GW - 32

GENERAL CORRESPONDENCE

YEAR(S):

JUL 95 → SEP 93

NEW MEXICO OIL CONSERVATION DIVISION

July 19, 1995

INTEROFFICE MEMORANDUM:

Mrs. Barbara Hoditscheck
NMED - HRMB

RE: Discharge Plan # GW 32
Monitoring/Sampling
Giant Ciniza Refinery

Dear Mrs. Hoditscheck:

The NMOCD at the request of Mike Chacon with HRMB on July 10, 1995 will outline the basic requirements of the groundwater discharge permit GW-32. All effluent and discharges are regulated under the permit GW-32, and all effluent such as the those associated with the API separator and Aeration lagoons are covered in the permit. The permit outlines sampling frequency and requirements. This permit GW-32 for Giant Ciniza will be up for renewal during the following year and NMOCD will be in contact with NMED during this process for input.

If you have any further questions please feel free to call me at (505)-827-7152.

Sincerely,

Roger C. Anderson
Environmental Bureau Chief, NMOCD

RCA/pws

CC: Mr. Lynn Shelton - Giant Ciniza Refinery.
certified mail no. Z-765-962-722

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

GARY E. JOHNSON
GOVERNOR

MARK E. WEIDLER
SECRETARY

EDGAR T. THORNTON, III
DEPUTY SECRETARY

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

July 13, 1995

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

Dear Mr. Stokes,

RE: Part A Permit Revision

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

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

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

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

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

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

Sincerely,

Benito J. Garcia
Chief, Hazardous and Radioactive Materials Bureau

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

GIANT
REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

July 6, 1995

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

Re: **Annual Groundwater Notification**
Permit No. NMD000333211-2

Dear Mr. Garcia:

Pursuant to Attachment G: Groundwater Monitoring Plan, 2.G. and H. of the indicated permit, Giant Refining Company - Ciniza submits the enclosed analytical and statistical data from the annual groundwater sampling event.

There are several significant items that should be noted. This was the first sampling event with the new dedicated pump system. The system worked flawlessly and significantly reduces the chance of contamination of groundwater samples. This is particularly evident in the absence of any volatiles in any of the samples.

Also significant is the overall reduction in chromium in SMW-3, SMW-4, and SMW-5. Giant is not sure if this is the result of the surging/redevelopment of all the predetection and detection wells or if it is the result of the dedicated pumps, which ostensibly could result in lower chrome values due to less movement of sampling equipment into and out of the well bores.

SMW-6 continues to show high levels of all metals (excluding lead) and electrical conductivity, as well as a decrease in pH, and confirms Giant's belief that the stainless steel casing in that well has become damaged. The damage could be a result of corrosion or from mechanical damage. Nevertheless, the water samples retrieved from SMW-6 are more similar to the water in the evaporation lagoons than what is normally observed within the Ciniza Sands.

The change in the analytical characteristics of the samples retrieved

from SMW-6 was first noted after the Fall, 1993 semi-annual sampling event. Graphs showing the various constituents are attached to illustrate the increase (or decrease in the case of pH) of those constituents. These increases are concurrent with renovation of the evaporation lagoons, which are adjacent to SMW-6. Although probably coincidental, it is conceivable that the earth moving activities may have exposed a recharge route from the evaporation lagoons to the SMW-6 completion zone.

Giant proposes to drill an offset to SMW-6, approximately 20 feet northwest and into the same sand lens, and abandon SMW-6 by plugging with a cement/bentonite slurry. The new well will be called SMW-6A. The drilling will be performed by a truck mounted rotary rig, using augers and coring constantly to insure that the well is completed in the same sand interval. The casing will be schedule 40 PVC with flush screw-type joints. A diagram of the proposed well bore is included with this letter. Please note that it is imperative that the new well be screened only across the Ciniza Sand in order to retrieve representative samples from that zone.

The indicator parameters for the detection wells once again show a significant statistical increase (Cochran's Approximation of the Behrens-Fisher Student's-T Test). Giant believes that this is a false positive, an inherent shortcoming of this statistical analysis technique with this type of very consistent data, as discussed with NMED on numerous occasions in the past, and proposes that the compliance sampling program not be initiated.

In summation, Giant requests NMED approval for the abandonment of SMW-6 and the replacement of that well with a new well to be identified as SMW-6A. Giant does not consider this to be a permit modification as it is a replacement in kind. Furthermore, Giant will appreciate a timely approval in order to facilitate the drilling and completion process prior to the required semi-annual sampling event which will occur in September or October.

Thank you for your consideration in this matter. Should you require additional information, please contact me at (505) 722-0227.

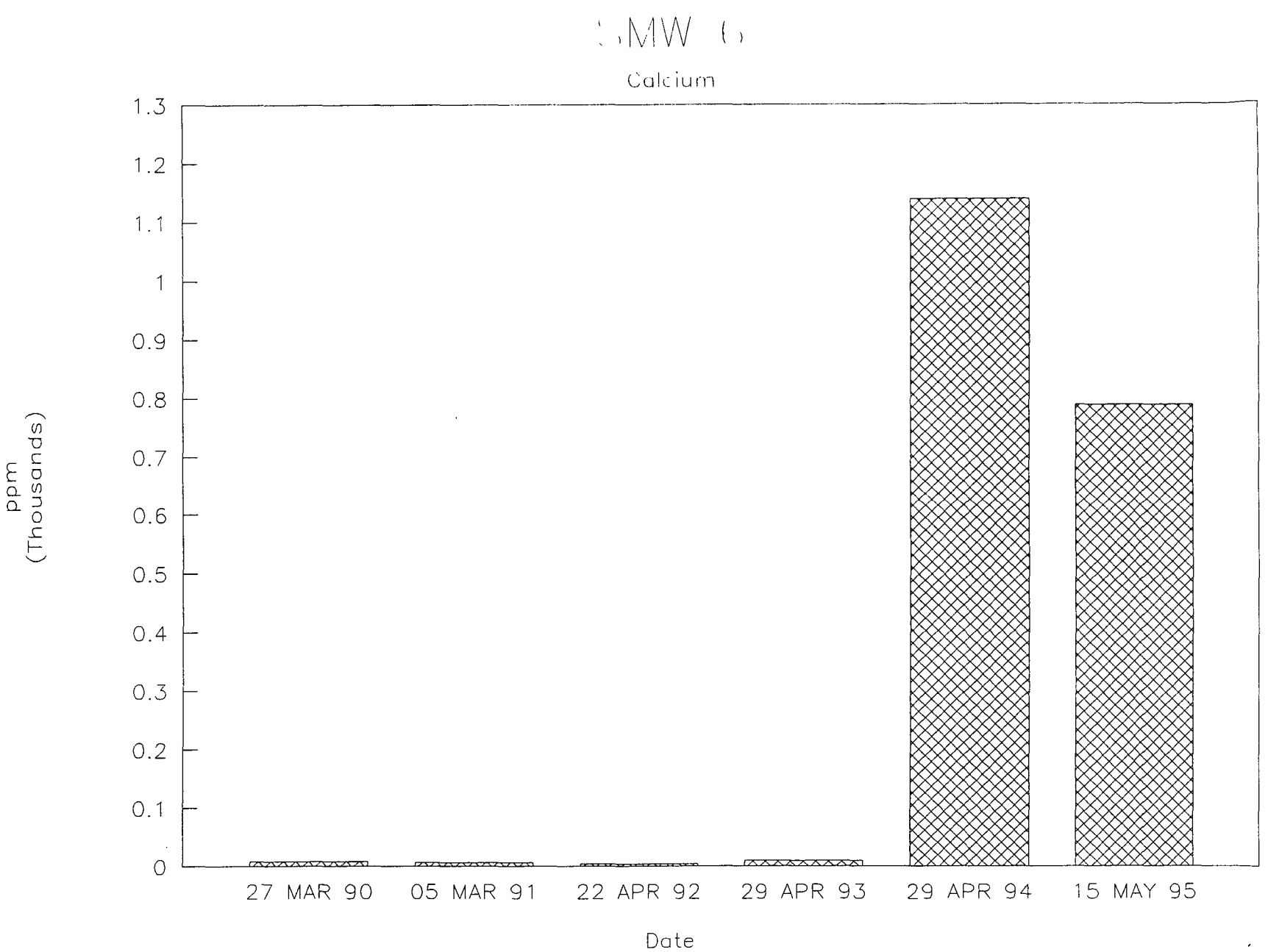
Sincerely,

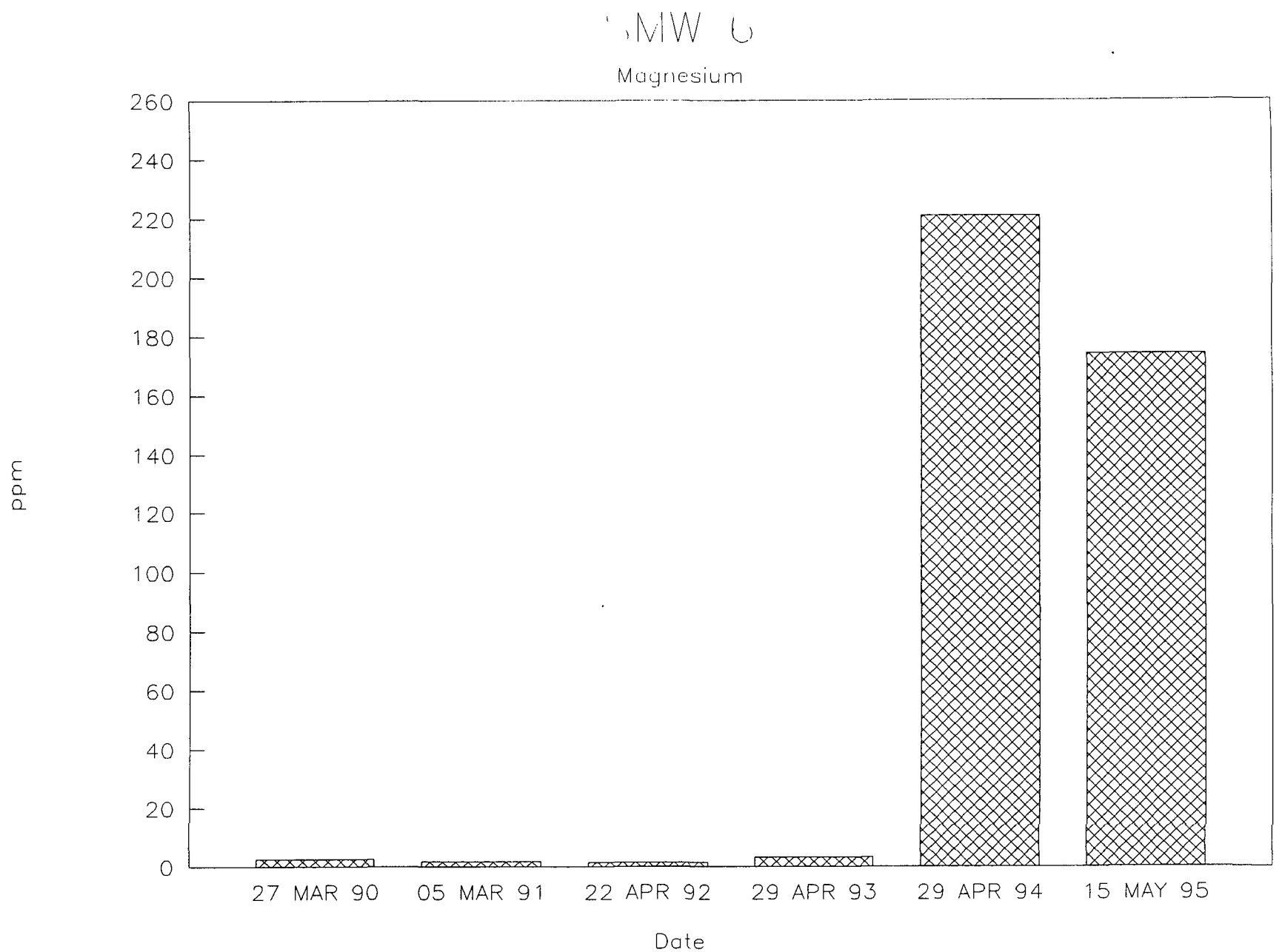
Lynn Shelton
Senior Environmental Coordinator
Giant Refining Company

TLS:sp

cc: David C. Pavlich, HSE Manager, Giant Refining Company
Kim Bullerdick, Corporate Counsel, Giant Industries Arizona, Inc.
Roger Anderson, Oil Conservation Division, Santa Fe, NM

(SRP)[WPDOCS\TLS\NMED.706]


MW 6
Calcium
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
ppm
(Thousands)
27 MAR 90
05 MAR 91
22 APR 92
29 APR 93
29 APR 94
15 MAY 95
Date


