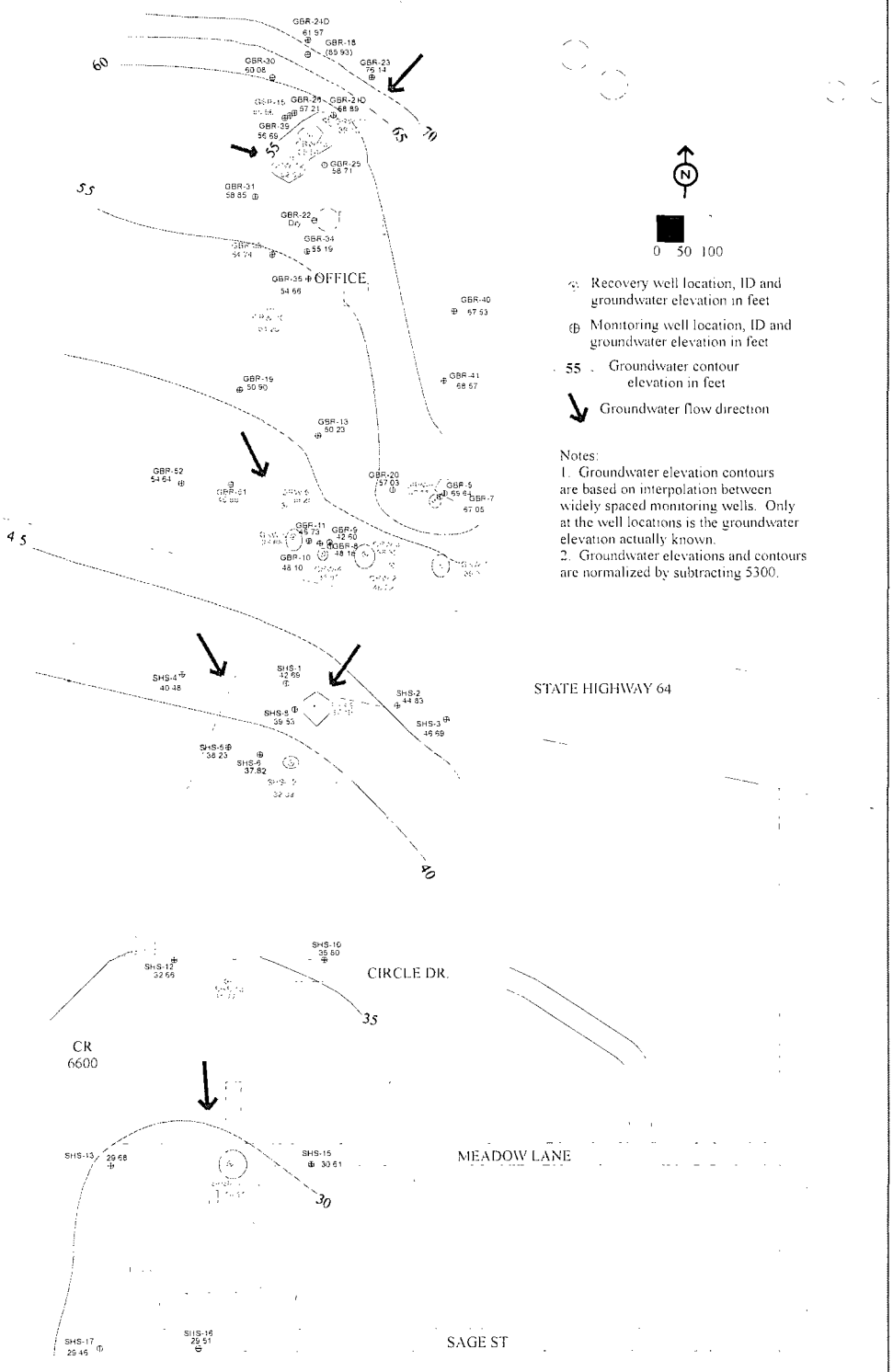
Figures



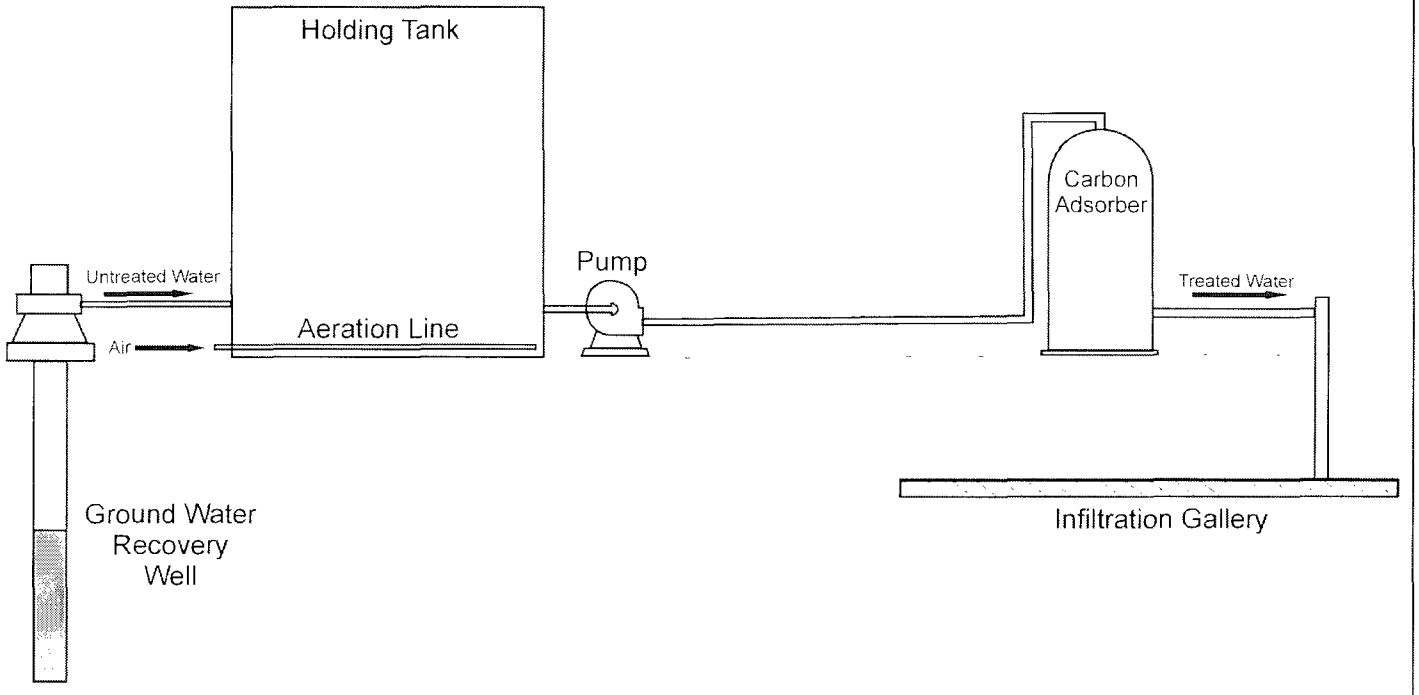
Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	Bloomfield Refinery Remediation Project Site Map	DRWN BY: AA CHKD BY: MN APPVD BY: MN DATE: 07/11/05	Figure 1



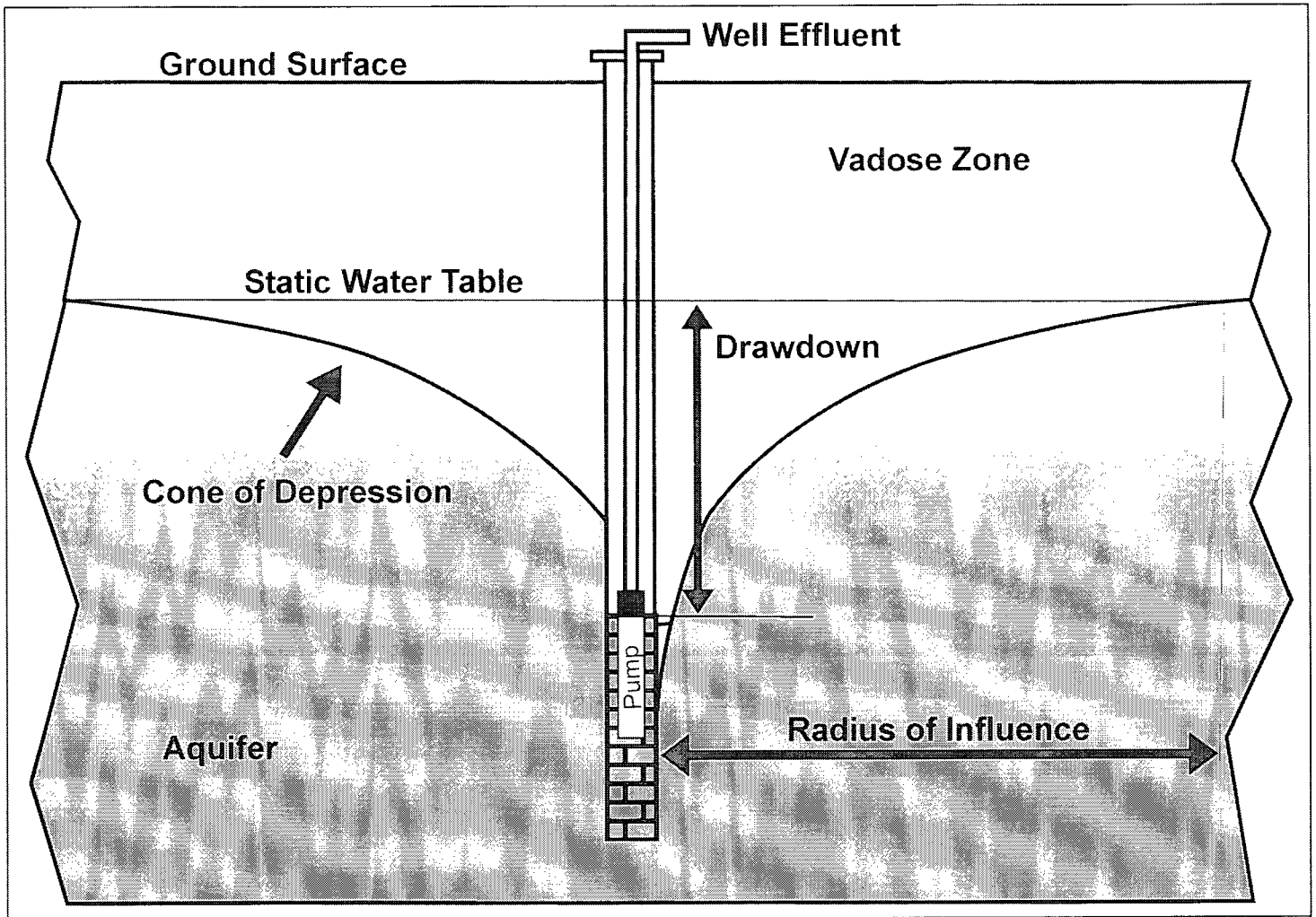
Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	Generalized East-West Hydrogeologic Cross-Section Across Refinery Site	DRWN BY: AA CHKD BY: MN APPVD BY: MN DATE: 06/18/05	Figure 2



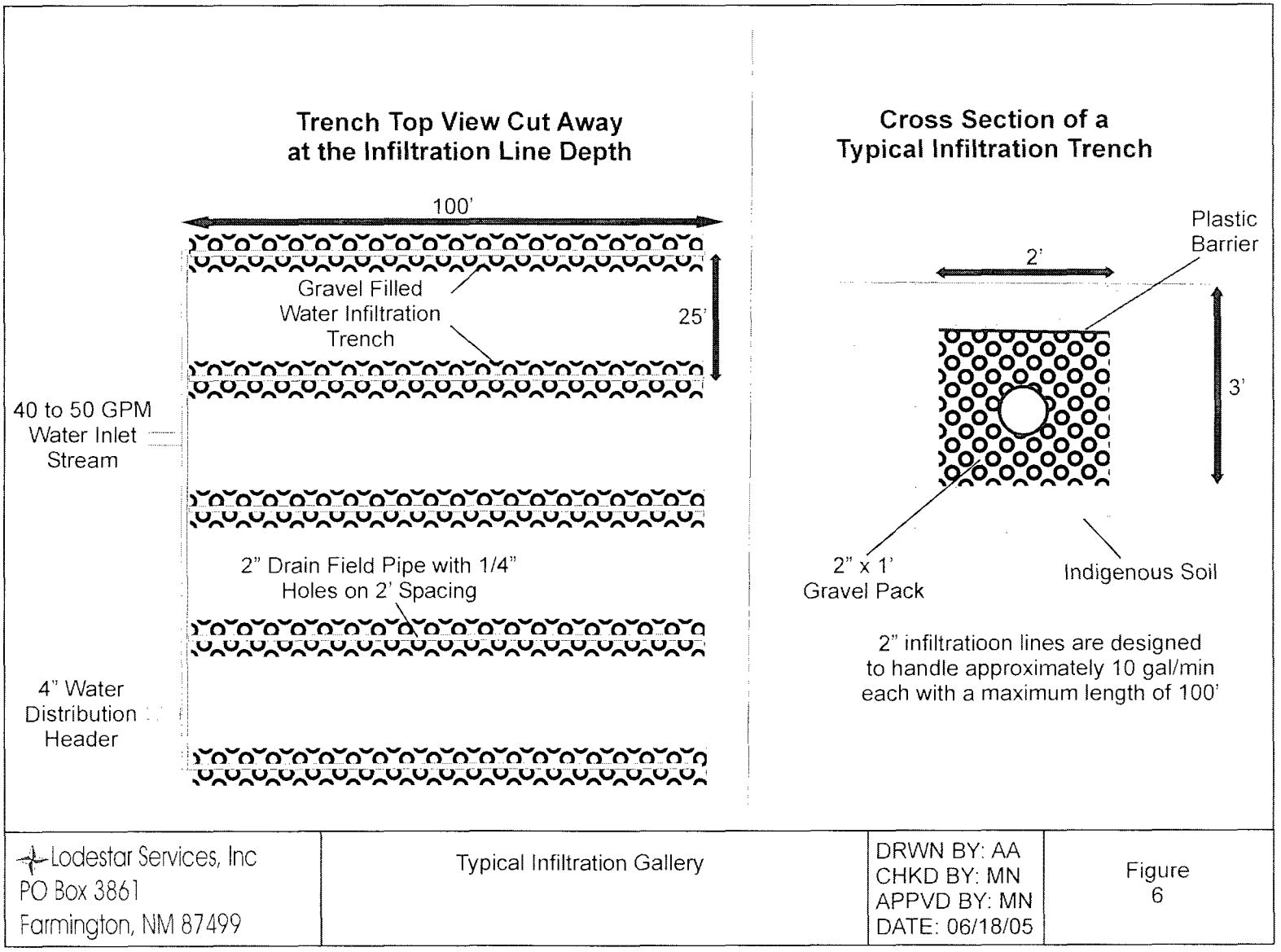
Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	Ground Water Potentiometric Surface Map	DRWN BY: MN CHKD BY: MN APPVD BY: MN DATE: 01/05/05	Figure 3



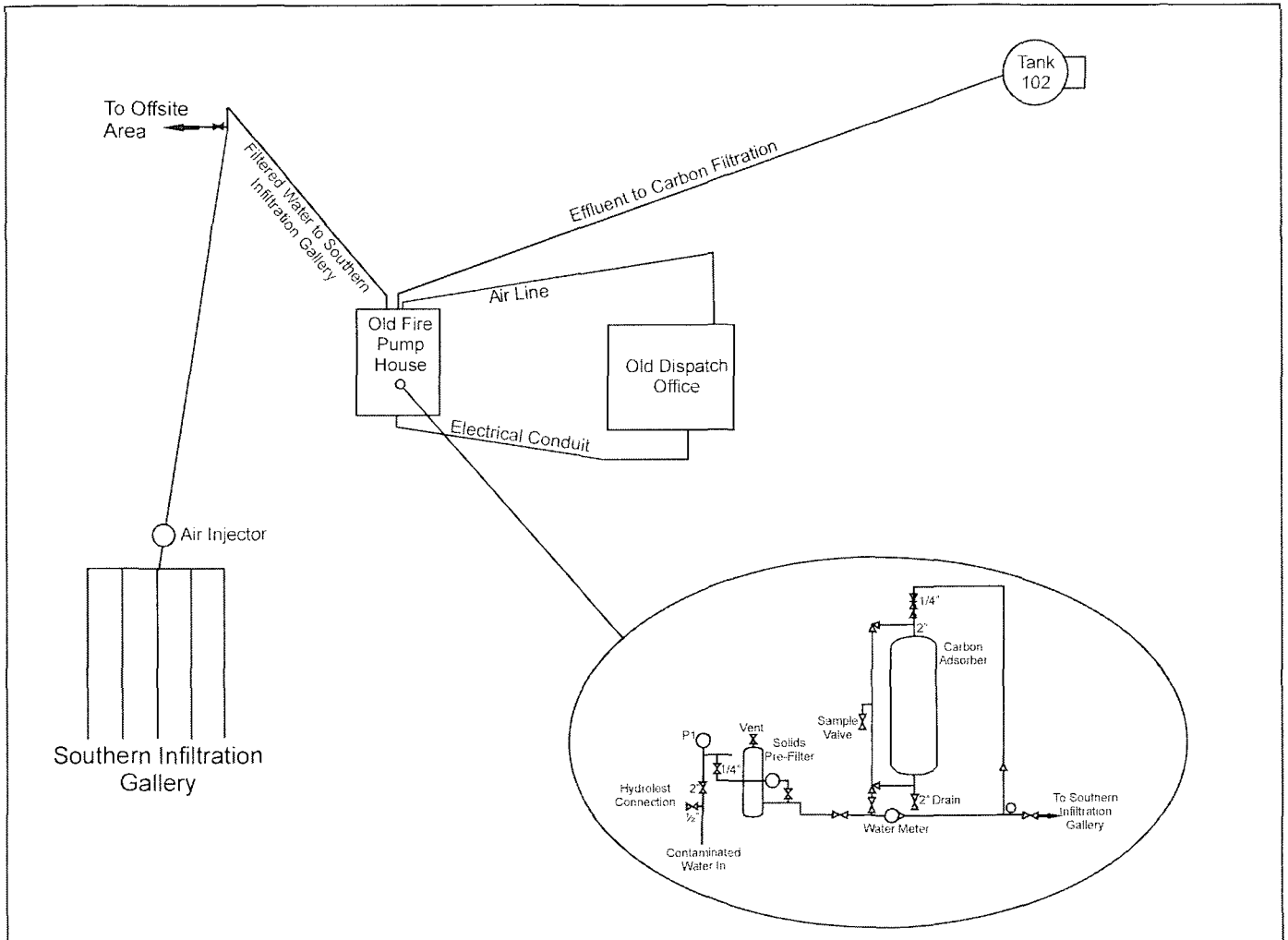
Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	Simplified Representation of a Ground Water Recovery, Treatment and Disposal System	DRWN BY: AA CHKD BY: MN APPVD BY: MN DATE: 06/18/05	Figure 4



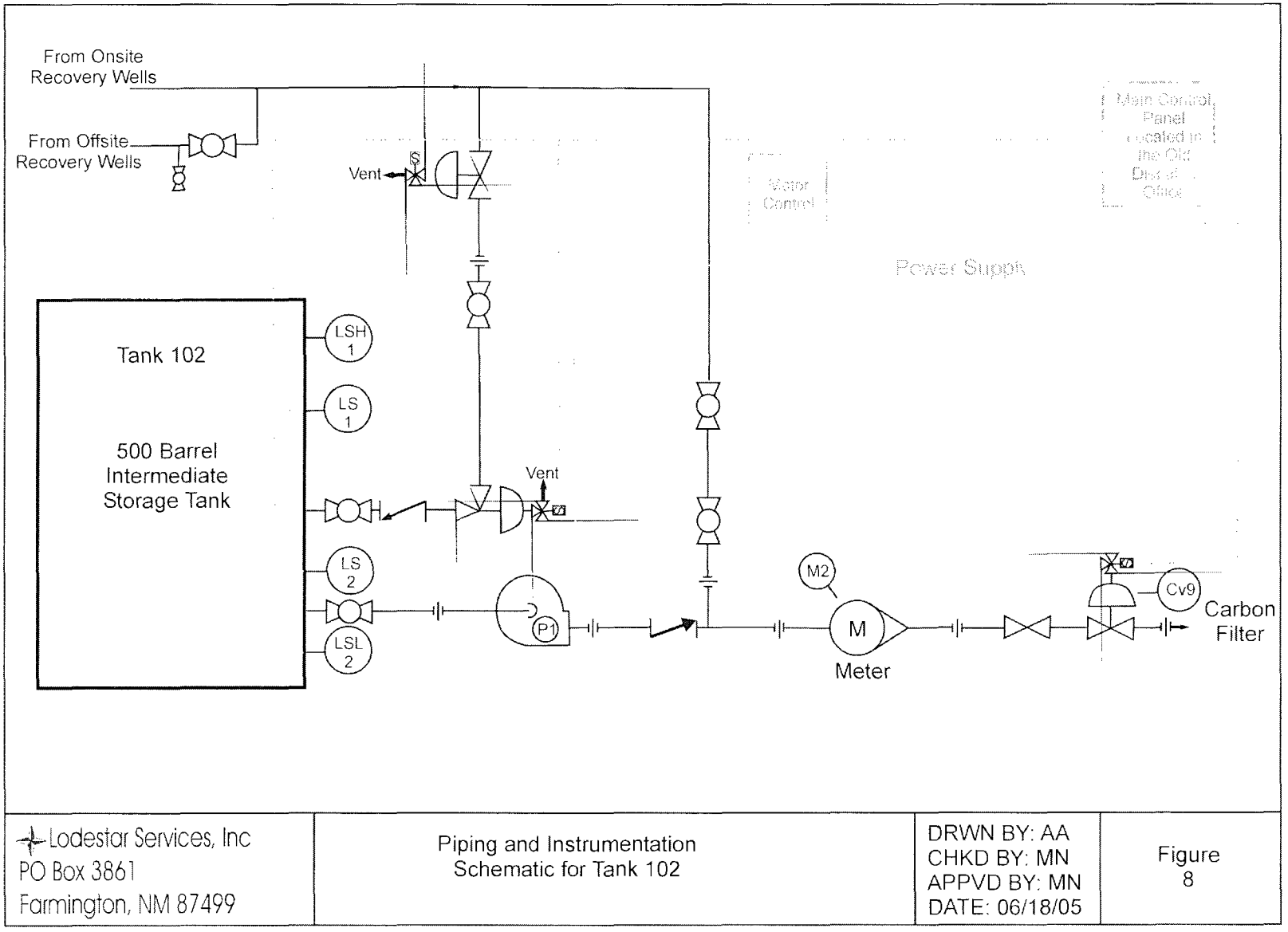
Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	Effect of Pumping on an Aquifer	DRWN BY: AA CHKD BY: MN APPVD BY: MN DATE: 06/18/05	Figure 5



Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	Typical Infiltration Gallery	DRWN BY: AA CHKD BY: MN APPVD BY: MN DATE: 06/18/05	Figure 6



Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	The Carbon Adsorption System at the Bloomfield Refinery	DRWN BY: AA CHKD BY: MN APPVD BY: MN DATE: 06/18/05	Figure 7



Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	Piping and Instrumentation Schematic for Tank 102	DRWN BY: AA CHKD BY: MN APPVD BY: MN DATE: 06/18/05	Figure 8

Appendix A: 2004 Annual Data Report Giant Bloomfield Refinery

February 1, 2005

Mr. Roger Anderson
Bureau Chief
New Mexico Oil Conservation Division
Environmental Bureau
1220 South St. Francis Drive
Santa Fe, NM 87504

Dear Mr. Anderson:

Enclosed you will find the annual report for Giant Refining Company's Bloomfield Refinery for 2004.

Please contact me if you have any questions.

Sincerely,

Tim Kinney
Remediation Project Manager

/dm

Enclosure

cc w/enc.: Luke Wethers-Giant
David Kirby-Giant
Jacque Cumbie-Giant
Stephanie Odell-BLM
Maura Hanning-EID
Chris Shuey-SWRIC
Jim Durrett-SJC
Herbert Gorrod-EPA
Denny Foust-OCD

ANNUAL DATA REPORT

GIANT BLOOMFIELD REFINERY

2004

Prepared By:

GIANT REFINING COMPANY
111 County Road 4990
Bloomfield, NM 87413
(505) 632-8006
FAX (505) 632-4021

TABLE OF CONTENTS

INTRODUCTION AND SUMMARY
ANNUAL REPORT
2004

INTRODUCTION

Tank 22 is being used for intermediate water storage. All water is treated by the carbon filter unit exclusively. All water was discharged into the southern infiltration field in 2004.

SUMMARY

Section 2

Section 2 contains a summary of the annual analytical results. Raw data, as received from the laboratory, is available on request as a supplement to the annual report.

Section 3

Potentiometric surface maps, as well as the adjusted water surface elevation and product thickness for each well, are included in Section 3.

Section 4

Section 4 illustrates the volume history for the year. Total volume pumped from each well, as well as current tank volumes and the reinjection volume, is reported. Tanks 21, 22, and 106 are no longer in use for water storage.

SECTION 2

The following pages show the annual analytical data for the Giant Refining Remediation Project. The data is broken down into units as described below.

	Unit of Measure
Total dissolved solids (180)	mg/l
Total dissolved solids (calc)	mg/l
Total alkalinity as CaCO3	mg/l
Total hardness as CaCO3	mg/l
Bicarbonate as HCO3	mg/l
Carbonate as CO3	mg/l
Chloride	mg/l
Sulfate	mg/l
Calcium	mg/l
Magnesium	mg/l
Potassium	mg/l
Sodium	mg/l

The remainder of the data is measured in ug/l.