MW 6
Magnesium
260
240
220
200
180
160
140
120
100
80
60
40
20
0
ppm
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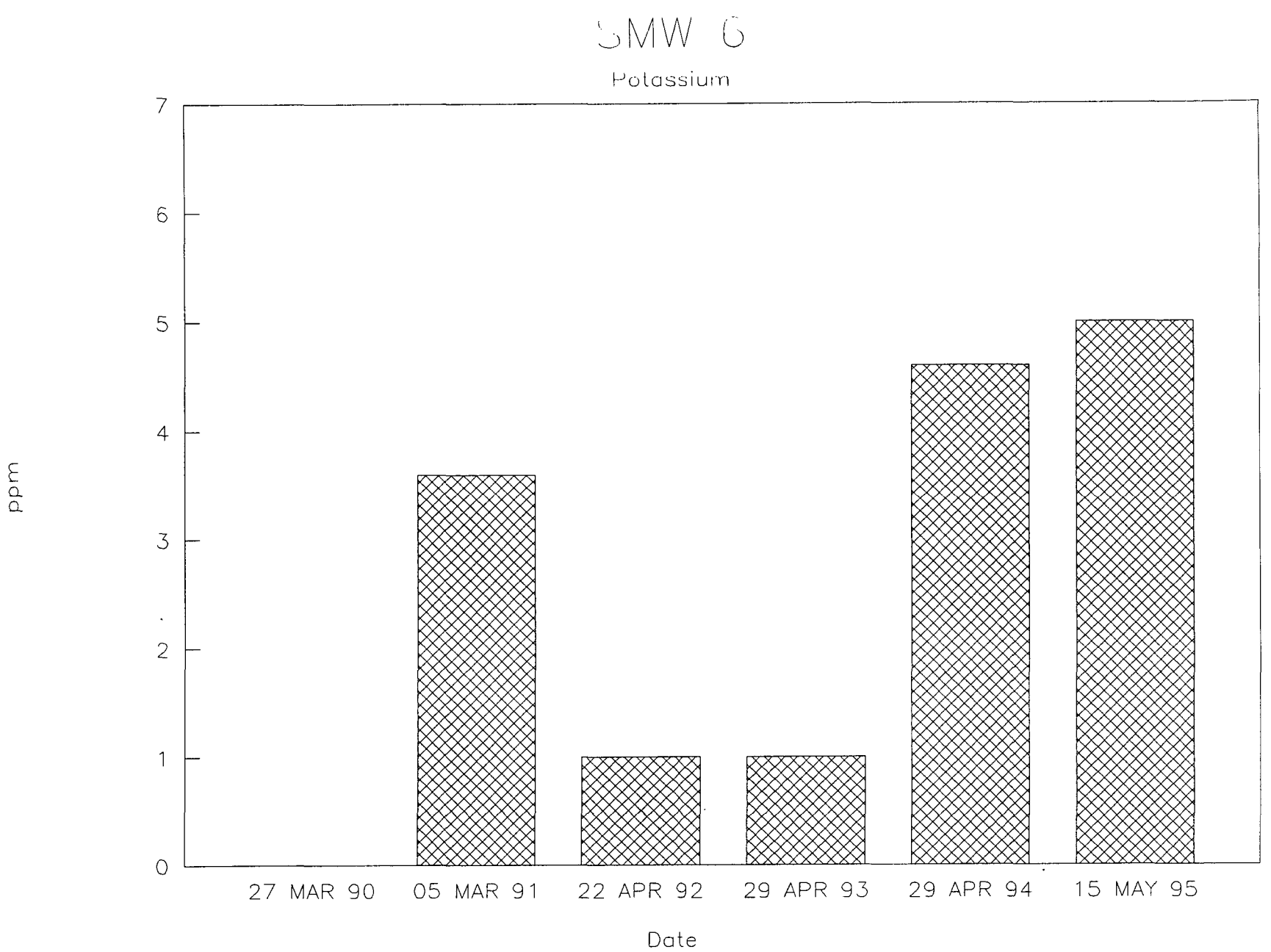
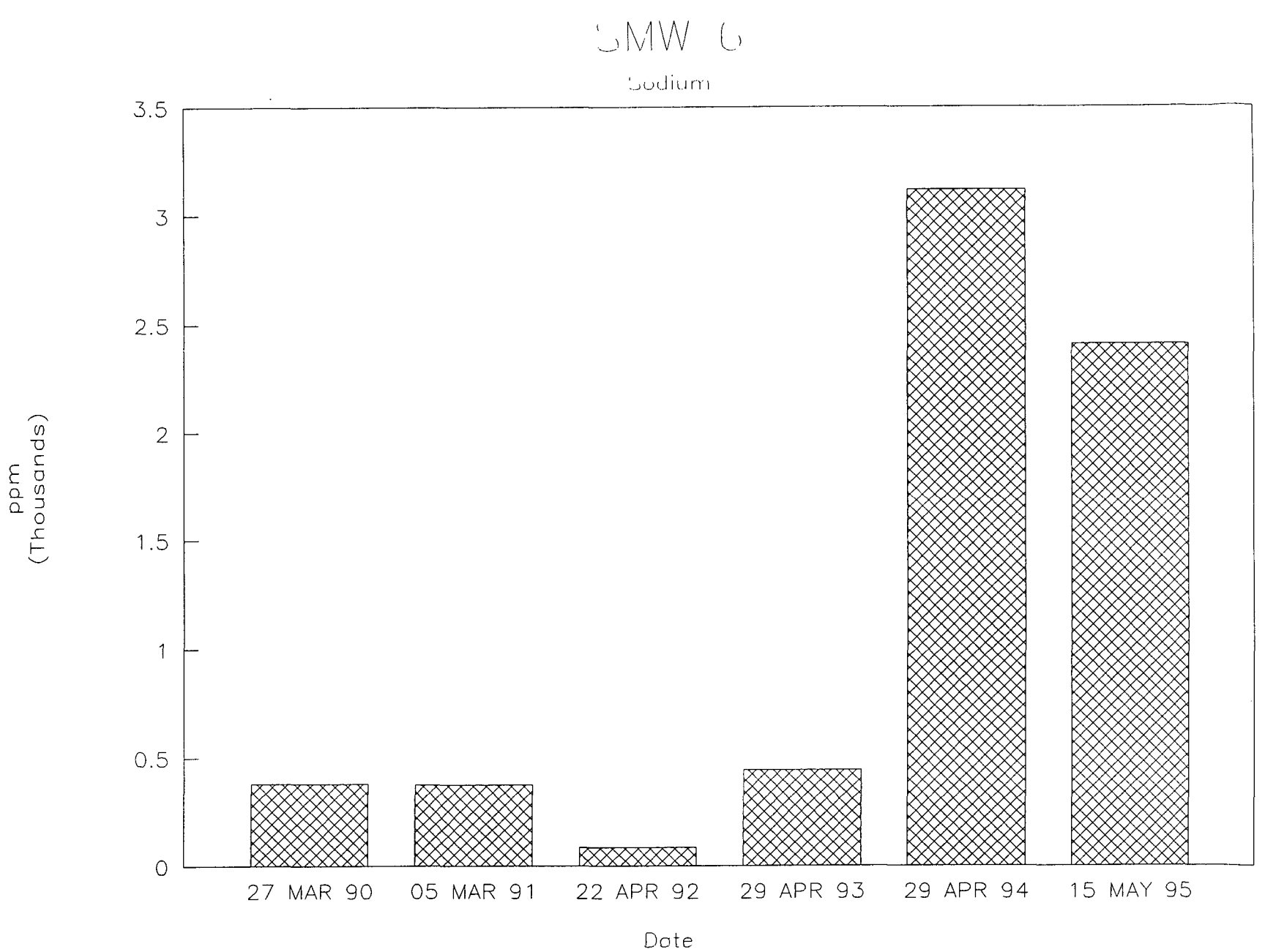
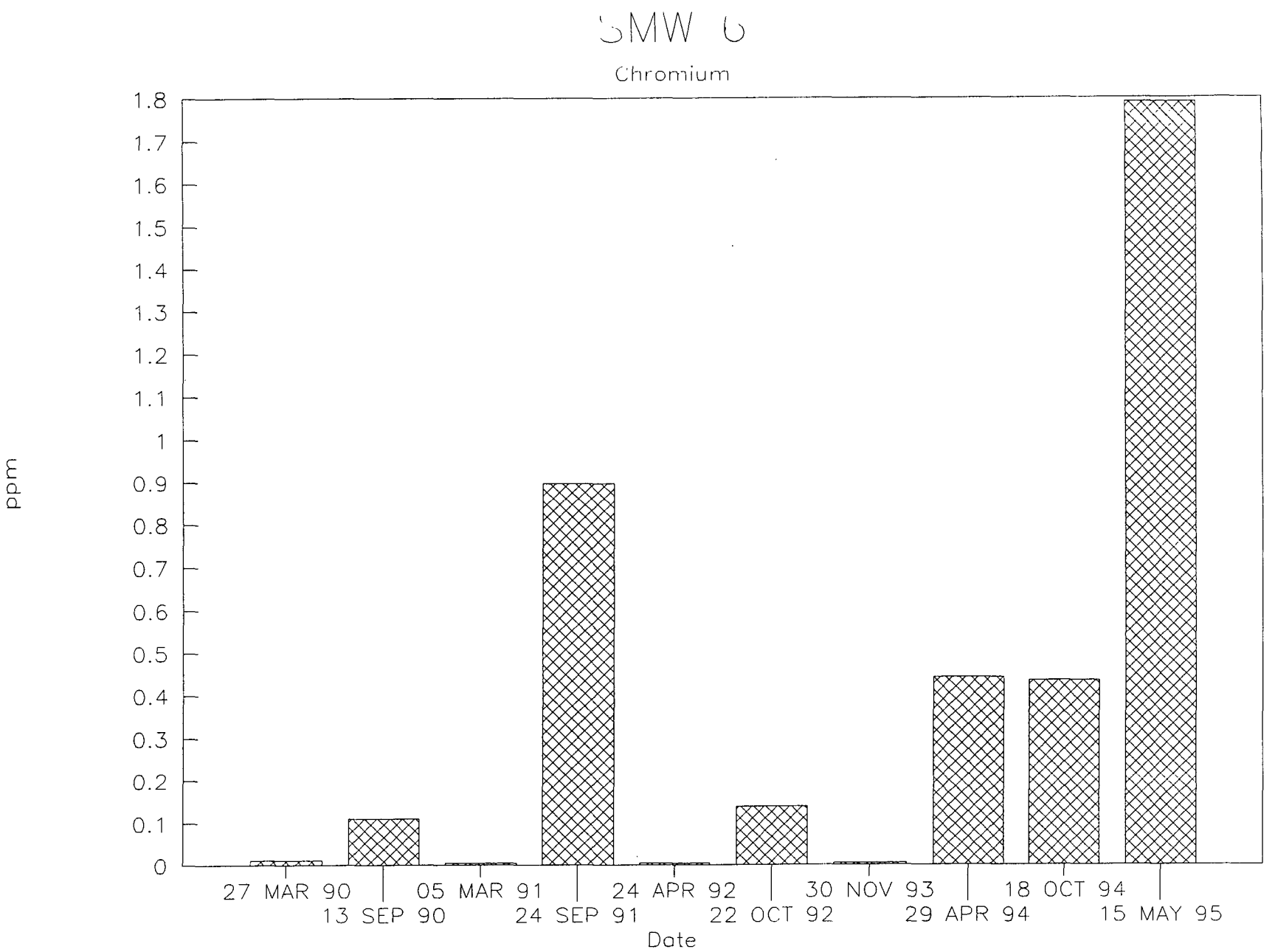
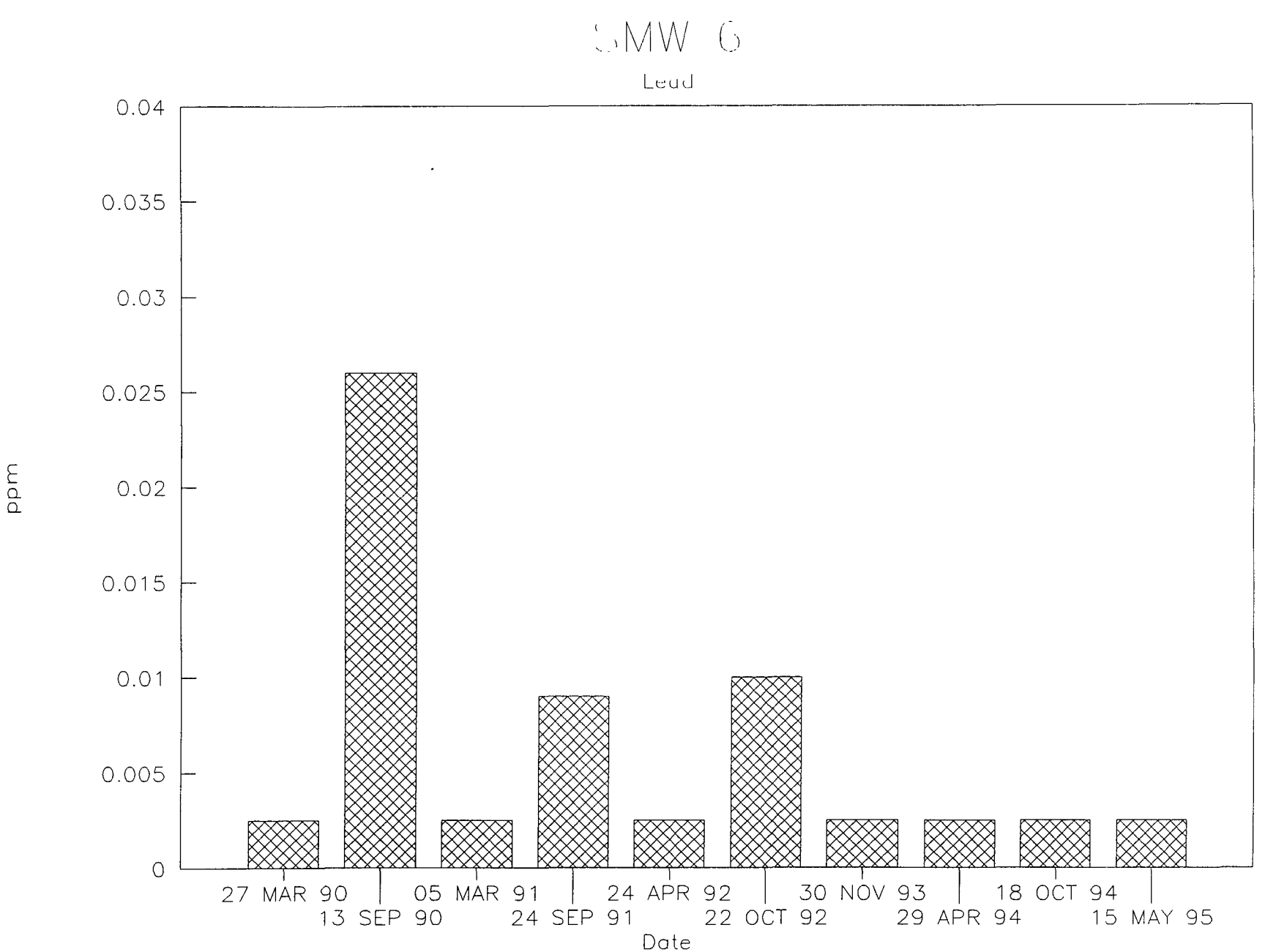
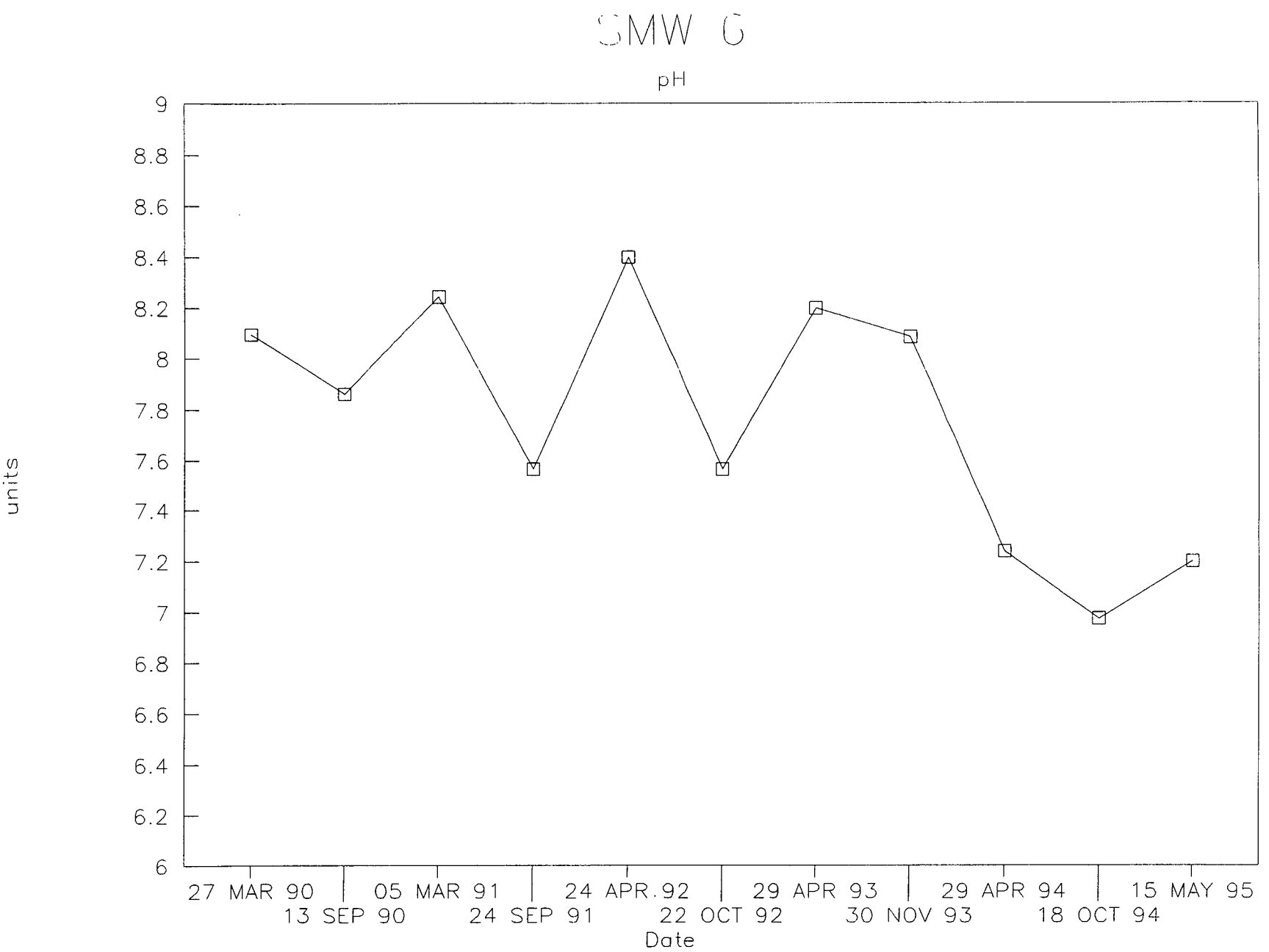
05 MAR 91
22 APR 92
29 APR 93
29 APR 94
15 MAY 95
Date

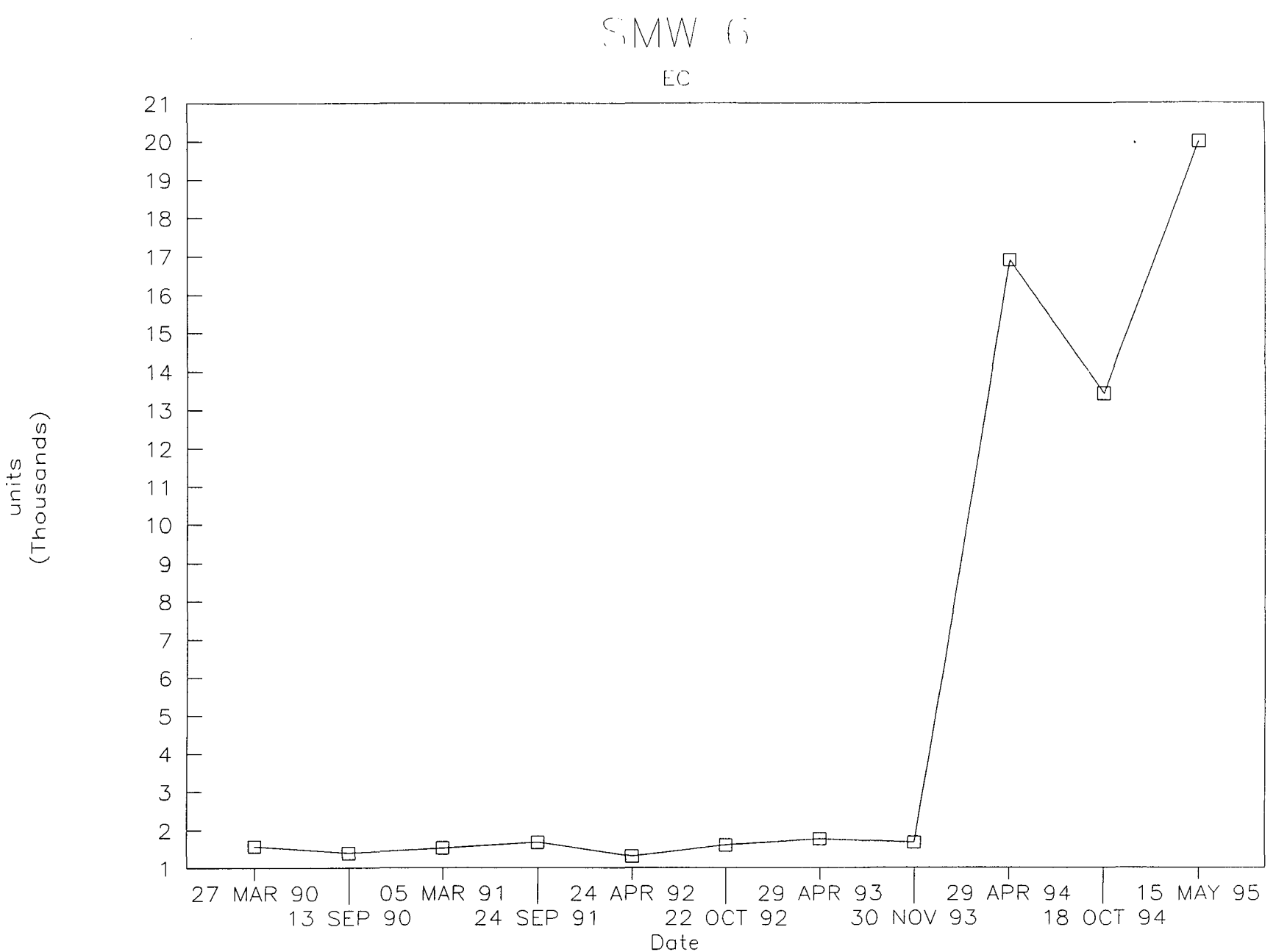

SMW 6
Potassium
7
6
5
4
3
2
1
0
ppm
27 MAR 90
05 MAR 91
22 APR 92
29 APR 93
29 APR 94
15 MAY 95
Date


SMW 6
Sodium
3.5
3
2.5
2
1.5
1
0.5
0
ppm
(Thousands)
27 MAR 90
05 MAR 91
22 APR 92
29 APR 93
29 APR 94
15 MAY 95
Date


SMW 6
Chromium
ppm
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
27 MAR 90
13 SEP 90
05 MAR 91
24 SEP 91
24 APR 92
22 OCT 92
30 NOV 93
29 APR 94
18 OCT 94
15 MAY 95
Date

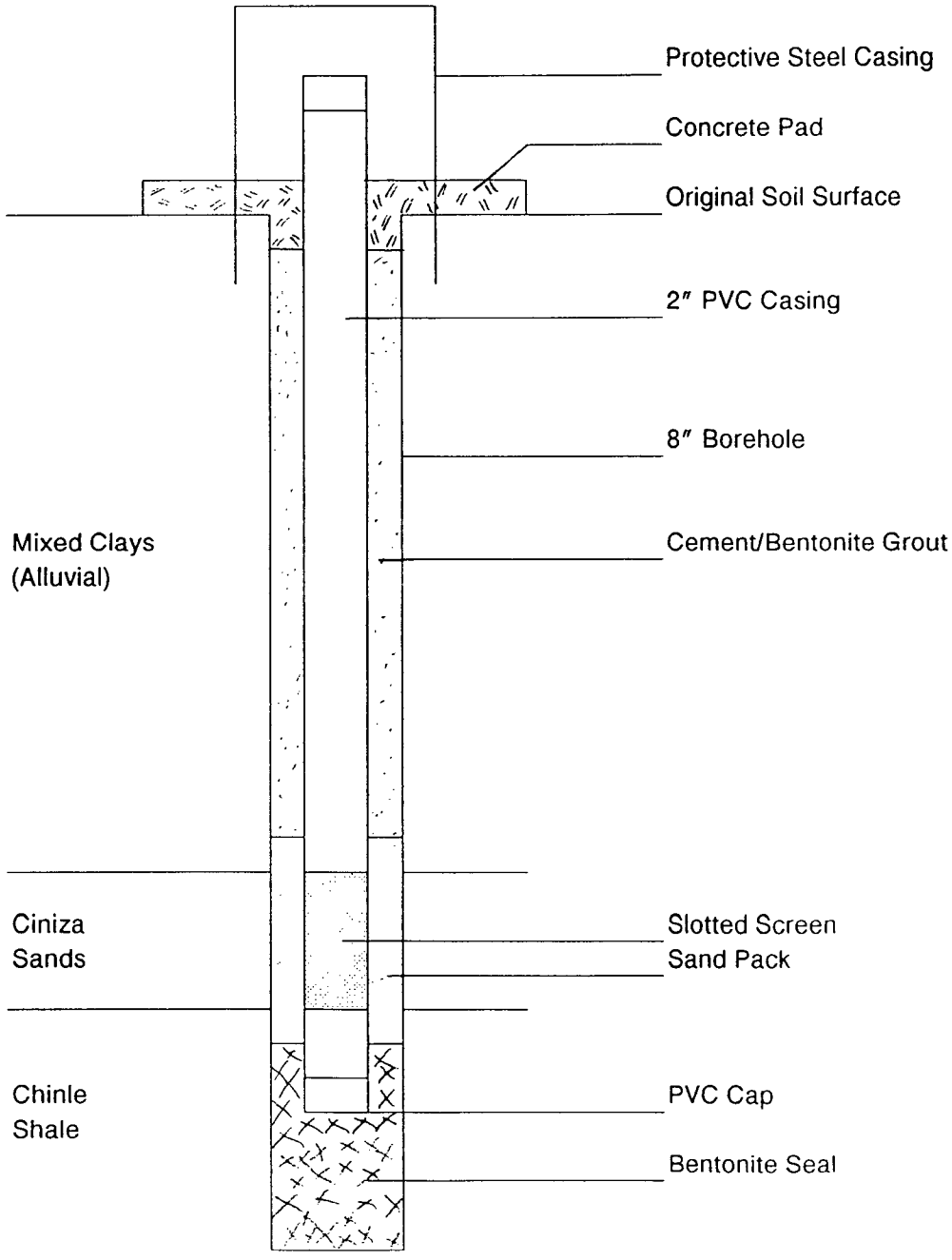

SMW 6
Lead
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
ppm
27 MAR 90
13 SEP 90
05 MAR 91
24 SEP 91
24 APR 92
22 OCT 92
30 NOV 93
29 APR 94
18 OCT 94
15 MAY 95
Date


SMW 6
pH
9
8.8
8.6
8.4
8.2
8
7.8
7.6
7.4
7.2
7
6.8
6.6
6.4
6.2
6
units
27 MAR 90
13 SEP 90
05 MAR 91
24 SEP 91
24 APR 92
22 OCT 92
29 APR 93
30 NOV 93
29 APR 94
18 OCT 94
15 MAY 95
Date


SMW 6
EC
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
units
(Thousands)
27 MAR 90
13 SEP 90
05 MAR 91
24 SEP 91
24 APR 92
22 OCT 92
29 APR 93
30 NOV 93
29 APR 94
18 OCT 94
15 MAY 95
Date

GIANT REFINING – CINIZA

PROPOSED SMW-6A WELL DIAGRAM



TLS/95

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

June 14, 1995

CERTIFIED MAIL
RETURN RECEIPT NO. Z-765-962-696

Mr. John J. Stokes
Giant Refining - Ciniza Refinery
Route 3, Box 7
Gallup, NM 87301

RE: Approval of Landfarm
Discharge Plan GW-032 Modification
Giant Ciniza Refinery
McKinley County, New Mexico

Dear Mr. Stokes:

The **discharge plan modification GW-032 for the Giant Ciniza Refinery Landfarm** located in Section 28 and Section 33, Township 15 North, Range 15 West, NMPM, McKinley County, New Mexico, **is hereby approved** under the conditions contained in the enclosed attachment. The discharge plan modification consists of the landfarm application and its contents dated April 12, 1995.

The discharge plan modification application was submitted pursuant to Section 3-106 of the New Mexico Water Quality Control Commission Regulations. Please note Sections 3-109.E and 3-109.F which provide for possible future amendments or modifications of the plan. Please be advised that the approval of this plan does not relieve Giant Refining Co. of liability should the operations associated with this facility result in pollution of surface water, ground water, or the environment. In additon, OCD approval does not relieve Giant of responsibility for compliance with any other Federal, State, or Local laws and/or regulations.

Please be advised that all exposed pits, including lined pits and open top tanks (tanks exceeding 16 feet in diameter), shall be screened, netted, or otherwise rendered nonhazardous to wildlife including migratory birds.

Please note that Section 3-104 of the regulations requires that "When a plan has been approved, discharges must be consistent with the terms and conditions of the plan." Pursuant to Section 3-107.C you are required to notify the Director of any facility expansion, production increase, or process modification that would result in any change in the discharge of water quality or volume.

This modification approval to the existing discharge plan will expire August 14, 1996, and you should submit an application for renewal in ample time before this date.

The discharge plan modification for the Giant Refining Co. Ciniza GW-032 is subject to the WQCC Regulation 3-114 discharge plan modification fee. Every billable facility submitting a discharge plan for modification shall be assessed a fee equal to the filing fee of fifty dollars ($50) plus the flat fee of three-thousand, nine-hundred and ten dollars ($3910) for Refineries filing for modification of existing discharge plans.

The filing fee and flat fee for the approved discharge plan modification has not been received by the OCD. The checks should be submitted to the **NMED - Water Quality Management** through the NMOCD office in Santa Fe, New Mexico.

On behalf of the staff of the Oil Conservation Division, I wish to thank you and your staff for your cooperation during this discharge plan review.

Sincerely,

William J. LeMay
Director

WJL/pws
Attachment

XC : Denny Foust

ATTACHMENT TO OCD PERMIT APPROVAL
Giant Refining Co. Ciniza Refinery
(June 14, 1995)

LANDFARM OPERATION

1. All operating procedures where not specified below will be adhered to as outlined in the application as submitted by Mr. John Stokes with Giant Refining dated April 12, 1995.

2. The facility will be fenced and have a sign at the entrance. The sign will be legible from at least 50 feet and will contain the following information: a) name of the facility, b) the permit number GW-032, c) location by section, township and range, and d) emergency phone number.

3. An adequate berm will be constructed and maintained to prevent runoff and runon for that portion of the facility containing contaminated soils.

4. All contaminated soils received at the facility will be spread and disked within 72 hours of receipt.

5. Soils will be spread in six inch lifts or less.

6. Soils will be disked a minimum of once every two weeks to enhance biodegradation of the contaminants.

7. Successive lifts of contaminated soils will not be spread until a laboratory measurement of Total Petroleum Hydrocarbons (TPH) in the previous lift is less than 100 parts per million (ppm), and the sum of all aromatic hydrocarbons (BTEX) is less than 50 ppm, and the benzene concentration is less than 10 ppm. Comprehensive records of laboratory analysis and the sampling locations will be maintained at the facility. Authorization from the OCD will be obtained prior to the spreading of successive lifts and/or removal of the remediated soils.

8. Only oilfield wastes regulated by the OCD which are exempt from RCRA Subtitle C regulations or non-hazardous by characteristic testing will be accepted at the facility. Solids from operations not currently exempt under RCRA Subtitle C or mixed exempt/non-exempt solids will be tested for the appropriate hazardous Characteristics and submitted to OCD for approval prior to acceptance. Comprehensive records of all laboratory analyses and sample locations will be maintained by the Giant Refining Co.

9. Moisture will be added as necessary to enhance biodegradation and to control blowing dust. There will be no ponding, pooling or runoff allowed. Any ponding of precipitation will be removed within seventy-two (72) hours of discovery.

10. Enhanced bio-remediation through the application of microbes (bugs) and/or fertilizers will only be permitted after prior approval from the OCD. Request for the application of microbes must include the location of the area designated for the bioremediation program, composition of additives, and the method, amount and frequency of application.

11. No free liquids or soils with free liquids will be accepted at the facility.

12. Comprehensive records of all materials received at the facility will be maintained at the facility. The records for each load will include: a) the origin, b) date received, c) quantity, d) exempt or non-exempt status and analyses for hazardous constituents if required, and e) exact cell location and any addition of microbes, moisture, fertilizers, etc.

TREATMENT ZONE MONITORING

1. One (1) background sample will be taken from the center portion of the landfarm two (2) feet below the native ground surface. The sample will be analyzed for total petroleum hydrocarbons (TPH), general chemistry, and heavy metals using EPA approved methods.

2. A treatment zone not to exceed three (3) feet beneath the landfarm will be monitored. A minimum of one random soil sample will be taken from each cell, with no cell being larger than five acres, six (6) months after the first contaminated soils are received in the cell and then quarterly thereafter. The sample will be taken at two (2) to three (3) feet below the native ground surface.

3. The soil samples will be analyzed using approved EPA methods for TPH and BTEX quarterly, and general chemistry and heavy metals annually.

4. After obtaining the soil samples the bore holes will be filled with an impermeable material such as bentonite cement.

REPORTING

1. Analytical results from the treatment zone monitoring will be submitted to the OCD Santa Fe Office within thirty (30) days of receipt from the laboratory.

2. The OCD will notified of any break, spill, or any other circumstance that could constitute a hazard or has potential to result in contamination in accordance with OCD Rule 116 and WQCC section 1-203.

CLOSURE

The Giant will notify the OCD upon cessation of operations. Upon cessation of landfarming operations for six (6) consecutive months, the Giant will complete cleanup of constructed facilities and restoration of the facility site within the following six (6) months, unless an extension is granted by the Director of the OCD. When the facility is to be closed no new material will be accepted. Existing soils will be remediated until they meet the OCD standards in effect at the time of closure. The area will then be reseeded with indigenous grasses and allowed to return to its natural state. Closure will be pursuant to all OCD requirements in affect at the time of closure.

GIANT REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

April 12, 1995

Mr. Roger Anderson
Environmental Bureau Chief
Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87504-2088

RECEIVED
APR 18 1995
Environmental Bureau
Oil Conservation Division

VIA: CERTIFIED MAIL #Z 046 325 012
RETURN RECEIPT REQUESTED

RE: Giant Refining - Ciniza
NMOCD Application for Surface Waste Disposal Facility

Dear Mr. Anderson:

Enclosed please find a completed and signed original application for a surface waste disposal facility for Giant's Ciniza Refinery. Giant would like to establish a land treatment facility for the application and biological degradation of nonhazardous oily wastes and operate the facility in accordance with NMOCD guidelines for such facilities.

If you or your staff have any questions regarding this matter, please contact Walter Toomer of Ciniza's Health, Safety, & Environmental group at (505) 722-0212.

Sincerely,

John J. Stokes
Refinery Manager

JJS/wdt

Enclosure: Application for Waste Disposal Facility

cc: Mr. Denny Foust (w/o encl)
Deputy Oil & Gas Inspector
Oil Conservation Division
1000 Reo Brazos Rd.
Aztec, NM 87410

D. Pavlich (w/o encl)
L. Shelton (w/o encl)
OCD-LTA File (w/ encl)

GIANT REFINING CO.
Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

April 12, 1995

Mr. Roger Anderson
Environmental Bureau Chief
Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87504-2088

VIA: CERTIFIED MAIL #Z 046 325 012
RETURN RECEIPT REQUESTED

RE: Giant Refining - Ciniza
NMOCD Application for Surface Waste Disposal Facility

Dear Mr. Anderson:

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If you or your staff have any questions regarding this matter, please contact Walter Toomer of Ciniza's Health, Safety, & Environmental group at (505) 722-0212.

Sincerely,

John J. Stokes
Refinery Manager

JJS/wdt

Enclosure: Application for Waste Disposal Facility

cc: Mr. Denny Foust (w/o encl)
Deputy Oil & Gas Inspector
Oil Conservation Division
1000 Rio Brazos Rd.
Aztec, NM 87410

D. Pavlich (w/o encl)
L. Shelton (w/o encl)
OCD-LTA File (w/ encl)

APPLICATION FOR SURFACE WASTE DISPOSAL FACILITY

PREPARED FOR:

State of New Mexico
Energy, Minerals, and Natural Resources
Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87501

SUBMITTED BY:

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

Revised 5/93

State of New Mexico
Energy, Minerals and Natural Resources Department
OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, NM 87501

APPLICATION FOR SURFACE WASTE DISPOSAL FACILITY

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

☐ Commercial ☒ Centralized

I. Type: ☐ Produced Water ☐ Drilling Muds ☐ Other _____
☒ Solids/Landfarm ☐ Treating Fluids

II. OPERATOR: Giant Refining Company

ADDRESS: Route 3, Box 7, Gallup, NM 87301

CONTACT PERSON: David C. Pavlich PHONE: 505/722-3833

III. LOCATION: S/4 N3/4 Section 28 & 33 Township 15N Range 15W
Submit large scale topographic map showing exact location.

* SEE ATTACHMENT A.

IV. IS THIS AN EXPANSION OF AN EXISTING FACILITY? ☐ Yes ☒ No

V. Attach the name and address of the landowner of the disposal facility site and landowners of record within one-half mile of the site.
* SEE ATTACHMENT B.

VI. Attach discription of the facility with a diagram indicating location of fences, pits, dikes, and tanks on the facility.
* SEE ATTACHMENT C.

VII. Attach detailed engineering designs with diagrams prepared in accordance with Division guidelines for the construction/installation of the following: pits or ponds, leak-detection systems, aerations sytems, enhanced evaporation (spray) systems, waste treating systems, security systems, and landfarm facilities.
* SEE ATTACHMENT D.

VIII. Attach a contingency plan for reporting and clean-up of spills or releases.
* Reference OCD Discharge Plan GW-32 Part 8.0 (ATTACHMENT E).

IX. Attach a routine inspection and maintenance plan to ensure permit compliance.
* SEE ATTACHMENT F.

X. Attach a closure plan.
* SEE ATTACHMENT G.

XI. Attach geological/hydrological evidence demonstrating that disposal of oil field wastes will not adversely impact fresh water. Depth to and quality of ground water must be included.
* Reference OCD Discharge Plan GW-32 Part 4.0 (ATTACHMENT E).

XII. Attach proof that the notice requirements of OCD Rule 711 have been met (Commercial facilities only).
* NOT APPLICABLE

XIII. Attach a contingency plan in the event of a release of H_2S.
* NOT APPLICABLE TO LANDFARM ACTIVITIES.

XIV. Attach such other information as necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.
* NOT REQUIRED.

XV. CERTIFICATION

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

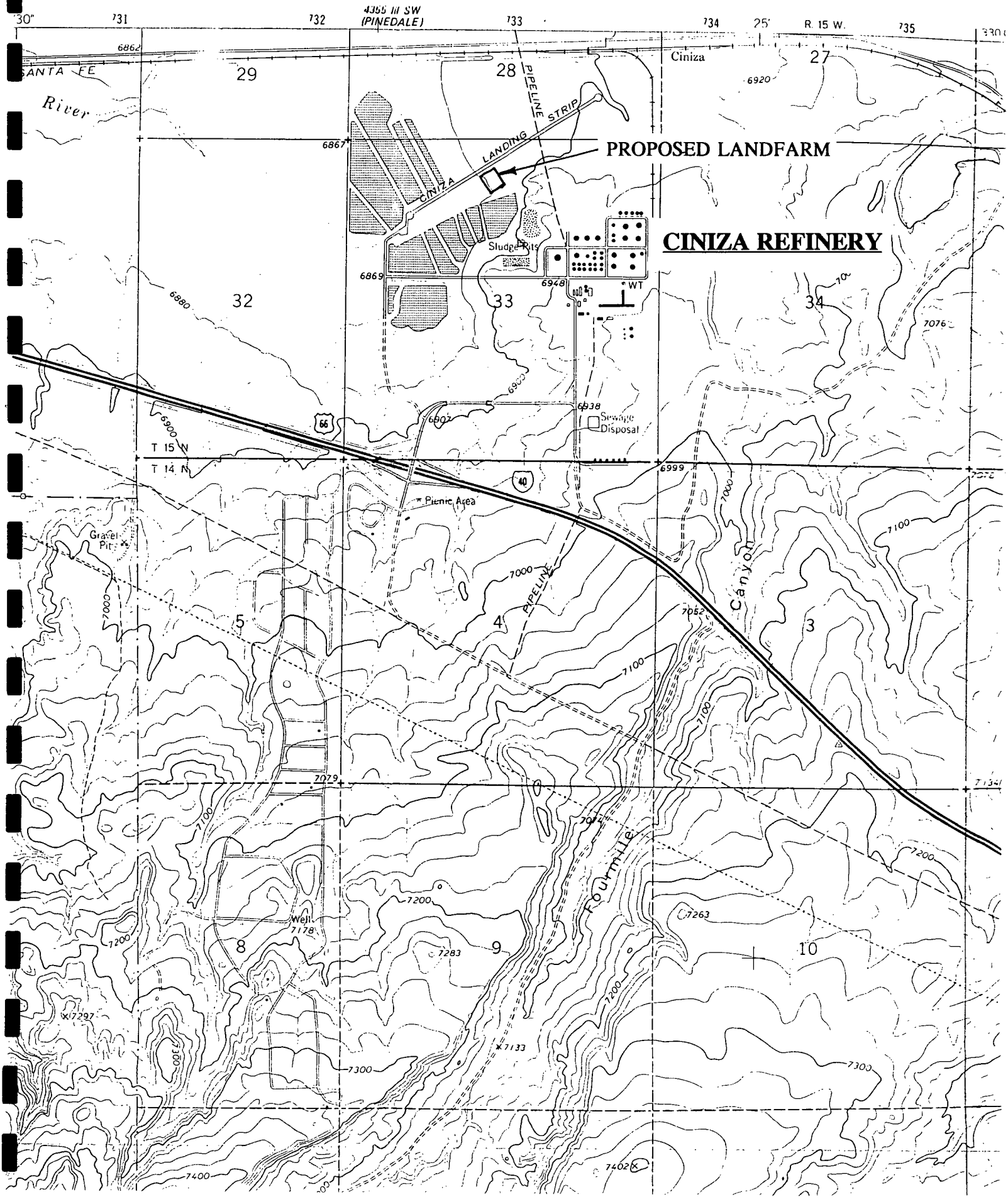
Name: John Stokes Title: Refinery Manager

Signature: John Stokes Date: 4/12/95

DISTRIBUTION: Original and one copy to Santa Fe with one copy to appropriate Division District Office.

ATTACHMENT A

USGS Quadrangle


PROPOSED LANDFARM
CINIZA REFINERY
Ciniza
SANTA FE
River
PIPELINE
STRIP
LANDING
CINIZA
Sludge Pits
WT
Sewage Disposal
Picnic Area
Gravel Pit
Well
T 15 N
T 14 N
R. 15 W.
Canyon
Fourmile
PIPELINE
29
28
27
32
33
34
5
4
3
8
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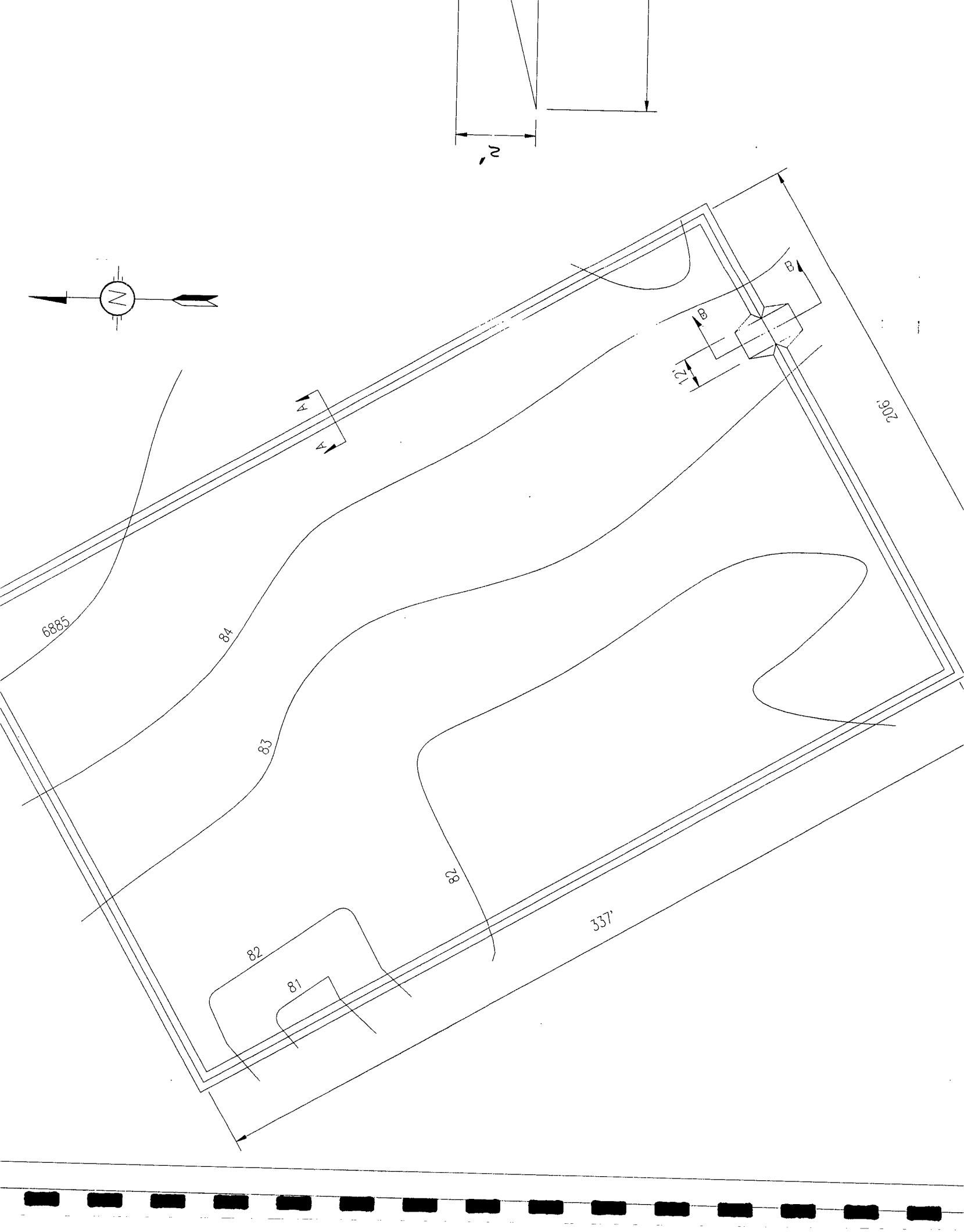
10
66
40

ATTACHMENT D

Landfarm Plan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A
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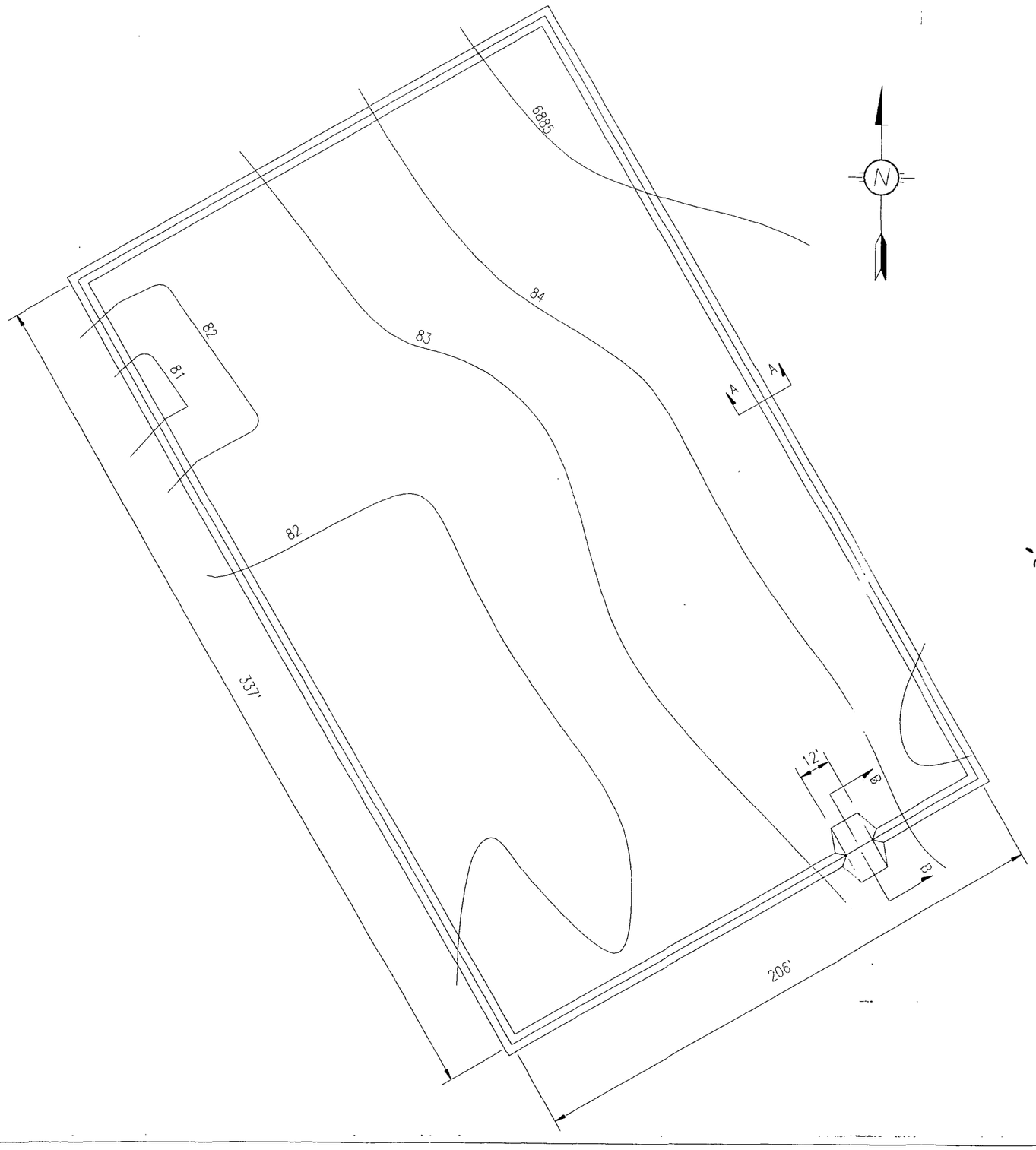
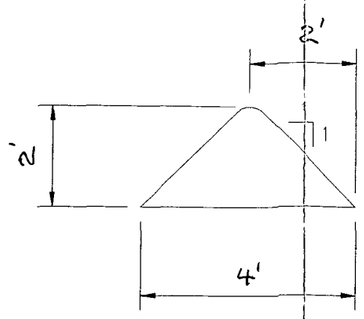
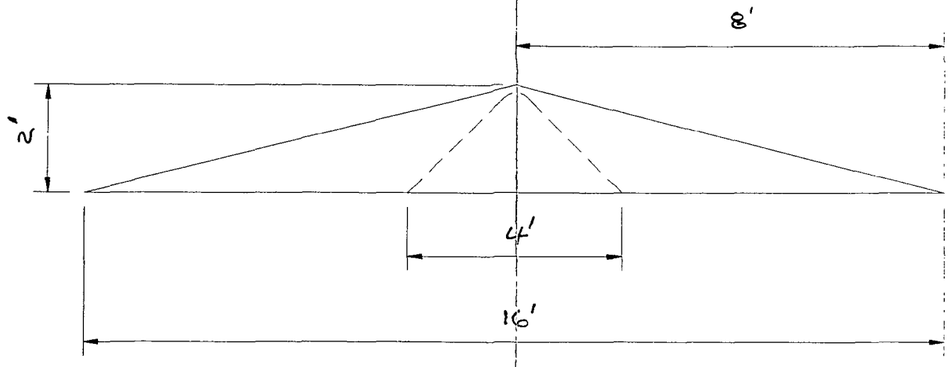
B
B
12'
206'
337'
6885
84
83
82
81
82





SECTION A–A



SECTION B–B

GIANT

CINIZA REFINERY — REFINING CO A DIVISION OF GIANT INDUSTRIES — GALLUP NEW MEXICO

LAND TREATMENT AREA
CONTAINMENT DIKE

MARK	DATE	DESCRIPTION	BY	APRVD
REVISIONS				

SCALE: NONE	APRVD		
DRN BY: SPS	480		REV
DATE: 10-31-94	DWG NO.	OCD-LTA	0

ATTACHMENT E

OCD Discharge Plan GW-32

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

August 21, 1992

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

CERTIFIED MAIL
RETURN RECEIPT NO:P-667-242-143

Mr. Lynn Shelton
Giant Refining Company
Route 3, Box 7
Gallup, New Mexico 87301

RE: Discharge Plan GW-32
Ciniza Refinery
McKinley County, New Mexico

Dear Mr. Shelton:

The modification of groundwater discharge plan GW-32 for the Giant Refining Company Ciniza Refinery located in the S/4, Section 28, and the N 3/4, Section 33, Township 15 North, Range 15 West, NMPM, McKinley County, New Mexico **is hereby approved.** The discharge plan modification consists of the discharge plan as renewed on August 14, 1991 and the modification application dated July 24, 1992.