GIANT INDUSTRIES, INC.
ONSITE REMEDIATION PROJECT
ANNUAL ANALYTICAL DATA SUMMARY
2004

	JAN	APR	JUL	OCT	DEC
SYSTEM EFFLUENT					
Lab pH	7.6	7.3	7.3	7.3	
Lab Conductivity@25C	2800	2900	2700	3200	
Total Dissolved Solids (Calc)	2100	2300	2200	2500	
Total Alkalinity as CaCO3	490	430	450	310	
Total Hardness as CaCO3	730	780	790	880	
Bicarbonate as HCO3	490	430	450	310	
Carbonate as CO3	5.0	nd	1.0	1.0	
Hydroxide	nd	nd	nd	nd	
Chloride	92	92	87	90	
Sulfate	1100	1200	1100	1300	
Calcium	250	260	270	310	
Magnesium	26	25	28	29	
Potassium	3.4	3.5	3.5	4.2	
Sodium	430	460	410	390	
HALOCARBONS					
Bromodichloromethane	nd	nd	nd	nd	
Bromoform	nd	nd	nd	nd	
Bromomethane	nd	nd	nd	nd	
Carbon Tetrachloride	nd	nd	nd	nd	
Chloroethane	nd	nd	nd	nd	
Chloroform	nd	nd	nd	nd	
Chloromethane	nd	nd	nd	nd	
Dibromochloromethane	nd	nd	nd	nd	
1,2-Dibromomethane (EDB)	nd	nd	nd	nd	
1,2-Dichlorobenzene	nd	nd	nd	nd	
1,3-Dichlorobenzene	nd	nd	nd	nd	
1,4-Dichlorobenzene	nd	nd	nd	nd	
1,1-Dichloroethane	nd	nd	nd	nd	
1,2-Dichloroethane (EDC)	nd	nd	nd	nd	
1,1-Dichoroethene	nd	nd	nd	nd	
cis-1,-Dichloroethene					
trans-1,2-Dichloroethene	nd	nd	nd	nd	
1,2-Dichloropropane	nd	nd	nd	nd	
cis-1,-Dichloropropene	nd	nd	nd	nd	
trans-1,2-Dichloropropene	nd	nd	nd	nd	
Methylene Chloride	nd	nd	nd	nd	
1,1,2,2-Tetrachloroethane	nd	nd	nd	nd	

	JAN	APR	JUL	OCT	DEC
Tetrachloroethane	nd	nd	nd	nd	
1,1,1-Trichloroethane	nd	nd	nd	nd	
1,1,2-Trichloroethane	nd	nd	nd	nd	
Trichloroethene	nd	nd	nd	nd	
Trichlorofluoromethane	nd	nd	nd	nd	
Vinyl Chloride	nd	nd	nd	nd	
AROMATICS					
Benzene	nd	nd	nd	nd	
Chlorobenzene	nd	nd	nd	nd	
1,2-Dichlorobenzene	nd	nd	nd	nd	
1,3-Dichlorobenzene	nd	nd	nd	nd	
1,4-Dichlorobenzene	nd	nd	nd	nd	
Ethylbenzene	nd	nd	nd	nd	
Methyl-t-Butyl Ether	nd	nd	nd	nd	
Toluene	nd	nd	nd	nd	
Total Xylenes	nd	nd	nd	nd	
PAH					
1-Methylnapthalene	nd				
2-Methylnapthalene	nd				
Benzo(a)pyrene	nd				
Napthalene	nd				
METALS (mg/l)					
Antimony	nd				
Arsenic	nd				
Beryllium	nd				
Cadmium	nd				
Chromium	nd				
Copper	nd				
Lead	nd				
Nickel	0.016				
Selenium	nd				
Silver	nd				
Thallium	nd				
Zinc	nd				
Mercury	nd				
SYSTEM INFLUENT					
Lab pH	7.6	7.3	7.5	7.3	
Lab Conductivity@25C	2800	2900	2700	3200	
Total Dissolved Solids (Calc)	2100	2300	2200	2500	
Total Alkalinity as CaCO3	480	430	450	310	

	JAN	APR	JUL	OCT	DEC
Total Hardness as CaCO3	720	710	780	900	
Bicarbonate as HCO3	480	430	450	310	
Carbonate as CO3	2.0	nd	1.0	nd	
Hydroxide	nd	nd	nd	nd	
Chloride	92	92	88	90	
Sulfate	1000	1200	1100	1300	
Calcium	250	260	270	310	
Magnesium	25	25	27	29	
Potassium	3.3	3.6	3.4	4.2	
Sodium	430	440	410	390	
HALOCARBONS					
Bromodichloromethane	nd	nd	nd	nd	
Bromoform	nd	nd	nd	nd	
Bromomethane	nd	nd	nd	nd	
Carbon Tetrachloride	nd	nd	nd	nd	
Chloroethane	nd	nd	nd	nd	
Chloroform	nd	nd	nd	nd	
Chloromethane	nd	nd	nd	nd	
Dibromochloromethane	nd	nd	nd	nd	
1,2-Dibromomethane (EDB)	nd	nd	nd	nd	
1,2-Dichlorobenzene	nd	nd	nd	nd	
1,3-Dichlorobenzene	nd	nd	nd	nd	
1,4-Dichlorobenzene	nd	nd	nd	nd	
1,1-Dichloroethane	nd	nd	nd	nd	
1,2-Dichloroethane (EDC)	nd	nd	nd	nd	
1,1-Dichoroethene	nd	nd	nd	nd	
trans-1,2-Dichloroethene	nd	nd	nd	nd	
1,2-Dichloropropane	nd	nd	nd	nd	
cis-1,-Dichloropropene	nd	nd	nd	nd	
trans-1,2-Dichloropropene	nd	nd	nd	nd	
Methylene Chloride	nd	nd	nd	nd	
1,1,2,2-Tetrachloroethane	nd	nd	nd	nd	
Tetrachloroethane	nd	nd	nd	nd	
1,1,1-Trichloroethane	nd	nd	nd	nd	
1,1,2-Trichloroethane	nd	nd	nd	nd	
Trichloroethene	nd	nd	nd	nd	
Trichlorofluoromethane	nd	nd	nd	nd	
Vinyl Chloride	nd	nd	nd	nd	
AROMATICS					
Benzene	nd	nd	nd	nd	
Chlorobenzene	nd	nd	nd	nd	
1,2-Dichlorobenzene	nd	nd	nd	nd	

	JAN	APR	JUL	OCT	DEC
1,3-Dichlorobenzene	nd	nd	nd	nd	
1,4-Dichlorobenzene	nd	nd	nd	nd	
Ethylbenzene	nd	nd	nd	nd	
Methyl-t-Butyl Ether	nd	nd	nd	nd	
Toluene	nd	nd	nd	nd	
Total Xylenes	nd	nd	nd	nd	
GRW-3					
Lab pH	7.7				
Lab Conductivity@25C	4300				
Total Dissolved Solids (Calc)	3700				
Total Alkalinity as CaCO3	160				
Total Hardness as CaCO3	1100				
Bicarbonate as HCO3	160				
Carbonate as CO3	nd				
Hydroxide	nd				
Chloride	27				
Sulfate	2500				
Calcium	400				
Magnesium	19				
Potassium	9.1				
Sodium	740				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				

	JAN	APR	JUL	OCT	DEC
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
PAH					
1-Methylnapthalene	nd				
2-Methylnapthalene	nd				
Benzo(a)pyrene	nd				
Napthalene	nd				
GRW-6					
Lab pH	7.7				
Lab Conductivity@25C	2300				
Total Dissolved Solids (Calc)	1500				
Total Alkalinity as CaCO3	720				
Total Hardness as CaCO3	410				
Bicarbonate as HCO3	720				
Carbonate as CO3	3.0				
Hydroxide	nd				
Chloride	110				
Sulfate	410				
Calcium	130				
Magnesium	22				
Potassium	1.8				
Sodium	430				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				

	JAN	APR	JUL	OCT	DEC
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
PAH					
1-Methylnapthalene	nd				
2-Methylnapthalene	nd				
Benzo(a)pyrene	nd				
Napthalene	nd				
GBR-17					

	JAN	APR	JUL	OCT	DEC
Lab pH					6.4
Lab Conductivity@25C					2300
Total Dissolved Solids (Calc)					2000
Total Alkalinity as CaCO3					280
Total Hardness as CaCO3					990
Bicarbonate as HCO3					280
Carbonate as CO3					nd
Hydroxide					nd
Chloride					50
Sulfate					1100
Calcium					340
Magnesium					33
Potassium					7.2
Sodium					280
HALOCARBONS					
Bromodichloromethane					nd
Bromoform					nd
Bromomethane					nd
Carbon Tetrachloride					nd
Chloroethane					nd
Chloroform					nd
Chloromethane					nd
Dibromochloromethane					nd
1,2-Dibromomethane (EDB)					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
1,1-Dichloroethane					nd
1,2-Dichloroethane (EDC)					nd
1,1-Dichoroethene					nd
trans-1,2-Dichloroethene					nd
1,2-Dichloropropane					nd
cis-1,-Dichloropropene					nd
trans-1,2-Dichloropropene					nd
Methylene Chloride					nd
1,1,2,2-Tetrachloroethane					nd
Tetrachloroethane					nd
1,1,1-Trichloroethane					nd
1,1,2-Trichloroethane					nd
Trichloroethene					nd
Trichlorofluoromethane					nd
Vinyl Chloride					nd

	JAN	APR	JUL	OCT	DEC
AROMATICS					
Benzene					nd
Chlorobenzene					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
Ethylbenzene					nd
Methyl-t-Butyl Ether					nd
Toluene					nd
Total Xylenes					nd
GBR-24D					
Lab pH	7.6				
Lab Conductivity@25C	4300				
Total Dissolved Solids (Calc)	3400				
Total Alkalinity as CaCO3	230				
Total Hardness as CaCO3	1400				
Bicarbonate as HCO3	230				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	20				
Sulfate	2000				
Calcium	480				
Magnesium	47				
Potassium	12				
Sodium	620				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	19				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				

	JAN	APR	JUL	OCT	DEC
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
PAH					
1-Methylnapthalene	nd				
2-Methylnapthalene	nd				
Benzo(a)pyrene	nd				
Napthalene	nd				
GBR-30					
Lab pH	7.0				
Lab Conductivity@25C	4500				
Total Dissolved Solids (Calc)	3500				
Total Alkalinity as CaCO3	240				
Total Hardness as CaCO3	1500				
Bicarbonate as HCO3	240				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	410				
Sulfate	2000				
Calcium	510				
Magnesium	44				
Potassium	8.8				
Sodium	630				

	JAN	APR	JUL	OCT	DEC
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
PAH					
1-Methylnapthalene	nd				
2-Methylnapthalene	nd				

	JAN	APR	JUL	OCT	DEC
Benzo(a)pyrene	nd				
Napthalene	nd				
GBR-31					
Lab pH	7.5				
Lab Conductivity@25C	3200				
Total Dissolved Solids (Calc)	2600				
Total Alkalinity as CaCO3	200				
Total Hardness as CaCO3	1000				
Bicarbonate as HCO3	200				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	79				
Sulfate	1700				
Calcium	350				
Magnesium	31				
Potassium	5.3				
Sodium	460				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				

	JAN	APR	JUL	OCT	DEC
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
PAH					
1-Methylnapthalene	nd				
2-Methylnapthalene	nd				
Benzo(a)pyrene	nd				
Napthalene	nd				
GBR-32					
Lab pH					6.1
Lab Conductivity@25C					4900
Total Dissolved Solids (Calc)					4200
Total Alkalinity as CaCO3					250
Total Hardness as CaCO3					1600
Bicarbonate as HCO3					250
Carbonate as CO3					nd
Hydroxide					nd
Chloride					470
Sulfate					2100
Calcium					550
Magnesium					58
Potassium					11
Sodium					770
HALOCARBONS					
Bromodichloromethane					nd
Bromoform					nd
Bromomethane					nd
Carbon Tetrachloride					nd
Chloroethane					nd
Chloroform					0.7

	JAN	APR	JUL	OCT	DEC
Chloromethane					nd
Dibromochloromethane					nd
1,2-Dibromomethane (EDB)					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
1,1-Dichloroethane					nd
1,2-Dichloroethane (EDC)					nd
1,1-Dichoroethene					nd
trans-1,2-Dichloroethene					nd
1,2-Dichloropropane					nd
cis-1,-Dichloropropene					nd
trans-1,2-Dichloropropene					nd
Methylene Chloride					nd
1,1,2,2-Tetrachloroethane					nd
Tetrachloroethane					nd
1,1,1-Trichloroethane					nd
1,1,2-Trichloroethane					nd
Trichloroethene					nd
Trichlorofluoromethane					nd
Vinyl Chloride					nd
AROMATICS					
Benzene					nd
Chlorobenzene					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
Ethylbenzene					nd
Methyl-t-Butyl Ether					nd
Toluene					nd
Total Xylenes					nd
GBR-48					
Lab pH					5.8
Lab Conductivity@25C					5900
Total Dissolved Solids (Calc)					4800
Total Alkalinity as CaCO3					50
Total Hardness as CaCO3					1800
Bicarbonate as HCO3					50
Carbonate as CO3					nd
Hydroxide					nd
Chloride					890
Sulfate					2100

	JAN	APR	JUL	OCT	DEC
Calcium					620
Magnesium					70
Potassium					11
Sodium					850
HALOCARBONS					
Bromodichloromethane					nd
Bromoform					nd
Bromomethane					nd
Carbon Tetrachloride					nd
Chloroethane					nd
Chloroform					1.1
Chloromethane					nd
Dibromochloromethane					nd
1,2-Dibromomethane (EDB)					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
1,1-Dichloroethane					nd
1,2-Dichloroethane (EDC)					nd
1,1-Dichoroethene					nd
trans-1,2-Dichloroethene					nd
1,2-Dichloropropane					nd
cis-1,-Dichloropropene					nd
trans-1,2-Dichloropropene					nd
Methylene Chloride					nd
1,1,2,2-Tetrachloroethane					nd
Tetrachloroethane					2.5
1,1,1-Trichloroethane					nd
1,1,2-Trichloroethane					nd
Trichloroethene					1.0
Trichlorofluoromethane					nd
Vinyl Chloride					nd
AROMATICS					
Benzene					nd
Chlorobenzene					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
Ethylbenzene					nd
Methyl-t-Butyl Ether					nd
Toluene					nd
Total Xylenes					nd

	JAN	APR	JUL	OCT	DEC
GBR-49					
Lab pH					6.3
Lab Conductivity@25C					4500
Total Dissolved Solids (Calc)					3600
Total Alkalinity as CaCO3					250
Total Hardness as CaCO3					1100
Bicarbonate as HCO3					250
Carbonate as CO3					nd
Hydroxide					nd
Chloride					520
Sulfate					1700
Calcium					360
Magnesium					40
Potassium					10
Sodium					450
HALOCARBONS					
Bromodichloromethane					nd
Bromoform					nd
Bromomethane					nd
Carbon Tetrachloride					nd
Chloroethane					nd
Chloroform					1.9
Chloromethane					nd
Dibromochloromethane					nd
1,2-Dibromomethane (EDB)					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
1,1-Dichloroethane					0.6
1,2-Dichloroethane (EDC)					nd
1,1-Dichoroethene					nd
trans-1,2-Dichloroethene					nd
1,2-Dichloropropane					nd
cis-1,-Dichloropropene					nd
trans-1,2-Dichloropropene					nd
Methylene Chloride					nd
1,1,2,2-Tetrachloroethane					nd
Tetrachloroethane					3.5
1,1,1-Trichloroethane					nd
1,1,2-Trichloroethane					nd
Trichloroethene					1.7
Trichlorofluoromethane					nd

	JAN	APR	JUL	OCT	DEC
Vinyl Chloride					nd
AROMATICS					
Benzene					nd
Chlorobenzene					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
Ethylbenzene					nd
Methyl-t-Butyl Ether					nd
Toluene					nd
Total Xylenes					nd
GBR-50					
Lab pH					2.0
Lab Conductivity@25C					3300
Total Dissolved Solids (Calc)					2900
Total Alkalinity as CaCO3					160
Total Hardness as CaCO3					1100
Bicarbonate as HCO3					160
Carbonate as CO3					nd
Hydroxide					nd
Chloride					47
Sulfate					1900
Calcium					420
Magnesium					35
Potassium					7.2
Sodium					450
HALOCARBONS					
Bromodichloromethane					nd
Bromoform					nd
Bromomethane					nd
Carbon Tetrachloride					nd
Chloroethane					nd
Chloroform					nd
Chloromethane					nd
Dibromochloromethane					nd
1,2-Dibromomethane (EDB)					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
1,1-Dichloroethane					nd
1,2-Dichloroethane (EDC)					nd

	JAN	APR	JUL	OCT	DEC
1,1-Dichoroethene					nd
trans-1,2-Dichloroethene					nd
1,2-Dichloropropane					nd
cis-1,-Dichloropropene					nd
trans-1,2-Dichloropropene					nd
Methylene Chloride					nd
1,1,2,2-Tetrachloroethane					nd
Tetrachloroethane					nd
1,1,1-Trichloroethane					nd
1,1,2-Trichloroethane					nd
Trichloroethene					nd
Trichlorofluoromethane					nd
Vinyl Chloride					nd
AROMATICS					
Benzene					nd
Chlorobenzene					nd
1,2-Dichlorobenzene					nd
1,3-Dichlorobenzene					nd
1,4-Dichlorobenzene					nd
Ethylbenzene					nd
Methyl-t-Butyl Ether					nd
Toluene					nd
Total Xylenes					nd
GBR-51					
Lab pH	7.7				
Lab Conductivity@25C	2800				
Total Dissolved Solids (Calc)	2400				
Total Alkalinity as CaCO3	210				
Total Hardness as CaCO3	970				
Bicarbonate as HCO3	210				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	61				
Sulfate	1400				
Calcium	340				
Magnesium	29				
Potassium	nd				
Sodium	330				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				

	JAN	APR	JUL	OCT	DEC
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
GBR-52					
Lab pH	8.0				
Lab Conductivity@25C	3000				
Total Dissolved Solids (Calc)	2600				
Total Alkalinity as CaCO3	200				
Total Hardness as CaCO3	1300				
Bicarbonate as HCO3	200				

	JAN	APR	JUL	OCT	DEC
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	64				
Sulfate	1600				
Calcium	470				
Magnesium	34				
Potassium	2.0				
Sodium	340				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				

	JAN	APR	JUL	OCT	DEC
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
SHS-4					
Lab pH	7.4				
Lab Conductivity@25C	3200				
Total Dissolved Solids (Calc)	2700				
Total Alkalinity as CaCO3	200				
Total Hardness as CaCO3	1400				
Bicarbonate as HCO3	200				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	66				
Sulfate	1700				
Calcium	480				
Magnesium	36				
Potassium	5.5				
Sodium	340				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				

	JAN	APR	JUL	OCT	DEC
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
SHS-6					
Lab pH	7.3				
Lab Conductivity@25C	2800				
Total Dissolved Solids (Calc)	2300				
Total Alkalinity as CaCO3	220				
Total Hardness as CaCO3	970				
Bicarbonate as HCO3	220				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	60				
Sulfate	1400				
Calcium	340				
Magnesium	28				
Potassium	2.4				
Sodium	330				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				

	JAN	APR	JUL	OCT	DEC
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
SHS-19					
Lab pH	7.5				
Lab Conductivity@25C	2600				
Total Dissolved Solids (Calc)	1800				
Total Alkalinity as CaCO3	650				
Total Hardness as CaCO3	570				
Bicarbonate as HCO3	650				
Carbonate as CO3	2.0				
Hydroxide	nd				
Chloride	110				
Sulfate	630				
Calcium	190				
Magnesium	24				
Potassium	2.3				
Sodium	450				

	JAN	APR	JUL	OCT	DEC
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
SHS-10					
Lab pH	7.3				
Lab Conductivity@25C	3100				

	JAN	APR	JUL	OCT	DEC
Total Dissolved Solids (Calc)	2400				
Total Alkalinity as CaCO3	440				
Total Hardness as CaCO3	950				
Bicarbonate as HCO3	440				
Carbonate as CO3	1				
Hydroxide	nd				
Chloride	120				
Sulfate	1200				
Calcium	290				
Magnesium	57				
Potassium	11				
Sodium	440				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				

	JAN	APR	JUL	OCT	DEC
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	1.6				
SHS-12					
Lab pH	7.2				
Lab Conductivity@25C	2900				
Total Dissolved Solids (Calc)	2100				
Total Alkalinity as CaCO3	500				
Total Hardness as CaCO3	740				
Bicarbonate as HCO3	500				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	110				
Sulfate	980				
Calcium	260				
Magnesium	21				
Potassium	1.8				
Sodium	450				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				

	JAN	APR	JUL	OCT	DEC
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
SHS-13					
Lab pH	7.0				
Lab Conductivity@25C	2800				
Total Dissolved Solids (Calc)	3200				
Total Alkalinity as CaCO3	650				
Total Hardness as CaCO3	1600				
Bicarbonate as HCO3	650				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	200				
Sulfate	1500				
Calcium	570				
Magnesium	49				
Potassium	3.1				
Sodium	410				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				

	JAN	APR	JUL	OCT	DEC
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	1.7				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
SHS-14					
Lab pH	7.3				
Lab Conductivity@25C	2500				
Total Dissolved Solids (Calc)	2100				
Total Alkalinity as CaCO3	300				
Total Hardness as CaCO3	900				
Bicarbonate as HCO3	300				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	56				
Sulfate	1200				

	JAN	APR	JUL	OCT	DEC
Calcium	310				
Magnesium	32				
Potassium	3.0				
Sodium	260				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				

	JAN	APR	JUL	OCT	DEC
SHS-15					
Lab pH	7.4				
Lab Conductivity@25C	2700				
Total Dissolved Solids (Calc)	2300				
Total Alkalinity as CaCO3	270				
Total Hardness as CaCO3	1100				
Bicarbonate as HCO3	270				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	74				
Sulfate	1300				
Calcium	360				
Magnesium	44				
Potassium	3.7				
Sodium	260				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				

	JAN	APR	JUL	OCT	DEC
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
SHS-16					
Lab pH	7.5				
Lab Conductivity@25C	2800				
Total Dissolved Solids (Calc)	2500				
Total Alkalinity as CaCO3	310				
Total Hardness as CaCO3	1100				
Bicarbonate as HCO3	310				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	54				
Sulfate	1400				
Calcium	380				
Magnesium	45				
Potassium	7.2				
Sodium	250				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				

	JAN	APR	JUL	OCT	DEC
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				
SHS-17					
Lab pH	7.4				
Lab Conductivity@25C	3500				
Total Dissolved Solids (Calc)	2700				
Total Alkalinity as CaCO3	270				
Total Hardness as CaCO3	1100				
Bicarbonate as HCO3	270				
Carbonate as CO3	1.0				
Hydroxide	nd				
Chloride	270				
Sulfate	1200				
Calcium	350				
Magnesium	48				
Potassium	4.4				
Sodium	430				
HALOCARBONS					
Bromodichloromethane	nd				
Bromoform	nd				

	JAN	APR	JUL	OCT	DEC
Bromomethane	nd				
Carbon Tetrachloride	nd				
Chloroethane	nd				
Chloroform	nd				
Chloromethane	nd				
Dibromochloromethane	nd				
1,2-Dibromomethane (EDB)	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
1,1-Dichloroethane	nd				
1,2-Dichloroethane (EDC)	nd				
1,1-Dichoroethene	nd				
trans-1,2-Dichloroethene	nd				
1,2-Dichloropropane	nd				
cis-1,-Dichloropropene	nd				
trans-1,2-Dichloropropene	nd				
Methylene Chloride	nd				
1,1,2,2-Tetrachloroethane	nd				
Tetrachloroethane	nd				
1,1,1-Trichloroethane	nd				
1,1,2-Trichloroethane	nd				
Trichloroethene	nd				
Trichlorofluoromethane	nd				
Vinyl Chloride	nd				
AROMATICS					
Benzene	nd				
Chlorobenzene	nd				
1,2-Dichlorobenzene	nd				
1,3-Dichlorobenzene	nd				
1,4-Dichlorobenzene	nd				
Ethylbenzene	nd				
Methyl-t-Butyl Ether	nd				
Toluene	nd				
Total Xylenes	nd				

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

September 11, 2003

Mr. Timothy A. Kinney
Giant Industries Arizona, Inc.
111 County Rd. 4990
Bloomfield, New Mexico 87413

RE: CASE # GW-40
BLOOMFIELD REFINERY
SAN JUAN COUNTY, NEW MEXICO

Dear Mr. Kinney:

The New Mexico Oil Conservation Division (OCD) has reviewed Giant Industries Arizona, Inc.'s (Giant) July 28, 2003 correspondence titled "FORMER GIANT BLOOMFIELD REFINERY" which was submitted on behalf of Giant by their consultant Martin Nee. This document contains the results of Giant's recent trial product removal activities at the former Bloomfield refinery. The document also contains a proposal to discontinue ground water recovery for one week in order to remove the pumps from the recovery wells and conduct tests on the wells.

The above-referenced proposal is approved with the following conditions:

1. Giant shall include the results of the tests in the subsequent annual ground water monitoring report for the refinery.

2. Giant shall notify the OCD at least 48 hours in advance of all scheduled activities such that the OCD has the opportunity to witness the events and split samples.

Please be advised that OCD approval does not relieve Giant of responsibility if the plan fails to adequately remediate or monitor contamination related to Giants activities, or if contamination exists which is outside the scope of the plan. In addition, OCD approval does not relieve Giant of responsibility for compliance with any other federal, state or local laws and regulations.

If you have any questions, please contact me at (505) 476-3491.

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

cc: Denny Foust, OCD Aztec District Office
Martin J. Nee

July 28, 2003

Mr. William Olson
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico, 87505

RE: Former Giant Bloomfield Refinery

Dear Mr. Olson,

During March and April 2003, Giant Industries Arizona, Inc. (Giant) initiated product recovery at onsite ground water monitoring wells GBR-19, GBR 25, GBR-34, and GBR-35. This was done on a trial basis to examine the effect regular product removal would have on the product thickness at non-pumping wells. In total approximately 2 gallons of product were removed during this trial. The data from the trial product removal can be seen on the attached Excel ™ spreadsheets. The results of the trial showed that:

- Product was completely removed at GBR-19 and had not returned by the end of the trial.
- Product at GBR-25 showed a significant increase through the first three product removal events and then appears to decline.
- GBR-34 show a significant decline in product thickness through three product removal events that appears to rebound slightly by the fourth site visit.
- GBR-35 show a marked decrease in product thickness that appears to taper off to approximately 25 percent of the initial thickness.

While looking at this data it became apparent that Giant has not reviewed static (non-pumping) groundwater elevations or sampled individual recovery wells recently. Giant proposes and herein requests New Mexico Oil Conservation Division (NMOCD) approval to discontinue ground water pumping for approximately one week. During this time ground water recovery pumps may be removed and static water level data will be collected at all monitoring and recovery wells. Individual ground water samples may be collected from all active recovery wells and select monitoring wells and sampled for benzene, toluene, ethyl benzene, and xylenes. Recovery wells with free-phase hydrocarbons will not be sampled. Giant will use this data to evaluate future pumping scenarios as well as a product recovery strategy. Product removal will continue on a monthly basis following ground water sampling.

We look forward to your approval of this proposed work. Should you have any comments, suggestions, questions, or require additional information please do not hesitate to call me at (505) 334-2791 or Tim Kinney (505) 632-4001.