The discharge plan modification was submitted pursuant to Section 3-107.C of the Water Quality Control Commission Regulations. It is approved pursuant to section 3-109.A. Please note Section 3-109.F., which provides for possible future amendment of the plan. Please be advised that approval of this plan does not relieve you of liability should your operation result in actual pollution of surface or ground waters or the environment which may be actionable under other laws and/or regulations.

Please be advised that all exposed pits, including lined pits and open top tanks (tanks exceeding 16 feet in diameter) shall be screened, netted or otherwise rendered nonhazardous to wildlife including migratory birds.

Please note that section 3-104 of the regulations requires that "When a plan has been approved, discharges must be consistent with the terms and conditions of the plan". Pursuant to Section 3-107.c. you are required to notify the Director of any facility expansion, production increase, or process modification that would result in any change in the discharge of water quality or volume.

Pursuant to Section 3-109.g.4., the renewed plan approval was for a period of five years. The approval will expire August 14, 1996 and modification of a plan during its term does not alter the expiration date.

The discharge plan modification is a minor modification and public notice is not required. Since the modification does not appreciably alter the discharge quality or quantity, the Director has waived the modification fee.

On behalf of the staff of the Oil Conservation Division, I wish to thank you and your staff for your cooperation during this discharge plan modification review.

Sincerely,

William J. LeMay
Director

WJL/rca

xc: Denny Foust - OCD Aztec Office

CINIZA REFINERY

Monitoring and Reporting Schedule

The schedule below summarizes the routine monitoring and reporting agreed to be performed by Giant as part of the discharge plan for the Ciniza Refinery (GW-32). While this summary is meant to be inclusive, if any differences occur between the schedule presented here and presented in the discharge plan, the discharge plan (including subsequent correspondence) is the controlling document.

Monitoring	Sampling Parameters	Reporting Frequency	Discharge Plan Reference
API separator effluent quarterly at the two Weir locations for four consecutive quarters, thence bi-annually coincidentally with high-flow periods. Neutralization stream measured on same schedule.	Flow rate of discharge	Quarterly reports during first year on same schedule as RCRA results to NMEID; annual thereafter with submittal to OCD within 30 days of receipt and verification.	Giant's response to OCD comments, p. 11, dated 2/3/86; p. 2, Giant's letter dated 4/30/86; p. 4, Giant's lette dated 6/26/86
Aerated lagoon input for four quarters, thence annually.	BOD	Same as above	p. 2, Giant's letter dated 4/30/86; and p. 4, Giant's letter dated 6/26/86
Evaporation ponds inspected monthly for freeboard, fluid levels, and seepage. Inspection also after 10-year precipitation event (1.8"/24 hrs.) as measured at refinery.	None	None. Refinery records kept on monthly inspections, and on precipitation events exceeding 1.8" per 24 hrs.	p. 3, Giant's letter dated 4/30/86; and p. 4, Giant's letter dated 6/26/86
MW-Series monitor wells sampled January and July, as per RCRA. MW-Series sampled for four consecutive quarters, thence January and July, as per RCRA.	All approved RCRA (including contuctivity , TOC, TOX, and pH)	Copies of RCRA MW and SMW results sent to OCD on same as to NMEID.	Giant's response to OCD comments, p. 11, dated 2/3/86; p. 3, Giant's letter dated 4/3/86
MW-Series monitor wells July, 1986 and January 1987, thence annually at time of RCRA sampling.	sodium, potassium, calcium, magnesium, chloride, sulfate, carbonate-bicarbonate, TDS, pH, and conductance	Submit 1986 results with January 1987 results by March 1, 1987. Thereafter annual results submitted within 30 days of analysis receipt verification.	Giant's response to OCD comments, p. 11, dated 2/3/86; p. 3, Giant's letter dated 4/3/86; p. 4, Giant's letter dated 6/26/86
SMW-Series monitor wells April and July, 1986, January, 1987, thence annually at time of RCRA sampling	sodium, potassium, calcium, magnesium, chloride, sulfate, carbonate-bicarbonate, TDS, pH, conductance, and volatile aromatic hydrocarbons (BTX)	Same as immediately above	Same as immediately above
Monitor Wells OW1, OW2 and OW3, sampled annually	Same as immediately above	Submitted within 30 days of analysis receipt and verification	p. 3, Giant's letter dated 4/3/86; p. 4 Giant's letter dated 6/26/86

FROM AUGUST 1986 LETTER TO OCD.

MONITOR WELLS TO BE SAMPLED, DATES AND ANALYSIS

MW - 1, 2, 3, 4, 5 - April and October

April Samples - Cl, Fe, Mn, Mg, Na, K, Ca, SO_4, Carb./Bi Carb., TDS, Phenols, pH(4), Spec. Cond. (4), TOC, TOX.

October Samples-pH(4), Spec. Cond.(4), TOC(4), TOX(4)

Results to be send to EID and OCD on an annual basis by March 1, the following year.

SMW - 4, 5, 6 and OW 4, 24 - April and October

Sample both dates - Pb, Cr, pH, Spec. Cond., TOC, TOX, (GC/MS Pergible screen may be substituted for TOC, TOX)

Results to be sent to EID on an annual basis by March 1, the following year.

SMW - 1, 2, 3, 4, 5, 6 and OW - 1, 2, 3 - January

Samples - Na, K, Ca, Mg, Cl, SO_4, Carb./Bi Carb., TDS pH, Spec. Cond., Aeromatic H.C. (BTEX).

Results to be sent to OCD within 30 days of verification.

FOUND IN FILE. NO DATE OR REFERANCE TO DATE.

DISCHARGE PLAN APPLICATION FOR
GIANT REFINING COMPANY
CINIZA REFINERY
GALLUP, NEW MEXICO

GW-32
OCD

November 21, 1985

Prepared for:

Giant Industries, Inc.
7227 North 16th Street
Phoenix, Arizona 85020

Prepared by:

Geoscience Consultants, Ltd.
500 Copper Avenue, N.W., Suite 325
Albuquerque, New Mexico 87102

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C Aquifer-Test Data and Analyses

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1-202.B

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3-106.C

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2.
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6.
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8.

3-107.A

1.
2.
3.
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9.
10.
11.

REGULATORY INDEX

WQCC REGULATION		SECTION OF DISCHARGE PLAN TO BE SUBMITTED THIS DOCUMENT
1-202.B		
3-106.A		
3-106.C		
	1.	5.0, 6.0
	2.	2.0, 4.0
	3.	1.0, 4.0
	4.	4.5
	5.	7.0
	6.	4.0
	7.	4.0, 5.0, 6.0, 8.0, 9.0
	8.	Not Applicable
3-107.A		
	1.	5.0, 6.0, 7.0
	2.	4.0, 7.0
	3.	7.0, 4.3.3
	4.	7.2
	5.	7.2
	6.	7.0, 8.0
	7.	7.2
	8.	7.0, 8.0
	9.	7.0, 8.0
	10.	8.0
	11.	7.2

1.0 EXECUTIVE SUMMARY

Giant Refining Company (Giant) operates an 18,000 BBL/day petroleum refinery at Ciniza, New Mexico, approximately 17 miles east of the city of Gallup in McKinley County, New Mexico in Sections 28 and 33 of Township 15N, Range 15W. This refinery has been in operation under various owners since 1957, and has been owned and operated by Giant since 1982. The refinery discharges approximately 160,000 gallons per day of process and non-process wastewater, with an average total dissolved solids content ranging from 2000 to 3000 mg/l.

Wastewater from process units which contacts feedstocks or products is routed to an twin-cell API separator, from which it flows to a series of evaporation ponds with natural clay liners. Other wastewater which does not contact hydrocarbons (boiler blowdown, water-softener backwash) flows through a neutralization tank prior to discharge directly to the evaporation ponds.

The uppermost aquifer beneath the Refinery is the Sonsela Sandstone Bed, which lies at a depth of 70 to 140 feet and contains ground water with an average total dissolved solids (TDS) content of 950 mg/l. Ground water in the Sonsela is under considerable artesian pressure. An additional zone of ground water exists in a thin, discontinuous lens of sand (Ciniza sand) which is interbedded with the shales of the Chinle Formation, 40 feet above the Sonsela. This ground water is also under artesian conditions and has an average TDS of 2240 mg/l. Neither the Sonsela nor the Ciniza sand ground-water zones are likely to be affected by refinery discharges, because:

- The shales and clays of the Chinle Formation have permeabilities (10^{-8} to 10^{-9} ft/sec) which are less than those specified for engineered clay liners under RCRA interim standards (10^{-7} ~~ft/sec~~) cm/sec
- Boreholes drilled within 20 feet of the perimeters of evaporation ponds, which have been in use for 13 years, show no evidence of pond leakage

o Artesian pressure prevents downward movem nt by advection

Giant currently maintains a network of 10 ground-w :e at Ciniza, and regularly samples these wells acc required by RCRA and NMHWM regulations. Previous : um evidence of ground water contamination due to refi subsequent sampling and analysis will serve to im ec migration of contaminants into the Ciniza sand or th

In order to further reduce the waste burden of its planning to install an aerated, biological-treatmen discharge from the API separator. This treatment 1 to reduce the ~~biological~~ Organic oxygen demand of the final also to reduce the levels of organic constituents.

through Septembe thundershowers Mexico. Precipi air-masses as th or Mount Taylor

2.0 LOCATION, PHYSIOGRAPHY AND CLIMATE

2.1 LOCATION AND MAILING ADDRESS

The Giant Refining Company's Ciniza Refinery facilities and wastewater-management system are located approximately 17 miles east of the city of Gallup, in McKinley County, New Mexico. The refinery location and local topography are shown in Figure 2-1. The refinery plant is sited in Sections 28 and 33 of T. 15 N., R 15 W. (New Mexico Prime Meridian). Access to the site is provided by Interstate 40 (Ciniza exit) and old Route 66 (Figure 2-1). All correspondence regarding this Discharge Plan should be sent to:

- Mr. Carl D. Shook
  Refinery Manager
  Ciniza Refinery
  Route 3, Box 7
  Gallup, New Mexico 87301

Copies of all correspondence should be forwarded to:

- Mr. Carlos Guerra, Esq.
  General Counsel
  Giant Industries, Inc.
  7227 N. 16th Street
  Phoenix, Arizona 85020
- Geoscience Consultants, Ltd
  500 Copper Avenue, N.W.
  Suite 325
  Albuquerque, New Mexico 87102

2.2 PHYSIOGRAPHY

The Ciniza site lies on the southeastern margin of the San Juan Basin on the northern flank of the Zuni Mountains. The site slopes gently (approximately 100 feet per mile) to the northeast and the area is drained by the intermittent South Fork of the Puerco River. The Ciniza refinery is located on the southern margin of the topographic valley of the Puerco River, which joins the Little Colorado River near Holbrook, Arizona.

2.3 CLIMATE

The region is semiarid, with an average rainfall of about 10 to 12 inches per year. Yearly (lake) evaporation is on the order of 50 to 55 inches per year (United States Soil Conservation Service, 1972). Temperatures range from maximum of over 100^0F in the summer months to minimum of 0^0F or less in the winter. The mean annual temperature is 48^0F. Precipitation is highly seasonal, with most of the volume occurring as rainfall during the months of July

through September. Rainfall is typically in the form of brief, intense thundershowers which are fed by moist air derived from the Gulf of Mexico. Precipitation is initiated by orographic cooling of moist air-masses as they rise on the slopes of the Zuni Mountains to the south, or Mount Taylor to the east.

3.0 BRIEF HISTORY OF OPERATION

The Ciniza Refinery was constructed by El Paso Natural Gas Company, at essentially its present capacity of 18,000 BBLS per day, in 1957. El Paso operated the refinery until 1964, when it was sold to Shell Oil Company.

Shell operated the Ciniza Refinery from 1964 through 1982, with no major changes in capacity or process. In 1982, the refinery was purchased by its present owner, Giant Industries, Inc. and operated by Giant Refining Company a division of Giant Industries, Inc.

The refinery currently produces regular, unleaded and unleaded premium gasoline, JP4 and JetA aircraft fuels, diesel, kerosine, naptha and minor amounts of other petroleum products.

The majority of feedstock crude arrives by pipeline from the San Juan Basin oil and gas fields. Products are primarily shipped by tank trucks, which are either common carriers, trucks owned or leased by Giant, or trucks operated by the product customers. Some diesel product is shipped via rail.

4.0 DESCRIPTION OF PHYSICAL ENVIRONMENT AT SITE

4.1 LOCAL GEOLOGY

The Ciniza Refinery site lies on the southeastern margin of the San Juan Basin, on the northern flank of Zuni Uplift (Figure 4-1). Bedrock (Chinle Formation) strikes approximately N. 40 E., and structure is expressed as a gentle, homoclinal northwesterly dip of 1.5 to 2.5 degrees. No significant faults are observed or inferred on or near the refinery site. Figure 4-2 is a cross-section showing the structure and stratigraphy of the bedrock deposits beneath the refinery area. Figure 4-3 is a generalized stratigraphic column for the Ciniza area. Logs of boreholes from monitor wells and exploratory holes are includes in Appendix A.

The refinery is underlain by outcrops of the upper part of the Petrified Forest Member of the Chinle Formation. The Petrified Forest is composed of volcanigenic siltstones, claystones and shales with localized and discontinuous sand bodies, deposited in a low-energy fluvial and flood-plain environment. Shales and claystones of the Petrified Forest comprise the overlying confining bed (aquitard) for the artesian Sonsela aquifer and for the confined ground water in the "Ciniza sand". These variegated blue, gray, brown, red and purple mudrocks weather into very fine clays, which swell slightly and become extremely plastic and slippery when water-saturated. Figure 4-4 includes photographs of drill cores from the Refinery site, illustrating the lithologies typically present in this area.

The upper and lower parts of the Petrified Forest Member are separated by the Sonsela Sandstone Bed. This sandstone is typically light yellow to greenish, fine to medium grained, cross-bedded and contains local interbeds of conglomerate and shale (Figure 4-5). Regionally, this unit varies in thickness from 40 to nearly 300 feet, but is about 60 to 100 feet thick in the Ciniza area. The Sonsela is recognized as the uppermost aquifer in this area.

Exploratory drilling and field investigations have revealed the presence of a thin (0-10 feet), lenticular sandstone body (the "Ciniza sand") in the upper Petrified Forest Member, approximately 40 feet above the Sonsela. This sand body is further described in Section 4.3.2

The lower part of the Petrified Forest Member is lithologically very similar to the upper part, and is also composed of siltstones and mudrocks with some local sandstone lenses (O'Sullivan, 1977).

Underlying the Chinle Formation are the San Andres and Glorieta formations (Permian), which contain the drinking water aquifer in this region. Approximately 600 feet of Chinle shales separate the San Andres from the Sonsela. The San Andres is composed of carbonates with interbedded clastic rocks, and the Glorieta is primarily a sandstone.

4.2 GEOMORPHOLOGY AND SOILS

The Ciniza Refinery is sited on soil-mantled (Montoya Series) bedrock outcrops of the upper Petrified Forest Member. Logs of numerous borings (Appendix A) indicate that none of the site is underlain by the alluvial deposits of the nearby Puerco River. No significant natural drainages cross the Refinery plant site, which is located on a slight (30 to 50 foot) topographic rise. The area's geomorphology is dominated by the 1 to 2 degree northwesterly dip-slopes of the Chinle outcrops and the effects of arid weathering on montmorillonite-rich shales and other mudrocks. Topographic relief is primarily the result of differential weathering and erosion of soft shales and resistant sandstones and conglomerates. Hills, buttes and mesas are capped by the resistant sandstones and conglomerates, whereas slopes and valleys develope in areas of shale and mudstone outcrops. Valleys formed in the Chinle are generally filled with very-fine-grained alluvial detritus from the weathering of mudstones and shales.

Soils derived from deep weathering of the shales and siltstones of the Chinle Formation are typically classified as Ustolic Camborthids

(USSCS, 1972). Soil types and physical properties are summarized in Table 4-1 and detailed in Appendix B. Soils are predominantly of the Montoya series. These clay-rich soils have very low permeabilities and high moisture retention capacities.

4.3 HYDROLOGY

4.3.1 Regional Geohydrology

The geohydrology of the southern San Juan Basin is controlled by geologic structure and by the vertical hetrogeneity of the hydraulic properties of the layered sedimentary bedrock. Beds dip into the basin at 1 to 5 degrees from the northern flanks of the Zuni Mountains. Interbedded permeable (sandstone and carbonate) and impermeable (shale and siltstone) units form numerous local and regional artesian aquifers in the Permian, Triassic, Jurassic and Cretaceous systems (see Figures 4-1, 4-2). The major aquifer in this region is the San Andres/Glorieta formation.

The San Andres/Glorieta aquifers are the most prolific and commonly-used local sources of ground water. These confined, artesian aquifer systems support wells (many of which are freely flowing) with capacities of over 300 gallons per minute (GPM). Although the Sonsela is an aquifer, its productivity is approximately one order of magnitude less than an equivalent-diameter San Andres well. Sonsela wells produce up to 30 GPM, but 5 to 20 GPM is more typical (Cooper and John, 1968). Wells in some areas can be completed in isolated sandstone lenses in the Petrified Forest Member, but these wells are of low capacity ($\leq$1 GPM), have not been developed and are not considered reliable sources of ground water.

Recharge of the San Andres/Glorieta aquifers occurs primarily in the areas of the upper Zuni Mountains, where permeable beds crop out. Ground water moves down dip through the permeable beds of porous limestone and sandstone (aquifers) and is restricted in its vertical movement by relatively impermeable beds of shales and mudrocks (aquitards). Discharge is through wells and springs, and by leakage in the deeper, central parts of the basin.

Table 4-1

Hydrologic factors, erodibility classification, and erosion hazard

[Dashed lines indicate that no rating was assigned]

Map symbol	Soil	Infiltration [1]	Permeability [1] of least pervious layer	Space for water storage [1]	Runoff potential (water yield) [2]	Hydrologic group [4]	Erodibility [1]	Erosion hazard [1]
Ag	Andrews gravelly loam, 5 to 20 percent slopes	Moderate	Slow	Low	Medium	C	Moderate	Moderate.
Ba	Badland							
Bd	Bandera gravelly loam, 5 to 15 percent slopes	Rapid	Moderate	Low	Low	A	Moderate	Low.
Bg	Bandera gravelly loam, 15 to 35 percent slopes	Rapid	Moderate	Low	Low	A	Moderate	High.
Bo	Bond sandy loam, 5 to 15 percent slopes	Rapid	Slow	Medium	High	C	Moderate	High.
Ca	Cabezon rocky complex, 2 to 10 percent slopes	Moderate	Slow	Low	Medium	D	Moderate	Low.
Cb	Clayey alluvial land (0 to 2 percent slopes)	Moderate	Slow	Medium	Low	C	Moderate	Moderate.
Cc	Concho clay loam, 1 to 3 percent slopes	Moderate	Slow	High	Low	D	Moderate	Moderate.
Co	Concho clay loam, 3 to 10 percent slopes	Moderate	Slow	High	Low	D	Moderate	Moderate.
Fo	Fortwingate loam, 2 to 8 percent slopes	Rapid	Slow	High	Low	C	High	Moderate.
Fr	Friana silt loam (1 to 3 percent slopes)	Moderate	Slow	High	Medium	C	High	Moderate.
Gm	Gem stony loam, 2 to 7 percent slopes	Moderate	Slow to very slow.	Medium	Medium	C	Moderate	Low.
Je	Jekley silt loam, 3 to 7 percent slopes	Rapid	Slow	Low to medium.	Low	C	High	Low.
Jk	Jekley stony loam, 10 to 30 percent slopes	Rapid	Slow	Low	Medium	C	High	High.
Jr	Jekley rocky complex, 30 to 40 percent slopes	Moderate	Slow	Low	High	C	High	High.
Ke	Kettner loam, 3 to 10 percent slopes	Moderately rapid.	Moderate	Medium to low.	Low	B	High	Moderate.
Kn	Kettner stony loam, 10 to 20 percent slopes	Moderate	Moderate	Low	High	D	High	High.
Kr	Kiln rocky complex, 3 to 20 percent slopes	Moderate	Moderate	Low	Medium	D	Moderate	Moderate.
Kx	Kiln rocky complex, 20 to 40 percent slopes	Moderate	Moderate	Low	High	D	Moderate	High.
La	Laporte stony loam, 3 to 10 percent slopes	Moderate	Moderate	Low	Medium	B	Moderate	High.
Lp	Laporte stony loam, 20 to 40 percent slopes	Moderate	Moderate	Low	Medium	B	Moderate	High.
Lr	Larry silty clay loam (2 to 5 percent slopes)	Moderate	Slow	High	Medium	D	Low	Low.
Ls	Lava flows							
Lv	Lava rock land							
Ma	McGaffey loam (1 to 3 percent slopes)	Rapid	Moderate	High	Medium	B	Moderate	Moderate.
Mb	Mirabal stony loam, 5 to 15 percent slopes	Rapid	Moderate to rapid.	Low	Medium	A	High	Moderate.
Mm	Mirabal stony loam, 15 to 45 percent slopes	Rapid	Moderate to rapid.	Medium	Low	B	High	High.
Mn	Mirabal stony loam, low rainfall, 5 to 20 percent slopes.	Rapid	Moderate to rapid.	Low	High	D	High	High.
Mo	Montoya clay (0 to 3 percent slopes)	Moderate	Slow to very slow.	Medium	Low	D	High	High.
Na	Nathrop loam, 0 to 5 percent slopes	Moderate	Moderate	Low to medium.	Low	C	Moderate	Moderate.
Od	Ordnance loam (5 to 15 percent slopes)	Slow	Slow	Low	Medium	D	High	High.
Or	Osoridge rocky complex, 5 to 20 percent slopes	Rapid	Slow	Low	High	D	High	High.
Ox	Osoridge rocky complex, 20 to 40 percent slopes	Rapid	Slow	Low	High	D	High	High.
Po	Polich loam (0 to 2 percent slopes)	Moderate	Slow	High	Medium	C	High	Moderate.
Pr	Prewitt clay loam (0 to 5 percent slopes)	Moderate	Slow to very slow.	Medium	Medium	D	High	High.
Rk	Rock land (5 to 50 percent slopes)							
Ro	Rock outcrop, gently sloping							
Rp	Rock outcrop, cliffs							
Sa	Sanchez stony complex, 10 to 20 percent slopes							

Sonsela outcrops are observed at lower elevations on the northern side of the Zuni Mountains, and in the area immediately to the south of Interstate 40 near the Refinery. All observed Sonsela outcrops are above the Refinery facilities topographically, and are also hydraulically upgradient from the site.