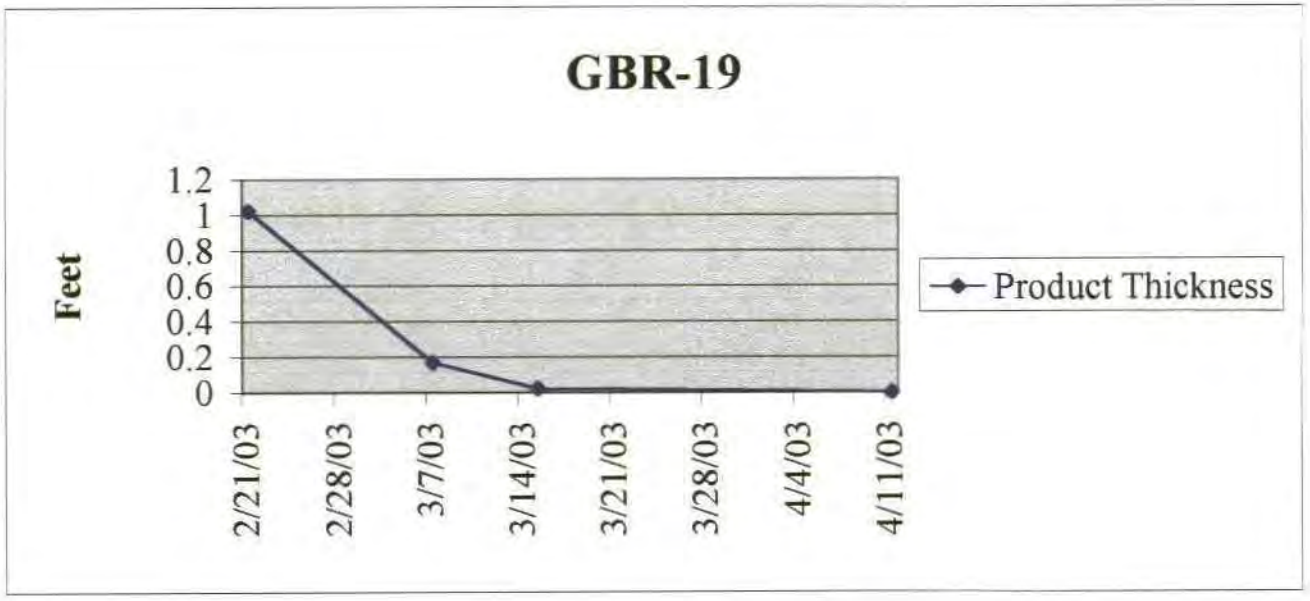
Sincerely,

Martin Nee

Cc: Mr. Tim Kinney, Giant Industries Arizona, Inc.
Mr. David Kirby, Giant Industries Arizona, Inc.
File

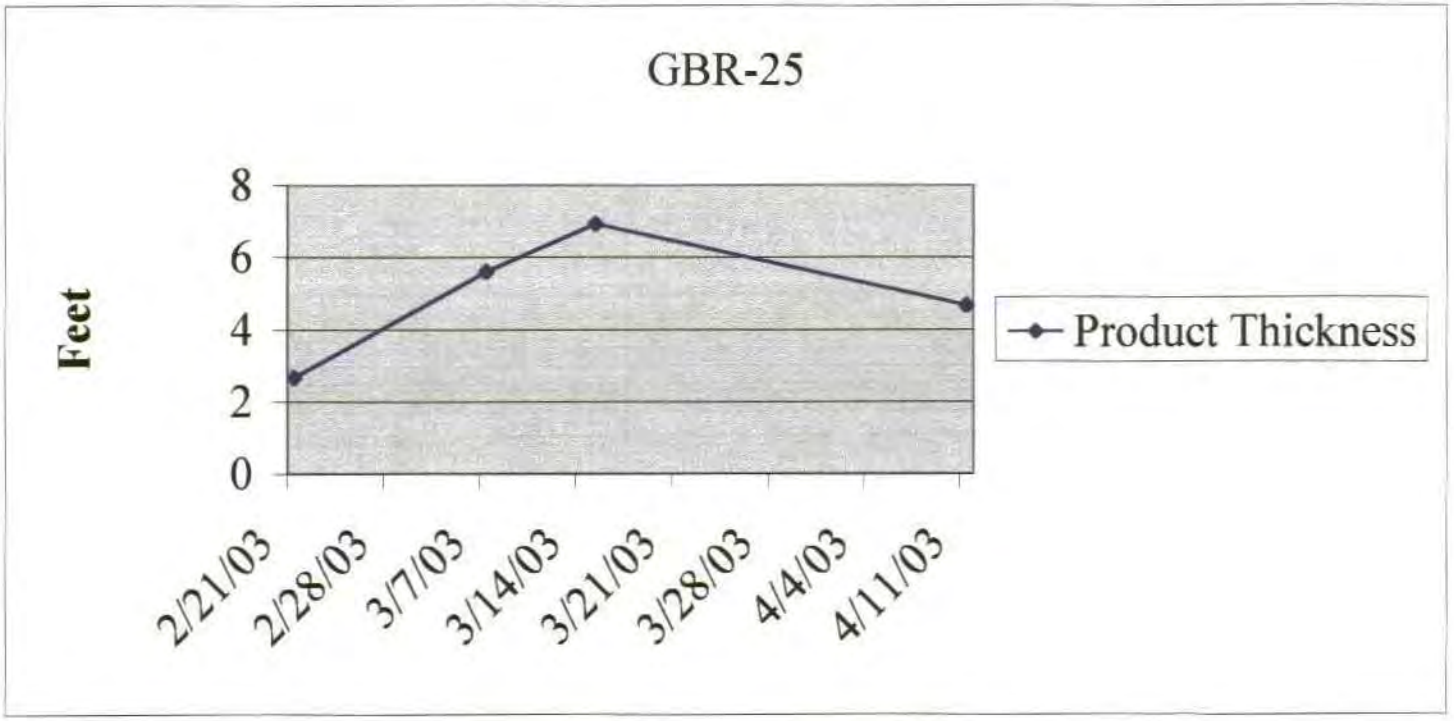
GBR-19

	Before Product Removal			After Product Removal			
Date	Depth to Product	Depth to Water	Product Thickness	Depth to Product	Depth to Water	Product Thickness	TD
2/21/03	42.05	43.07	1.02	46.18	46.2	0.02	50.3
3/7/03	42.14	42.31	0.17		45.52	0	50.3
3/15/03	42.17	42.19	0.02		44.56	0	50.3
4/11/03		41.94	0		41.94	0	50.3



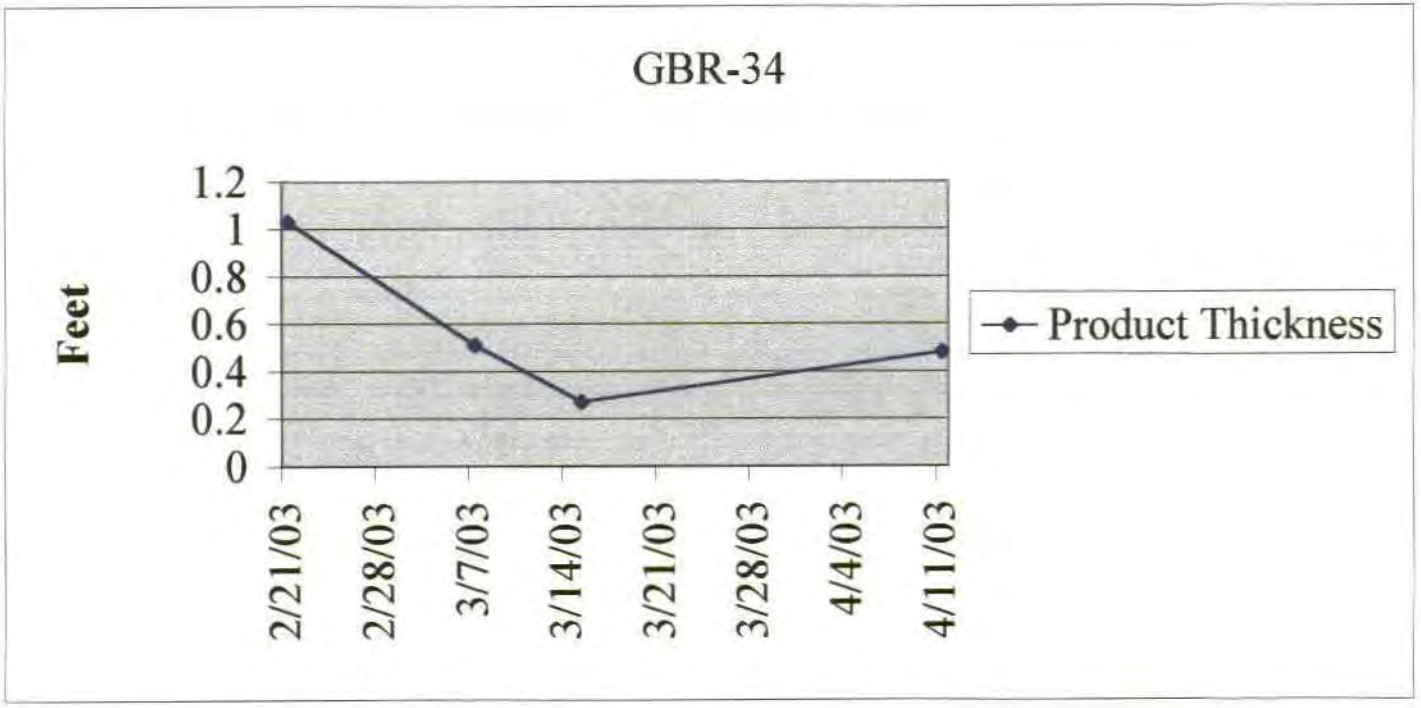
GBR-25

	Before Product Removal			After Product Removal			
Date	**Depth to Product**	**Depth to Water**	**Product Thickness**	**Depth to Product**	**Depth to Water**	**Product Thickness**	**TD**
2/21/03	37.35	40.02	2.67	46	46.225	0.225	48.6
3/7/03	37.4	42.99	5.59	45.05	45.27	0.22	48.6
3/15/03	37.38	44.3	6.92		48.38	0	48.6
4/11/03	36.81	41.48	4.67	45.84	46.04	0.2	48.6



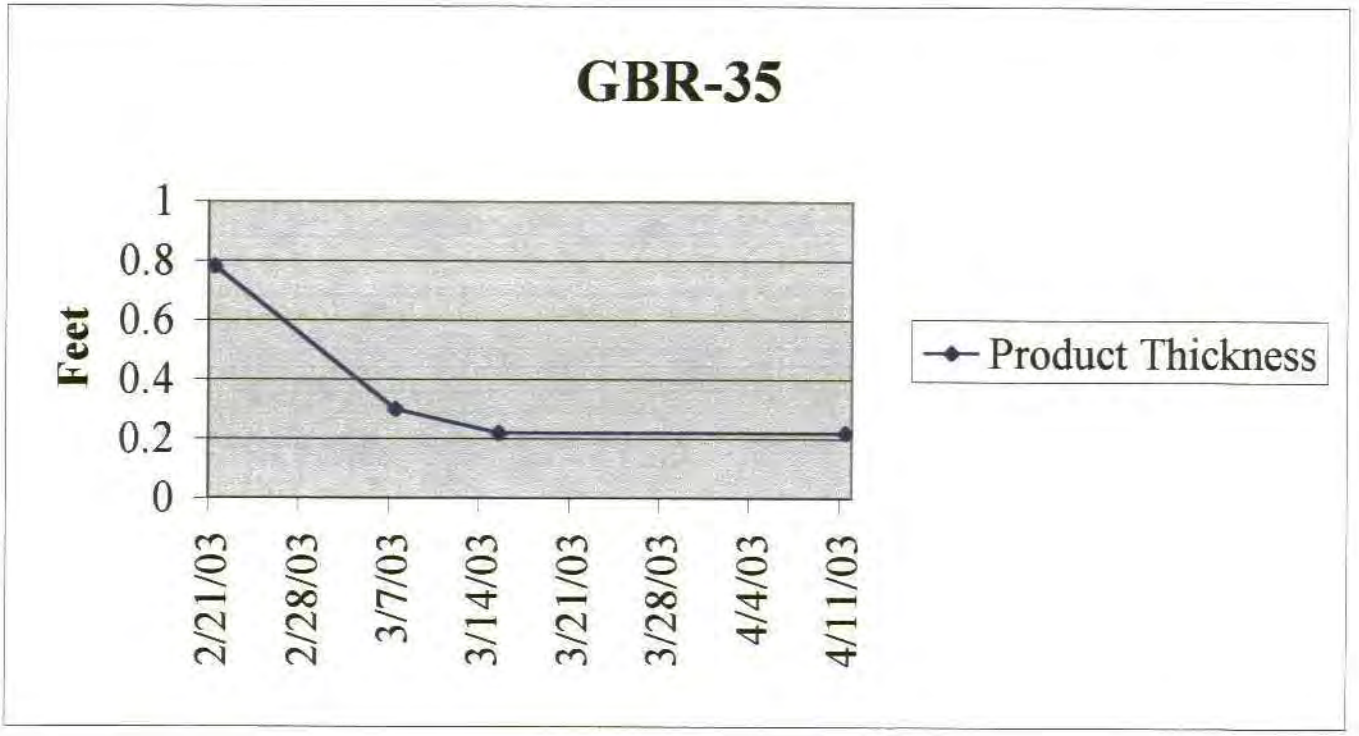
GBR-34

	Before Product Removal			After Product Removal			
Date	Depth to Product	Depth to Water	Product Thickness	Depth to Product	Depth to Water	Product Thickness	TD
2/21/03	38.02	39.05	1.03		41.44	0	45.3
3/7/03	38.2	38.71	0.51		41.7	0	45.3
3/15/03	38.44	38.71	0.27		44.14	0	45.3
4/11/03	38.12	38.6	0.48		44.52	0	45.3



GBR-35

	Before Product Removal			After Product Removal			
	Depth to Product	Depth to Water	Product Thickness	Depth to Product	Depth to Water	Product Thickness	TD
2/21/03	38.4	39.18	0.78	42.35	42.36	0.01	42.4
3/7/03	38.45	38.75	0.3		44.8	0	42.4
3/15/03	38.23	38.45	0.22		41.89	0	42.4
4/11/03	37.96	38.18	0.22		41.59	0	42.4



GIANT

INDUSTRIES, INC.
SAN JUAN REGIONAL OFFICE

February 12, 2002

RECEIVED

FEB 1 5 2002

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

Mr. William Olson
Hydrogeologist
New Mexico Oil Conservation Division
Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, NM 87504

Dear Mr. Olson:

Enclosed you will find the annual report for Giant Refining Company's Bloomfield Refinery for 2001.

Please contact me if you have any questions.

Sincerely,

Tim Kinney
Remediation Project Manager

/dm

Enclosure

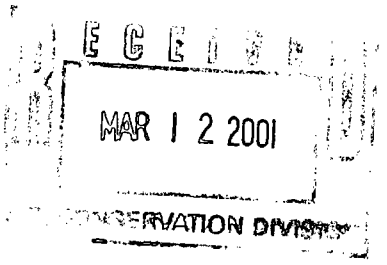
cc w/enc.: Luke Wethers-Giant
David Kirby-Giant
Jacque Cumbie-Giant
Stephanie Odell-BLM
Maura Hanning-EID
Chris Shuey-SWRIC
Jim Durrett-SJC
Herbert Gorrod-EPA
Denny Foust-OCD
Steve Collins – Commercial Development

PHONE
505-632-8006
FAX
505-632-4021

111 COUNTY
ROAD 4990
BLOOMFIELD
NEW MEXICO
87413

GIANT

INDUSTRIES, INC.
SAN JUAN REGIONAL OFFICE



March 5, 2001

Mr. William Olson
Hydrogeologist
New Mexico Oil Conservation Division
Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, NM 87504

Dear Mr. Olson:

Enclosed you will find the annual report for Giant Refining Company's Bloomfield Refinery for 2000.

Please contact me if you have any questions.

Sincerely,

Tim Kinney
Remediation Project Manager

/dm

Enclosure

cc w/enc.: Luke Wethers-Giant
Sarah Allen-Giant
Jacque Cumbie-Giant
Stephanie Odell-BLM
Maura Hanning-EID
Chris Shuey-SWRIC
Jim Durrett-SJC
Herbert Gorrod-EPA
Denny Foust-OCD

PHONE
505-632-8006
FAX
505-632-4021

111 COUNTY
ROAD 4990
BLOOMFIELD
NEW MEXICO
87413

GIANT

INDUSTRIES, INC.
SAN JUAN REGIONAL OFFICE

January 4, 2001

Mr. Roger C. Anderson
Environmental Bureau Chief
New Mexico Oil Conservation Division
2040 S. Pacheco Street
Santa Fe, NM 87505

Dear Mr. Anderson:

RE: GROUND WATER DISCHARGE PLAN GW-40 RENEWAL
FORMER BLOOMFIELD REFINERY
SAN JUAN COUNTY, NEW MEXICO

I am enclosing a check in the amount of $3,910.00 in payment of the renewal fee for the Giant Bloomfield Refinery Discharge Plan.

Sincerely,

Deanna Miller

Deanna Miller
Administrative Manager
Giant Transportation

/dm

Enclosure

PHONE
505-632-8006
FAX
505-632-4021

111 COUNTY
ROAD 4990
BLOOMFIELD
NEW MEXICO
87413

ACKNOWLEDGEMENT OF RECEIPT OF CHECK/CASH

I hereby acknowledge receipt of check No. [redacted] dated 1/04/200

or cash received on _____ in the amount of $ 3910.00

from GIANT INDUSTRIES, INC.

for FORMER BLOOMFIELD REFINERY GW-40

(Facility Name) (DP No.)

Submitted by: WAYNE PRICE FOR BILL OLSON Date: 1/29/200

Submitted to ASD by: [signature] Date: 1/29/200

Received in ASD by: _____ Date: _____

Filing Fee ____ New Facility ____ Renewal ✓

Modification ____ Other _____

(specify)

Organization Code 521.07 Applicable FY 2001

To be deposited in the Water Quality Management Fund.

Full Payment ✓ or Annual Increment ____

Security enhanced document. See back for details

[redacted]

GIANT INDUSTRIES, INC.
111 COUNTY ROAD 4990 (505)632-8006
BLOOMFIELD, NM 87413

95-629/1122
3001

DATE Jan. 4, 2001

PAY TO THE ORDER OF NMED - Water Quality Management $ 3910.00

Three thousand nine hundred ten & 00/100 DOLLARS

BANK of the SOUTHWEST
320 W. MAIN • (505) 325-1971
FARMINGTON, NM 87401

$ _____
$ _____

FOR BFE #9834 Discharge Plan fee [signature]

[redacted]

GIANT

INDUSTRIES, INC.
SAN JUAN REGIONAL OFFICE

October 26, 2000

CERTIFIED MAIL RETURN RECEIPT #7099 3220 0010 2241 2327

Mr. Bill Olson
Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87504

Dear Bill:

RE: Discharge Plan Renewal GW-40

Enclosed you will find Plate #1 and Plate #2 referenced in the Discharge Plan. They were inadvertently omitted from the original transmittal. Thank you for your patience.

Please contact me with any questions that may arise concerning this matter at (505) 632-4001.

Sincerely,

Tim Kinney

Tim Kinney
General Manager
Refinery Remediation Manager

/dm

Enclosures

cc: Denny Foust – OCD Aztec

PHONE
505-632-8006
FAX
505-632-4021

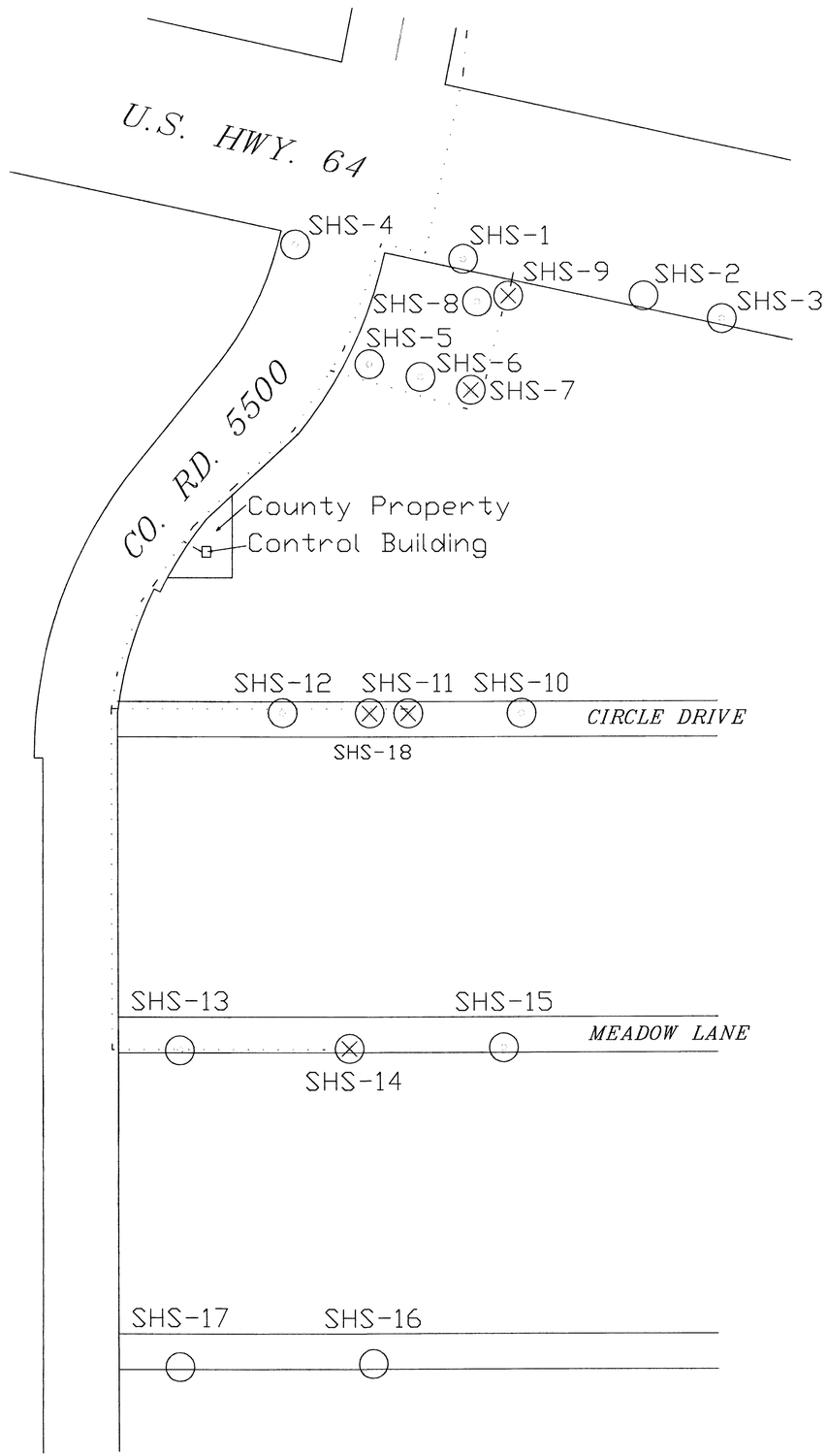
111 COUNTY
ROAD 4990
BLOOMFIELD
NEW MEXICO
87413

Plate #1

GBR 17
GBR 24D, GBR 24S
GBR 30
GBR 23
N 11,000
GRW-13
GBR 26
GBR 15
GBR 21D, GBR21S
GBR 39
GRW 11
GRW 12
GBR 25
GBR 31
GBR 22
GBR 33
GBR 34
GBR 35
Dispatch Office
GRW 10
GBR 40
N 10,500
GBR 41
GBR 19
GBR 13
GBR 52
GBR 51
GBR 20
GBR 05
GBR 07
GRW 06
GBR 06
GBR 10
GRW 05
GBR 09
GRW 03
GBR 11
GRW 02
GRW 01
GRW 04
GBR 08
N 10,000
SHS-4
SHS-1
SHS-9
RW
SHS-2
SHS-8
SHS-3
SHS-5
SHS-6
SHS-7
Southern Control Building
N 9,500
RW
SHS-12
SHS-11
SHS-10
CIRCLE DRIVE
N 9,000
SHS-13
RW
SHS-14
SHS-15
MEADOW LANE
County Road 5500
BALDWIN AVENUE
E 12,500
SAGE STREET
SHS-16
N 8,500
E 11,000
E 11,500
E 12,000
80 40 0 200
100 60 20 100
N

Dwg# 1070	GIANT
Date: 9-13-91	
By: Tim Kinney	Giant Industries Bloomfield Refinery Remediation Project Plot Plan
Revisions:	

PLATE #2



Monitor Wells

Recovery Wells

GIANT

Site Overview For The Offsite Area

Dwg # 1043	By: Jim Kinney	Date: 10/14/93	Rev: 1

NOTICE OF PUBLICATION

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission (WQCC) Regulations, the following discharge plan application has been submitted to the Director of the Oil Conservation Division, 2040 S. Pacheco, Santa Fe, New Mexico 87540, Telephone (505) 827-7132:

(GW-40) - Giant Industries, Inc., Tim Kinney (Refinery Remediation Project Manager), 111 County Road 4990, Bloomfield, New Mexico 87413, has submitted a discharge plan application for remediation of contaminated ground water at the former Giant Bloomfield Refinery located in the NW 1/4 of Section 27 and the SW 1/4, of Section 22, Township 29 North, Range 12 West NMPM, Lea County, New Mexico. The application addresses discharges to ground water associated with the remediation of petroleum contaminated ground water. Approximately 23 gallons per minute of contaminated ground water is processed through a treatment system to remove contaminants to below WQCC ground water standards prior to reinjection in an infiltration gallery. Groundwater most likely to be affected by an accidental discharge is at a depth of approximately 25 feet with a total dissolved solids concentration of approximately 2500 mg/l. The discharge plan addresses system operation and monitoring, ground water quality monitoring and how spills, leaks, and other accidental discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Request for public hearing shall set forth the reasons why a hearing shall be held. A hearing will be held if the Director determines that there is significant public interest. If no hearing is held, the Director will approve or disapprove the plan based on the information available. If a public hearing is held, the Director will approve the plan based on the information in the plan and information presented at the hearing.

GIVEN under the Seal of New Mexico Conservation Commission at Santa Fe, New Mexico, on this 24th day of July, 2000.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

SEAL

for LORI WROTENBERY, Director

GIANT

INDUSTRIES, INC.
SAN JUAN REGIONAL OFFICE

April 13, 2000

UPS OVERNIGHT TRACKING #J096 866 836 2

Mr. Roger Anderson
New Mexico Oil Conservation Division
2040 S. Pacheco Street
Santa Fe, NM 87505

RECEIVED
APR 14 2000
Environmental Bureau
Oil Conservation Division

Dear Mr. Anderson:

RE: DISCHARGE PLAN RENEWAL GW-40

Pursuant to your letter of February 11, 2000 regarding the **Ground Water Discharge Plan GW-40 Former Bloomfield Refinery San Juan County, New Mexico,** enclosed is the revised plan, the renewal application, and a check for the renewal fee.

Please contact me with any questions that may arise concerning this matter at (505) 632-4001.

Sincerely,

Tim Kinney
Refinery Remediation Manager

/dm

Attachments

cc: Carl Shook - Giant
Kim Bullerdick - Giant
Luke Wethers - Giant
Denny Foust – OCD Aztec

PHONE
505-632-8006
FAX
505-632-4021

111 COUNTY
ROAD 4990
BLOOMFIELD
NEW MEXICO
87413

ACKNOWLEDGEMENT OF RECEIPT OF CHECK/CASH

I hereby acknowledge receipt of check No. [redacted] dated 4/13/00,

or cash received on _____ in the amount of $ 50.00

from Giant Industries, Inc.

for Former Giant Bloomfield Refinery GW-40

(Facility Name) (DP No.)

Submitted by: Bill Olson Date: 4/14/00

Submitted to ASD by: Bill Olson Date: 4/14/00

Received in ASD by: _____ Date: _____

Filing Fee ✓ New Facility ___ Renewal ___

Modification ___ Other _____

(specify)

Organization Code 521.07 Applicable FY 2000

To be deposited in the Water Quality Management Fund.

Full Payment ___ or Annual Increment ___

Security enhanced document. See back for details.

[redacted]

GIANT INDUSTRIES, INC.
111 COUNTY ROAD 4990 (505)632-8006
BLOOMFIELD, NM 87413

95-629/1122
3001

DATE April 13, 2000

PAY TO THE ORDER OF NMED Water Quality Management Fund $ 50.00

Fifty and no/100---------- DOLLARS

Security features are included. Details on back.

BANK of the SOUTHWEST
320 W. MAIN • (505) 325-1971
FARMINGTON, NM 87401

$_____
$_____

FOR Refinery Discharge Plan renewal filing fee Deanna M Miller

RFE #9834 [redacted]

MP

©Clarke American BA
GUARDIAN • SAFETY

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 87505

Revised March 17, 1999

Submit Original
Plus 1 Copy
to Santa Fe
1 Copy to Appropriate
District Office

DISCHARGE PLAN APPLICATION FOR SERVICE COMPANIES,GAS PLANTS. REFINERIES, COMPRESSOR, AND CRUDE OIL PUMP STATIONS

(Refer to the OCD Guidelines for assistance in completing the application)

☐ New ☒ Renewal ☐ Modification

1. Type: Refinery

2. Operator: Giant Industries, Inc.
   Address: Physical: 5764 U. S. Highway 64 Farmington, NM 87401
   Mailing: 111 County Road 4990 Bloomfield, NM 87413

   Contact Person: Tim Kinney Phone: (505) 632-8006

3. Location: NW /4 SW /4 Section 22 & 27 Township 29N Range 12W
   Submit large scale topographic map showing exact location.

4. Attach the name, telephone number and address of the landowner of the facility site.

5. Attach the description of the facility with a diagram indicating location of fences, pits, dikes and tanks on the facility.

6. Attach a description of all materials stored or used at the facility.

7. Attach a description of present sources of effluent and waste solids. Average quality and daily volume of waste water must be included.