4.3.2 Local Geohydrology

Three water-bearing units are present beneath the Ciniza Refinery site (see Figure 4-2):

- The San Andres and Glorieta Formations (Uppermost Drinking Water Aquifer)
- The Sonsela Sandstone Bed of the Chinle Formation (Uppermost Aquifer)
- A local sand lens (Ciniza sand) in the Chinle Formation (Uppermost Water-Bearing Zone)

The San Andres and Glorieta Formations (Permian) are principally composed of limestone with local clastic interbeds. The San Andres lies approximately 800 feet beneath the refinery, and produces ground water from 3 on-site wells for refinery process and local domestic uses. The San Andres-Glorieta aquifer contains water under considerable artesian pressure, and is recognized as the principal deep aquifer in the Grants/Bluewater basin (Stone, et.al., 1983). The depth of this aquifer, its artesian pressure, and the extremely low permeability of the units between it and the surface act together to prevent downward movement of any refinery products or effluents into the San Andres aquifer.

The Sonsela Sandstone Bed, the uppermost geohydrologic unit which is recognized as a aquifer, is also a confined, artesian unit. This sandstone bed lies 70 to 140 feet beneath the refinery site (Figure 4-6). Ground water in the Sonsela is under 20 to 100 feet of artesian head

ATTACHMENT B

Landowners of Record

FACILITY LAND OWNER OF RECORD:

FACILITY MAILING ADDRESS:

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

FACILITY PHYSICAL LOCATION:

Giant Refining Company
Ciniza Refinery
Interstate 40, Exit 39
Jamestown, NM 87347

CORPORATE HEADQUARTERS:

Giant Industries - Arizona
23733 North Scottsdale Road
Scottsdale, AZ 85255

LAND OWNERS OF RECORD WITHIN 1/2 MILE OF DISPOSAL FACILITY:

The State of New Mexico
Santa Fe, NM

Jon & Jackie Myers
P.O. Box 2
Continental Divide, NM 87312

ATTACHMENT C

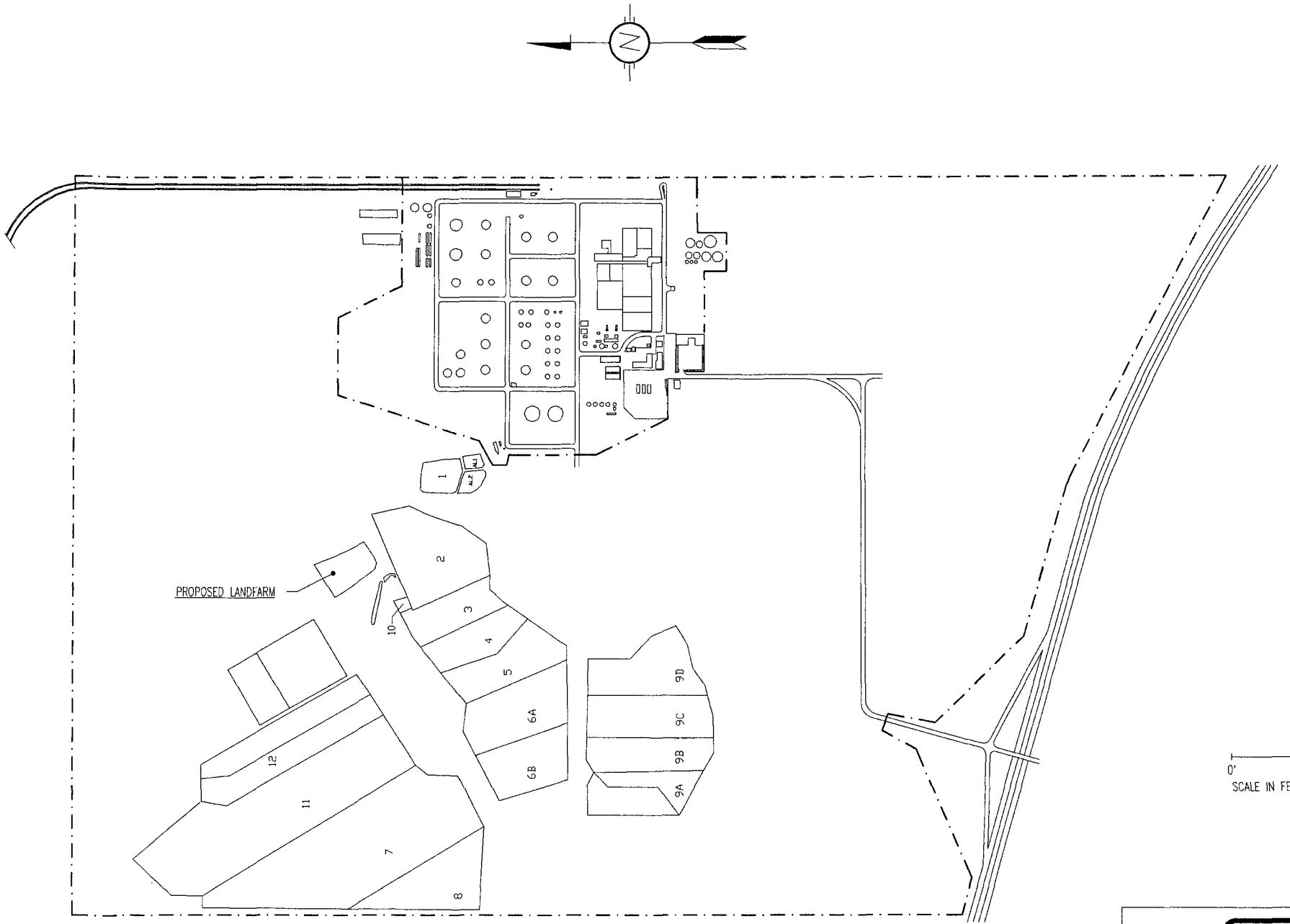
Facility Description & Site Plan

SITE DESCRIPTION:

Giant Refining Company operates a 23,000 barrel per day oil refinery at the site known as "Ciniza" located approximately 17 miles east of Gallup, NM. Ciniza's refining processes include crude distillation, fluidized catalytic cracking (FCC), alkylation, reforming, isomerization, hydrotreating, sulfur recovery, and petroleum gas concentration.

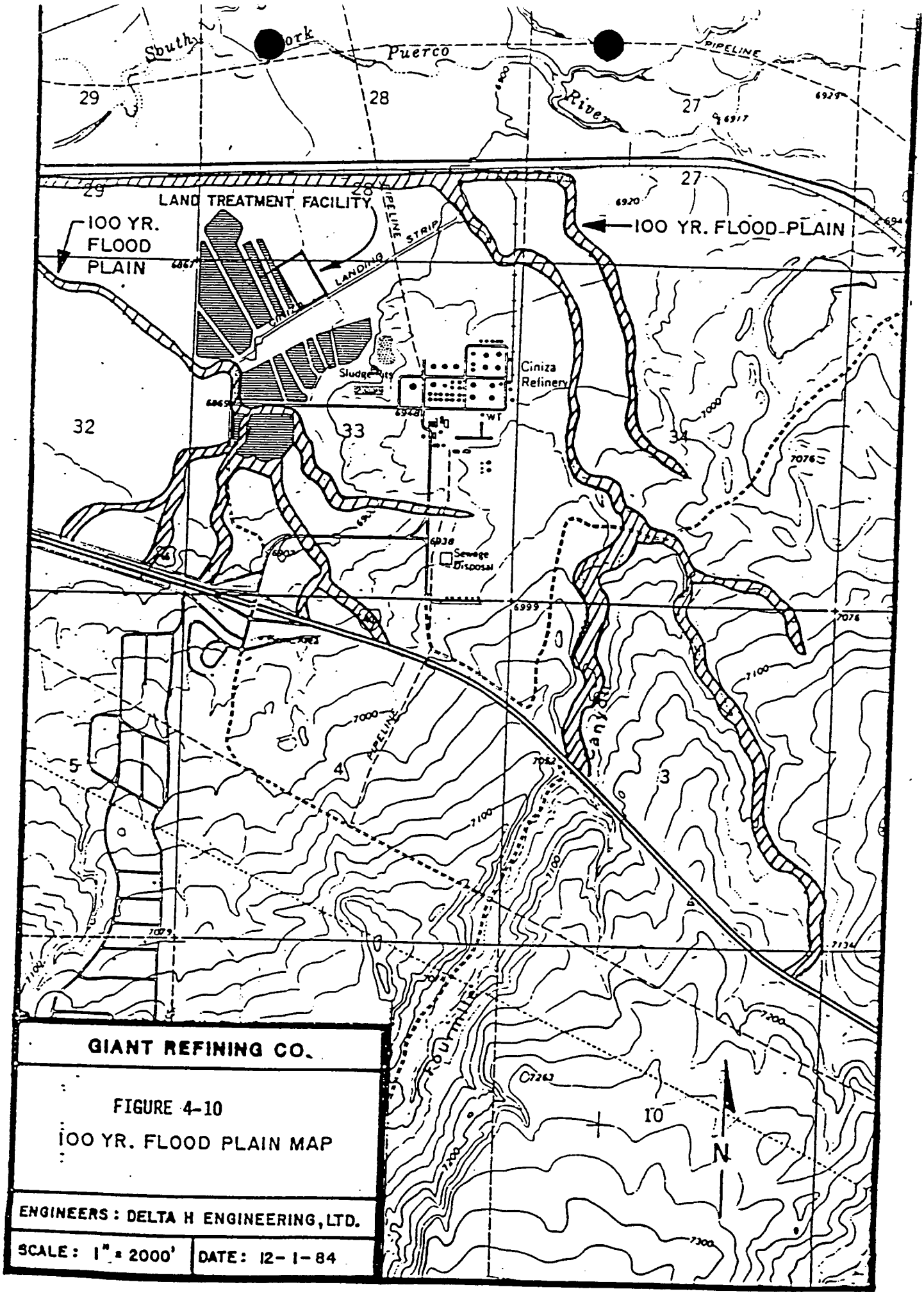
Giant also operates a large "Travel Center" marketing facility adjacent to the refinery.

* ***Reference OCD Discharge Plan GW-32 Parts 2.0, 3.0 & 5.0 (Attachment E) for more detailed site description and history.***



GIANT

SIZE	DWG NO.
A	SITE PLAN



GIANT REFINING CO.

FIGURE 4-10

100 YR. FLOOD PLAIN MAP

ENGINEERS: DELTA H ENGINEERING, LTD.

SCALE: 1" = 2000' | DATE: 12-1-84

(Figure 4-7). The potentiometric surface of this aquifer slopes northwest at about 0.01. Like the San Andres, artesian conditions insure that the Sonsela will be protected from contamination by any refinery products or effluents discharged at the surface. Ground water in the Sonsela is confined by the essentially impermeable shales of the Petrified Forest Member of the Chinle Formation (Triassic), of which the Sonsela is a part. Appendix D contains analyses from Sonsela Wells.

4.3.3 Uppermost Water-Bearing Zone

The uppermost water-bearing unit at the Refinery site is a local, lenticular sand body contained in the shales and clays of the Petrified Forest Member overlying the Sonsela. This sand unit has been given the informal field name "Ciniza sand". The lateral extent of this sand is shown on a map based on continous coring on a portion of the refinery site (Plate 1). Ground water in the Ciniza sand is confined by the surrounding clays and shales and is under 10 to 30 feet of artesian head. The potentiometric surface of this ground water zone slopes northwest at a gradient of .008.

The Ciniza sand is approximately 5 feet in thickness (ranging from 0 to 10 feet), and is only observed in the area north and west of the Refinery site (Plate 1). Approximately 40 feet of Petrified Forest shales and siltstones separate the Ciniza sand from the Sonsela. Difficult or impossible to recognize in outcrop, this sand body was discovered by continuous-core drilling while installing additional RCRA monitoring wells for the refinery's land treatment area. The Ciniza sand lies from 0 to 65 feet below the land surface in the area north and west of the refinery site, and strikes N.35 E. with a northwesterly dip of 2.4 degrees (Plate 2). The sand is a relatively continous unit under the land treatment area, but pinches out near the eastern, western and southern boundaries of that area.

The Ciniza sand is typically a fine to very-fine-grained, moderately-to-poorly-sorted quartzose sand with a clay and silt content which varies from 5% to over 35% . Sharp contacts are observed with the overlying

and underlying clays, and preserved sedimentary structures indicate a fluvial origin.

Giant has recently installed a total of 6 RCRA monitoring wells in the Ciniza sand in the vicinity of the land treatment area; all of these wells are hydrologically downgradient from the NMOCD regulated waste management units. As further discussed in Section 7.1, regular analyses of water samples from these wells will indicate the presence and movement of any potential contaminants in the ground water in the Ciniza sand. Samples have been collected from all 6 wells in the Ciniza sand, and complete RCRA analyses are pending.

The ground water in the Ciniza sand is typically under 10 to 30 feet of artesian head (Plate 3), and is confined by the highly impermeable clays and shales of the Petrified Forest Member. The potentiometric surface dips N.85 W. at a gradient of 0.008. Examination of numerous cores shows that these clays and shales are essentially unsaturated, and commonly dry, within less than 2 feet of their contact with the saturated sand. This observation is confirmed by moisture-content analyses from boreholes (Appendix A) which show that the clays are unsaturated within a few feet of the water-bearing sand (Figure 4-8). Thin beds of sand (0.5 to 2.0 feet) were commonly observed to lie within 5 to 15 feet of the Ciniza sand; these other sands were invariably dry in all borings.

Several of the exploratory boreholes (e.g., SMX-7, 8; see Plate 1) did not encounter the Ciniza sand at its expected depth, but were advanced to depths of 10 to 20 feet below the expected target-depth. These boreholes were allowed to remain open for up to 6 weeks; during that period no water was observed to accumulate in these boreholes. This shows that there is little or no ground water in the strata above the Ciniza sand, and no ground water in the shales and clays adjacent to the stratigraphic "zero edge" of that sand. Other exploratory piezometers, completed in the Petrified Forest shales above the Ciniza sand have remained totally dry for a period of several months. This demonstrates

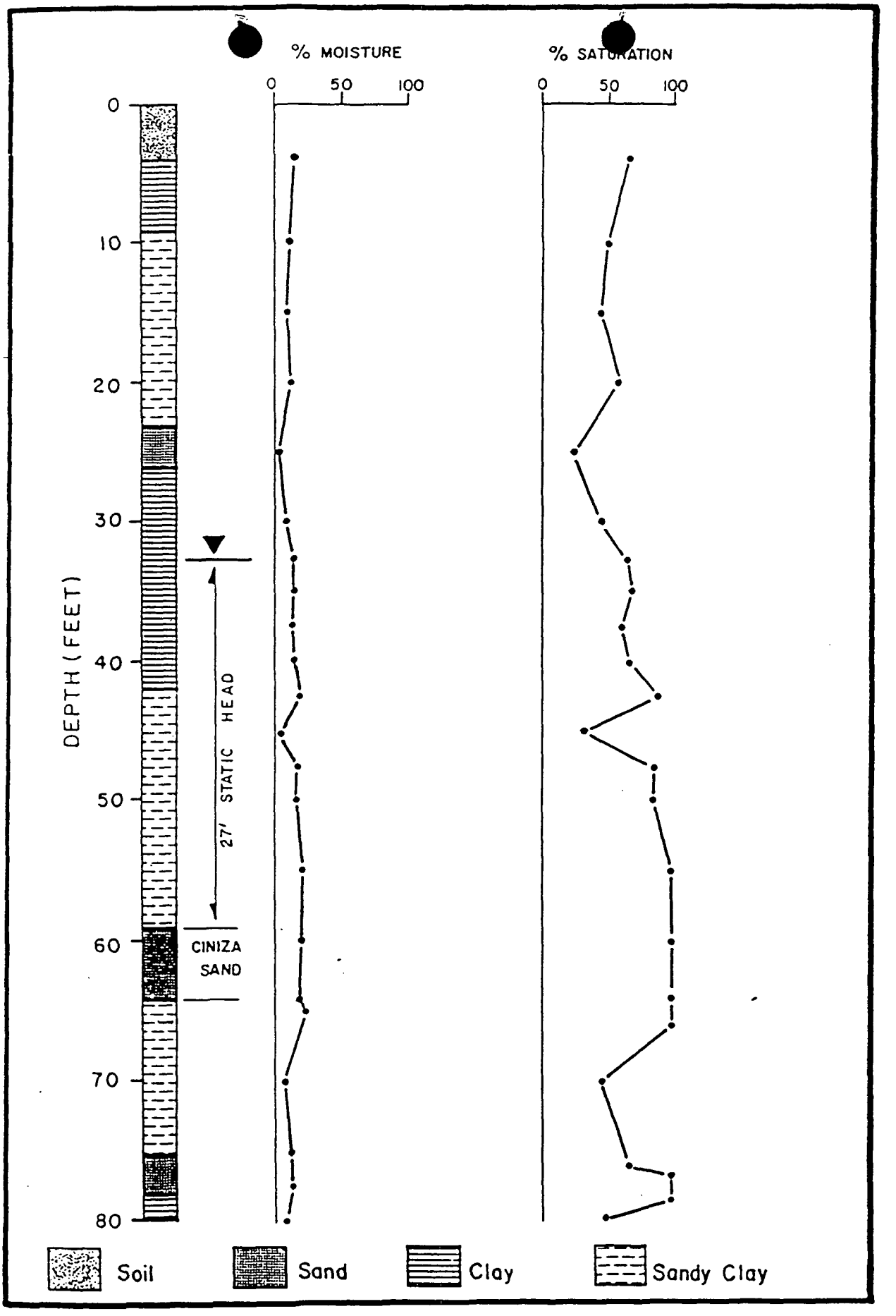


Figure 4-8: Soil Moisture Profiles From Borehole SMX-1

that there is effectively no consistent zone of saturation in the Chinle shales.

No known water wells (other than Giant's SMW-series monitor wells) are completed in the Ciniza sand. The discontinuous nature, small saturated thickness, extremely low transmissivity, and highly variable water-quality of this unit indicate that it has no potential as a present or future source of ground water.

4.3.4 Hydrogeologic Properties Of Uppermost Ground Water Zones

In conjunction with its RCRA Part B Application, Giant Refining Company has performed several tests to determine the hydrologic properties of the Sonsela aquifer and the Chinle shale aquitard which overlies the Sonsela and contains the Ciniza Sand. The results of these tests are summarized in Table 4-2. Further information on these tests is contained in Appendix C.

In addition to planned tests, field observations of hydrogeologic properties of the Chinle Formation were made during the installation of numerous boreholes and wells on the Refinery site. Several of these borings were located within a few tens of feet from the edges of evaporation ponds, but in no case was free water or saturation of soils observed in any zones above the Ciniza sand. This observation, coupled with the presence of unsaturated clay in beds located within a few feet above or below the pressurized, confined-water Ciniza sand, indicates that the hydraulic conductivity of the Pertified Forest shales is at least several orders of magnitude less than the values indicated by the pump tests.

The pump test of the Chinle Shale zone was conducted before the discovery of the Ciniza sand, and was performed in a well which may be interconnected with that sand. Therefore, the hydraulic conductivity calculated from that pump-test represents a maximum possible value for the shales and a minimum value for the Ciniza sand.

TEST	UNIT	T	K
Slug	Sonsela	1.3×10^{-4}	3.9×10^{-6}
Slug	Chinle Shale	5.2×10^{-7}	1.3×10^{-8}
Pump	Chinle Shale	1.7×10^{-7}	8.3×10^{-9}

T in ft^2/sec

K in ft/sec

Table 4-2

SUMMARY OF AQUIFER-TEST RESULTS

SONSELA AND OVERLYING CHINLE FORMATION

The Sonsela aquifer has a maximum hydraulic conductivity of 3.94 X 10^{-6} ft/sec (0.35 ft/day). Tests of the shale aquitard show conductivities of 1.3 X 10^{-8} to 8.3 X 10^{-9} ft/sec (.001 to .0007 ft/day). These values are for horizontal conductivity, and vertical conductivities for shales are typically one or more orders of magnitude less. The measured conductivities (.001 to .0007 ft/day) are equal to or exceed the New Mexico Water Quality Control Commission standards for clay-pond liners, which are 0.0013 ft/day.

Unless fractured!!

@ what head?

4.4 GROUND WATER USERS IN THE CINIZA AREA

The Ciniza Refinery, and all known users of ground water within a 1 mile radius of the Refinery are shown in Figure 4-9. The Ciniza Refinery withdrew an average of 175,000 gallons per day of ground water from the San Andres aquifer during the period of review, making it the largest user of ground water in the area. The only other adjacent users of drinking water from the San Andres are the rest area and the service station. These wells are upgradient of the Refinery. The "Stock Well" is completed in the Sonsela, and is not used for human consumption.

4.5 FLOODING POTENTIAL

Figure 4-10, from Giant's Part B Application, shows the anticipated pathways of a 100 year flood. Table 4-3 presents the results of the calculations used to determine these flood paths. With the exception of evaporation pond #9, no plant or waste-management units are likely to be affected by a 100-year flood event.