8. Attach a description of current liquid and solid waste collection/treatment/disposal procedures.

9. Attach a description of proposed modifications to existing collection/treatment/disposal systems.

10. Attach a routine inspection and maintenance plan to ensure permit compliance.

11. Attach a contingency plan for reporting and clean-up of spills or releases.

12. Attach geological/hydrological information for the facility. Depth to and quality of ground water must be included.

13. Attach a facility closure plan, and other information as is necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.

14. CERTIFICATIONI hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: Tim Kinney Title: Refinery Remediation Project Mgr.

Signature: Tim Kinney Date: 4/13/00

DISCHARGE PLAN

I. TYPE OF OPERATION

Giant Industries Arizona, Inc. proposes an annual discharge of up to 12,000,000 gallons of treated water to infiltration trenches located within the inactive Giant Bloomfield Refinery. The water is derived from recovery wells which are part of a remedial action relating to the site.

II. OPERATOR/LEGALLY RESPONSIBLE PARTY AND LOCAL REPRESENTATIVE

Operator/Legally Responsible Party
Giant Industries Arizona, Inc.
23733 North Scottsdale Road
Post Office Box 12999
Scottsdale, Arizona 85267
Phone: (602) 585-8888

Local Representative
Timothy A. Kinney
Remediation Project Manager
Giant Refining Company
111 County Road 4990
Bloomfield, New Mexico 87413
Phone: (505) 632-8006

Correspondence regarding this discharge plan should be directed to the local representative.

III. LOCATION OF DISCHARGE/FACILITY

Legal Description:
The refinery is located in the NW 1/4 of Section 27, and the SW 1/4, Section 22, Township 29 N, Range 12W, in San Juan County, New Mexico, approximately 5 miles west of Bloomfield, New Mexico.

Plate 1, enclosed, is an aerial view of the refinery with significant landmarks noted.

IV. LANDOWNER

Giant Industries Arizona, Inc.
23733 North Scottsdale Road
Post Office Box 12999
Scottsdale, Arizona 85267

V. FACILITY

The facility consists of the Giant Bloomfield Refinery and the associated remedial equipment both within, and south of the refinery boundary. The Giant Bloomfield Refinery operated from 1974 to 1982, and is presently inactive. Basically, the remedial system consists of a series of ground water recovery wells, water treatment facilities, and treated water infiltration trenches, processing up to 12,000,000 gallons of water per year. Plate 1 illustrates the refinery boundaries and significant site features within the refinery. Plate 2 illustrates the location and significant details of the southern remedial area.

VI. SOURCES, QUANTITIES AND QUALITY OF EFFLUENT

The facility effluent consists of treated water and separated hydrocarbons. Effluent is derived from contaminated water, which is pumped from a series of recovery wells at the site. Up to 1,000,000 gallons of water may be treated and discharged per month. Figure 1 is the result of analytical work performed in 1999 and is representative of effluent quality. General water chemistry, EPA 601, EPA 602, and PAH analyses are represented in the figures. See Appendix A for sampling frequency, methods, procedures and locations. Major variations in effluent volumes and quality are not expected, as this has not been the operating experience over the last several years under the previous discharge plan.

VII. TRANSFER AND STORAGE OF PROCESS FLUIDS AND EFFLUENTS

Overview - Water Treatment System

At the Giant Bloomfield Refinery, contaminated water is pumped from the aquifer through a series of recovery wells located strategically within the contaminated plume, collected in storage tanks, and subsequently treated by carbon adsorption, and, at times, augmented with bacterial enhancing nutrients, prior to discharge into the aquifer through an infiltration trench. Figure #2 is a simplified pictorial representation of a ground water recovery, treatment, and disposal system.

The recovery wells are utilized to recover free-floating product and contaminated ground water from the aquifer and create a hydraulic barrier to prevent migration of the contamination plume beyond the well. The hydraulic barrier is formed as the pumping recovery well depresses the water table. This creates a cone of depression to which contamination from surrounding areas preferentially migrates. Figure #3 illustrates the concept. If sufficient recovery wells are placed so that the radii of influence from adjacent wells overlap, a barrier can be formed across the plume preventing migration beyond the barrier. This is the principle employed at the refinery to contain and remediate the contamination plume.

Recovered water exhibiting dissolved phase and/or free phase hydrocarbons above New Mexico WQCC groundwater regulatory levels require treatment to within applicable guidelines prior to discharge. The method of treatment used at the Giant Bloomfield Refinery for the removal of dissolved phase hydrocarbons is carbon adsorption where volatile and non-volatile organic compounds are adsorbed into the carbon matrix.

At times, recovered water exhibits free phase hydrocarbons. Gravity separation of these components takes place in various tanks. The free-floating hydrocarbon that is skimmed off the water is stored in a separate tank for eventual transportation to a refinery for processing into finished products.

Treated water is discharged to infiltration trenches strategically located within the refinery. Infiltration trenches consist of subsurface distribution systems placed within gravel packs where water can infiltrate the surrounding strata and eventually make its way to the aquifer. Figure #4 illustrates a typical infiltration gallery. The return of recovered water to the aquifer serves to recharge the aquifer and to flush contamination from overlying soil zones to the recovery well system. Infiltrated water also serves as a medium for the introduction of oxygen and nutrients for the stimulation of beneficial bacterial growth. The speed of remedial efforts is enhanced by the application of recovered water to specific source areas within the refinery. Infiltration trench locations are noted on Plate 1.

Equipment and Operation – Water Treatment System

Monitor Wells

Numerous monitor wells are located within the refinery and south of the refinery. Monitor wells within the refinery are identified by the acronym GBR (Giant Bloomfield Refinery) followed by a numerical designation. Monitor wells located south of the refinery are identified by the acronym SHS (South Highway Site) followed by a number. Monitor wells aid in characterization of the aquifer in their respective locations. Plate #1 illustrates the locations of the monitor wells within the refinery. Plate #2 illustrates the locations of the monitor wells south of the refinery.

Each well is unique in construction and geology. Informational sheets for each well are available. The sheets include well logs and completion details for every monitoring well.

Appendix A of this manual contains sampling frequency and analytical requirements for applicable wells. Analytical results from various wells help determine the effectiveness and progress of remedial efforts. In addition to sampling, the water level in each well is determined quarterly. This information is tabulated and utilized to prepare potentiometric surface maps. Figure #5 is a typical potentiometric map. The lines on the map represent the elevation of the surface of the ground water. The resulting contours are useful in determining the direction of ground water flow and the effectiveness of the hydraulic control achieved by the recovery well system.

Recovery Wells

Recovery wells are an integral part of the containment and remedial system. Recovery wells north of Highway 64 are identified by the acronym GRW (Giant Recovery Well) followed by a numerical designation. Recovery wells south of the highway are identified by their original SHS designation. See Plates 1&2. Analytical results from various wells help determine the effectiveness and progress of remedial efforts. Appendix A contains sampling frequency and analytical methods for applicable wells. The water level in each recovery well is determined quarterly. This information is used for the same purpose as the level information collected from the monitor wells. Water volumes from each recovery well are metered. Metered water

volumes as well as well water levels indicate the effectiveness of the well pump and controls. Effort is made to maintain consistent maximum pumping rates to maximize the effectiveness of the hydraulic containment barrier.

Water Treatment

A carbon adsorption process is utilized for water treatment. All effluent is treated by carbon adsorption prior to discharge

Tank 102

Tank 102 acts as an intermediate storage tank for the water treatment system. It has a capacity of 500 barrels or 21,000 gallons. The tank stores water before it is pumped to the carbon filtration unit for treatment. Separation of any free phase hydrocarbon from the recovered water takes place in the tank. Free product is periodically skimmed from the tank and stored in a separate vessel. Piping and instrumentation associated with Tank 102 is illustrated by Figure #6. Water is pumped from Tank 102 to the carbon filtration unit by Pump #1, Pl. Pump operation is based on the level of water in Tank 102. Level switches LS-1 and LS-2 are utilized by the Control Panel, located in the old Dispatch Office, to determine the water level and consequently the run status of Pumps. Level safety switches LSH-1 and LSL-1 indicate abnormally high or low water level conditions in Tank 102 and initiate control panel alarm and shutdown functions.

Tank 21

Tank 21 is located in the central part of the refinery. See Plate #1. The tank serves as the collection point for excess volumes of untreated recovery water. See Figure #7 for a schematic of the valves and controls located at Tank 21. There is a high-level alarm switch, LSH-3, located at Tank 21. As a part of normal operation, Tank 21 may operate at very low water levels. Therefore, there is not a low level safety switch in the tank. A low-level switch, LS-7 is located in Tank 21. In the event of low water level in the tank, Pump #3 will not start even though the Control Panel may be calling for it to run. There is an elevated level limiting trap and siphon break at Tank 21. This device prevents any accumulated scum or hydrocarbon from exiting the tank into the system as the water level is drawn down close to the outlet level.

Rainbow Springs

In the vicinity of an area known as the Refinery Burn Pit there is an underground water collection gallery. See Plate #1. It drains into a covered agricultural stock tank. The gallery and tank are referred to as Rainbow Springs. During the spring, summer, and fall, contaminated water accumulates in the tank. Approximately once a week, water must be pumped from the tank into the water treatment system. Water from Rainbow Springs is metered into the system through the GRW-9 water meter. During the winter, operation of Rainbow Springs is terminated by capping the end of the gallery's effluent pipe, which protrudes from the side of the hill above the tank.

Air Compressor

The Air Compressor is an integral part of the remediation system. It is located in the Dispatch Office. The compressor pumps air for the operation of control valves and air sparging in various tanks. PSL-2 is located on the air compressor. It monitors the system air pressure. If the air pressure in the system drops below 50 psig, an alarm is enunciated by the Control Panel.

Control Panel

The heart of the water treatment system is the microprocessor based Control Panel located in the Dispatch Office in the refinery. See Plate #1 for the location of the Dispatch Office. The Control Panel serves to monitor and control the operation of the treatment system, while providing alarm and shutdown functions to safeguard against spills and other undesirable events. Figure #8 illustrates the basic process flow scheme of the treatment system. Safety, alarm, and shutdown functions are also initiated by the Control Panel. Tanks 102 and 21 are monitored for undesirable water levels.

In the event of a power failure, the system will shut down. It will return to normal operation after the power is restored.

The system operational logic is based on the program that is installed in the microprocessor within the Control Panel.

Recovery Well Filters

There are solids filters in each recovery well enclosure, and in the southern control building to control the deposition of solid contaminants in the system.

Heat Tracing

Water piping, which connects the On-Site and Off-Site systems, crosses through a culvert under US highway 64. The highway parallels the southern boundary of the refinery property. The exposed water piping is insulated and further protected from freezing by heat tracing.

Miscellaneous

All piping connecting wells and facilities is buried. All piping with the exception of infiltration trenches is pressurized at least occasionally. All piping is PVC or other suitable plastic. Underground piping is schedule 40 minimum and aboveground piping is schedule 80 minimum. Valves and controls are constructed of suitable materials such as bronze, cast iron and stainless steel. All active tanks are surrounded by earthen berms with a minimum capacity of 1.5 times the maximum individual or combined applicable tank volume.

VIII. EFFLUENT DISPOSAL

Effluent water is discharged to a variety of infiltration trenches within the refinery. See Figure #4 for details of typical infiltration trench construction. All water is treated prior to discharge. Effluent quality is monitored periodically to verify compliance with WQCC standards. See Appendix A for the sampling program schedule. In an effort to enhance both the degradation and recovery of hydrocarbons, water may have oxygen and nutrients added prior to discharge. Infiltration trenches are located such that contaminated zones are reached with oxygen and nutrients by the treated water. Some flushing of free hydrocarbons also occurs. Free hydrocarbons are flushed toward active recovery wells to speed recovery of hydrocarbons and clean contaminated soil sources. Infiltration trench locations are noted on Plate #1. Treated effluent volumes are metered and reported.

IX. INSPECTION, MAINTENANCE AND REPORTING

Inspection, maintenance, and reporting are an integral part of the remediation project. Inspection provides information critical to the safe and efficient operation of the system. Maintenance is key in the prevention of undesirable events and excessive downtime. Spills of untreated effluent are reported to the OCD office when the volume exceeds five barrels.

Regular inspections are performed to assure safe and efficient operation. On a regular basis during the workweek the system operation is monitored. Visual observations are made, looking for leaks, equipment malfunctions and the status of the control system. Observations are recorded in a bound field logbook with the date, time, and person recording the information noted.

An inspection in the control building at each tank, the southern area, and each recovery well is made regularly during the workweek. All equipment is inspected for leaks and malfunctions. The operator is familiar with the location of underground lines and notes any surface indication of underground leaks. Leaks of any size are noted and repaired. Readings from all water meters are observed and recorded in the logbook regularly and comparisons of previous readings are made. Abnormal meter readings can indicate problems within the system. On a quarterly basis, the level of water and product is determined for each well. This includes both monitoring and recovery wells.

Knowledge of the ground water elevation is useful in determining the effectiveness of the recovery well network. Levels are determined on a quarterly basis. An electronic water/oil detection tape is to be used to determine levels. Collected data is recorded in the logbook, noting the depth to water and the depth to product as well as the time, date and person recording the observations.

Maintenance of the system includes replacement of filters in well houses, rotating equipment lubrication, air compressor oil changes, adding nutrients as necessary, listening for unusual pump and motor noise, inspecting the carbon pre-filter, and repairing all equipment as required.

X. SPILL/LEAK PREVENTION AND REPORTING

Prevention

Leaks and spills are not likely, however, the potential does exist for these events. Tanks and piping are the most likely locations. Safeguards in place in the refinery include the choice of construction materials, safety and shutdown devices, secondary containment, inspection, and security.

1. Materials of Construction

   All piping is constructed of PVC or other hydrocarbon and corrosion resistant plastics. Material choices for valves and controls include plastic, stainless steel, bronze, and cast iron, all selected to be suitable for water and hydrocarbon service. Storage tanks are constructed of steel.

2. Safety and Shutdown Devices

   A microprocessor based central control and safety shutdown panel monitors, enunciates, and shuts down the water treatment system based on the occurrence of abnormal conditions as indicated by equipment sensors outlined following. All storage tanks are equipped with high and low level liquid sensors to detect breaches or overfills.

3. Secondary Containment

   All tanks in service have viable earthen secondary containment berms in place. All of these bermed areas have a minimum liquid capacity of 1.5 times the total capacity of tank(s) contained within them. Berms are monitored and maintained to ensure effectiveness.

4. Inspection

   Regular inspections during the workweek are performed. These inspections include looking for visual indications of leaks, checking tank levels, recording and comparing meter readings, and checking the condition of pump seals and motors. Unusual conditions are noted in the logbook and reported to the Project Manager.

5. Security

   The facility is entirely fenced with chainlink or barbed wire. Gates are locked and access is limited to facility personnel and supervised visitors and contractors.

Emergency Response and Notification

In the event of an unplanned release of water or hydrocarbon at the facility, the project manager should be notified and act as the response coordinator. If he is not available, the next person noted in the following list of alternates should be notified.

	OFFICE	HOME
Project Manager Tim Kinney	632-8006	325-2907
Environmental Technician Jeany Overman	632-8006	325-0715
Transportation Safety Manager	632-8006	

If it is determined that the release is 5 barrels or greater, the OCD will be notified and a written report submitted.

Leaks occurring outside of tank containment berms should be contained or redirected so that they can be picked up by pumps or vacuum trucks and placed back in storage. In the event of piping leaks, the leaking section should be isolated by closing necessary valves and shutting down pumps. Leaks occurring inside of containment berms can be pumped back into storage tanks.

A red emergency shutdown button is located on the face of the control panel. Depressing the button shuts down all pumps and closes all air-operated valves. It should be used in case of emergency.

Reporting

A report of activities at the facility is prepared annually. The report includes an update of operations, analytical results, water levels, a potentiometric surface amp, volume history, and specific conductance tracking.

XI. SITE CHARACTERISTICS

The refinery is located on weathered outcrops of the Nacimiento Formation, which is comprised of shales, sandstones, and siltstones of Cretaceous-Tertiary age. Immediately to the west of the refinery and on Giant's property is a large unnamed arroyo, which is underlain by 30 to 60 feet of Quaternary alluvial sediments. Older Quaternary terrace deposits of cobbles and boulders are observed on the interfluvial ridges adjacent to the arroyo. These terrace deposits may have been

utilized as fill on the refinery site. The San Juan River Valley is located south of the site and contains up to several hundred feet of alluvial fill.

The uppermost zone of ground water in the refinery area is an unconfined to partially confined water-table unit which is hosted by the weathered, locally porous sandstones and shales of the Nacimiento Formation and arroyo alluvium. These units merge hydrologically with the San Juan River alluvium to the south. Figure 4-1 is a generalized east-west cross section across the refinery site showing the relationship of the arroyo alluvium to bedrock. Major hydrogeologic features of the site are:

- an interconnected water-table aquifer, hosted by both valley and arroyo fill and the upper parts of the Nacimiento sandstone;
- ground water at a depth of 25 to 45 feet beneath the land surface;
- an upper water-table surface generally conforming to topography, with ground water flow from north or northeast to south (towards the San Juan River) through the refinery area; and
- minor, local zones of perched ground water, lying 5 to 30 feet above the water table.

Water levels and floating product thicknesses were measured in all wells on the refinery property from April through November 1986. A record of these measurements is shown in Table 4-1. A water table contour map was prepared (Figure 4-2) based on the static water levels of all the wells at the refinery measured in November 1986. This map is representative of static conditions of the aquifer because pumping was not being done at that time. Where floating product was encountered, the product thickness (Table 4-1) has been multiplied by 0.8 and added to the measured water elevation. This calculation corrects for the difference in density between floating product and water by taking into account a product density of approximately 0.8 g/cc. The result provides a value that should be the actual potentiometric surface.

The water table surface depicted in Figure 4-2 generally conforms to local topography. The ground water gradient slopes and flows from:

- north to south in the arroyo toward the San Juan River;
- northeast to southwest in the area east of the arroyo; and
- east to west at the arroyo boundary near the Diesel Spill Area.

Several pump tests were conducted in the Diesel Spill Area and in the Southern Refinery Area. Analysis of the pump tests in the Diesel Spill Area revealed small values of transmissivity and storativity near GBR-27 and moderate values near GBR-14. High values were found in the Southern Refinery Area near GBR-29. These findings imply that fine-grained sandstone, shale, and clay are more predominant in the northern part of the Diesel Spill Area and that coarse-grained sandstone dominates the geology in the southern part of the Diesel Spill Area and the Southern Refinery Area. Flow conditions appear to range from confined near GBR-27 where shale is present, to semi-confined near GBR-14 where clay is present.

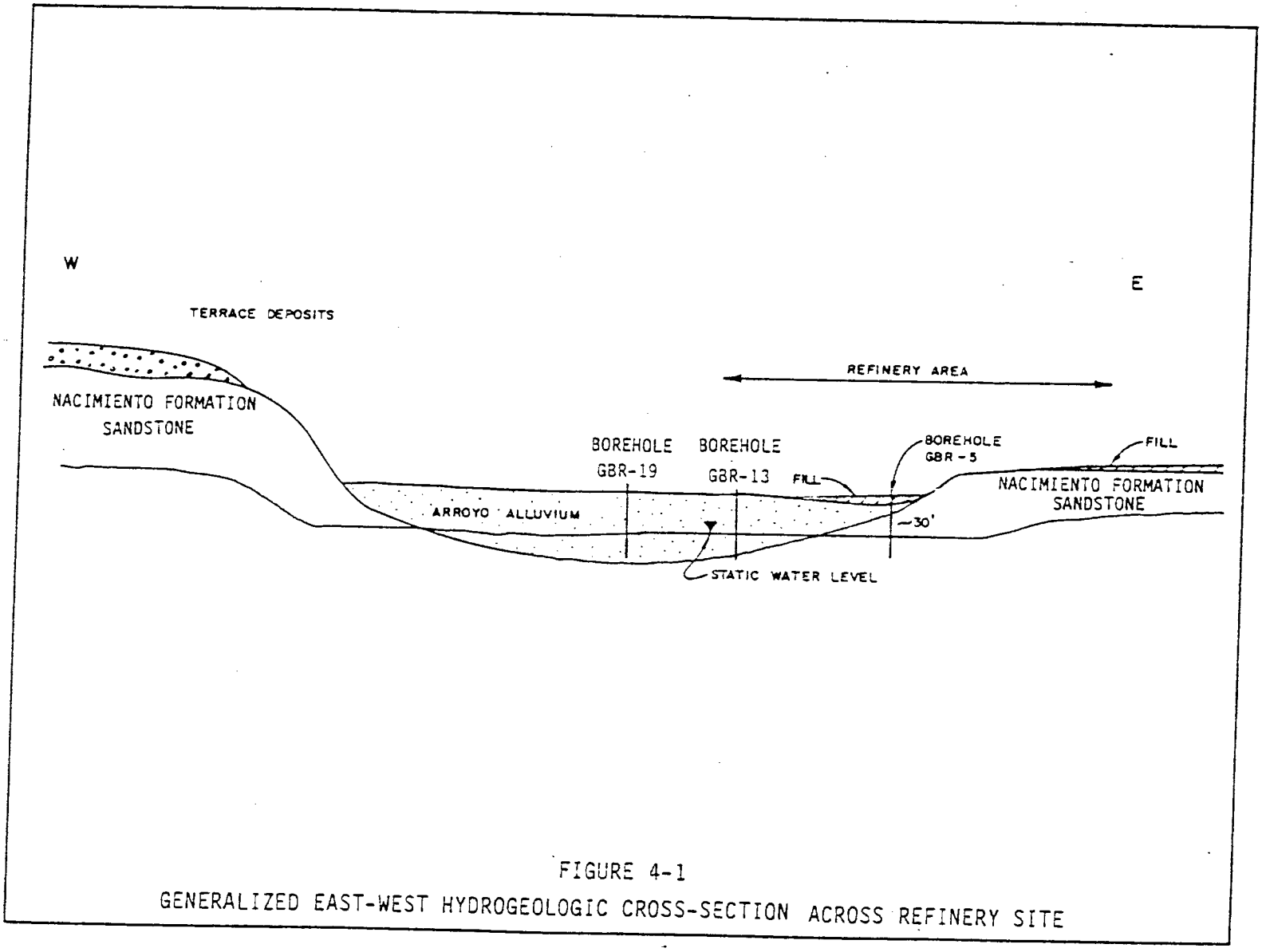


FIGURE 4-1

GENERALIZED EAST-WEST HYDROGEOLOGIC CROSS-SECTION ACROSS REFINERY SITE

TABLE 4-1

GIANT INDUSTRIES BLOOMFIELD REFINERY
CHRONOLOGY OF STATIC WATER LEVELS AND PETROLEUM PRODUCT THICKNESSES IN FEET
WELLS 5-16

DATE	WELL NO.-	GBR 5		GBR 6		GBR 7		GBR 8		GBR 9		GBR 10		GBR 11		GBR 13		GBR 14		GBR 15		GBR 16	
		W.L.	P.T.	W.L.	P.T.	W.L.	P.T.	W.L.	P.T.	W.L.	P.T.	W.L.	P.T.	W.L.	P.T.	W.L.	P.T.	W.L.	P.T.	W.L.	P.T.	W.L.	P.T.
4/3		-	-											5349.95	0	5354.75	0					-	-
4/15		5343.10	-											5349.91	0	5352.75	0					-	-
4/16		-	-											-	-	-	-					-	-
4/23		5341.20	0.00											5349.83	0	5352.68	0					5393.10	-
4/30		5342.54	0.00											5349.85	0	5352.79	0					5396.60	-
5/2		-	0.00											-	0	-	0					-	0
5/9		-	-											5349.83	-	5352.75	-						
5/28		-	0.00											-	0	-	0						
5/29		5358.21	1.38											-	0	5350.08	0						
5/30		-	0.08											-	0	-	0						
7/1		-	6.75											-	0	-	0						
7/15		-	14.00											5349.75	0.40	5351.77	0.56						
7/31		5351.93	11.04											-	-	5350.71	0.83						
8/12		5351.63	11.49											5348.66	0.17	5350.39	1.42						
10/7		5362.31	1.00	5359.50	-	-	-	-	-	-	-	-	-	-	-	5351.50	0.75	5365.83	0	5364.62	0		
10/8		5362.81	0.83	5359.54	0	5363.00	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
10/8 (After Pumping GBR-7)		5362.89	0.75	5358.58	0	5353.30	0							-	-	-	-			-	-		
10/9		-	-	-	-	-	-	5348.42	0	5348.50	0	5345.50	2.33	5348.87	0.75	-	-	-	-	-	-		
10/9 (After Pumping GBR-31)		-	-	-	-	-	-	5348.33	0	-	-	5345.62	2.38	-	-	-	-	5365.75	0	5364.50	0		
10/16		-	-	5360.00	-	5362.80	0	5348.38	0	5348.54	0	-	-	-	-	-	-	-	-	5357.58	0		
10/17 (after purging)								5348.42	0	5347.92	0	-	-	-	-	-	-	5365.50	0	5363.46	0		
11/4 (after purging)		5363.10	0.71	5360.17	0.04	5362.50	0	5348.46	0.04	5348.71	0	5348.17	2.04	5348.32	1.50	5351.79	0.38	-	-	-	-		
11/5 (after purge) (After Pumping GBR-29)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5366.46	0	5365.12	0		
11/19		5363.39	0.67	5360.33	0.08	5363.21	0	5348.79	0.04	5349.12	0	5347.42	3.17	5349.08	1.04	5352.33	0.38	5366.33	0	5365.25	0		
11/21 (After pump test)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5358.58	0	5360.37	0		

W.L. = WATER LEVEL IN FEET ABOVE SEA LEVEL
P.T. = PRODUCT THICKNESS IN FEET
- = NO MEASUREMENT
0 = ZERO MEASUREMENT

TABLE 4-1 CONTINUED

GIANT INDUSTRIES BLOOMFIELD REFINERY
CHRONOLOGY OF STATIC WATER LEVELS AND PETROLEUM PRODUCT THICKNESSES IN FEET CONT.
WELLS 17-25

DATE	WELL NO.-	GBR 17		GBR 18		GBR 19		GBR 20		GBR 21(S)		GBR 21(D)		GBR 22		GBR 23		GBR 24(S)		GBR 24(D)		GBR 25	
		W.L.	P.T.	W.L.	P.T.	W.L.	P.T.	W.L	P.T	W.L.	P.T.	W.L	P.T.	W.L.	P.T.	W.L.	P.T.	W.L.	P.T.	W.L.	P.T.	W.L.	P.T.
4/3		-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/15		-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/16		-	-	-	-			-	-	5379.62	-	5372.92	-	5361.33	-	-	-	-	-	-	-	-	-
4/23		-	-	5407.15	-			5364.35	-	5377.70	-	5366.55	-	5361.00	-	5377.15	-	5370.70	-	5370.10	-	5367.65	-
4/30		-	-	5407.50	-			5354.00	-	5366.67	-	5370.94	-	5361.21	-	5378.50		5368.79		5368.62		5367.08	
5/2		-	-	-	0			-	0	5377.50	1.92	5370.54	0	5361.11	0	5378.71	0.01	5368.79	0.08	5368.17	0	5366.17	0
5/9		-	-	5407.75	-			5354.08	-	5289.67	-	5368.42	-	5361.17	-	5379.12	-	5368.83	-	5368.33	-	5367.21	-
5/28		-	-	-	0			-	0	-	-	-	0	-	0	-	-	-	-	-	0	-	0
5/29		5367.75	0	-	0			5352.17	0	5375.29	-	5369.67	0	5357.58	0	5375.71	-	5369.54	-	5365.12	0	5365.29	0
5/30		-	0	-	0			-	0	-	1.06	-	0	-	0	-	0.01	-	0.08	-	0	-	0
7/1		-	0	-	0			-	0	-	-	-	0	-	0	-	-	-	-	-	0	-	0
7/15		5367.78	0	5407.23	0			5253.18	0	5368.33	1.04	5371.58	0	5361.07	0	5377.45	0.02	5368.07	0.01	5368.70	0	5367.55	0
7/31		5368.31	0	5411.46	0			5354.20	0	5378.12	0.80	5371.54	0	5360.96	0	5379.23	0.04	5369.57	0	5369.32	0	5367.74	0.04
8/12		5367.89	0	5410.78	0			5354.20	0	5379.04	0.42	5372.25	0	5361.11	0	5379.22	0.03	5369.72	0.03	5369.08	0	5367.81	0
10/7		-	-	-	-	-	-	-	-	5379.37	0.50	5370.71	0	5361.84	0	5379.69	0	5369.87	0.04	5369.16	0	5365.90	0
10/8		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/9		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/9																							
(After Pumping GBR-31		-	-	-	-	5355.00	0	-	-	-	-			5361.75	0	5379.69	0	5369.91	0.04	5369.08	0	5367.86	0
10/16		5369.06	0	5408.52	0	5355.00	0	5354.66	0	-	-	5363.58	0	5361.46	0	-	-	-	-	5366.62	0	5366.28	0
10/17		5369.06	0	5402.72	0	5355.00	0	5354.50	0	-	-	5360.79	0	5361.38	0	-	-	-	-	5368.20	0	5367.03	0
(after purging)																							
11/4		-	-	-	-	-	-	5354.87	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/5																							
(After Pumping GBR-29)		5369.31	0	5408.56	0	5355.42	0	-	-	5379.71	0.50	5369.71	0	-	-	5379.98	0.02	5370.53	0.04	5369.58	0	5368.03	0
11/19		5369.64	0	5408.89	0	5355.62	0	5355.16	0	5379.79	0.46	5369.92	0	5359.84	2.96	5380.36	0.02	5370.91	0.02	5370.03	0	5368.03	0
11/21																							
(After pump test)		-	-	-	-	-	-	-	-	5379.75	0.33	5366.34	0	5360.04	2.79	5380.36	0	5369.45	0	5367.82	0	5366.95	0

W.L. = WATER LEVEL IN FEET ABOVE SEA LEVEL
P.T. = PRODUCT THICKNESS IN FEET
- = NO MEASUREMENT
0 = ZERO MEASUREMENT

BLOOM4EL

TABLE 4-1 CONTINUED

GIANT INDUSTRIES BLOOMFIELD REFINERY
CHRONOLOGY OF STATIC WATER LEVELS AND PETROLEUM PRODUCT THICKNESSES IN FEET CONT.
WELLS 26-31

DATE	WELL NO.-	GBR 26		GBR 27		GBR 28		GBR 29		GBR 30		GBR 31		STEEL WELL	
		W.L.	P.T.	W.L.	P.T.	W.L	P.T	W.L.	P.T.	W.L.	P.T.	W.L.	P.T.	W.L	P.T.
		-	-	-	-	-	-	-	-					-	-
4/3		-	-	-	-	-	-	-	-					5363.17	-
4/15		-	-	-	-	-	-	-	-					5363.08	-
4/16		-	-	-	-	-	-	-	-					5362.30	-
4/23		5362.65	-	-	-	-	-	-	-					-	-
4/30		5362.92		5357.04	-	-	-	-	-						
														5363.12	0
5/2		5362.85	0	5360.16	7.17	-	-	-	-					5362.92	-
5/9		5362.75	-	-	-	-	-	-	-					-	0
5/28		-	0	-	8.08	-	-	-	-					5363.04	0
5/29		5361.29	0	5357.67	8.67	5359.87	0.17	5345.00	0					-	0
5/30		-	0	-	8.38	-	0.13	-	0						
														-	0
7/1		-	0	-	9.00	-	-	-	1.60					5362.96	0
7/15		5362.62	0	-	-	5361.95	0.50	5342.85	4.50					-	-
7/31		5362.93	0	5364.75	2.91	5360.59	0.58	5341.02	7.34						
				(after being pumped)										-	-
8/12		5362.31	0	-	-	5360.43	1.22	5341.61	6.50						
														5363.71	0
10/7		5363.72	0	5367.25	0.42	5362.18	0	5342.27	6.25	5366.00	0	5362.30	0	-	-
10/8		-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/9		-	-	-	-	-	-	-	-	-	-	-	-		
10/9														5363.56	0
(After Pumping GBR-31)		5363.56	0.04	5367.08	0.38	5361.47	0	-	-	5365.92	0	5362.21	0	5362.79	0
10/16		5363.33	0	-	-	5358.43	-	-	-	5365.79	0	5362.00	0	5363.04	0
10/17		5361.26	0	-	-	-	-	-	-	5365.83	0	5362.00	0		
(after purging)														-	-
11/4		-	-	-	-	-	-	5343.02	5.58	-	-	-	-		
11/5														5364.21	0
(After Pumping GBR-29)		5364.93	0.08	5368.08	0.29	5362.26	0.02	5345.94	2.04	5367.00	0.25	5362.42	0	5364.17	0
11/19		5364.39	0.17	5367.91	0.08	5362.64	0.12	5345.52	2.96	5366.50	0.17	5362.84	0		
11/21															
(After pump test)		5364.01	0.12	5357.16	0	5361.93	0	-	-	5366.42	0	-	-	5363.79	0

W.L. = WATER LEVEL IN FEET ABOVE SEA LEVEL
P.T. = PRODUCT THICKNESS IN FEET
- = NO MEASUREMENT
0 = ZERO MEASUREMENT

APPENDIX A

MONITORING, SAMPLING AND REPORTING PROGRAM

Monitoring, sampling and analysis, and reporting are an integral part of the remediation project. Monitoring provides information critical to the safe and efficient operation of the system. Sampling and analytical work is the barometer by which the effectiveness of the project is determined. An emphasis is placed on correct monitoring, sampling, and analysis.

Monitoring

Monitoring the system helps maintain a safe and efficient operation. On a regular basis during the workweek the system operation should be monitored. Visual observations should be made, looking for leaks, equipment malfunctions and the status of the control system. Observations are to be recorded in a bound field logbook including the date, time, and person recording the information.

An inspection in all equipment enclosures should be made regularly. All equipment should be inspected for leaks and malfunctions. The operator should be familiar with the location of underground lines and note any surface indication of underground leaks. Leaks of any size should be noted and repaired. Leaks of a sufficient quantity may have to be reported to the appropriate governmental agency. Readings from all meters are to be observed and recorded in the logbook regularly. Comparisons of previous readings should be made. Abnormal meter readings can indicate problems within the system. On a quarterly basis, the level of water and product should be determined for each well. This includes both monitoring and recovery wells. Knowledge of the ground water flow direction is useful in determining the effectiveness of the recovery well network. An electronic water/oil detection tape is to be used to determine levels. Record collected data in the logbook noting the depth to water and the depth to product as well as the time, date and person recording the observations. All measurements are to be recorded in feet and tenths of feet. A mark on the north side of the top of each well casing serves as the measurement reference point. It is necessary to decontaminate the detection tape between each well.

Sampling

Water samples are collected from a variety of wells on a regular basis. The samples are analyzed for various components. The results are included as a part of quarterly reports. Figure #9 is the sample matrix for the project. It illustrates the required analyses and the frequency for various wells and points in the system.

Purging

Wells must be properly purged prior to collection of samples. To obtain a representative aquifer sample it is necessary to withdraw at least 3-5 casing volumes of water from monitoring wells before sample collection. Water is withdrawn using a Teflon or stainless steel bailer. The bailer is repeatedly lowered into the well, withdrawn and emptied until sufficient water has been purged from the well.

The temperature, Ph, and conductivity of the purged water should be monitored at regular intervals as the well is purged. This will help to determine if enough water has been purged to insure a representative ground water sample. As the well is purged, these three parameters should stabilize. If they do not stabilize after 3 casing volumes have been purged, additional water will have to be purged until they do.

Some wells will purge dry. If a well purges dry and does not recover in a reasonable period of time, allow the well to recover and collect samples.

If the well to be sampled has an active recovery pump, collect the sample directly from the pump discharge after allowing a small volume of water to purge the sample valve and line.

Wells which exhibit free-floating product are not sampled.

Decontamination

To prevent contamination of ground water samples or monitor wells, all sampling equipment must be thoroughly cleaned prior to each use. The following decontamination procedure is to be strictly adhered to.

1. Disassemble and thoroughly wash all sampling equipment with non-phosphate detergent and water.
2. Rinse several times with deionized water.
3. Rinse once with laboratory grade methanol.
4. Rinse again with deionized water.
5. Wrap the cleaned equipment with aluminum foil or plastic if it is not used immediately.

Plastic gloves should be worn during sampling. They must be disposed of or decontaminated per the above procedure between samples. Do not attempt to decontaminate the rope used with the bailer. Discard it and replace the rope with new rope for each well. Use new nylon, polypropylene or similar rope.

Sample Containers and Shipment

Laboratory supplied sample containers are to be used for all samples. All samples will be collected and placed in tightly sealed glass or polyethylene containers, as appropriate, and preserved in accordance with the requirements of EPA document SW846 and the standard practices of the laboratory contracted to perform the analyses. The container and preservation technique will be specified by the laboratory. Immediately upon collection, label each container with an adhesive label clearly indicating, in waterproof ink, the project and site identification, sample number, method of sample preservation, date and time of sampling, and the name of the sample collector. The sample number is a unique ten digit code indicating the date and time of sampling. The first two digits represent the year, the third and fourth digits, the month, the fifth and sixth, the day, and the seventh, eighth, ninth, and tenth, the time based on a twenty four hour clock. For example, a sample collected on December 10, 1990 at 1:45 PM would be assigned a sample number of 9012101345. Each sample container is to be sealed with a chain of custody seal. The seal is an adhesive strip, which contains the sample number, project and site designation, date and the signature and printed name of the sampler. The seal is affixed to the sample container in such a way that the container can only be opened by

breaking the seal. Seals are to be removed only by the laboratory. Samples should be placed on ice as soon as possible and chilled to below 4 degrees Celsius.

Samples are to be shipped via Federal Express or similar overnight air freight, or hand carried to the laboratory. Samples are to be shipped packed in ice, in suitable coolers supplied by the laboratory. The samples must arrive at the laboratory no warmer than 4 degrees Celsius. Samples are wrapped in Styrofoam, foam rubber, plastic bubble pack, or similar materials suitable for fragile shipment.

Chain of Custody Forms

All samples collected for analysis are to be accompanied by a chain of custody form. The document records the transfer of custody as the samples are processed. Figure #10 is an example of a properly filled out chain of custody form. The form is prepared in triplicate. One copy is to be retained by Giant prior to shipment. The original and the remaining copy are to be included with the samples. Chain of custody forms are kept on file with the corresponding laboratory report.

GIANT INDUSTRIES, INC.
ONSITE REMEDIATION PROJECT
ANNUAL ANALYTICAL DATA SUMMARY
1999

	JAN	APR	JUN	JUL	OCT	DEC
SYSTEM EFFLUENT						
Lab pH	7.1	7.1		7.1	7.1	
Lab Conductivity @25 C	3190	3130		3220	3090	
Total Dissolved Solids (Calc)	2430	2490		2370	2430	
Total Alkalinity as CaCO3	481	480		428	456	
Total Hardness as CaCO3	1080	922		917	967	
Bicarbonate as HCO3	586	ND		522	556	
Carbonate as CO3	ND	204		ND	ND	
Hydroxide	ND	48		ND	ND	
Chloride	122	155		151	140	
Sulfate	1180	1130		1160	1140	
Calcium	384	318		316	330	
Magnesium	30.4	31.3		31.1	34.8	
Potassium	2.6	3		2.4	2.7	
Sodium	399	394		394	431	
HALOCARBONS						
Bromodichloromethane	ND	ND		ND		
Bromoform	ND	ND		ND		
Bromomethane	ND	ND		ND		
Carbon Tetrachloride	ND	ND		ND		
Chloroethane	ND	ND		ND		
Chloroform	ND	ND		ND		
Chloromethane	ND	ND		ND		
Dibromochloromethane	ND	ND		ND		
1,2-Dibromoethane (EDB)	ND	ND		ND		
1,2-Dichlorobenzene	ND	ND		ND		
1,3-Dichlorobenzene	ND	ND		ND		
1,4-Dichlorobenzene	ND	ND		ND		
1,1-Dichloroethane	ND	ND		ND		
1,2-Dichloroethane (EDC)	ND	ND		ND		
1,1-Dichloroethene	ND	ND		ND		
cis-1,2-Dichloroethene	ND	0.43		0.8		
trans-1,2-Dichloroethene	ND	ND		ND		
1,2-Dichloropropane	ND	ND		ND		
cis-1,3-Dichloropropene	ND	ND		ND		
trans-1,3-Dichloropropene	ND	ND		ND		
Methylene Chloride	ND	ND		ND		
1,1,2,2-Tetrachloroethane	ND	ND		ND		
Tetrachlorethene	ND	ND		ND		
1,1,1-Trichloroethane	ND	ND		ND		
1,1,2-Trichloroethane	ND	ND		ND		
Trichloroethene	ND	ND		ND		
Trichlorofluoromethane	ND	ND		ND		
Vinyl Chloride	ND	ND		ND		
AROMATICS						
Benzene	ND	ND		0.6		
Chlorobenzene	ND	ND		ND		

FIGURE #1

	JAN	APR	JUN	JUL	OCT	DEC
1,2-Dichlorobenzene	ND	ND		ND		
1,3-Dichlorobenzene	ND	ND		ND		
1,4-Dichlorobenzene	ND	ND		ND		
Ethylbenzene	ND	ND		ND		
Methyl-t-Butyl Ether	ND	ND		ND		
Toluene	ND	ND		ND		
Total Xylenes	ND	ND		ND		

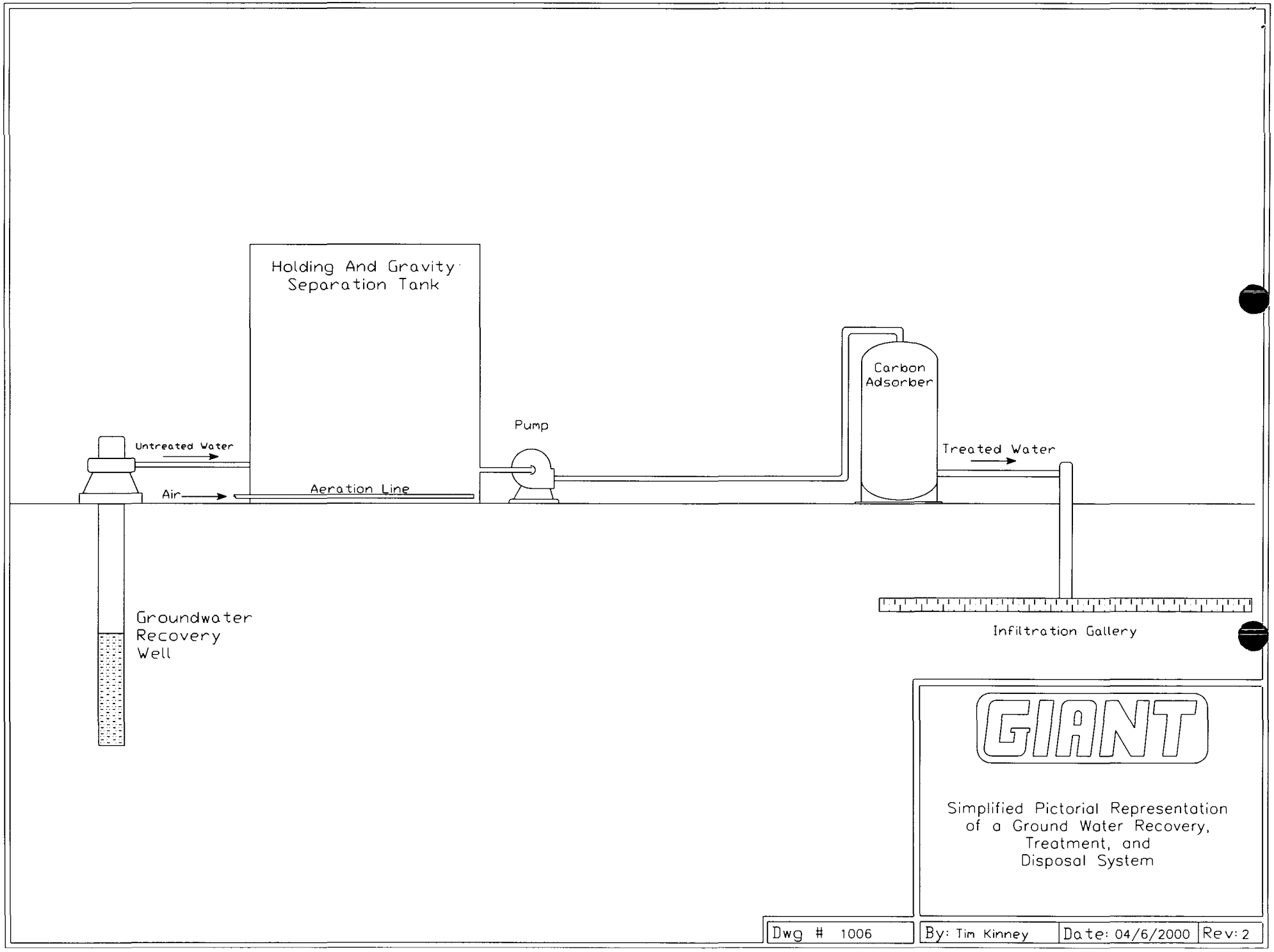

Holding And Gravity Separation Tank
Carbon Adsorber
Pump
Untreated Water
Treated Water
Air
Aeration Line
Groundwater Recovery Well
Infiltration Gallery
GIANT
Simplified Pictorial Representation of a Ground Water Recovery, Treatment, and Disposal System
Dwg # 1006
By: Tim Kinney
Date: 04/6/2000
Rev: 2

FIGURE #2

The Effect Of Pumping On An Aquifer

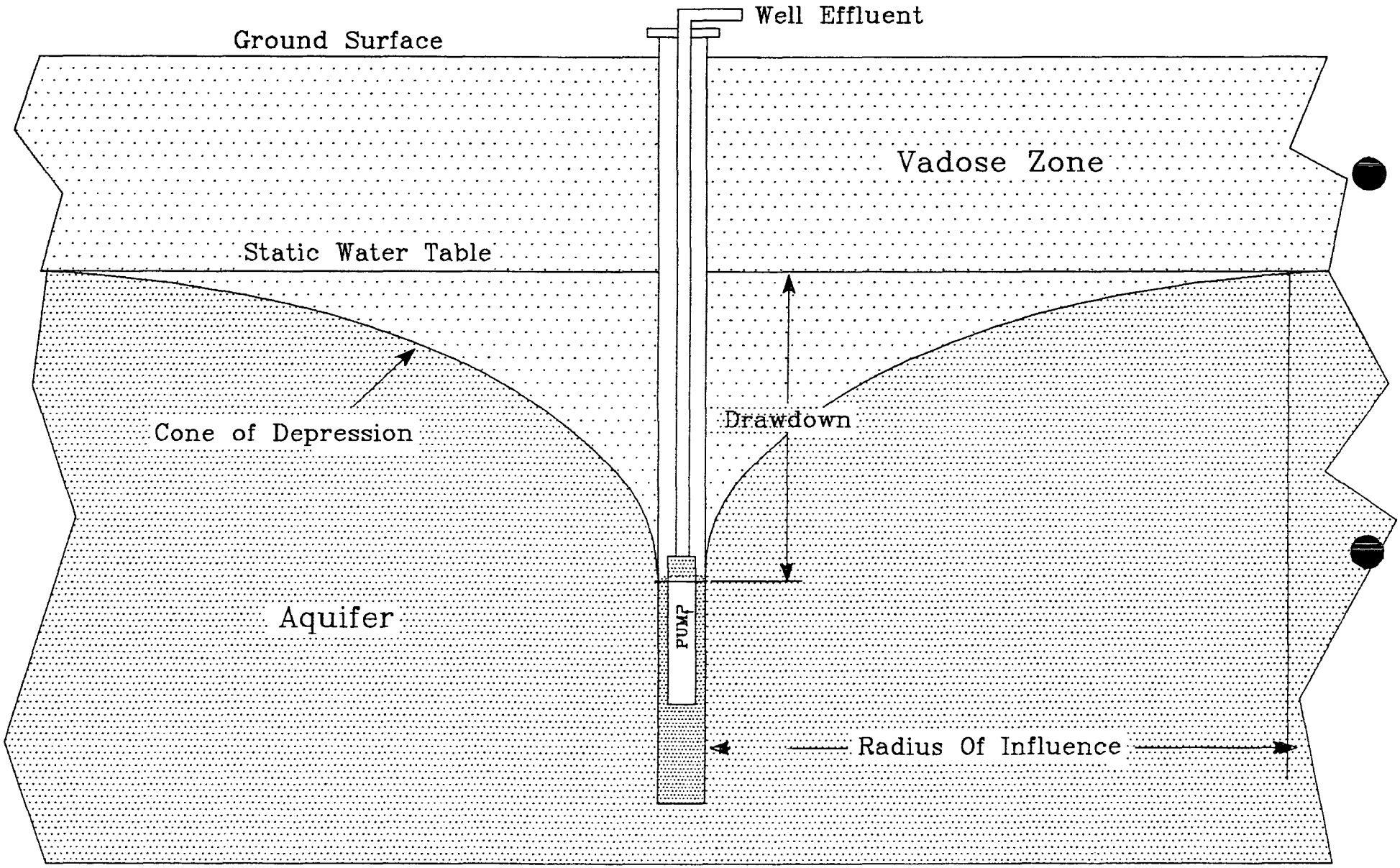
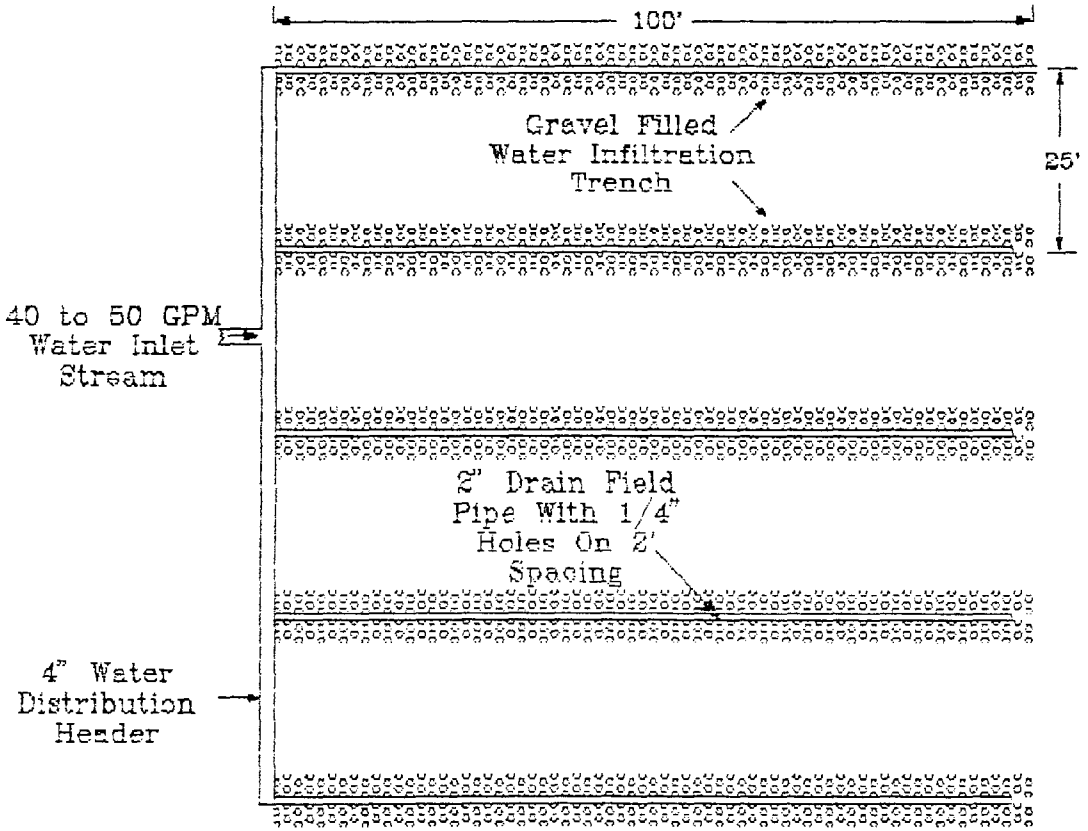


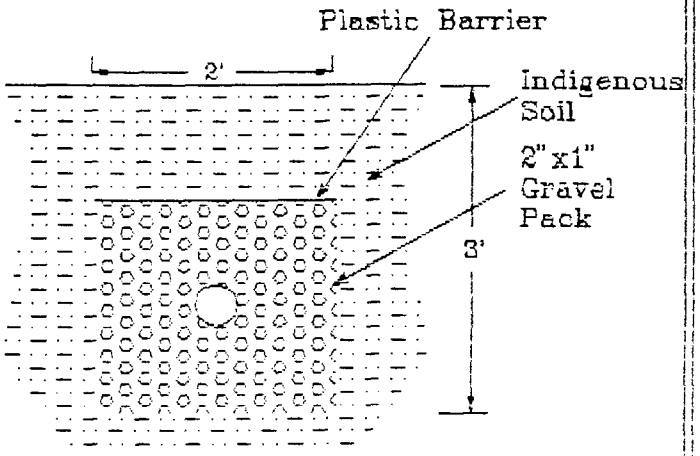
Figure #3

FIGURE #4

Trench Top View
Cut Away At The
Infiltration Line
Depth



Two inch infiltration lines are designed to handle approximately ten gallons per minute each with a maximum length of 100 feet.