Giant is aware of this potential threat to pond #9, and is currently taking several steps to mitigate this problem:

- The area in question has been surveyed, and options for additional flood-control measures such as dikes, ditches and channel re-direction are being evaluated
- Giant is proceeding with plans to construct a truck stop at the Ciniza exit; flood and drainage control plans for this construction may be modified to divert runoff (from south of I-40) to pathways which do not endanger any of the evaporation ponds

TABLE 4-3

PEAK DISCHARGE AND RUNOFF CALCULATION SHEET #1

Referrence: Chapter 2 - Engineering Field Manual for Conservation Practices; U.S.D.A., Soil Conservation Service

Location: Area NW, Fourmile Canyon, Ciniza, New Mexico

Soil and Cover: Subarea I, B/C soil, 75 percent cover, good condition, ponderosa pine

Date: December 15, 1983

Purpose: 100-year floodplain at Ciniza Refinery

Drainage Area:	A	=	5,071	ac
Length:	L	=	20,000	ft
Elevation Differences:	H	=	900	ft
Runoff Curve Number:	CN	=	58	
Time of Concentration	T_c	=	8.84	hr
Rainfall, 24-hr at 100 year:	P_{24}	=	2.8	in
Direct Runoff:	Q	=	0.3	in
Distribution Curve No:	DC	=	70	
Runoff Rate:	R	=	0.84	cfs/ac-in
Peak Discharge, q = A x Q x R		=	1,280	cfs
Runoff Volume, v = A x Q/12		=	127	ac-ft

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TABLE 4-3 (Con't.)

PEAK DISCHARGE AND RUNOFF CALCULATION SHEET #2

Reference: Chapter 2 - Engineer Field Manual for Conservation Practices; U.S.D.A., Soil Conservation Service

Location: Area NW, Fourmile Canyon, Ciniza, New Mexico

Soil and Cover: Subarea II, B/C soil, mountain brush and juniper grass, 50 percent cover

Date: December 15, 1983

Purpose: 100-year floodplain at Ciniza Refinery

Drainage Area:	A	=	1,894	ac
Length:	L	=	17,000	ft
Elevation Difference:	H	=	200	ft
Runoff Curve Number:	CN	=	65	
Time of Concentration:	T_c	=	1.3	hr
Rainfall, 24-hr at 100 yr:	P_{24}	=	2.8	in
Direct Runoff:	Q	=	0.4	in
Distribution Curve No.	DC	=	70	
Runoff Rate:	R	=	0.55	cfs/ac-in
Peak Discharge, q = A x Q x R		=	1,895	cfs
Runoff Volume, v = A x Q/12.		=	3,175	ac-ft

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TABLE 4-3 (Con't.)

PEAK DISCHARGE AND RUNOFF CALCULATIO

Reference: Chapter 2 - Engineering Field Manual Conservation Practices; U.S.D.A., Soi Conservation Service

Location: Area NW, Fourmile Canyon, Ciniza, New M

Soil and Cover: Subarea III; B/C soil, 50 percent herbaceous and mountain brush

Date: December 15, 1983

Purpose: 100-year floodplain at Ciniza Refinery

Drainage Area:	A	=
Length:	L	
Elevation Difference:	H	=
Runoff Curve Number:	CN	
Time of Concentration:	T_c	=
Rainfall, 24-hr at 100 yr:	P_{24}	=
Direct Runoff (Figure 2-4):	Q	
Distribution Curve No:	DC	=
Runoff Rate (Figure 2-5):	R	

Peak Discharge, q = A x Q x R

Runoff Volume, v = A x Q/12

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5.0 PROCESS D

5.1 OVERVIEW

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Major sources
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Following the completion of surveys and engineering analysis, Giant will select options for dealing with the potential threat to Pond #9. These may include:

- Diversion of natural channels, at US 40 and/or between the highway and the pond
- Construction of a berm, or increasing the height of the berms around Pond #9

Giant will notify NMOCD when an option is selected, and will provide design and as-built specifications in a timely manner.

o Platforming	5.2.4
o Merox Treating	5.2.5
o Naphtha Hydrotreating	5.2.6

The following processes are associated with several auxiliary activities which do not directly result in conversion of crude oil to product nor result in complex chemical changes in the product. Instead these auxiliary processes separate impurities from the feedstocks and products, or are required for other aspects of the operation and maintenance of a refinery. These auxiliary units are:

WASTEWATER SOURCE	SUBSECTION
o Boilers	5.3.1
o Cooling Towers	5.3.2
o Storage Tanks	5.3.3
o Water Softening Units	5.3.4
o Desalting Units	5.3.5
o Additive-Mixing Facility	5.3.6
o Oil/Water Separation System	5.3.7
o Blowdown/Relief Flare System	5.3.8
o Air Compressors	5.3.9

Plates 4 and 5 show the location of these process and auxiliary units at the refinery. Each process or auxiliary unit operation has different water usages associated with it. The nature and quantity of wastewater produced by the units varies according to the process involved. The final aqueous waste effluent of the Ciniza Refinery is a blend of eight major process and auxiliary waste streams (Table 5-1) and several intermittent flows from such minor sources as seal leakage from water-cooled pumps. During the period of review, the relative flow volumes from the different units were:

TABLE 5-1
PROCESS UNITS AND WASTEWATER TREATMENT/DISPOSAL UNITS

Process Unit	Treatment/ Disposal System	Flow (gpm)
Crude Receiver Primary Separation	To API Separator	4
Crude Receiver Secondary Separation	To API Separator	1
Desalter	To API Separator	26*
Fluidized Catalytic Cracking (FCC) Unit	To API Separator	10
Alkylation Unit Regenerator	To API Separator	0.02
Kerosine Water Wash	To API Separator	1 gpm*
NHT Separator Drum	To API Separator	5
NHT Stripper	To API Separator	1
Boilers **	To Limestone Contact Chamber for pH Adjustment	30*
Cooling Tower ***	To API Separator	45*
		123 gpm

* Maximum flow, based on water input
** Blowdown and backwash
*** Blowdown

Cooling Towers	37%
Boiler Blowdown	24%
Process and Remaining Auxiliary Units	39%

Based upon weir measurements taken over the course of several days, the maximum effluent discharge is approximately 0.25 cfs or about 161,000 gallons per day at a maximum production of 18,000 BBLS/calendar day.

The total flow from Table 5-1 is 123 GPM, or 177,000 GPD. This figure represents a maximum value based on input to the boilers and cooling towers. Evaporative and other minor losses account for the 16,000 GPD difference.

Additional wastewater is produced by stormwater runoff, drainage from wash pads and cleanup areas, drainage from truck and railroad loading racks and from domestic sewage. The nature and fate of these discharges are discussed in Section 5.4.

5.2 MAIN PROCESS UNIT DESCRIPTIONS AND WASTEWATER CHARACTERISTICS

5.2.1 Crude Oil Fractionation (C)

Fractionation serves as the basic refining process for the separation of petroleum crude into intermediate fractions of specific boiling-point ranges. Increasing temperatures and decreasing pressure evaporate progressively heavier constituents yielding straight run gasoline, naptha, kerosene, diesel, atmospheric gas oil and reduced crude. Naphtha is further fractionated and fed into the NHT platformer for reforming.

Waste streams are generated from two areas: condensation on overhead piping or accumulators and water sinking to the bottom of process units and being drawn off as an emulsion. Wastewater produced from these units contains ammonia, sulfides, chlorides, oil, and phenols. The process flow sheet (Plate 4) shows the location of all wastewater collection pipes for this and other units. Table 5-1 summarizes the type and

volume of effluent produced and the treatment units to which the streams are discharged.

5.2.2 Catalytic Cracking (C)

Fluidized catalytic cracking is employed at Ciniza. Catalytic cracking involves four major types of reactions:

- o Thermal decomposition
- o Primary catalytic reactions at the catalyst surface
- o Secondary catalytic reactions between the primary products
- o Removal of products which may be polymerized from further reactions by adsorption onto the surface of a fluidized bed of catalyst such as coke

This last reaction is the key to catalytic cracking because it permits decomposition reactions to move closer to completion than is possible in simple thermal cracking. The catalysts are in the form of beads or pellets in the thermal unit and powder for the fluidized unit. The catalyst is usually heated and lifted into the reactor area by the incoming oil feed which, in turn, is vaporized upon contact. Vapors from the reactors pass upward through a cyclone separator which removes most of the entrained catalyst. These vapors then enter the fractionator, where the desired products are removed and heavier fractions recycled to the reactor.

The major wastewater constituents resulting from catalytic cracking operations are oil, sulfides, phenols, cyanides and ammonia. High BOD_5 (5-day culture) and COD levels are also found in the alkaline wastewater. The wastestreams from the catalytic cracking process are routed through the API separator to the evaporation ponds.

5.2.3 Alkylation (C)

Alkylation is the reaction of an isoparaffin (usually isobutane) and an olefin (propylene butylenes, amylenes) in the presence of an acid catalyst at carefully controlled temperatures and pressures. Hydrofluoric

acid is currently used as the catalyst at the Ciniza Refinery. These reactions produce propane, butane and a high-octane alkylate used in gasoline blending. The reaction products are separated in a catalyst recovery unit, from which the catalyst is recycled. The hydrocarbon stream is passed through a caustic-soda and water wash after passing through the fractionation section.

The wastewater from the alkylation unit is an acidic solution containing some suspended solids, oils, dissolved solids, fluoride and phenols. The waste stream is discharged to the API separator.

5.2.4 Platforming

Platforming converts low octane naphtha, heavy gasoline and naphthene-rich stocks to high-octane gasoline blending stock, aromatics for petrochemical use, and isobutane. Feed stocks are usually hydrotreated for the removal of sulfur and nitrogen compounds prior to charging to the platformer (see Section 5.2.6), because the extremely expensive platinum catalysts used in the units are readily contaminated and ruined by sulfur and nitrogen species. The predominant reaction during platforming is the dehydrogenation of naphthenes. Important secondary reactions are the isomerization and dehydrocyclization of parafins. All reactions result in high octane products. At Ciniza the platformers do not produce a waste stream.

5.2.5 Merox Treating (C)

A proprietary procedure, Merox treating, converts mercaptans to alkyl disulfides in a catalytic process known commonly as sweetening. This is a single-stage process which reduces odors in the final product. There are two Merox treating units utilized at the Ciniza Refinery, one for straight-run gasoline and the other for kerosine. The straight-run gasoline process uses caustic soda to reduce the mercaptan levels to an acceptable level prior to contact with the catalyst. Following catalytic contact, a waste stream containing caustic soda and Merox catalyst is

produced. The kerosine Merox treating unit requires no caustic pre-treatment and therefore generates no aqueous wastes. Alkaline wastewater containing small amounts of commercial Merox catalysts is discharged to the API separator. An analysis of the wastewater stream is presented in Table 5-2.

5.2.6 Naphtha Hydrotreating (C)

Hydrotreating is used to saturate olefins and control such parameters as sulfur compounds, nitrogen compounds, odor, color and gum-forming elements. This process mixes the feedstock with hydrogen, raises the temperature and then sends it to the catalytic reactor. The catalytic reactor is used to remove sulfur and saturate naphtha for the reforming unit. The reactor products are cooled and three constituents are separated out: high grade products, hydrogen and impurities. Increasing the hydrogen content or decreasing the temperature decreases the level of impurities in the product.

Hydrotreating typically reduces the sulfur and nitrogen content of the treated material by 90 percent and 85 percent, respectively. The primary constituents of the wastestream are ammonia, sulfides and phenols if the temperature is at the high end of the range. Table 5-2 contains a representative analysis of the waste stream. Wastes are routed to the API separator.

5.3 AUXILIARY PROCESS UNIT DESCRIPTIONS AND WASTEWATER CHARACTERISTICS

5.3.1 Boilers (NC)

Steam is consumed throughout the refining process and is generated in boilers located on the facility. To assure proper operation of the boilers, a certain amount of condensate must be discharged (blowdown) and well water added as make-up. Boiler feed water is made of softened well water with an oxygen scavenger additive (hydrazine derivitive) and a patented boiler-treatment additive, purchased from Nalco Chemical Company located at 4435 Civic Center Plaza, Suite # 11, Scottsdale, Arizona. Boiler blowdown is routed to the evaporation ponds. Analyses are given in Table 5-2. Wastes are routed to the neutralization tank.

Pwhere

TABLE 5-2

CHEMICAL ANALYSES OF SELECTED

WASTE STREAMS AT GIANT CINIZA REFINERY

(VALUES IN MG/L)

WQCC 3-103 PARAMETERS	CRUDE UNIT PROCESS (#2.1)	NHT STRIPPER (#2.6b)	HYDROTREATOR SEPARATOR DRUM (#2.6A)	KEROSINE WATER WASH (#2.5)	FCC UNIT (#2.2)	COOLING UNIT BLOWDOWN (#2)
As	<0.05	<0.05	<0.05	<0.05	<0.05	---
Ba	<1.0	<1.0	<1.0	<1.0	<1.0	---
Be	<0.001	<0.001	<0.001	<0.001	0.2	---
Ca	---	---	---	---	---	<1200.0
Cd	<0.01	<0.01	<0.01	<0.01	<0.01	---
Cr	<0.05	<0.05	<0.05	<0.05	<0.05	17.81
CN	---	---	---	---	---	---
F	---	---	---	---	---	1.98
K	---	---	---	---	---	17.0
Pb	<0.001	<0.001	<0.001	<0.001	<0.001	---
Hg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	---
NO_3	---	---	---	---	---	300
Se	<0.01	<0.01	<0.01	<0.01	<0.25	---
Ag	<0.05	<0.05	<0.05	<0.05	0.05	---
U	---	---	---	---	---	---
Cl	---	---	---	---	---	384.0
Cu	<0.002	<0.002	<0.002	<0.002	<0.002	---
Fe	---	---	---	---	---	0.79
Mg	---	---	---	---	---	85.0
Mn	---	---	---	---	---	---
SO^4	---	---	---	---	---	2500.0
TDS	---	---	---	---	---	6580.0
Zn	<0.004	<0.004	<0.004	<0.004	0.070	---

pH	9.0	7.4	6.4	6.0	--
Silica	---	---	---	---	--
Mo	---	---	---	---	--
Na	---	---	---	---	--
Ni	<0.01	<0.01	<0.01	<0.01	0.4
Phenols	15.8	0.06	9.0	10.6	986.
Phosphate	---	---	---	---	--
TSS	---	---	---	---	--
Cond.	---	---	---	---	--
COD	454.0	198.0	191.0	127.0	599.(
NH_4	---	---	---	---	--
Sb	<0.002	<0.002	<0.002	<0.002	1.8
COD	149.3	89.8	89.8	120.0	500.(
Oil & Grease	8.1	8.5	5.3	20.0	50.0
TOC	---	---	---	---	---
Hardness	---	---	---	---	---

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the surface waste disposal facility will be tilled to thoroughly incorporate all wastes in the surface soil, provide oxidation, and level the area. Tilling will be accomplished with either a tractor mounted discer or rototiller. All equipment will be thoroughly decontaminated prior to leaving the containment area.

B) FERTILIZING:

Nitrogen fertilizer will be applied to the surface soil of the waste disposal facility as required to maintain a C:N:P ratio of 100:10:1 for optimum microbial degradation. The C:N:P ratio shall be determined from the soil monitoring data described in the next section (Section IV).

C) IRRIGATION:

The waste disposal facility shall be irrigated as necessary to maintain a soil moisture content of approximately 20% based on the soil monitoring described in the next section (Section IV).

IV) SOIL MONITORING:

On at least a semiannual basis (twice during the degradation season), one (1) randomly located boring shall be sampled at depths of one (1) and three (3) feet below the native soil surface for the following parameters:

Total Petroleum Hydrocarbons (EPA 8015)
BTEX (EPA 8020)
pH
Total Kjeldahl Nitrogen
Total Phosphorous
% Moisture

If analytical data from the samples described above show concentrations in excess of 10 mg/Kg Benzene, 500 mg/Kg Total BTEX, or 1000 mg/Kg TPH, Giant will collect additional samples at the same boring location at a depth of five (5) feet and implement additional soil management techniques and reduce the organics loading to compensate.

V) GROUNDWATER MONITORING:

Giant will utilize the existing facility groundwater monitoring wells for the purpose of detecting any measurable contamination from the surface waste disposal facility. The site geology, well location and depth, and monitoring parameters and frequency are described in detail in the Facility Discharge Plan GW-32.

ATTACHMENT F

Routine Inspection and Maintenance Plan

5.3.2 Cooling Towers (NC)

Water used for cooling process-streams is produced by cooling towers and comprises most of the water usage at the facility. A significant amount of water is lost by evaporation in the cooling towers resulting in an increased concentration of dissolved solids in the cooling water over time. To prevent excessive concentrations of dissolved solids, a certain portion is discharged and an equal amount of well water is added. To prevent scaling, corrosion and biological growth in the towers, chromate is added to the cooling water. Analyses of cooling tower blowdown is given in Table 5-2. Cooling tower wastewater, containing small amounts of chromate, is routed to the API separator. In the reducing and organic-rich environment of the separator, chromate forms insoluble complexes with organic constituents. These complexes precipitate and settle to the bottom of the API separator. The chromate-bearing sludges are periodically removed by a vacuum truck and transported to the Land Treatment Area, which is regulated under RCRA and the NMHWMA.

5.3.3 Storage Tanks (C)

Storage of crude typically allows some gravity-separation of any water or suspended solids entrained in the fluid. These wastes, removed from the tank bottoms, contain emulsified oil, phenols, iron, sulfide and other constituents which depend upon the nature of the material stored in a particular tank. This liquid is either decanted off or removed by vacuum trucks to the API separator. The volume of effluent from this unnumbered source is relatively small. Solid wastes (tank-bottom sludges) are regulated under RCRA and NMHWM regulations. These wastes are transported to the Refinery's Land Treatment Area. A full description of these wastes and the waste management and monitoring system is contained in the Ciniza Refinery's Part B application on file with NMEID's hazardous waste bureau.

5.3.4 Water Softening Units (NC)

To prevent scaling, softened water must be supplied to the boiler units as well as several of the process systems. The softening process basically contacts the water with a zeolite ion-exchange medium, at a

controlled pH, to precipitate out the calcium and magnesium salts which would produce scale in the boiler. With use, the softening units build up high concentrations of calcium and magnesium-rich solids which hinder further operation. Waste water from backwashing operations is sent to the neutralization tank and then to the evaporation ponds.

5.3.5 Desalters (C)

All produced crude contains some formation (connate) water. Although northwestern New Mexico crude is generally found in marine formations, this connate water is not highly saline. Desalters remove the existing saline fluid from the crude by passing crude (with some added water) through an electrostatic field which acts to agglomerate dispersed brine droplets. Desalters are considered an integral part of the crude oil fractionation unit at the Ciniza Refinery.

The wastewater can contain high levels of dissolved solids, some phenols and (depending upon crude type) ammonia and sulfides. This contact wastewater is discharged to the API separator. A characterization of desalter effluent is shown in Table 5-2.

5.3.6 Additive Mixing Facility

The additive facility simply provides a containment area for mixing and addition of lead or other additives. There is no waste stream produced.

5.3.7 Oil/Water Separation System (C)

All waste streams which contain or may contain free feedstocks or products are directed to an twin-celled oil-water separation system (API separator) before discharge to the evaporation ponds. This separator is a series of settling tanks which physically separates and collects lighter fractions (crude oil and products) at the top as the wastewater flows from the bottom. Heating of the inflow by steam improves the separation by reducing viscosity. An analysis of the API separator wastestream is presented in Table 5-3.

	EFFLUENT SOURCE				
	API SEPARATOR	NEUTRALIZATION TANK	SEWAGE	ASPHALT PIT	RAILROAD LAGOON
TSS	52.0	<1.0	28.0		
TDS	2490.0	2324.0	1124.0	184	620
Oil & Grease	75.4	<0.1	48.2		
Phenols	52.6	<0.01	<0.01	<0.01	0.07
Benzene	9.9	<0.001	<0.001		
BOD	567.4	2.8	9.6		
COD	1206.4	64.9	245.9		
Na	1275.0	1296.0	636.0		
K	9.0	4.0	7.0		
Ca	89.0	90.0	19.0		
Cr	1.44	<0.050	<0.050	<.050	<0.050
Mg	10.0	14.0	8.0		
P Total	<0.01	0.03	0.35		
Cl	588.0	710.0	61.0	30	10
SO_4	1812.0	600.0	489.0	<0.01	138
S Total	7045.0	278.0	241.0		
HCO_3	512.0	232.0	308.0		
Fe	0.5	0.10	0.12	0.34	0.35
Cu	<0.03	<0.03	<0.03		
Mn	0.2	0.03	0.2		
Zn	<0.01	<0.01	<0.01		
Mo	<0.01	<0.01	<0.01		
Al	<0.01	<0.01	<0.01		
B	<0.01	<0.01	<0.01		
NO_3 as N	<0.01	<0.01	<0.01	0.1	<0.01
NH_4	477.0	<0.01	0.2		
TKN	479.0	1.8	2.8	3.9	4.9
CN	6.0	<0.01	<0.01		

TABLE 5-3
ANALYSES OF COMINGLED WASTES, SEWAGE AND MISCELLANEOUS WASTES
(all values in mg/l)

5.3.8 Blowdown/Relief Flare System

Liquid or gaseous hydrocarbons discharged from pressure-relief valves are directed to a blowdown system. The blowdown system is a series of condensers intended to recover as much product as possible for recycling. Those gaseous cuts which cannot be condensed and recycled are fed to the relief flare system. The Ciniza Refinery utilizes a flare system fueled by refinery gas or purchased gas. Live steam is continuously passed through the flare-stack chimney to reduce particulates and to prevent clogging. No aqueous or solid-waste streams are produced from this auxiliary unit process.

5.3.9 Air Compressors (NC)

The air compressors provide pneumatic-instrument air for flow and termperature control devices and utility air for cleaning purposes and equipment (i.e., impact wrenches). The only waste produced by these units is a small quantity of condensed water, which is periodically drained from the compressor tanks. This water is routed to the shop drains (see Section 5.4.5), from which it flows through the API separator to the evaporation ponds.