Cross Section Of A
Typical Infiltration
Trench

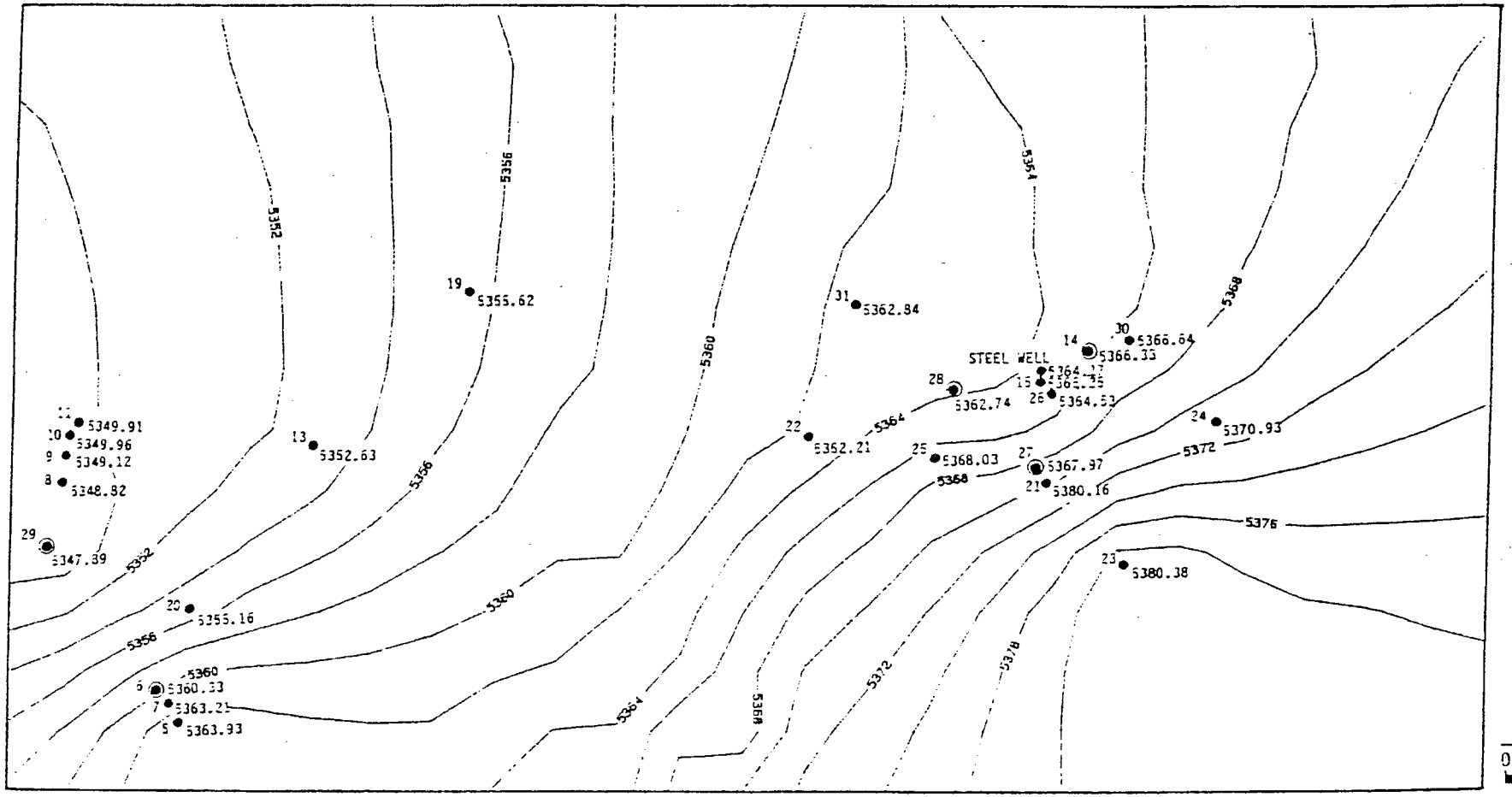
This design is of a typical infiltration gallery similar to the one in the North stormwater containment area

GIANT

Typical
Water
Infiltration
Gallery

Dwg # 1057	By: Tim Kinney	Date 4/18/91	Rev: 0

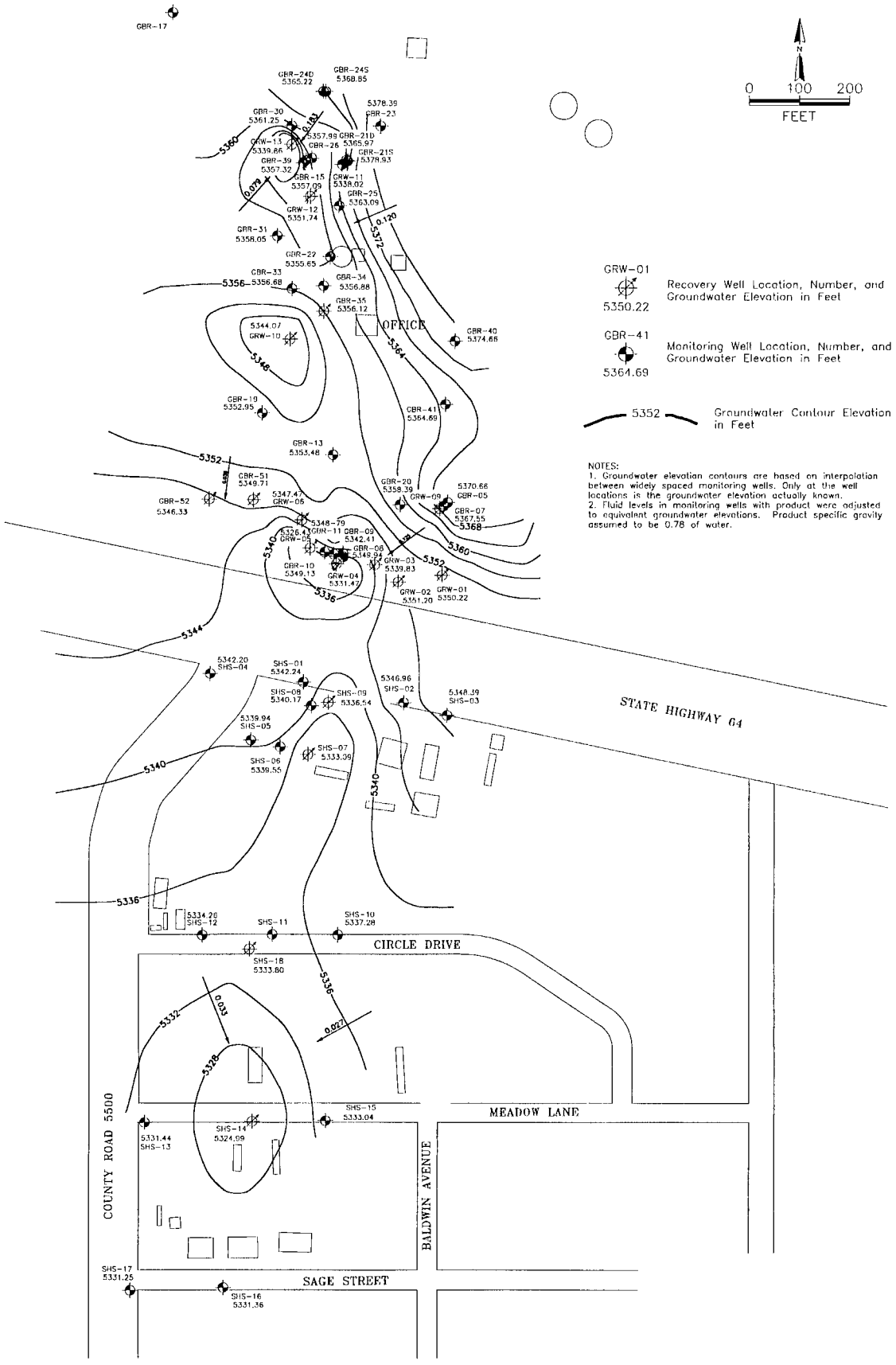
FIGURE #4-2



Elevations in Feet above Sea Level, Measured in Monitor and Recovery Wells and Corrected for Floating Product, if Present.

FIGURE 4-2

GROUND WATER LEVEL CONTOUR MAP - GIANT BLOOMFIELD REFINERY, NOV. 1986



GIS\UPDATED\GIANT\HYDRO\MAPS\GW-9901.DWG

PHILIP SERVICES CORP

TITLE:
EQUIVALENT GROUNDWATER ELEVATION CONTOUR MAPS
JANUARY 1999

DWN: MRC	DES.: MN	PROJECT NO.:
CHKD:	APPD:	
DATE: 02/01/00	REV.: A	FIGURE NO.: FIGURE 5

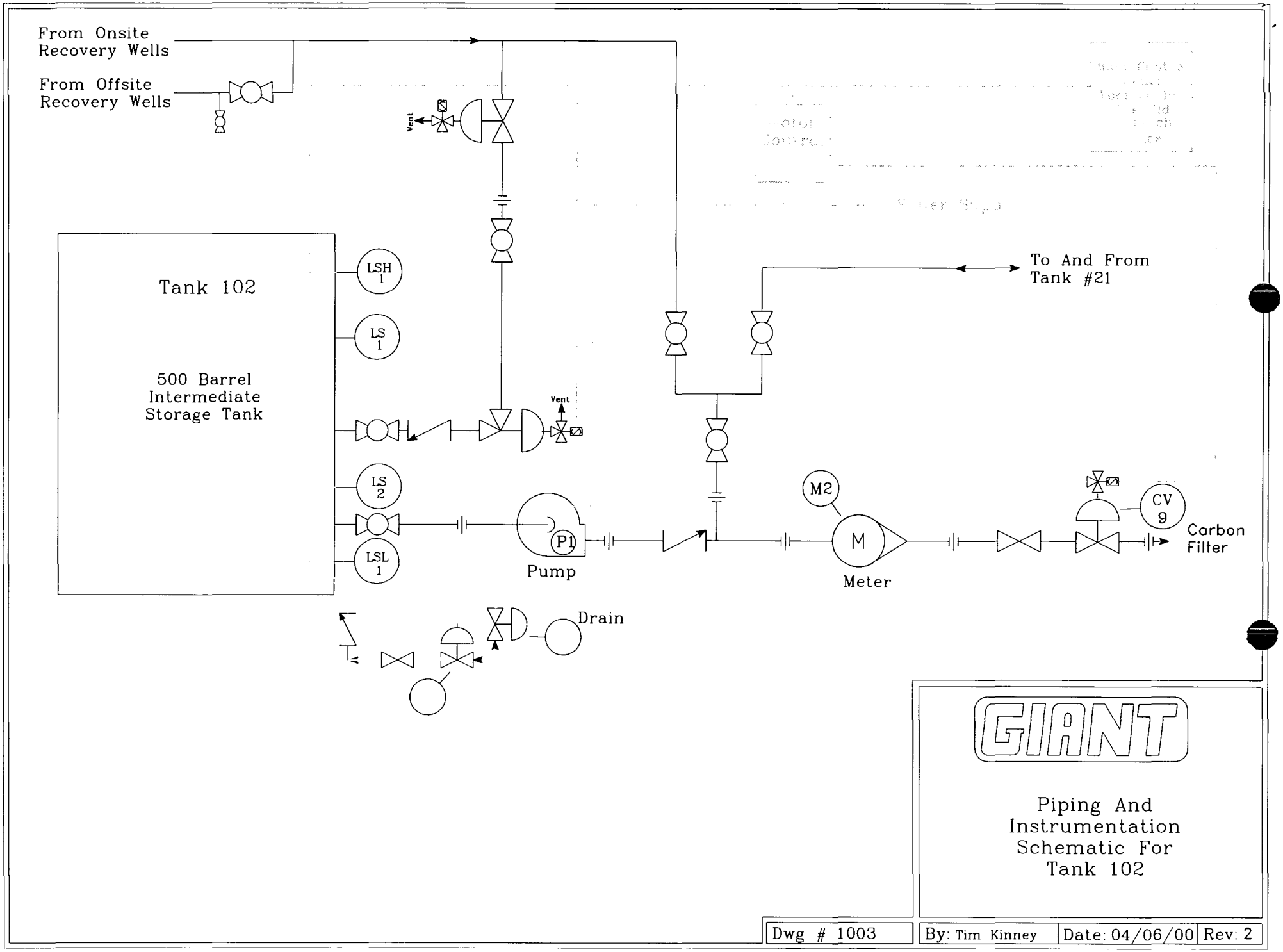

From Onsite
Recovery Wells
From Offsite
Recovery Wells
Vent
Tank 102
500 Barrel
Intermediate
Storage Tank
LSH
1
LS
1
LS
2
LSL
1
Vent
P1
Pump
To And From
Tank #21
M2
M
Meter
CV
9
Carbon
Filter
Drain
GIANT
Piping And
Instrumentation
Schematic For
Tank 102
Dwg # 1003
By: Tim Kinney
Date: 04/06/00
Rev: 2

FIGURE #6

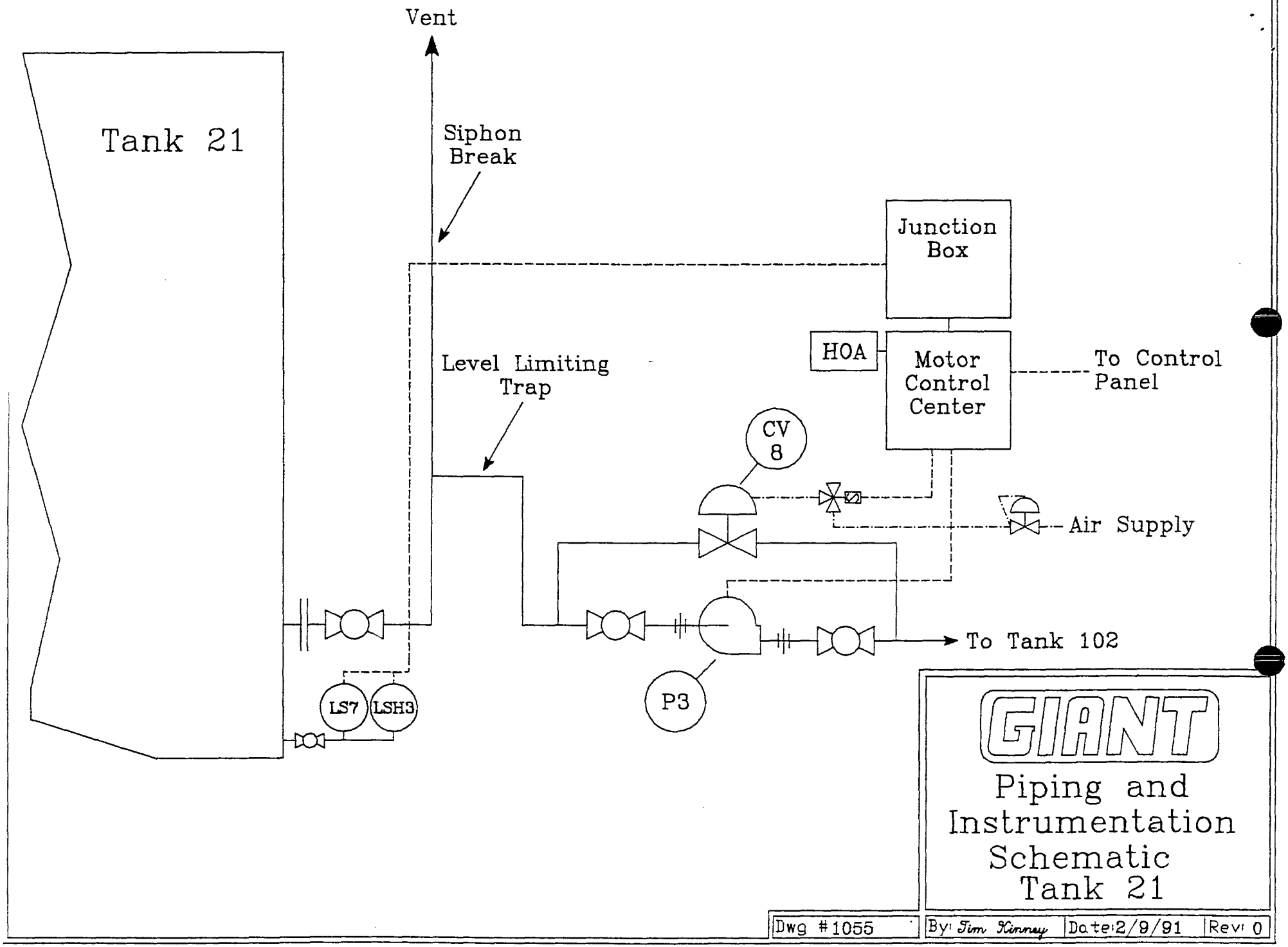

Vent
Tank 21
Siphon Break
Junction Box
HOA
Motor Control Center
To Control Panel
Level Limiting Trap
CV 8
Air Supply
To Tank 102
LS7
LSH3
P3
GIANT
Piping and Instrumentation Schematic Tank 21
Dwg #1055
By: Jim Kinney
Date: 2/9/91
Rev: 0

FIGURE #7

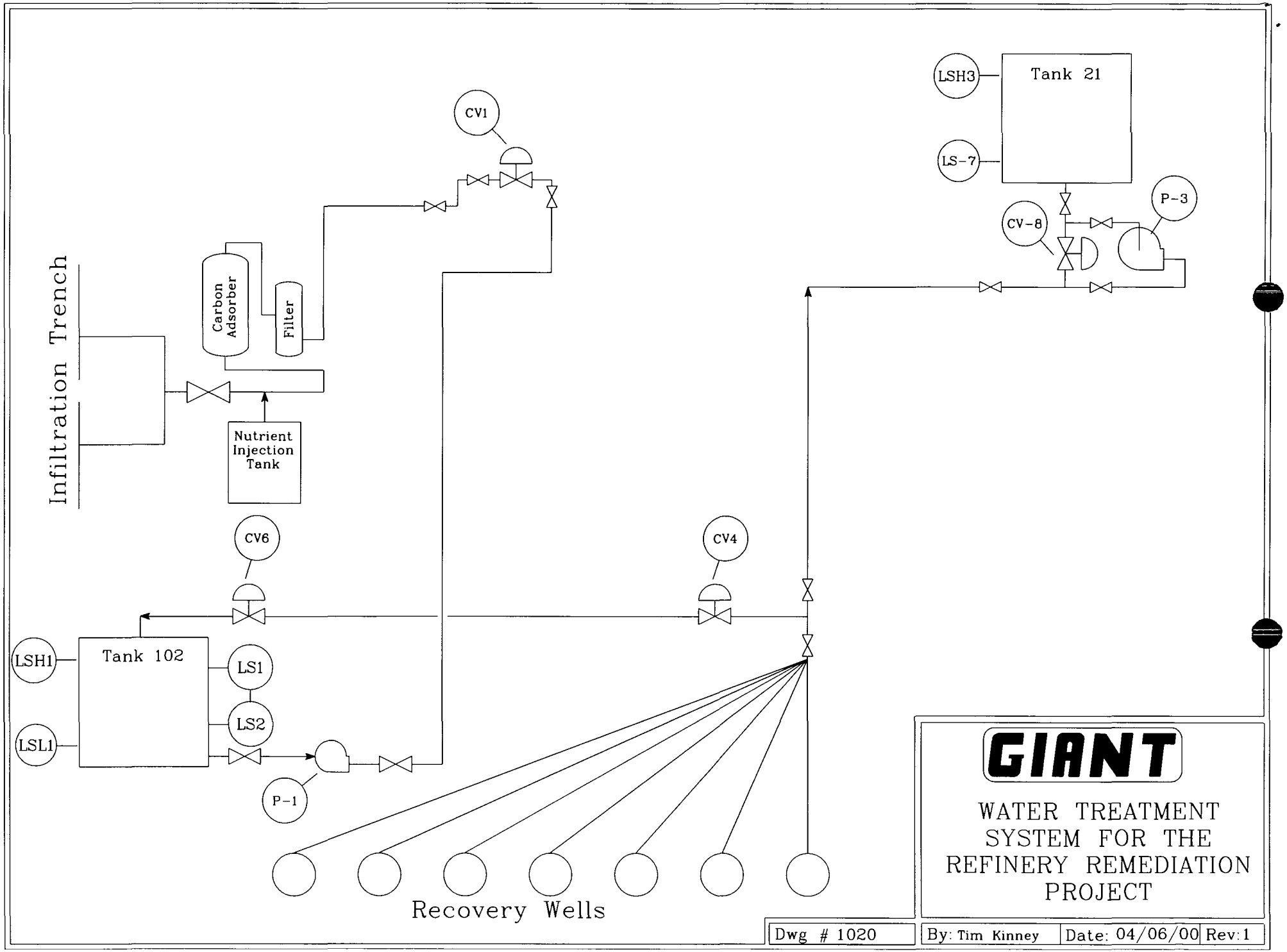

LSH3
Tank 21
LS-7
P-3
CV-8
CV1
Carbon Adsorber
Filter
Infiltration Trench
Nutrient Injection Tank
CV6
CV4
LSH1
Tank 102
LS1
LS2
LSL1
P-1
Recovery Wells
GIANT
WATER TREATMENT SYSTEM FOR THE REFINERY REMEDIATION PROJECT
Dwg # 1020
By: Tim Kinney
Date: 04/06/00
Rev:1

FIGURE #8

GIANT INDUSTRIES, INC.
BLOOMFIELD REFINERY

REDUCED SAMPLE MATRIX
AS MODIFIED BY THE NMOCD
AUGUST, 1995

LOCATION	MONTHLY	QUARTERLY	SEMI-ANNUALLY	ANNUALLY
System Influent		601 602 GWC	601 602 GWC	601 602 GWC
System Effluent		601 602 GWC	601 602 GWC	601 602 GWC Metals PAH
GRW-3				601 602 GWC PAH
GRW-6				601 602 GWC PAH
GRW-13				
GBR-15				
GBR-17				601 602 GWC PAH
GBR-24D				601 602 GWC PAH
GBR-30				601 602 GWC PAH

FIGURE #9

LOCATION	MONTHLY	QUARTERLY	SEMI-ANNUALLY	ANNUALLY
GBR-31				601 602 GWC PAH
SHS-3				601 602 GWC
SHS-4				601 602 GWC
SHS-6				601 602 GWC
SHS-10				601 602 GWC
SHS-12				601 602 GWC
SHS-13				601 602 GWC
SHS-14				601 602 GWC
SHS-15				601 602 GWC
SHS-16				601 602 GWC
SHS-17				601 602 GWC
SHS-7				601 602 GWC
SHS-9				

LOCATION	MONTHLY	QUARTERLY	SEMI-ANNUALLY	ANNUALLY
SHS-18				601 602 GWC
GBR-51				601 602 GWC
GBR-52				601 602 GWC
GBR-32				601 602 GWC Metals
GBR-48				601 602 GWC Metals
GBR-49				601 602 GWC Metals
GBR-50				601 602 GWC Metals

NOTES: All wells will have water and free product elevations determined on a monthly basis.

Wells exhibiting free product will not be sampled.

GIANT

Bloomfield Refinery Remediation
Physical Address: 5764 US Hwy 64
Mailing Address: 111 County Road 4990
Bloomfield, New Mexico 87413

CHAIN OF CUSTODY

Date: 4/7/2000 Page 1 of 1

LABORATORY The Laboratory
ADDRESS 1212 E. Main Street
Lab City, CA
Telephone (222) 555 - 2222
SAMPLER'S SIGNATURE

SAMPLE NUMBER	MATRIX	LOCATION	POLYNUCLEAR AROMATICS 610/8310	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	GENERAL WATER CHEMISTRY	NUMBER OF CONTAINERS
9104150955	Water	SHS-25		✓	✓	✓	5
9104151320	Water	GRW-64	✓			✓	3

REQUESTED ANALYSIS

PROJECT INFORMATION	SAMPLE RECEIPT
PROJECT: Refinery Remediation	TOTAL NO. OF CONTAINERS
PROJECT MANAGER: Tim Kinney	CHAIN OF CUSTODY SEALS
SHIPPING I.D. NO. Fed. Express #	REC'D GOOD CONDITION/COLD
SHIPPED VIA Federal Express	CONFORMS TO RECORD
	LABORATORY NUMBER:

SPECIAL INSTRUCTIONS OR COMMENTS
Return original Chain of Custody to Giant

1004

RELINQUISHED BY: (Signature) 1.	RELINQUISHED BY: (Signature) 2.	RELINQUISHED BY: (Signature) 3.
Sally Sampler		
(Printed Name) Sally Sampler	(Printed Name)	(Printed Name)
(Company) Giant Refining	(Company)	(Company)
DATE AND TIME: 4/7/2000 3:00 pm	DATE AND TIME:	DATE AND TIME:
RECEIVED BY: (Signature) 1.	RECEIVED BY: (Signature) 2.	RECEIVED BY: (Signature) 3 LABORATORY
(Printed Name)	(Printed Name)	(Printed Name)
(Company)	(Company)	(Company)
DATE AND TIME:	DATE AND TIME:	DATE AND TIME:

FIGURE #10

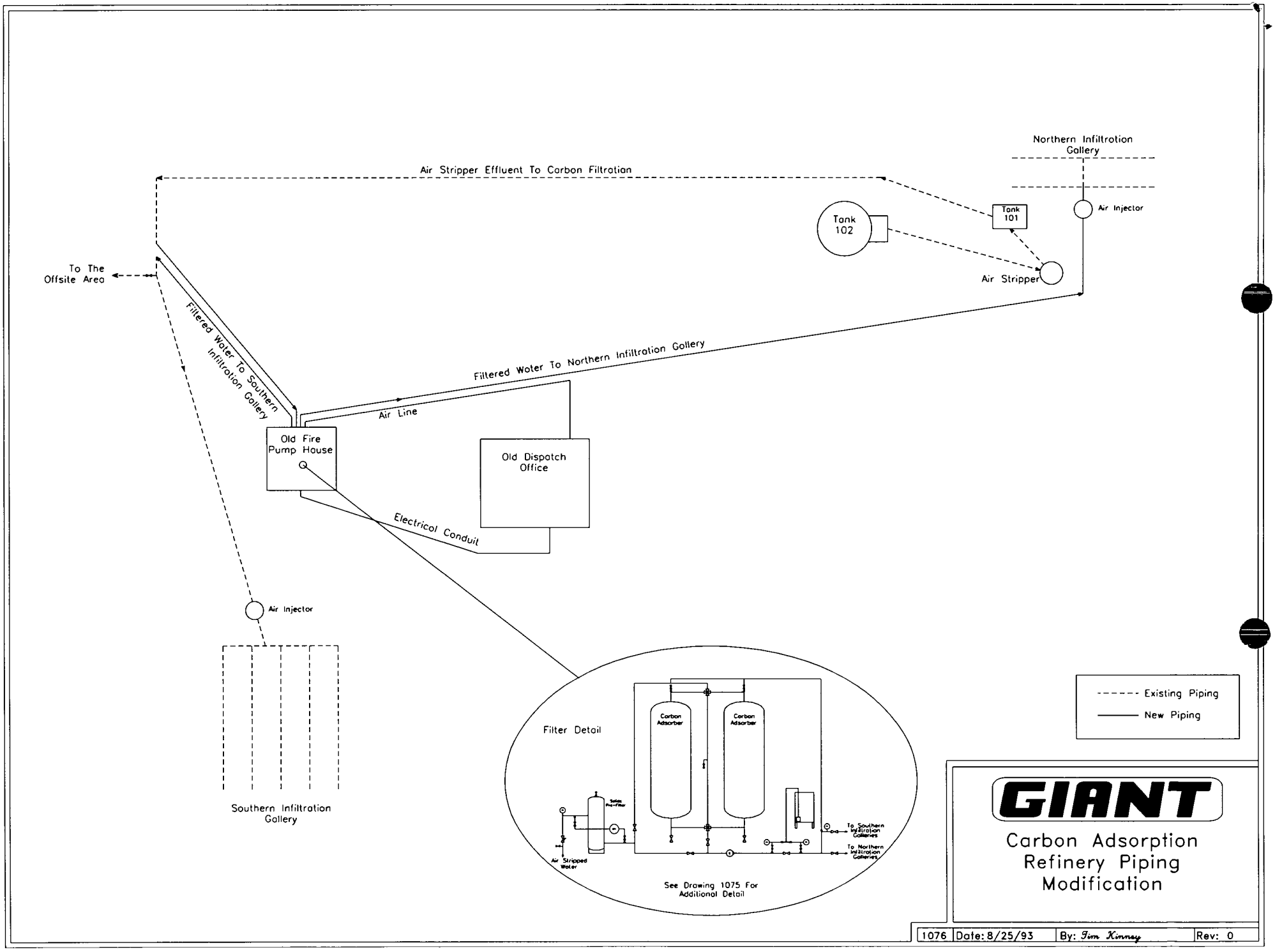
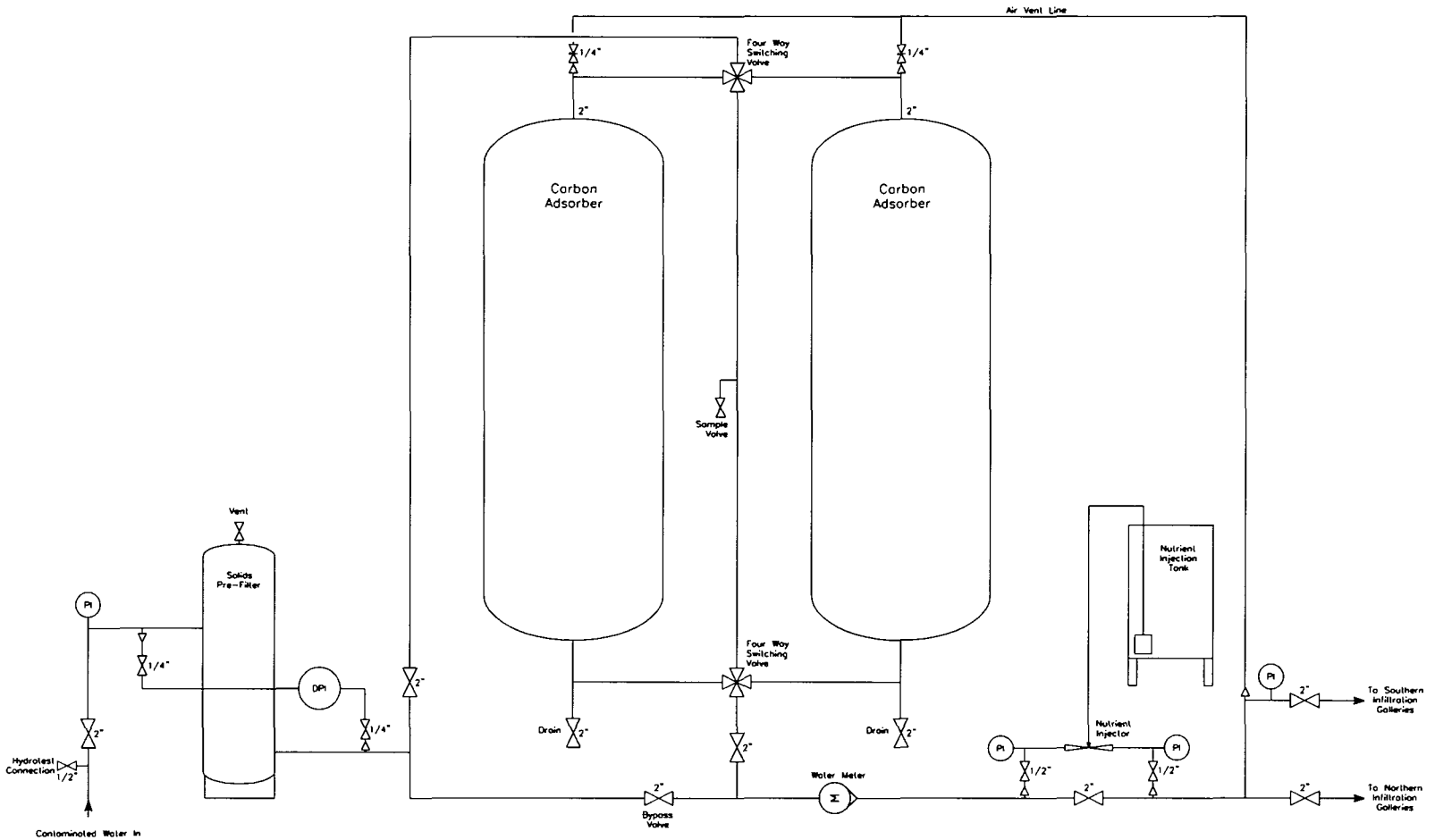

Northern Infiltration Gallery
Air Stripper Effluent To Carbon Filtration
Tank 102
Tank 101
Air Injector
To The Offsite Area
Air Stripper
Filtered Water To Southern Infiltration Gallery
Filtered Water To Northern Infiltration Gallery
Air Line
Old Fire Pump House
Old Dispatch Office
Electricol Conduit
Air Injector
Southern Infiltration Gallery
Filter Detail
Carbon Adsorber
Carbon Adsorber
To Southern Infiltration Galleries
To Northern Infiltration Galleries
Air Stripped Water
See Drawing 1075 For Additional Detail
Existing Piping
New Piping
GIANT
Carbon Adsorption Refinery Piping Modification
1076
Date: 8/25/93
By: Tim Kinney
Rev: 0

FIGURE #11

FIGURE #12



GIANT

Carbon Adsorption and Nutrient Injection Flow Diagram

1075	Date: 04/6/2000	By: Tim Kinney	Rev: 1

NOTICE OF PUBLICATION

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission (WQCC) Regulations, the following discharge plan application has been submitted to the Director of the Oil Conservation Division, 2040 S. Pacheco, Santa Fe, New Mexico 87540, Telephone (505) 827-7132:

(GW-40) - Giant Industries, Inc., Tim Kinney (Refinery Remediation Project Manager), 111 County Road 4990, Bloomfield, New Mexico 87413, has submitted a discharge plan application for remediation of contaminated ground water at the former Giant Bloomfield Refinery located in the NW 1/4 of Section 27 and the SW 1/4, of Section 22, Township 29 North, Range 12 West NMPM, Lea County, New Mexico. The application addresses discharges to ground water associated with the remediation of petroleum contaminated ground water. Approximately 23 gallons per minute of contaminated ground water is processed through a treatment system to remove contaminants to below WQCC ground water standards prior to reinjection in an infiltration gallery. Groundwater most likely to be affected by an accidental discharge is at a depth of approximately 25 feet with a total dissolved solids concentration of approximately 2500 mg/l. The discharge plan addresses system operation and monitoring, ground water quality monitoring and how spills, leaks and other accidental discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge application may be viewed at the address between 8:00 a.m. and 4:00 p.m., Monday through Friday. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Request for public hearing shall set forth the reasons why a public hearing shall be said. A hearing will be held if the Director determines that there is significant public interest. If no hearing is held, the Director will approve or disapprove the plan based on the information available. If a public hearing is held, the Director will approve the plan based on the information in the plan and information presented at the hearing.

GIVEN under the Seal of New Mexico Conservation Commission at Santa Fe, New Mexico, on this 24th day of July, 2000.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

/s/ Roger Cullander
Roger Cullander
for LORI WROTENBERY, Director

SEAL

Legal No. 43197 published in The Daily Times, Farmington, New Mexico, Tuesday, August 8, 2000.

Affidavit of Publication

STATE OF NEW MEXICO)
) ss.
COUNTY OF LEA)

Joyce Clemens being first duly sworn on oath deposes and says that she is Advertisting Director of **THE LOVINGTON DAILY LEADER**, a daily newspaper of general paid circulation published in the English language at Lovington, Lea County, New Mexico; that said newspaper has been so published in such county continuously and uninterruptedly for a period in excess of Twenty-six (26) consecutive weeks next prior to the first publication of the notice hereto attached as hereinafter shown; and that said newspaper is in all things duly qualified to publish legal notices within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico.

That the notice which is hereto attached, entitled

Legal Notice

was published in a regular and entire issue of **THE LOVINGTON DAILY LEADER** and not in any supplement thereof, for one (1) day, beginning with the issue of July 28, 2000 and ending with the issue of July 28, 2000.

And that the cost of publishing said notice is the sum of $ 59.84 which sum has been (Paid) as Court Costs.

Joyce Clemens

Subscribed and sworn to before me this 9th day of August 2000

Debbie Schilling

Debbie Schilling
Notary Public, Lea County, New Mexico
My Commission Expires June 22, 2002

LEGAL NOTICE
NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission (WQCC) Regulations, the following discharge plan application has been submitted to the Director of the Oil Conservation Division, 2040 South Pacheco, Santa Fe, New Mexico 87540, Telephone (505) 827-7132:

(GW-40) - Giant Industries, Inc., Tim Kinney (Refinery Remediation Project Manager), 111 County Road 4990, Bloomfield, New Mexico 87413, has submitted a discharge plan application of remediation of contaminated ground water at the former Giant Bloomfield Refinery located in the NW 1/4 of Section 27 and the SW 1/4, of Section 22, Township 29 North, Range 12 West NMPM, Lea County, New Mexico. The application addresses discharges to ground water associated with the remediation of petroleum contaminated ground water. Approximately 23 gallons per minute of contaminated ground water is processed through a treatment system to remove contaminants to below WQCC ground water standards prior to reinjection in an infiltration gallery. Groundwater most likely to be affected by an accidental discharge is at a depth of approximately 25 feet with a total dissolved solids concentration of approximately 2500 mg/l. The discharge plan addresses system operation and monitoring, ground water quality monitoring and how spills, leaks, and other accidental discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted and a public hearing may be requested by any interested person. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest. If no hearing is held, the Director will approve or disapprove the plan based on information available. If a public hearing is held, the Director will approve the based on the information in the plan and information submitted at the hearing.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 24th day of July, 2000.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
LORI WROTENBERY, Director

SEAL

Published in the Lovington Daily Leader July 28, 2000.

Affidavit of Publication

STATE OF NEW MEXICO)
) ss.
COUNTY OF LEA)

Joyce Clemens being first duly sworn on oath deposes and says that she is Advertisting Director of **THE LOVINGTON DAILY LEADER**, a daily newspaper of general paid circulation published in the English language at Lovington, Lea County, New Mexico; that said newspaper has been so published in such county continuously and uninterruptedly for a period in excess of Twenty-six (26) consecutive weeks next prior to the first publication of the notice hereto attached as hereinafter shown; and that said newspaper is in all things duly qualified to publish legal notices within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico.

That the notice which is hereto attached, entitled

Legal Notice

was published in a regular and entire issue of **THE LOVINGTON DAILY LEADER** and not in any supplement thereof, for one (1) day, beginning with the issue of July 28, 2000 and ending with the issue of July 28, 2000.

And that the cost of publishing said notice is the sum of $ 59.84 which sum has been (Paid) as Court Costs.

Joyce Clemens

Subscribed and sworn to before me this 9th day of August 2000

Debbie Schilling

Debbie Schilling
Notary Public, Lea County, New Mexico
My Commission Expires June 22, 2002

LEGAL NOTICE
NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission (WQCC) Regulations, the following discharge plan application has been submitted to the Director of the Oil Conservation Division, 2040 South Pacheco, Santa Fe, New Mexico 87540, Telephone (505) 827-7132:

(GW-40) - Giant Industries, Inc., Tim Kinney (Refinery Remediation Project Manager), 111 County Road 4990, Bloomfield, New Mexico 87413, has submitted a discharge plan application of remediation of contaminated ground water at the former Giant Bloomfield Refinery located in the NW 1/4 of Section 27 and the SW 1/4, of Section 22, Township 29 North, Range 12 West NMPM, Lea County, New Mexico. The application addresses discharges to ground water associated with the remediation of petroleum contaminated ground water. Approximately 23 gallons per minute of contaminated ground water is processed through a treatment system to remove contaminants to below WQCC ground water standards prior to reinjection in an infiltration gallery. Groundwater most likely to be affected by an accidental discharge is at a depth of approximately 25 feet with a total dissolved solids concentration of approximately 2500 mg/l. The discharge plan addresses system operation and monitoring, ground water quality monitoring and how spills, leaks, and other accidental discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted and a public hearing may be requested by any interested person. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest. If no hearing is held, the Director will approve or disapprove the plan based on information available. If a public hearing is held, the Director will approve the based on the information in the plan and information submitted at the hearing.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 24th day of July, 2000.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
LORI WROTENBERY, Director
SEAL

Published in the Lovington Daily Leader July 28, 2000.

THE SANTA FE
NEW MEXICAN
Founded 1849

AUG 2

NM OIL CONVERSATION DIVISION
ATTN: DONNA DOMGINUEZ
2040 S. PACHECO ST.
SANTA FE, NM 87505

AD NUMBER: 161699 ACCOUNT: 56689
LEGAL NO: 67791 P.O.#: 00199000278
197 LINES 1 time(s) at $ 86.84
AFFIDAVITS: 5.25
TAX: 5.76
TOTAL: 97.85

AFFIDAVIT OF PUBLICATION

STATE OF NEW MEXICO
COUNTY OF SANTA FE
I, B Penner being first duly sworn declare and say that I am Legal Advertising Representative of THE SANTA FE NEW MEXICAN, a daily newspaper published in the English language, and having a general circulation in the Counties of Santa Fe and Los Alamos, State of New Mexico and being a Newspaper duly qualified to publish legal notices and advertisements under the provisions of Chapter 167 on Session Laws of 1937; that the publication #67791 a copy of which is hereto attached was published in said newspaper 1 day(s) between 07/28/2000 and 07/28/2000 and that the notice was published in the newspaper proper and not in any supplement; the first publication being on the 28 day of July, 2000 and that the undersigned has personal knowledge of the matter and things set forth in this affidavit.

/S/ Betsy Penner
LEGAL ADVERTISEMENT REPRESENTATIVE

Subscribed and sworn to before me on this 28 day of July A.D., 2000

Notary Laura L. Harding

Commission Expires 11/23/03

NOTICE OF PUBLICATION

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission (WQCC) Regulations, the following discharge plan application has been submitted to the Director of the Oil Conservation Division, 2040 S. Pacheco, Santa Fe, New Mexico 87505, Telephone (505) 827-7132:

(GW-40) - Giant Industries, Inc., Tim Kinney (Refinery Remediation Project Manager), 111 County Road 4990, Bloomfield, New Mexico 87413, has submitted a discharge plan application for remediation of contaminated ground water at the former Giant Bloomfield Refinery located in the NW ¼ of Section 27 and the SW ¼, of Section 22, Township 29 North, Range 12 West NMPM, Lea County, New Mexico. The application addresses discharges to ground water associated with the remediation of petroleum contaminated ground water. Approximately 23 gallons per minute of contaminated ground water is processed through a treatment system to remove contaminants to below WQCC ground water standards prior to reinjection in an infiltration gallery. Groundwater most likely to be affected by an accidental discharge is at a depth of approximately 25 feet with a total dissolved solids concentration of approximately 2500 mg/l. The discharge plan addresses system operation and monitoring, ground water quality monitoring and how spills, leaks, and other accidental discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why a hearing shall be held. A hearing will be held if the Director determines there is significant public interest. If no hearing is held, the Director will approve or disapprove the plan based on the information available. If a public hearing is held, the Director will approve the plan based on the information in the plan and information presented at the hearing.

GIVEN under the Seal of New Mexico Conservation Commission at Santa Fe, New Mexico, on this 24th day of July, 2000.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
LORI WROTENBERY, Director

Legal #67791
Pub. July 28, 2000

THE SANTA FE
NEW MEXICAN
Founded 1849

NM OIL CONVERSATION DIVISION
ATTN: DONNA DOMGINUEZ
2040 S. PACHECO ST.
SANTA FE, NM 87505

AD NUMBER: 161699 ACCOUNT: 56689
LEGAL NO: 67791 P.O.#: 00199000278
197 LINES 1 time(s) at $ 86.84
AFFIDAVITS: 5.25
TAX: 5.76
TOTAL: 97.85

AFFIDAVIT OF PUBLICATION

STATE OF NEW MEXICO
COUNTY OF SANTA FE
I, Betsy Perner being first duly sworn declare and say that I am Legal Advertising Representative of THE SANTA FE NEW MEXICAN, a daily newspaper published in the English language, and having a general circulation in the Counties of Santa Fe and Los Alamos, State of New Mexico and being a Newspaper duly qualified to publish legal notices and advertisements under the provisions of Chapter 167 on Session Laws of 1937; that the publication #67791 a copy of which is hereto attached was published in said newspaper 1 day(s) between 07/28/2000 and 07/28/2000 and that the notice was published in the newspaper proper and not in any supplement; the first publication being on the 28 day of July, 2000 and that the undersigned has personal knowledge of the matter and things set forth in this affidavit.

/S/ Betsy Perner
LEGAL ADVERTISEMENT REPRESENTATIVE

Subscribed and sworn to before me on this 28 day of July A.D., 2000

Notary Laura L Harding

Commission Expires 11/23/03

NOTICE OF PUBLICATION

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission (WQCC) Regulations, the following discharge plan application has been submitted to the Director of the Oil Conservation Division, 2040 S. Pacheco, Santa Fe, New Mexico 87505, Telephone (505) 827-7132:

(GW-40) - Giant Industries, Inc., Tim Kinney (Refinery Remediation Project Manager), 111 County Road 4990, Bloomfield, New Mexico 87413, has submitted a discharge plan application for remediation of contaminated ground water at the former Giant Bloomfield Refinery located in the NW ¼ of Section 27 and the SW ¼, of Section 22, Township 29 North, Range 12 West NMPM, Lea County, New Mexico. The application addresses discharges to ground water associated with the remediation of petroleum contaminated ground water. Approximately 23 gallons per minute of contaminated ground water is processed through a treatment system to remove contaminants to below WQCC ground water standards prior to reinjection in an infiltration gallery. Groundwater most likely to be affected by an accidental discharge is at a depth of approximately 25 feet with a total dissolved solids concentration of approximately 2500 mg/l. The discharge plan addresses system operation and monitoring, ground water quality monitoring and how spills, leaks, and other accidental discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why a hearing shall be held. A hearing will be held if the Director determines there is significant public interest. If no hearing is held, the Director will approve or disapprove the plan based on the information available. If a public hearing is held, the Director will approve the plan based on the information in the plan and information presented at the hearing.

GIVEN under the Seal of New Mexico Conservation Commission at Santa Fe, New Mexico, on this 24th day of July, 2000.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
LORI WROTENBERY, Director

Legal #67791
Pub. July 28, 2000

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

February 11, 2000

CERTIFIED MAIL
RETURN RECEIPT NO: Z-559-572-902

Mr. Timothy A. Kinney
Giant Industries, Inc.
111 County Rd. 4990
Bloomfield, New Mexico 87413

RE: GROUND WATER DISCHARGE PLAN GW-40
FORMER BLOOMFIELD REFINERY
SAN JUAN COUNTY, NEW MEXICO

Dear Mr. Kinney:

On December 9, 1988 the ground water discharge plan, GW-40 for the Former Bloomfield Refinery located in NW ¼ of Section 27 and the SW ¼ Section 22, Township 29 North, Range 12 West, San Juan County, New Mexico was approved by the Director of the New Mexico Oil Conservation Division (OCD). The discharge plan was subsequently renewed on December 29, 1993. This discharge plan was required and submitted pursuant to New Mexico Water Quality Control Commission (WQCC) regulations and was approved for a period of five years. The approval expired on December 29, 1998.

If your facility continues to have potential or actual effluent or leachate discharges, you must renew your discharge plan. Please submit a renewal application to the OCD by April 14, 2000. Please submit an original application and one copy to the OCD Santa Fe Office and one copy to the OCD Aztec District Office. Note that the completed and signed application form must be submitted with your discharge plan renewal request (Copies of the WQCC regulations and the application form and guidelines can be found on the OCD web page at www.emnrd.state.nm.us/ocd/). Please indicate whether you have made, or intend to make, any changes in your system, and if so, please include these modifications in your application for renewal.

The discharge plan renewal application for the Former Bloomfield Refinery is subject to the WQCC Regulation 3114 discharge plan fees. Every billable facility submitting a discharge plan renewal will be assessed a fee equal to the filling fee of $50.00 plus a flat fee of $690.00 for ground water remediations.

The $50.00 filing fee is to be submitted with the discharge plan renewal application and is nonrefundable. The flat fee for an approved discharge plan renewal may be paid in a single payment due at the time of approval, or in equal installments over the duration of the discharge plan.

Please make all checks payable to the **NMED Water Quality Management Fund** and addressed to the OCD Santa Fe Office.

If you no longer have any actual or potential discharges, a discharge plan is not needed and you need to notify this office. If you have any questions regarding this matter, please do not hesitate to contact Bill Olson of my staff at (505) 827-7154.

Sincerely,

Roger C. Anderson
Environmental Bureau Chief

xc: Denny Foust, OCD Aztec District Office

GIANT
INDUSTRIES, INC.

111 Road 4990
Bloomfield, New Mexico 87413

505
632.8006

January 25, 1999

Mr. William Olson
Hydrogeologist
New Mexico Oil Conservation Division
Environmental Bureau
P. O. Box 2088
Santa Fe, NM 87504-2088

Dear Mr. Olson:

Enclosed you will find the annual report for Giant Refining Company's Bloomfield Refinery for 1998.

Please contact me if you have any questions.

Sincerely,

Tim Kinney
Remediation Project Manager

/dm

Enclosure

cc w/enc.: Mike Hardy-Giant
Kim Bullerdick-Giant
Jacque Cumbie-Giant
Stephanie Odell-BLM
Maura Hanning-EID
Chris Shuey-SWRIC
Jim Durrett-SJC
Herbert Gorrod-EPA
Denny Foust-OCD

GIANT
REFINING CO.

5764 US Highway 64
Farmington, New Mexico
87401

505.632.8006

December 24, 1997

Mr. Bill Olson
Environmental Bureau
New Mexico Oil Conservation Division
Land Office Building
P. O. Box 2088
Santa Fe, NM 87504-2088

Dear Bill:

As you are aware, the annual report for the former Giant Bloomfield Refinery remediation project contained analytical results which indicated the questionable presence of MTBE in several monitoring well samples. Philip Services was contracted to review the issue for Giant and prepared the attached report. For reasons noted in their report, they concluded that MTBE does not occur in the groundwater sampled at the facility.

Sincerely,

Tim Kinney

Tim Kinney
Project Manager
Refinery Remediation Project

/dm

Attachments

cc w/attachments: Mike Hardy-Giant
Kim Bullerdick-Giant
Jacque Cumbie-Giant
Stephanie Odell-BLM
Maura Hanning-EID
Chris Shuey-SWRIC
Jim Durrett-SJC
Herbert Gorrod-EPA
Denny Foust-OCD

PHILIP SERVICES CORP

Industrial Services Group
Central Region

December 2, 1997

RECEIVED DEC 09 1997

Mr. Timothy Kinney
Giant Industries Arizona, Inc.
5764 Highway 64
Farmington, New Mexico 87401

RE: MTBE REPORTED ON LABORATORY RESULTS FOR 12/96

Dear Mr. Kinney:

Philip Services Corporation (Philip) has reviewed the analytical results from the groundwater samples collected on 12/13/96. Unique to this sampling event is the occurrence of MTBE in groundwater samples. Careful review of other sampling data from these wells does not support the presence of MTBE.

On November 21, 1997 Philip contacted American Environmental Network, Inc., the laboratory that performed the analyses, and requested that they review the laboratory QA/QC for the analyses in question. Philip received a response from the laboratory on December 1, 1997 (copy attached), stating that the results indicating the presence of MTBE are invalid. American Analytical Network, Inc. stated that the peak present in the samples is an unknown interference.

Philip is confident that MTBE does not occur in the groundwater at these locations.

Respectfully submitted,

PHILIP SERVICES CORPORATION

Martin J. Nee
Operations Manager

Attachments:
-As stated

J:\qtrsamp

American Environmental Network, Inc.

AEN I.D. 612329

December 1, 1997

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

Project Name Giant Semi-Annual
Project Number 10214

Attention: Martin Nee

On 12/13/96 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. A report for these samples was issued on 12/19/96.

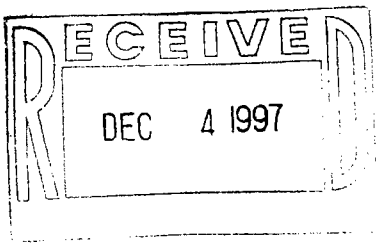
Per request the data for these samples were re-evaluated by a senior analyst and Quality Assurance. We now believe that the MTBE hits are invalid due to retention time variations. The peak present in the samples is an unknown interference.

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

Christopher F. Froehlich
Quality Assurance

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: cff



2709-D Pan American Freeway, NE • Albuquerque, NM 87107 • (505) 344-3777 • Fax (505) 344-4413

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

February 20, 1997

CERTIFIED MAIL
RETURN RECEIPT NO. P-269-269-261

Mr. Timothy A. Kinney
Giant Industries, Inc.
5764 US Highway 64
Farmington, New Mexico 87401

RE: REMEDIATION SYSTEM MONITORING
GIANT BLOOMFIELD REFINERY

Dear Mr. Kinney:

The New Mexico Oil Conservation Division (OCD) has reviewed Giant Refining Company's November 13, 1996 correspondence. This document recommends continuing the current ground water remediation monitoring program, but changing the frequency for reporting the results of monitoring from quarterly to annually.

The recommendations contained in the above referenced document are approved with the following condition:

1. The annual report will be submitted to the OCD Santa Fe Office by April 1 of each respective year with a copy provided to the OCD Aztec Office.

Please be advised that OCD approval does not limit Giant to the work proposed if the actions fail to effectively remediate or monitor contamination related to their activities. In addition, OCD approval does not relieve Giant of liability which may be actionable under any other federal, state or local laws and/or regulations.

If you have any questions please contact me at (505) 827-7154.

Sincerely,

William C. Olson
Hydrogeologist
Environmental Bureau

xc: OCD Aztec District Office
Maura Hanning, NMED Superfund Program
Herbert M. Gorrod, EPA Region VI
Stephanie Odell, BLM Farmington District Office

P 269 269 261

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail *(See reverse)*

Sent to	
Street & Number	
Post Office, State, & ZIP Code	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date	

PS Form **3800**, April 1995

GIANT
TRANSPORTATION

5764 US Highway 64
Farmington, New Mexico
87401

505-632-8006

November 13, 1996

Mr. William Olson
Hydrogeologist
New Mexico Oil Conservation Division
Environmental Bureau
P. O. Box 2088
Santa Fe, NM 87504-2088

Dear Bill:

Per our recent conversation, Giant Industries Arizona, Inc. requests that data reports for the old Bloomfield Refinery be prepared and transmitted on an annual timetable rather than the present quarterly timetable. Sampling and monitoring frequencies will remain unchanged.

Sincerely,

Tim Kinney
Remediation Project Manager

/dm

cc: Mike Hardy-Giant
Kim Bullerdick-Giant
Jacque Cumbie-Giant
Stephanie Odell-BLM
Maura Hanning-EID
Chris Shuey-SWRIC
Jim Durrett-SJC
Herbert Gorrod-EPA
Denny Foust-OCD

GIANT
TRANSPORTATION

5764 US Highway 64
Farmington, New Mexico
87401

505-632-8006

August 14, 1996

Mr. William Olson
Hydrogeologist
New Mexico Oil Conservation Division
Environmental Bureau
P. O. Box 2088
Santa Fe, NM 87504-2088

Dear Mr. Olson:

Enclosed you will find the quarterly report for Giant Refining Company's Bloomfield Refinery for the second quarter of 1996.

Please contact me if you have any questions.

Sincerely,

Tim Kinney
Remediation Project Manager

/dm

Enclosure

cc w/enc.: Mike Hardy-Giant
Kim Bullerdick-Giant
Jacque Cumbie-Giant
Stephanie Odell-BLM
Maura Hanning-EID
Chris Shuey-SWRIC
Jim Durrett-SJC
Herbert Gorrod-EPA
Denny Foust-OCD

QUARTERLY DATA REPORT

GIANT BLOOMFIELD REFINERY

SECOND QUARTER, 1996

Prepared By:

GIANT REFINING COMPANY
5764 U. S. Highway 64
Farmington, NM 87401
(505) 632-8006
FAX (505) 632-4025

TABLE OF CONTENTS

INTRODUCTION AND SUMMARY
QUARTERLY REPORT
SECOND QUARTER, 1996

INTRODUCTION

Tank 22 is being used for intermediate water storage. All water is treated by the carbon filter unit exclusively.

SUMMARY

Section 2

Section 2 contains a summary of the quarterly analytical results. Raw data, as received from the laboratory, is available on request as a supplement to the quarterly report.

Section 3

A quarterly potentiometric surface map, as well as the adjusted water surface elevation and product thickness for each well, is included in Section 3.

Section 4

Section 4 illustrates the volume history for the quarter. Total volume pumped from each well, as well as current tank volumes and the reinjection volume, is reported. Additional detail, on a weekly basis, is also available if desired.

SECTION 2

The following pages show the quarterly analytical data for the Giant Refining Remediation Project. The data is broken down into units as described below.

	Unit of Measure
Total dissolved solids (180)	mg/l
Total dissolved solids (calc)	mg/l
Total alkalinity as CaCO3	mg/l
Total hardness as CaCO3	mg/l
Bicarbonate as HCO3	mg/l
Carbonate as CO3	mg/l
Chloride	mg/l
Sulfate	mg/l
Calcium	mg/l
Magnesium	mg/l
Potassium	mg/l
Sodium	mg/l

The remainder of the data is measured in ug/l.