5.4 NON-PROCESS WASTE STREAMS

In addition to the waste streams generated by Refinery processes and associated operations, several other wastewater streams are produced by:

- Storm-water runoff from the refinery area
- Runoff from an equipment and vehicle-cleaning wash pad
- Runoff from the tank-truck loading rack
- Runoff from the railroad-car loading rack
- Drains from shops and warehouses on the Refinery site
- Condensed steam from heating jackets on pipes and tanks
- Condensed steam from the asphalt plant
- Domestic sewage from the refinery and from employee housing

With the exception of storm water, these waste streams comprise only a small fraction of the total aqueous wastes produced by the Refinery. The origin, paths and disposition of these non-process waste streams are shown in Plate 5. Available analyses of these waste streams are given in Table 5-3.

5.4.1 Storm Water Runoff (NC)

Storm water which falls onto or flows into the Refinery area is collected by a system of storm sewers and surface ditches. The effluent is transported by underground pipes and/or open ditches to either the main API separator, or to a secondary separator ("Oil Skimmer" in Plate 5), before being discharged to the evaporation. Due to the intermittent and unpredictable nature of precipitation at Ciniza, no samples of this waste stream are currently available for analysis.

5.4.2 Wash-Pad Runoff (NC)

Refinery tools, equipment and vehicles are cleaned with high-pressure water, detergents and by steam. Clean-up operations are performed on a concrete wash-pad. Waste water is collected by drains, and flows through the storm-sewer system to the API separator, from which it is discharged to the evaporation ponds.

5.4.3 Truck Loading-Rack Drains (NC)

Giant ships the majority of its refinery products by tank truck. These trucks are loaded at an overhead-filling rack. The rack area is paved with concrete, and runoff is controlled by steel grates over a drain. The fluids which drain from this area include stormwater, water from truck washdown (in the event of minor loading spills) and small quantities of product due to minor spills. From the drains, these fluids are directed by a storm sewer to the API separator. The aqueous fraction is then discharged to the evaporation ponds. No analyses of this intermittent waste stream are available.

5.4.4 Railroad Loading Rack (NC)

Giant ships some of its refinery products by rail, and tank cars are loaded by an overhead rack located on a spur of the Santa Fe Railroad's tracks which enters the east side of the Refinery plant (Figure 5-2). Like the truck-loading area, the railroad rack is paved with concrete and drained by underground sewers. Effluents consist of stormwater, washdown from tank cars and minor amounts of product due to occasional, small spills. Fluids are directed through an underground pipe to an evaporation pond (Plate 5). The evaporation pond is currently equipped with an underdrain which allows pond water to discharge to grade before the fluid level exceeds the 2-foot minimum freeboard. Analyses of the railroad evaporation-pond fluids are given in Table 5-3.

5.4.5 Shop Drains (NC)

The Ciniza Refinery operates in-house facilities for pipefitting, welding, carpentry and general machine work. Shops housing these service facilities are equipped with floor drains which connect with the API sewer network (Plate 5). Effluents contain water, detergents, minor amounts of oil and grease, and miscellaneous particulates. These wastestreams flow to the API separator, where the insoluble organic fractions are removed. The remaining wastewater is the discharged to the evaporation ponds.

5.4.6 Condensed Steam (NC)

In order to maintain the correct product viscosity for flow, pipelines and tanks are heated by steam jackets or parallel steam pipes. As the steam heats the lines or tanks it condenses, and this condensed water is then drained or blown down from the lines. Small volumes of this water are discharged at numerous locations throughout the Refinery. The condensed water is similar in chemistry to the boiler blowdown, but may also contain small amounts of hydrocarbons. Following discharge, these small quantities of water flow into the storm sewer system, through the API separator and into the evaporation ponds.

5.4.7 Asphalt Plant (C)

The fractionation and refining of petroleum results in the accumulation of heavy, non-volatile liquids and semi-solids which are collectively known as asphalt. This material has many uses as a paving, roofing and sealing material, and as a raw material for the manufacture of paints and floor coverings. The Ciniza asphalt plant has been inactive since 1979. The old asphalt plant is now retained as a steam-heated tank farm (Plate 5). Wastewater is produced from steam condensation. This wastewater is directed to a small evaporation pond ("Asphalt Pit" in Plate 5). The pond has a thick natural liner of asphalt. Occasional overflows from this pond are discharged to grade. Analyses of this wastewater are given in Table 5-3.

5.4.8 Domestic Sewage (NC)

Sewage is produced from the Refinery plant and offices, and from a small (7 dwellings housing 28-30 persons) employee-housing area. As shown in Plate 5, the sewage follows several paths. Refinery work-area sewage flows to an aerobic treatment/evaporation lagoon, labeled "Plant Sewage" on Plate 5. Sewage from the office building flows into the "Office Sewage" lagoon, and one remote building is served by the "Railroad Office" lagoon. Sewage from the residential area flows into an underground septic tank, from which it is discharged to an aerobic treatment/evaporation pond. At this time, no domestic sewage is comingled with any refinery process effluent or stormwater.

It is anticipated that, as part of a pilot-scale study of biological treatment, some domestic sewage may be diverted to the API pond (Pond 1). Aerators will be installed, and nutrients in the sewage will allow bacteria to degrade organic wastes in the API effluent. This system is discussed in further detail in sections 6.2 and 6.3.9.

6.0 WASTE MANAGEMENT SYSTEM

As discussed in the preceeding sections, Giant maintains a comprehensive system of waste management for:

- o Refinery process wastes
- o Non-process refinery wastes and stormwater
- o Domestic sewage
- o Wastes classified as hazardous under RCRA and NMHWMA

The aqueous process and non-process wastes are ultimately discharged, following oil-water separation (API separator) and/or neutralization (neutralization tank), to the evaporation ponds located to the west and north of the refinery plant. Minor occasional waste streams from the railroad rack and the disused asphalt plant area are diverted to small, individual evaporation ponds. Domestic sewage is treated in septic tanks and aerobic lagoons; these lagoons also serve as evaporation ponds for the sewage.

Under the provisions of the Federal Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Management Act, Giant has segregated the wastes characterized as hazardous from the general refinery waste streams. These wastes include:

- o API separator sludges
- o Heat-exchanger bundle cleaning sludges
- o Leaded and unleaded tank bottoms
- o Spent solvents

With the exception of spent solvents, which are commercially recycled, Giant disposes of these wastes in a Land Treatment Area, located to the north of the plant site. This Land Treatment Area is regulated and monitored by the New Mexico Environmental Improvement Division (NMEID) and the United States Environmental Protection Agency (USEPA). Giant has filed a Part B application, and is currently managing their hazardous wastes under interim status. Complete information concerning the

nature, treatment, storage and disposal of these wastes is contained in the Part B documents, which are on file with NMEID and USEPA Region VI.

6.1 WASTEWATER PATHS AND DISPOSITION

Giant diverts its wastewater into different evaporation ponds, depending on the waste source. Figure 6-1 shows the locations and configurations of these ponds. Figure 6-1 also includes the flow paths connecting the ponds, by which wastewater is moved to and among the ponds. Table 6-1 is a water balance for the ponds.

As described in Section 5.0, there are many discrete and chemically distinct waste streams generated by the refinery. Some of these streams are comingled, either in the drains, sewers and ditches, in the API separator, and in the ponds. Tables 5-2 and 5-3 present analyses of the effluents, sewage-lagoon waters and samples of pond waters.

The main division of waste streams is based on the distinction between contact and non-contact waste streams. Contact waste streams are those which involve water contact with product, wastes and/or feedstocks. These waste streams typically contain some hydrocarbons as a free phase. Streams containing (or likely to contain) free hydrocarbons are routed through the API separator. Following oil-water separation these wastes flow into Pond 1, where some additional separation of oil and water may occur. An underdrain allows the aqueous phase to flow into Pond 2. Pond 2 discharges through a weir, from which the flow is normally diverted to Ponds 12, 11, 7 and 8 (Figure 6-1).

Non-contact wastewater normally passes through the neutralization tank, where contact with limestone chips neutralizes any residual acids. From the tank the wastewater flows into Pond 3 via a short conveyence ditch which feeds a buried pipeline. Wastewater then may pass into Ponds 4, 5, 6A and 6B. If these ponds approach their capacity (defined by the minimum of 2 feet of freeboard) the wastewater may be diverted by underground pipes to Pond 9, or to Ponds 7 and 8.

FIGURE 6-1
WASTEWATER DISPOSITION IN
EVAPORATION PONDS

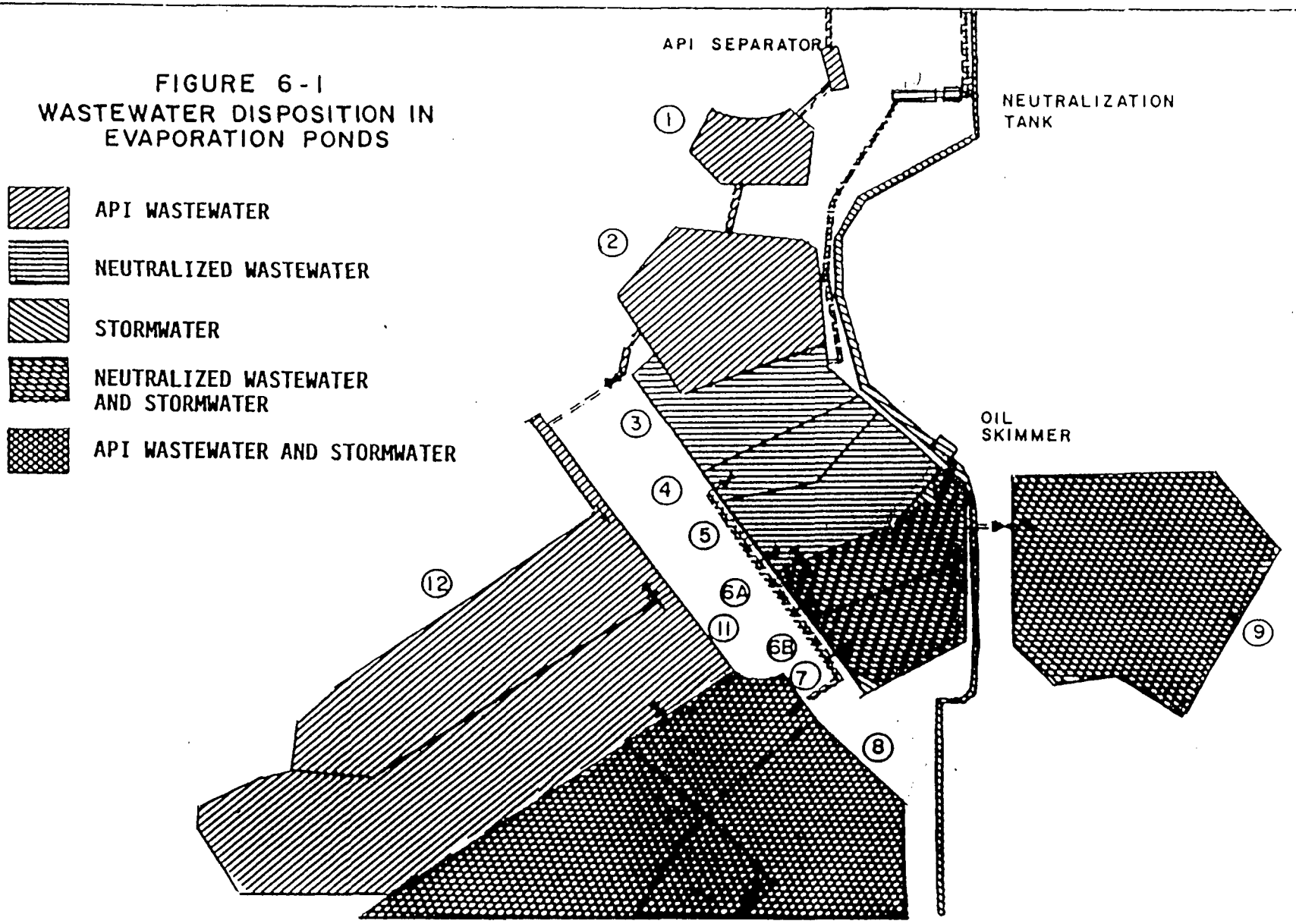

TABLE 6-1

WATER BALANCE FOR EVAPORATION PONDS

MONTH	PRECIP. (IN.)	PAN EVAP. (IN.)	DIFFERENCE (IN.)
Jan	.56	.38	+.18
Feb	.50	.50	0.00
Mar	.61	.84	-.23
Apr	.43	2.05	-1.62
May	.43	3.82	-3.39
June	.52	5.81	-5.29
July	1.83	7.11	-5.28
Aug	1.65	5.92	-4.27
Sep	.99	3.89	-2.90
Oct	1.17	2.03	-.86
Nov	.62	.70	-.08
Dec	.68	.39	+.29
	9.99	33.44	-23.45

Average discharge = 161,000 gallons/day

Yearly Discharge = 365 days x 161,000 gallons/day = 58,765,000 gallons/year

58,765,000 gallons/year x 1 Acre-Foot/325,742 gallons = 180.4 AF/year

Net Pond Evaporation = 23.45 in/year = 1.954 ft/year

Pond Evaporative Capacity = 117 Acres x 1.954 ft/year = 228.6 AF/year

Relative Capacity = $\frac{228.6 \text{ AF/year}}{180.4 \text{ AF/year}}$ = ~~127%~~

Stormwater which is not captured by the storm sewer system (which passes through the API separator) is collected into a ditch (Figure 6-1) which flows into the oil skimmer. This skimmer is a smaller, unheated version of the API separator which serves to remove any oily phases from stormwater. From the oil skimmer, the wastewater then flows by conveyence channel to Pond 6A. To prevent overtopping of either the ponds or the skimmer, some of the skimmer effluent can be diverted to grade, adjacent to Pond 8.

6.1.1 Evaporation Ponds

The Ciniza Refinery currently maintains 16 evaporation ponds, with a total available area of approximately 117 acres. These ponds were constructed at various times in the history of the refinery, but the last ponds were built in 1972. These ponds are constructed with natural liners and berms made from the clays and shales of the Chinle Formation, which have an extremely low natural permeability (10^{-7} to 10^{-9} ft/sec).

A minimum of 2 feet of freeboard is maintained at all times by daily inspection, which also serves to immediately identify any erosion or structural problems. As discussed in Section 6.1, Giant maintains a comprehensive system of flow control, which allows plant personnel to divert the wastewater from pond to pond in order to maximize the area available for evaporation and to prevent overfilling of any pond.

As described in Section 4.3.4, boreholes advanced to depths of over 50 feet, and located within 20 feet of the pond berms, were observed to be completely devoid of free water. Soil-moisture analyses (Appendix A) show that there is no soil saturation at any level above the Ciniza sand. This demonstrates that even after over 13 years of service, these ponds retain an excellent degree of hydraulic integrity.

6.1.2 Water Balance For Evaporation Ponds

Giant's evaporation pond system has a total area of approximately 117 acres, and recieves a water input of approximately 160,000 gallons of water per day. As outlined in Table 6-1, the local evaporation rates

indicate that [redacted] Refinery's ponds have an evap[redacted]tive capacity of 130% in excess of the present wastewater load. Giant has considerable area available on site for the construction of additional ponds if necessary. This calculation is based on pan evaporation, and as such is quite conservative. Using a lake evaporation of 50 in/year, the ponds have a capacity of 216% of load.

In the unlikely event that 2.0 feet of freeboard cannot be maintained in the ponds for 2 consecutive quarters, or if overtopping was likely, Giant would take the steps (Contingency Plans) that are further discussed in Section 8.0.

6.1.3 Proposed Aerated Lagoon

In order to reduce the levels of certain waste parameters in the wastewater from the API separator, Giant is currently examining the feasibility of constructing an aerated lagoon for secondary biological treatment of the API separator effluent. This secondary treatment is based on the principal of biological degradation of hydrocarbon and other waste constituents by coliform and other natural bacteria. Both the bacteria and their necessary nutrients will either be supplied or supplemented by domestic sewage. The sewage will be diverted to the existing API-separator lagoon, which is located adjacent to the API separator. Aerators will be installed to facilitate aerobic degradation of wastes. The aerated lagoon design is based upon a minimum 60% BOD reduction. Further information on this proposed lagoon will be provided with the Plans and Specifications.

7.0 MONITORING AND REPORTING PLAN

7.1 MONITORING

In conjunction with NMEID and RCRA regulations, the Ciniza Refinery has developed and maintained comprehensive plans for sampling and analysis of wastes and wastewater. A ground water monitoring network consisting of 10 monitoring wells is in place, and 4 of these wells (1 up-gradient, 3 down-gradient) in the uppermost aquifer (Sonsela) have been regularly sampled since 1982 (See Plates 3,4). The original 4 monitoring wells (MW Series) are completed in the Sonsela. Six new RCRA wells, completed in the Ciniza sand (SMW Series), were installed in October, 1985. These wells have been sampled, and analysis for all first-quarter RCRA parameters is in progress. Based on a review of the 4 years of RCRA analysis of samples from the monitoring wells in the Sonsela (MW Series), there is no evidence for any ground-water contamination due to refinery activities. Giant will continue to perform sampling and analysis of ground water from these wells, according to the schedule and parameters described in the Part B application.

Giant will monitor the quantities and quality of their discharges on a regular basis. This monitoring will include:

- Weir measurements on a quarterly basis to determine the quantity of wastewater discharged to the evaporation ponds
- Sampling and analysis of input to the proposed aerated lagoon on a quarterly basis, analysing for TDS, TOC, BOD, COD
- Sampling and analysis (for the parameters above) of the final effluent to the ponds, on an quarterly basis
- Inspection of all evaporation ponds for fluid levels and freeboard on a monthly basis, and following any major storms
- Sampling and analysis of ground water samples from the monitoring wells, according to the schedule outlined in Giant's Part B application, and transmittal of the results of these analyses to NMOCD annually

Giant has installed and attempted to sample several pressure-vacuum lysimeters near the Land Treatment Area. To date, these devices have produced no useful quantities of soil-pore water. Due to the extremely high soil-suction of the Chinle shales, it does not appear that any lysimeters will function in these soils. No further vadose-zone monitoring is planned at this time.

7.2 REPORTING AND RECORD KEEPING

Giant will report the results of its monitoring program to the Director on a yearly basis. If Giant elects to modify its facilities and/or processes in a manner which would result in a significant change in the quantity or chemical quality of the wastes discharged, the Director will be notified of these changes within 90 days.

Unplanned discharges, such as spills, leaks or process upsets, will be reported to the Director within 15 days. As outlined in the Contingency Plan (Section 8.0 of this document), Giant will take immediate steps to contain, control and mitigate the effects of any unplanned release of products or wastes.

Records of all monitoring and emergency-response activities will be retained at the refinery for 5 years. These records will be made available to the Director or his authorized representative upon request. Authorized representatives of the Director may, upon request, inspect and copy discharge plan records, inspect the plant's waste management and monitoring systems, sample effluents and collect samples from monitoring devices installed pursuant to NMOCD discharge plan requirements.

Under RCRA and NMHWMR, Giant will continue ground-water monitoring for a period of 30 years after closure of the Land Treatment Area. NMOCD will be provided with yearly reports of the results of this monitoring.

8.0 CONTINGENCY PLANS

Giant has developed a comprehensive Contingency Plan (included in the Part B Application filed with USEPA and NMEID) for dealing with any unplanned release of any substances which might pose a threat to human health or the environment. This contingency plan does not, however, address the evaporation ponds with respect to inspection, structural integrity, fluid levels or flooding potential.

Giant will inspect all active evaporation ponds on a monthly basis, or following any major storm. Erosion or other damage will be repaired in a timely manner, so that the structural integrity of the dikes is maintained. During monthly inspection, freeboard levels will be observed. If the 2-foot freeboard requirement is not met for 2 consecutive quarters, Giant will report this finding to NMOCD, and take one or more of the following steps:

- Construct additional ponds to contain and evaporate the additional wastewater
- Take steps to reduce the quantity of wastewater discharged
- Install devices (e.g., sprinklers) to enhance evaporation
- Evaluate other methods to restore the water balance

The hydrology of the site (confined ground water overlain by highly impermeable shales and clays) indicates that there is little or no chance that ground water would be affected by any spills of products, feedstocks or wastes. Spills will be handled under the Part B contingency plan, and all spills and the response to them are reported to NMEID within 15 days.