GIANT INDUSTRIES
ONSITE REMEDIATION PROJECT
QUARTERLY ANALYTICAL DATA SUMMARY
SECOND QUARTER, 1996

SYSTEM EFFLUENT

	APRIL
Lab pH	7.2
Lab Conductivity @25 C	3510
Total Dissolved Solids @ 180 C	2730
Total Dissolved Solids (Calc)	2668
Total Alkalinity as CaCO3	361
Total Hardness as CaCO3	1145
Bicarbonate as HCO3	897
Carbonate as CO3	ND
Hydroxide	ND
Chloride	181
Sulfate	1390
Calcium	399
Magnesium	36
Potassium	3.1
Sodium	446

HALOCARBONS

Bromodichloromethane	ND
Bromoform	ND
Bromomethane	ND
Carbon Tetrachloride	ND
Chloroethane	ND
Chloroform	ND
Chloromethane	ND
Dibromochloromethane	ND
1,2-Dibromoethane (EDB)	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
1,1-Dichloroethane	ND
1,2-Dichloroethane (EDC)	ND
1,1-Dichloroethene	ND
cis-1,2-Dichloroethene	ND
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachlorethene	ND
1,1,1-Trichloroethane	ND

1,1,2-Trichloroethane	ND
Trichloroethene	ND
Trichlorofluoromethane	ND
Vinyl Chloride	ND

AROMATICS

Benzene	1.9
Chlorobenzene	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
Ethylbenzene	ND
Methyl-t-Butyl Ether	ND
Toluene	ND
Total Xylenes	ND

SYSTEM INFLUENT

	APRIL
Lab pH	7.3
Lab Conductivity @25 C	3510
Total Dissolved Solids @ 180 C	2750
Total Dissolved Solids (Calc)	2615
Total Alkalinity as CaCO3	357
Total Hardness as CaCO3	1097
Bicarbonate as HCO3	897
Carbonate as CO3	ND
Hydroxide	ND
Chloride	181
Sulfate	1390
Calcium	384
Magnesium	34
Potassium	2.3
Sodium	413

HALOCARBONS

Bromodichloromethane	ND
Bromoform	ND
Bromomethane	ND
Carbon Tetrachloride	ND
Chloroethane	ND
Chloroform	ND
Chloromethane	ND
Dibromochloromethane	ND
1,2-Dibromoethane (EDB)	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
1,1-Dichloroethane	ND
1,2-Dichloroethane (EDC)	ND
1,1-Dichloroethene	ND

cis-1,2-Dichloroethene	1.4
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachlorethene	ND
1,1,1-Trichloroethane	ND
1,1,2-Trichloroethane	ND
Trichloroethene	ND
Trichlorofluoromethane	ND
Vinyl Chloride	ND

AROMATICS

Benzene	24
Chlorobenzene	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
Ethylbenzene	53
Methyl-t-Butyl Ether	3.1
Toluene	ND
Total Xylenes	63

GBR-17

	JUNE
Lab pH	7.1
Lab Conductivity @25 C	2620
Total Dissolved Solids @ 180 C	2170
Total Dissolved Solids (Calc)	2190
Total Alkalinity as CaCO3	216
Total Hardness as CaCO3	1020
Bicarbonate as HCO3	264
Carbonate as CO3	ND
Hydroxide	ND
Chloride	50.2
Sulfate	1280
Calcium	360
Magnesium	30.3
Potassium	1.56
Sodium	340

HALOCARBONS

Bromodichloromethane	ND
Bromoform	ND
Bromomethane	ND
Carbon Tetrachloride	ND
Chloroethane	ND

Chloroform	ND
Chloromethane	ND
Dibromochloromethane	ND
1,2-Dibromoethane (EDB)	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
1,1-Dichloroethane	ND
1,2-Dichloroethane (EDC)	ND
1,1-Dichloroethene	ND
cis-1,2-Dichloroethene	ND
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachlorethene	ND
1,1,1-Trichloroethane	ND
1,1,2-Trichloroethane	ND
Trichloroethene	ND
Trichlorofluoromethane	ND
Vinyl Chloride	ND

AROMATICS

Benzene	ND
Chlorobenzene	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
Ethylbenzene	ND
Methyl-t-Butyl Ether	ND
Toluene	ND
Total Xylenes	ND

GBR-31

HALOCARBONS

	APRIL
Bromodichloromethane	ND
Bromoform	ND
Bromomethane	ND
Carbon Tetrachloride	ND
Chloroethane	ND
Chloroform	ND
Chloromethane	ND
Dibromochloromethane	ND
1,2-Dibromoethane (EDB)	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND

1,1-Dichloroethane	ND
1,2-Dichloroethane (EDC)	ND
1,1-Dichloroethene	ND
cis-1,2-Dichloroethene	ND
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachlorethene	ND
1,1,1-Trichloroethane	ND
1,1,2-Trichloroethane	ND
Trichloroethene	ND
Trichlorofluoromethane	ND
Vinyl Chloride	ND

GBR-32

	JUNE
Lab pH	7
Lab Conductivity @25 C	5420
Total Dissolved Solids @ 180 C	4320
Total Dissolved Solids (Calc)	3980
Total Alkalinity as CaCO3	306
Total Hardness as CaCO3	1580
Bicarbonate as HCO3	373
Carbonate as CO3	ND
Hydroxide	ND
Chloride	640
Sulfate	1750
Calcium	540
Magnesium	55
Potassium	4.69
Sodium	810

HALOCARBONS

Bromodichloromethane	ND
Bromoform	ND
Bromomethane	ND
Carbon Tetrachloride	ND
Chloroethane	ND
Chloroform	2.7
Chloromethane	ND
Dibromochloromethane	ND
1,2-Dibromoethane (EDB)	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
1,1-Dichloroethane	1.4
1,2-Dichloroethane (EDC)	ND

1,1-Dichloroethene	ND
cis-1,2-Dichloroethene	56 D(5)
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachlorethene	7.1
1,1,1-Trichloroethane	1
1,1,2-Trichloroethane	ND
Trichloroethene	4.3
Trichlorofluoromethane	0.2
Vinyl Chloride	ND

AROMATICS

Benzene	ND
Chlorobenzene	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
Ethylbenzene	ND
Methyl-t-Butyl Ether	ND
Toluene	ND
Total Xylenes	ND

GBR-48

	JUNE
Lab pH	7
Lab Conductivity @25 C	5780
Total Dissolved Solids @ 180 C	4620
Total Dissolved Solids (Calc)	4440
Total Alkalinity as CaCO3	242
Total Hardness as CaCO3	1760
Bicarbonate as HCO3	295
Carbonate as CO3	ND
Hydroxide	ND
Chloride	740
Sulfate	2030
Calcium	600
Magnesium	62.5
Potassium	5.47
Sodium	860

HALOCARBONS

Bromodichloromethane	ND
Bromoform	ND
Bromomethane	ND
Carbon Tetrachloride	ND
Chloroethane	ND

Chloroform	1.8
Chloromethane	ND
Dibromochloromethane	ND
1,2-Dibromoethane (EDB)	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
1,1-Dichloroethane	0.8
1,2-Dichloroethane (EDC)	ND
1,1-Dichloroethene	ND
cis-1,2-Dichloroethene	42 D(5)
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachlorethene	5.3
1,1,1-Trichloroethane	ND
1,1,2-Trichloroethane	ND
Trichloroethene	3.4
Trichlorofluoromethane	0.2
Vinyl Chloride	ND

AROMATICS

Benzene	ND
Chlorobenzene	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
Ethylbenzene	ND
Methyl-t-Butyl Ether	ND
Toluene	ND
Total Xylenes	ND

GBR-49

	JUNE
Lab pH	7.1
Lab Conductivity @25 C	3810
Total Dissolved Solids @ 180 C	3160
Total Dissolved Solids (Calc)	3080
Total Alkalinity as CaCO3	298
Total Hardness as CaCO3	1210
Bicarbonate as HCO3	364
Carbonate as CO3	ND
Hydroxide	ND
Chloride	210
Sulfate	1720
Calcium	420
Magnesium	40.1

Potassium	274
Sodium	510
HALOCARBONS	
Bromodichloromethane	ND
Bromoform	ND
Bromomethane	ND
Carbon Tetrachloride	ND
Chloroethane	ND
Chloroform	1.2
Chloromethane	ND
Dibromochloromethane	ND
1,2-Dibromoethane (EDB)	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
1,1-Dichloroethane	0.6
1,2-Dichloroethane (EDC)	ND
1,1-Dichloroethene	ND
cis-1,2-Dichloroethene	49 D(5)
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachlorethene	5
1,1,1-Trichloroethane	ND
1,1,2-Trichloroethane	ND
Trichloroethene	2.6
Trichlorofluoromethane	ND
Vinyl Chloride	ND
AROMATICS	
Benzene	0.6
Chlorobenzene	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
Ethylbenzene	ND
Methyl-t-Butyl Ether	ND
Toluene	ND
Total Xylenes	ND
GBR-50	
	JUNE
Lab pH	6.9
Lab Conductivity @25 C	3120
Total Dissolved Solids @ 180 C	2690
Total Dissolved Solids (Calc)	2690
Total Alkalinity as CaCO3	216
Total Hardness as CaCO3	1110

Bicarbonate as HCO3	264
Carbonate as CO3	ND
Hydroxide	ND
Chloride	44.2
Sulfate	1670
Calcium	390
Magnesium	31.7
Potassium	3.13
Sodium	430

HALOCARBONS

Bromodichloromethane	ND
Bromoform	ND
Bromomethane	ND
Carbon Tetrachloride	ND
Chloroethane	ND
Chloroform	ND
Chloromethane	ND
Dibromochloromethane	ND
1,2-Dibromoethane (EDB)	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
1,1-Dichloroethane	ND
1,2-Dichloroethane (EDC)	ND
1,1-Dichloroethene	ND
cis-1,2-Dichloroethene	4.6
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachlorethene	1.8
1,1,1-Trichloroethane	1
1,1,2-Trichloroethane	ND
Trichloroethene	0.4
Trichlorofluoromethane	ND
Vinyl Chloride	ND

AROMATICS

Benzene	24
Chlorobenzene	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
Ethylbenzene	53
Methyl-t-Butyl Ether	3.1
Toluene	ND
Total Xylenes	63

SHS-10

HALOCARBONS

	APRIL
Bromodichloromethane	ND
Bromoform	ND
Bromomethane	ND
Carbon Tetrachloride	ND
Chloroethane	ND
Chloroform	ND
Chloromethane	ND
Dibromochloromethane	ND
1,2-Dibromoethane (EDB)	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
1,1-Dichloroethane	ND
1,2-Dichloroethane (EDC)	ND
1,1-Dichloroethene	ND
cis-1,2-Dichloroethene	ND
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachlorethene	ND
1,1,1-Trichloroethane	ND
1,1,2-Trichloroethane	ND
Trichloroethene	ND
Trichlorofluoromethane	ND
Vinyl Chloride	ND

AROMATICS

Benzene	ND
Chlorobenzene	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
Ethylbenzene	ND
Methyl-t-Butyl Ether	ND
Toluene	ND
Total Xylenes	ND

SHS-12

HALOCARBONS

	APRIL
Bromodichloromethane	ND
Bromoform	ND
Bromomethane	ND
Carbon Tetrachloride	ND
Chloroethane	ND
Chloroform	ND
Chloromethane	ND
Dibromochloromethane	ND
1,2-Dibromoethane (EDB)	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
1,1-Dichloroethane	ND
1,2-Dichloroethane (EDC)	ND
1,1-Dichloroethene	ND
cis-1,2-Dichloroethene	0.6
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachlorethene	ND
1,1,1-Trichloroethane	ND
1,1,2-Trichloroethane	ND
Trichloroethene	ND
Trichlorofluoromethane	ND
Vinyl Chloride	ND

AROMATICS

Benzene	ND
Chlorobenzene	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
Ethylbenzene	ND
Methyl-t-Butyl Ether	ND
Toluene	ND
Total Xylenes	ND

SHS-13

HALOCARBONS

	APRIL
Bromodichloromethane	ND

Bromoform	ND
Bromomethane	ND
Carbon Tetrachloride	ND
Chloroethane	ND
Chloroform	ND
Chloromethane	ND
Dibromochloromethane	ND
1,2-Dibromoethane (EDB)	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
1,1-Dichloroethane	0.3
1,2-Dichloroethane (EDC)	ND
1,1-Dichloroethene	ND
cis-1,2-Dichloroethene	0.6
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachlorethene	ND
1,1,1-Trichloroethane	5.2
1,1,2-Trichloroethane	ND
Trichloroethene	ND
Trichlorofluoromethane	ND
Vinyl Chloride	ND

AROMATICS

Benzene	ND
Chlorobenzene	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
Ethylbenzene	ND
Methyl-t-Butyl Ether	ND
Toluene	ND
Total Xylenes	ND

SHS-16

HALOCARBONS

	APRIL
Bromodichloromethane	ND
Bromoform	ND
Bromomethane	ND
Carbon Tetrachloride	ND
Chloroethane	ND
Chloroform	ND
Chloromethane	ND

Dibromochloromethane	ND
1,2-Dibromoethane (EDB)	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
1,1-Dichloroethane	ND
1,2-Dichloroethane (EDC)	ND
1,1-Dichloroethene	ND
cis-1,2-Dichloroethene	0.6
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachlorethene	ND
1,1,1-Trichloroethane	5.2
1,1,2-Trichloroethane	ND
Trichloroethene	ND
Trichlorofluoromethane	ND
Vinyl Chloride	ND

AROMATICS

Benzene	ND
Chlorobenzene	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
Ethylbenzene	ND
Methyl-t-Butyl Ether	ND
Toluene	ND
Total Xylenes	ND

SHS-17

HALOCARBONS

	APRIL
Bromodichloromethane	ND
Bromoform	ND
Bromomethane	ND
Carbon Tetrachloride	ND
Chloroethane	ND
Chloroform	ND
Chloromethane	ND
Dibromochloromethane	ND
1,2-Dibromoethane (EDB)	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
1,1-Dichloroethane	ND

1,2-Dichloroethane (EDC)	ND
1,1-Dichloroethene	ND
cis-1,2-Dichloroethene	0.6
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachlorethene	ND
1,1,1-Trichloroethane	5.2
1,1,2-Trichloroethane	ND
Trichloroethene	ND
Trichlorofluoromethane	ND
Vinyl Chloride	ND

AROMATICS

Benzene	ND
Chlorobenzene	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
Ethylbenzene	ND
Methyl-t-Butyl Ether	ND
Toluene	ND
Total Xylenes	ND

GIANT REFINING BLOOMFIELD REFINERY
QUARTERLY POTENTIOMETRIC SURFACE

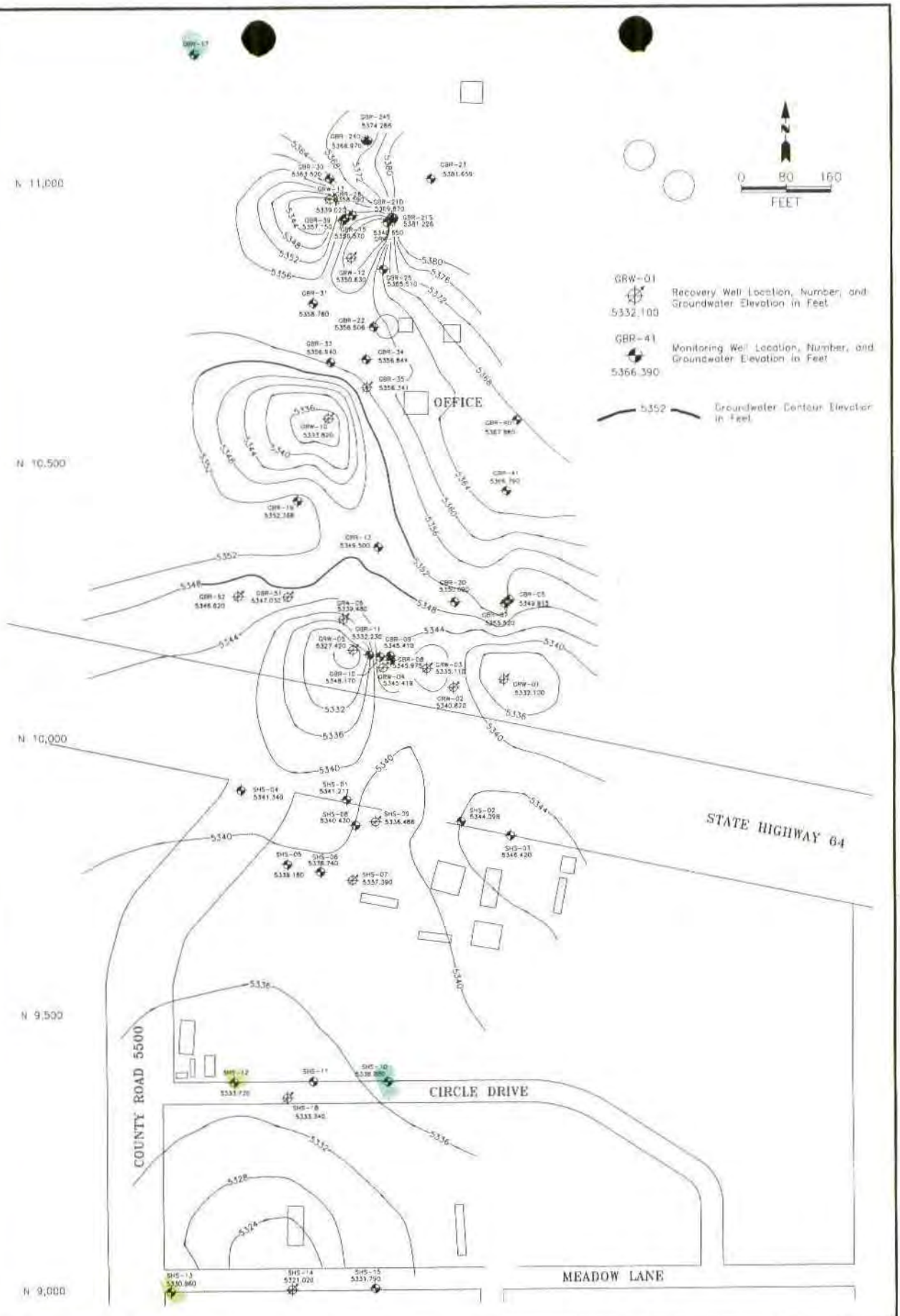
APRIL, 1996

WELL #	WELLHEAD ELEVATION IN FEET	DEPTH TO WATER IN FEET	DEPTH TO PRODUCT IN FEET	PRODUCT THICKNESS IN FEET	ADJUSTED WSEL* IN FEET
GRW-1	5394.30	62.20	62.20	0.00	5332.10
GRW-2	5391.28	50.46	50.46	0.00	5340.82
GRW-3	5388.77	53.66	53.66	0.00	5335.11
GRW-4	5390.02	45.56	44.33	1.23	5345.44
GRW-5	5390.56	63.14	63.14	0.00	5327.42
GRW-6	5390.81	51.33	51.33	0.00	5339.48
GRW-10	5395.02	61.20	61.20	0.00	5333.82
GRW-11	5397.85	57.20	57.20	0.00	5340.65
GRW-12	5397.24	46.61	46.61	0.00	5350.63
GRW-13	5396.90	57.88	57.88	0.00	5339.02
GBR-5	5395.07	45.35	45.10	0.25	5349.92
GBR-6	5395.70	56.13	56.13	0.00	5339.57
GBR-7	5395.85	41.75	39.93	1.82	5355.56
GBR-8	5390.50	45.50	44.25	1.25	5346.00
GBR-9	5389.92	44.51	44.51	0.00	5345.41
GBR-10	5390.57	42.40	42.40	0.00	5348.17
GBR-11	5389.43	57.20	57.20	0.00	5332.23
GBR-13	5393.04	57.88	57.88	0.00	5335.16
GBR-15	5397.99	41.42	41.42	0.00	5356.57
GBR-18	5421.68	30.45	30.45	0.00	5391.23
GBR-19	5393.83	43.10	41.00	2.10	5352.41
GBR-20	5393.47	43.38	43.38	0.00	5350.09
GBR-21S	5400.65	19.44	19.42	0.02	5381.23
GBR-21D	5400.19	30.32	30.32	0.00	5369.87
GBR-22	5395.91	38.98	36.96	2.02	5358.55
GBR-23	5403.72	22.10	22.05	0.05	5381.99
GBR-24S	5396.08	21.88	21.77	0.11	5366.37
GBR-24D	5396.77	29.80	29.80	0.00	5366.97
GBR-25	5396.72	31.21	31.21	0.00	5365.51
GBR-26	5395.59	37.00	37.00	0.00	5358.59
GBR-30	5396.58	33.06	33.06	0.00	5363.52
GBR-31	5394.86	36.08	36.08	0.00	5358.78
GBR-33	5396.28	39.34	39.34	0.00	5356.94
GBR-34	5394.00	38.42	36.80	1.62	5356.88
GBR-35	5393.66	38.70	36.93	1.77	5356.38
GBR-39	5397.55	40.40	40.40	0.00	5357.15
GBR-40	5400.76	32.88	32.88	0.00	5367.88
GBR-41	5396.35	29.96	29.96	0.00	5366.39
GBR-51	5389.68	42.65	42.65	0.00	5347.03
GBR-52	5387.74	41.12	41.12	0.00	5346.62

GIANT REFINING BLOOMFIELD REFINERY
QUARTERLY POTENTIOMETRIC SURFACE
APRIL, 1996

WELL #	WELLHEAD ELEVATION IN FEET	DEPTH TO WATER IN FEET	DEPTH TO PRODUCT IN FEET	PRODUCT THICKNESS IN FEET	ADJUSTED WSEL* IN FEET
SHS-1	5383.54	42.43	42.30	0.13	5341.21
SHS-2	5381.66	37.78	37.50	0.28	5344.10
SHS-3	5383.33	36.91	36.91	0.00	5346.42
SHS-4	5383.62	42.28	42.28	0.00	5341.34
SHS-5	5378.36	39.18	39.18	0.00	5339.18
SHS-6	5378.17	39.43	39.43	0.00	5338.74
SHS-7	5375.89	38.50	38.50	0.00	5337.39
SHS-8	5380.25	39.82	39.82	0.00	5340.43
SHS-9	5380.79	44.32	44.30	0.02	5336.49
SHS-10	5373.80	36.92	36.92	0.00	5336.88
SHS-12	5373.94	40.22	40.22	0.00	5333.72
SHS-13	5367.81	36.85	36.85	0.00	5330.96
SHS-14	5367.07	46.05	46.05	0.00	5321.02
SHS-15	5366.21	34.42	34.42	0.00	5331.79
SHS-16	5362.58	31.65	31.65	0.00	5330.93
SHS-17	5364.35	33.64	33.64	0.00	5330.71
SHS-18	5373.64	40.30	40.30	0.00	5333.34

* WSEL - WATER SURFACE ELEVATION ADJUSTED FOR PRODUCT DEPTH



PHILIP ENVIRONMENTAL

TITLE:
Equivalent Groundwater Elevation Contours
April 1996

DWN: MRC	DES:	PROJECT NO.: 14111
CHKD:	APPD:	FIGURE NO.: Figure 1
DATE: 08/13/96	REV.: C	

G:\GANT\HYDRO\MAPS\ALL-0496.DWG

GIANT REFINING COMPANY
BLOOMFIELD REFINERY
QUARTERLY VOLUME CHANGE

SECOND QUARTER, 1996

Tank Number	Beginning Volume	Ending Volume	Net Change
102	11,691	12,916	1,225
106	8,010	8,010	0
21	67,472	230,133	162,661
22	212,927	252,739	39,812
Total Net Volume Change			203,698

GIANT REFINING COMPANY
BLOOMFIELD REFINERY
QUARTERLY RECOVERY WELL
VOLUME TABULATION

SECOND QUARTER, 1996

Well	Month #1	Month #2	Month #3	Total
GRW-1	4,810	2,300	1,210	8,320
GRW-2	5,340	2,430	1,386	9,156
GRW-3	9,010	5,010	1,870	15,890
GRW-4	7,370	3,920	3,490	14,780
GRW-5	15,200	660	5,150	21,010
GRW-6	9,820	5,820	2,850	18,490
GRW-9	1,210	520	460	2,190
GRW-10	299,820	186,870	80,300	566,990
GRW-11	41,620	9,880	3,460	54,960
GRW-12	4,690	2,440	1,310	8,440
GRW-13	7,660	3,760	1,620	13,040
SHS-7	120	1,650	491	2,261
SHS-9	5,011	2,642	1,270	8,923
SHS-14	142,005	75,166	30,806	247,977
SHS-18	393	189	76	658
TOTAL VOLUME PUMPED IN GALLONS				993,085

GIANT REFINING COMPANY
BLOOMFIELD REFINERY
TOTAL VOLUME SUMMARY

SECOND QUARTER, 1996

Total Volume Of Water Recovered	993,085
Net Change In Storage Volume	203,698
Total Water Treated And Pumped To The Infiltration Gallery	789,387

GIANT
TRANSPORTATION

5764 US Highway 64
Farmington, New Mexico
87401

505-632-8006

AUG 14 1996

August 1, 1996

Mr. William Olson
Hydrogeologist
New Mexico Oil Conservation Division
Environmental Bureau
P. O. Box 2088
Santa Fe, NM 87504-2088

Dear Mr. Olson:

I have enclosed additions to Section 2 of Giant Refinery's first quarter of 1996 report showing the analytical results for the offsite wells. These results were inadvertently left out of the original report.

Please contact me if you have any questions.

Sincerely,

Deanna Miller

Deanna Miller
Administrative Manager

/dm

Enclosure

cc w/enc.: Mike Hardy-Giant
Kim Bullerdick-Giant
Jacque Cumbie-Giant
Stephanie Odell-BLM
Maura Hanning-EID
Chris Shuey-SWRIC
Jim Durrett-SJC
Herbert Gorrod-EPA
Denny Foust-OCD

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☑ Telephone ☐ Personal	Time 1440	Date 8/1/96

Originating Party	Other Parties
Bill Olson - Envir. Bureau	Tim Chney - Giant 632-8006

Subject

GBR 1/4 report

Discussion

Data from offsite SHS monitor wells is missing

He stated that Giant performed the work

Conclusions or Agreements

He will get missing info submitted ASAP

Distribution

File
Denny Foust - OCD Aztec

Signed Bill Olson

GIANT
TRANSPORTATION

5764 US Highway 64
Farmington, New Mexico
87401

505-632-8006

May 15, 1996

Mr. William Olson
Hydrogeologist
New Mexico Oil Conservation Division
Environmental Bureau
P. O. Box 2088
Santa Fe, NM 87504-2088

Dear Mr. Olson:

Enclosed you will find the quarterly report for Giant Refining Company's Bloomfield Refinery for the first quarter of 1996.

Please contact me if you have any questions.

Sincerely,

Tim Kinney
Remediation Project Manager

/dm

Enclosure

cc w/enc.: Mike Hardy-Giant
Kim Bullerdick-Giant
Jacque Cumbie-Giant
Stephanie Odell-BLM
Maura Hanning-EID
Chris Shuey-SWRIC
Jim Durrett-SJC
Herbert Gorrod-EPA
Denny Foust-OCD

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☑ Telephone ☐ Personal	Time 1510	Date 3/15/96
Originating Party		**Other Parties**
Bill Olson - Envir. Bureau		Tim Kinney - Giant

Subject

Giant Bloomfield Carbon Disposal

Discussion

Giant's 1/25/96 Carbon Disposal request did not contain analysis for TC metals.

Conclusions or Agreements

They will run analysis for metals and submit to OCD ASAP (approx 3 weeks)

Distribution

file
Denny Foust - OCD Aztec

Signed Bill Olson