9.0 SUMMARY OF DISCHARGE PLAN REQUIREMENTS

This Discharge Plan Application summarizes the location, site characteristics, hydrogeology, processes, waste management systems, monitoring systems and reporting and contingency plans for the Ciniza Refinery. Under the New Mexico Water Quality Control Commission regulations as administered by the New Mexico Oil Conservation Division (NMOCD), Giant will:

- Submit plans and specifications of the present process and wastewater systems and any subsequent modifications to NMOCD
- Sample and analyze ground water from the existing network of monitoring wells, according to the schedules and parameters specified by the RCRA and NMHWMR regulations
- Inspect all evaporation ponds on a monthly basis
- Analyse all effluents on a quarterly basis
- Notify NMOCD within 15 days of any significant spill or release
- Take steps to modify pond volume and/or wastewater volumes if minimum freeboard requirements are not met for 2 consecutive quarters
- Notify NMOCD when an option for dealing with the flooding potential of pond #9 is selected, and provide NMOCD with as-built plans and specifications for the option selected

10.0 BASIS FOR APPROVAL

The hydrogeologic conditions at the Ciniza site, and Giant's comprehensive system of waste management and control act together to insure that there is no feasible danger of ground water contamination due to discharges to the present waste-management units. No present or foreseeable future users of ground water in the Ciniza area can be affected for the following reasons:

- Pump and slug tests indicate that the clay shales underlying the evaporation ponds have permeabilities of 10^{-8} to 10^{-9} ft/sec; this is <u>less</u> than the 10^{-7} ft/sec requirement for engineered clay liners specified by RCRA interim standards
- The clays and shales which overlie the Sonsela are highly impermeable, as evidenced by dry boreholes located within 20 feet of the pond perimeters
- The Ciniza sand (uppermost ground-water zone) is a thin, localized unit which does not appear to extend beyond the refinery boundary
- The uppermost aquifer, the Sonsela Sandstone Bed, is under considerable artesian pressure which prevents any downward migration of contaminants by advection
- Giant maintains an extensive network of ground-water monitor wells in the Sonsela and overlying Ciniza sand; regular sampling and analysis of ground water would immediately identify any migration of wastes to ground water
- The evaporative capacity of the evaporation ponds is 130% of the present waste input, and space exists to construct additional ponds if necessary
- Giant is planning to construct an aerated lagoon for wastewater treatment, which will further reduce the levels of many parameters of concern in the final effluent to pond
- There is no significant potential for wastewater release due to flooding by the 100 yr storm; Giant is currently evaluating options to eliminate the potential of flood damage to pond #9 from the 100 year storm

General Inorganics

Parameter
Biochemical Oxygen Demand
Chemical Oxygen Demand (Regular)
Oil and Grease
pH
Sulfide, Total
Total Organic Carbon
Total Dissolved Solids

Metals

Total Metals

Parameter
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel
Selenium

Refinery Hazardous Constituent Semivolatiles

Method 8270

Parameter
Anthracene
Benzo(a)anthracene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(a)pyrene
bis(2-Ethylhexyl) phthalate
Butyl benzyl phthalate
Chrysene
Dibenz(a,h)anthracene
Di-n-butyl phthalate
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
Diethyl phthalate
7,12-Dimethylbenz(a)-anthracene
Dimethyl phthalate
Di-n-octyl phthalate
Fluoranthene
Indene
1-Methylnaphthalene
Naphthalene
Phenanthrene
Pyrene
Pyridine
Quinoline
Benzenethiol
o-Cresol
m & p-Cresol(s)
2,4-Dimethylphenol
2,4-Dinitrophenol
4-Nitrophenol
Phenol

Refinery Hazardous Constituent Volatiles

Method 8240

Parameter
Benzene
Carbon disulfide
Chlorobenzene
Chloroform
EDB (1,2-Dibromoethane)
1,2-Dichloroethane
1,4-Dioxane
Ethylbenzene
2-Butanone (MEK)
Toluene
Styrene
Xylenes (total)

NMOCD SURFACE WASTE DISPOSAL FACILITY

ROUTINE INSPECTION AND MAINTENANCE PLAN

I) GENERAL DISPOSAL FACILITY DESCRIPTION:

The planned surface waste disposal facility will consist of approximately 1.5 acres of diked land area adjacent to the south side of the inactive airplane landing strip at Giant's Ciniza Refinery. The area will be used for the disposal of RCRA nonhazardous oily wastes. The area will have restricted access and will be posted accordingly. Applied wastes will be biologically degraded through tilling, fertilization, and irrigation. Total disposal capacity of the facility will be maintained at less than 1400 cubic yards.

II) WASTE APPLICATION:

A) APPLICABLE WASTES:

Only oily wastes that are "nonhazardous" per federal RCRA standards (40 CFR 260-299) shall be applied to the surface waste disposal facility. A determination of the "hazard status" of any waste stream designated for application to the surface waste disposal facility shall be made in accordance with federal RCRA guidelines and will involve either sampling and analysis of the waste, knowledge of the generation process, or both.

B) NONAPPLICABLE WASTES:

1) Wastes that are hazardous per federal RCRA standards by either direct listing or toxicity characteristic shall not be permitted in the waste disposal facility and shall be handled in accordance with applicable regulations.

2) Nonhazardous solid wastes such as rubbish, trash, debris, empty containers, and yard waste shall not be permitted in the surface waste disposal area.

3) Regulated nonhazardous solid wastes (such as asbestos) shall not be permitted in the surface waste disposal facility.

C) APPLICATION TECHNIQUES:

Oily waste shall be applied to the surface waste disposal area as evenly as possibly. Even application of wastes will prevent excessive oil loading in a single location. Waste shall be applied in three (3) to six (6) inch lifts or spread out when applied so as not to leave piles of oily waste standing in a single location.

II) ROUTINE INSPECTIONS:

A) WEEKLY INSPECTION:

1) At least once weekly, the earthen containment dikes around the surface waste disposal facility will be inspected for structural integrity. The dikes shall be considered structurally sound if the elevation of the lowest point on the containment dike above the interior level of the treatment area is sufficient to contain the design storm event water depth (plus freeboard) and the dike compaction and thickness are sufficient to resist erosion by the stormwater to be contained inside the dikes. A record of the weekly containment inspection shall be kept on a standard inspection form with other related data and maintained on-site for a period of one (1) year.

2) After any significant precipitation event and/or precipitation event accompanied by strong winds, the earthen containment dikes around the surface waste disposal facility shall be inspected for structural integrity as described in (A) above. An inspection after a significant storm event may also satisfy the weekly inspection requirement of (A) above.

3) The *active* waste application and incorporation areas of the surface waste disposal facility shall be inspected at least once weekly for free oil liquids, staining, accumulation or ponding of water, visibly dry soil conditions, levelness, and/or the uneven application of wastes. Based on the observations made, the necessity of tilling, leveling, irrigating, fertilizing, and/or restricting the application of addition wastes will be assessed and recorded. A record of this inspection shall be kept on a standard inspection form with other related data and maintained on-site for a period of one (1) year.

4) At least once weekly, all equipment intended to limit access to the surface waste disposal facility shall be inspected for effectiveness and structural integrity. In addition, all postings of the limited access area shall be inspected for legibility and soundness. A record of this inspection shall be kept on a standard inspection form with other related data and maintained on-site for a period of one (1) year.

III) SOIL MANAGEMENT:

The following soil management techniques will be employed during the "warm weather" degradation season which occurs between April and October of a calendar year:

A) TILLING:

After each significant application of waste, or at least once every sixty (60) days,

VI) RECORD KEEPING:

A) OPERATIONS LOG BOOK:

A permanent log book shall be maintained for a historical record of the following:

1) Waste application volumes in tons.

2) Soil maintenance activities.

3) Monitoring activities and boring locations.

4) Major improvements and/or maintenance items.

B) STANDARD WEEKLY INSPECTION FORM:

A standard inspection form shall be used for recording data required in the weekly inspections (Section III.A). The forms shall be kept in a three ring style binder and retained on-site for a period of one (1) year.

VII) REPORTING:

On an annual basis, Giant will submit a formal report to the NMOCD on the past year's activities at the surface waste disposal facility. The report will include results from the soil monitoring activities, soil boring locations, a summary of soil maintenance activities, and a summary of any major maintenance work that was required. For convenience, the annual activities report will be submitted to the OCD with Giant's annual ground water report.

ATTACHMENT G

Closure Plan

NMOCD SURFACE WASTE DISPOSAL FACILITY

CLOSURE PLAN

I) CLOSURE OF WASTE DISPOSAL FACILITY:

At the time of closure of the surface waste disposal facility, Giant will discontinue the application of oily wastes to the area. Also at the time of closure, a formal written notification of the termination of use of the surface waste disposal facility will be submitted to the NMOCD. Soil maintenance and monitoring practices will be continued in the facility for *at least* two (2) full degradation seasons or *up to two (2) full calendar years* after the last waste application. No closure contamination assessment or drilling shall be done until after the end of the two (2) degradation seasons described above.

II) CLOSURE ASSESSMENT:

After completion of the two (2) full degradation seasons after the last waste application, Giant will begin a "closure assessment" of any remaining or migratory contamination resulting from the waste disposal activities at the facility. The assessment will be conducted in two (2) phases, with the second phase assessment being contingent on the findings of the first phase assessment. All assessment activities will consist of soil borings with continuous core sampling and analysis of samples collected at predetermined depths. Lithologic logs will be maintained for all borings and notes of visible staining or odors will be included.

A) PHASE I CLOSURE ASSESSMENT:

The PHASE I Closure Assessment will consist of six (6) randomly located borings. The borings will be located by developing a numbered grid for the waste disposal facility area and selecting six (6) drilling locations from a computer generated random number table corresponding to the number of grid cells. Each boring will be drilled to at least a total depth below the original grade level of five (5) feet. Soil samples shall be collected at depths as shown in TABLE 1.

TABLE 1

PHASE I BORING SAMPLING DEPTHS & ANALYSES

SAMPLE DEPTH	SAMPLE QUANTITY	ANALYSIS GROUP
INCORPORATION ZONE	TWO (2)	I
ORIGINAL GRADE INTERFACE	ONE (1)	I
THREE (3) FEET BELOW ORIGINAL GRADE	ONE (1)	I
FIVE (5) FEET BELOW ORIGINAL GRADE	ONE (1)	II

1) GROUP I ANALYSES:

Total Petroleum Hydrocarbons (EPA 8015)
BTEX (EPA 8020)
Ph
Total Kjeldahl Nitrogen
Total Phosphorous
% Moisture

2) GROUP II ANALYSES:

Total Petroleum Hydrocarbons (EPA 8015)
BTEX (EPA 8020)

3) ANALYTICAL PROCEDURES:

All samples collected for satisfying the requirements of this closure plan shall be collected, handled, transported, and analyzed in accordance with applicable federal EPA and/or state standards. All analysis shall be conducted at a licensed and qualified laboratory that will provide all applicable QA/QC data and documentation.

4) DECONTAMINATION PROCEDURES:

All equipment used during soil sampling activates will be decontaminated using a non-petroleum based soap wash, distilled water wash rinse, and final isopropyl alcohol rinse followed by air drying.

The drilling equipment shall be decontaminated between borings using a non-petroleum based soap wash and a high pressure steam rinse.

5) PHASE I CLOSURE ASSESSMENT REPORT:

Giant will submit a report containing the data collected during the PHASE I assessment to the NMOCD within ninety (90) days of completion of the field work. The report will contain boring locations, sample number and depths, analytical results and applicable QA/QC data, an overall summary of the assessment finds, and a conclusion.

If analytical data from the PHASE I assessment samples show concentrations in excess of 10 mg/Kg Benzene, 500 mg/Kg Total BTEX, or 1000 mg/Kg TPH at five (5) feet below the original grade, a PHASE II assessment may be required at the discretion of the NMOCD. If analytical data from the PHASE I assessment samples are less than the concentration criteria stated above, no PHASE II assessment will be required by Giant or the NMOCD, and Giant will have clearly

demonstrated that no migration of contaminants below the immediate waste disposal facility has occurred with the PHASE I assessment. Upon receipt of confirmation from the NMOCD that the satisfactory completion of the PHASE I closure assessment has been demonstrated, Giant may "clean close" the facility as described in this plan without further assessment or monitoring.

B) PHASE II CLOSURE ASSESSMENT:

If the results of the PHASE I closure assessment described above reveal vertical migration of contaminants, the NMOCD may require additional assessment boring(s) in areas of concern. All PHASE II boring(s) shall be drilled to a depth required to obtain two (2) sequential samples that are below the action levels stated above using EPA 8015 and EPA 8020 analytical methods.

Upon completion of all additional assessments required by the NMOCD, Giant will submit a formal written report on the assessment findings to the NMOCD within ninety (90) day of the completion of field work. The report shall be in the same format as described in the PHASE I report above (Section II.A.5).

Based on the extent of contamination defined during the PHASE II assessment, Giant may propose potential remediation and/or corrective action to the NMOCD in the conclusion section of the PHASE II assessment report or in letter form at a later date.

Upon receipt of confirmation from the NMOCD that Giant has demonstrated successful remediation of any contamination reveled during the PHASE II assessment, Giant may "clean close" the facility as described in this plan without further assessment or monitoring.

III) CLEAN CLOSURE:

Upon receipt of confirmation from the NMOCD that Giant has satisfactorily completed the PHASE I assessment or PHASE II assessments and/or remediation described above, Giant may "clean close" the waste disposal facility. Giant shall maintain the earthen dike containment area, limited access, and warning postings at the inactive surface waste disposal facility for a period of five (5) years from the date of assessment and/or remediation completion. After that time, Giant may request permission from the NMOCD to level the dikes, remove fences & gates, remove postings, and allow the area to return to nature. Giant has the option of seeding a vegetative cover or allowing native growth to germinate over the area.

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 Regulations, the following discharge plan applications and modification application have been submitted to the Director of the Oil Conservation Division, 2040 South Pacheco, Santa Fe, New Mexico 87505, Telephone (505) 827-7131:

(GW-032) - GIANT REFINING Company, Route 3, Box 7, Gallup, New Mexico, 87301 has submitted a modification application for the previously approved discharge plan for their Ciniza Refinery located in Section 28 and Section 33, Township 15 North, Range 15 West, NMPM, Mckinley County, near Gallup, New Mexico. The modification will consist of the addition of a landfarm for the treatment of non-hazardous oily wastes. Groundwater most likely to be affected by a spill, leak, or accidental discharge to the surface varies in depth from 70 feet to 140 feet with an approximate total dissolved solids concentration of 950 mg/l. The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

(GW-192) - ENVIRO-CHEM, P.O. BOX 668, Hobbs, New Mexico, 88240 has submitted a discharge plan application for their Enviro-Chem facility located in NE/4 NE/4, Section 4, Township 19 South, Range 38 East, NMPM, Lea County, in the city of Hobbs, New Mexico. The facility is an oil field chemical service company with no wastewater discharges from the facility. Groundwater most likely to be affected by a spill, leak, or accidental discharge to the surface is at a depth of approximately 50 feet with a total dissolved solids concentration of approximately 100 mg/l. The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

(GW-193) - Meridian Oil Inc., P.O. BOX 4289, Farmington, New Mexico, 87499-4289 has submitted a discharge plan application for their Sandstone Compressor Station located in SE/4, Section 32, Township 31 North, Range 8 West, NMPM, San Juan County, New Mexico. The station will compress natural gas with no process waste stream discharges to the ground; all waste streams will be stored onsite in closed top tanks and then transported to an NMOCD approved disposal facility. Groundwater most likely to be affected by a spill, leak, or accidental discharge to the surface is at a depth of approximately 80 feet with a total dissolved solids concentration of approximately 1700 mg/l. The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

(GW-194) - Meridian Oil Inc., P.O. BOX 4289, Farmington, New Mexico, 87499-4289 has submitted a discharge plan application for their Frances Mesa Compressor Station located in SW/4, Section 27, Township 30 North, Range 7 West, NMPM, Rio Arriba County, New Mexico. The station will compress natural gas with no process waste stream discharges to the ground; all waste streams will be stored onsite in closed top tanks and then transported to an NMOCD approved disposal facility. Groundwater most likely to be affected by a spill, leak, or accidental discharge to the surface is at a depth of approximately 240 feet with a total dissolved solids concentration of approximately 1700 mg/l. The discharge plan addresses 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 should be held. A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the director will approve or disapprove the proposed plan based on 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 2nd day of May, 1995.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

SEAL

WILLIAM J. LEMAY, Director

NO EFFECT FINDING

The described action will have no effect on listed species, [redacted]

Date May 15, 1995

Consultation # GW95OCD2

Approved by

U.S. FISH and WILDLIFE SERVICE
NEW MEXICO ECOLOGICAL SERVICES FIELD OFFICE
ALBUQUERQUE, NEW MEXICO

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 Regulations, the following discharge plan applications and modification application have been submitted to the Director of the Oil Conservation Division, 2040 South Pacheco, Santa Fe, New Mexico 87505, Telephone (505) 827-7131:

(GW-032)-GIANT REFINING Company, Route 3, Box 7, Gallup, New Mexico, 87031 has submitted a modification application for the previously approved discharge plan for their Ciniza Refinery located in Section 28 and Section 33, Township 15 North, Range 15 West, NMPM, McKinley County, near Gallup, New Mexico. The modification will consist of the addition of a landfarm for the treatment of non-hazardous oily wastes. Groundwater most likely to be affected by a spill, leak, or accidental discharge to the surface varies in depth from 70 feet to 140 feet with an approximate total dissolved solids concentration of 950 mg/l. The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

(GW-192)-ENVIRO-CHEM, P.O. BOX 952, Hobbs, New Mexico, 88240 has submitted a discharge plan application for their Enviro-Chem facility located in NE/4 NE/4, Section 4, Township 19 South, Range 38 East, NMPM, Lea County, in the City of Hobbs, New Mexico. The facility is an oil field chemical service company with no wastewater discharges from the facility. Groundwater most likely to be affected by a spill, leak, or accidental discharge to the surface is at a depth of approximately 50 feet with a total dissolved solids concentration of approximately 100 mg/l. The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

(GW-193)-Meridian Oil Inc., P.O. BOX 4289, Farmington, New Mexico, 87499-4289 has submitted a discharge plan application for their San Juan Compressor Station located in SE/4, Section 32, Township 31 North, Range 13 West, NMPM, San Juan County, New Mexico. The station will compress natural gas with no process waste stream discharges to the ground; all waste streams will be stored onsite in closed top tanks and then transported to an NMOCD approved disposal facility. Groundwater most likely to be affected by a spill, leak or accidental discharge to the surface is at a depth of approximately 80 feet with a total dissolved solids concentration of approximately 1700 mg/l. The discharge plan addresses 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. This 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 (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 should be held. A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on 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 2nd day of May, 1995.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
s/WILLIAM J. LEMAY, Director

Journal: May 12, 1995.

RECEIVED
JUN 13 1995
Environmental Bureau
Oil Conservation Division

OIL SEAL
Jan Garcia
NOTARY PUBLIC
OF NEW MEXICO
5-20-98

STATE OF NEW MEXICO
County of Bernalillo SS

Bill Tafoya being duly sworn declares and says that he is Classified Advertising manager of **The Albuquerque Journal**, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made of assessed as court cost; that the notice, copy of which is hereto attached, was published in said paper in the regular daily edition, for 1 times, the first publication being of the 12 day of May, 1995, and the subsequent consecutive publications on _____, 1995

Bill Tafoya

Sworn and subscribed to before me, a notary Public in and for the County of Bernalillo and State of New Mexico, this 15 day of May 1995

PRICE 33.71

Statement to come at end of month.

CLA-22-A (R-1/93) ACCOUNT NUMBER 130932

Affidavit of Publication

STATE OF NEW MEXICO
) SS
COUNTY OF McKINLEY

Denise Franco being duly sworn upon oath, deposes and says:

As Legal Clerk of The Independent, a newspaper published in and having a general circulation in McKinley County, New Mexico and in the City of Gallup, New Mexico and having a general circulation in Cibola County, New Mexico and in the City of Grants, New Mexico and having a general circulation in Apache County, Arizona and in the City of St. Johns and in the City of Window Rock, Arizona therein: that this affiant makes this affidavit based upon personal knowledge of the facts herein sworn to. That the publication, a copy of which is hereto attached was published in said newspaper during the period and time of publication and said notice was published in the newspaper proper, and not in a supplement thereof,

for one time, the first publication being on the 11th day of May, 19 95 the second publication being on the _____ day of _____, 19_____ the third publication on the _____ day of _____, 19_____.

and the last publication being on the _____ day of _____, 19_____.

That such newspaper, in which such notice or advertisement was published, is now and has been at all times material hereto, duly qualified for such purpose, and to publish legal notices and advertisements within the meaning of Chapter 12, of the statutes of the State of New Mexico, 1941 compilation.

Denise Franco
Affiant.

Sworn and subscribed to before me this 13th day of May, A.D., 19 95.

Notary Public

My commission expires
June 22, 1997

2735 2M BUTLER'S Gallup

LEGAL NOTICE
Gallup McKinley County
New Mexico

Energy, Minerals and Natural Resources Department Oil Conservation Division

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan application and modification application have been submitted to the Director of the Oil Conservation Division, 2040 South Pacheco, Santa Fe, New Mexico 87505, Telephone 505-827-7131:

(GW-032) - GIANT REFINING Company, Route 3, Box 7, Gallup, New Mexico, 87301 has submitted a modication aplication for the previously approved discharge plan for their Ciniza Refinery located in Section 28 and Section 33, Township 15 North, Range 15 West, NMPM, McKinley County, near Gallup, New Mexico. The modifiction will consist of the addition of a landfarm for the treatment of non-hazardous oily waste. Groundwater most likely to be affected by a spill, leak, or accidental discharge to the surface varies in depth from 70 feet to 140 feet with an approximate total dissolved solids concentration of 950 mg/l. The discharge to the surface will be managed.

(GW-192) - ENVIRO-CHEM, P.O. Box 668, Hobbs, New Mexico, 88240 has submitted a discharge plan application for their Envir-Chem facility located in NE/4 NE/4, Section 4, Township 19 South, Range 38 East, NMPM, Lea County, in the city of Hobbs, New Mexico. The facility is an oil field chemical service company with no wastewater discharges from the facility. Groundwater most likely to be affected by a spill, leak, or accidental discharge to the surface is at a depth of approximately 50 feet with a total dissolved solids concentration of approximately 100mg/l. The discharge plan address how spills, leaks, and other accidental discharges to the surface will be managed.

(GW-193) - Meridian Oil Inc., P.O. Box 4289, Farmington, New Mexico, 87499-4289 has submitted a discharge plan application for their Sandstone Compressor Station located in SE/4, Section 32, Township 31 North, Range 8 West, NMPM, San Juan County, New Mexico. The station will compress natural gas with no process waste stream discharge to the ground; all waste streams will be stored onsite in closed top tanks and then transported to an NMOCD approved disposal facility. Groundwater most likely to be affected by a spill, leak, or accidental charge to the surface is at a depth of approximately 80 feet with a total dissolved solids concentration of approximately 1700mg/l. The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

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GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 2nd day of May 1995.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
William J. LeMay, Director

Legal #11792 Publish in The Independent May 11, 1995

AFFIDAVIT OF PUBLICATION

No. 34755

STATE OF NEW MEXICO
County of San Juan:

ROBERT LOVETT being duly sworn says: That he is the Classified Manager of THE DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice was published in a regular and entire issue of the said DAILY TIMES, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for publication on the following day(s):

Wednesday, May 10, 1995

and the cost of publication was: $97.25

Robert Lovett

On 5-10-95 ROBERT LOVETT appeared before me, whom I know personally to be the person who signed the above document.

Deanna Bath

My Commission Expires

April 2, 1996

COPY OF PUBLICATION

Legals

NOTICE OF PUBLICATION

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

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ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

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If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the director will approve or disapprove the proposed plan based on 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 2nd day of May, 1995.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

S E A L

WILLIAM J. LEMAY, Director

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

March 15, 1995

CERTIFIED MAIL
RETURN RECEIPT NO.Z-765-962-647

Mr. Walter D. Toomer
Giant Refining - Ciniza
Route 3, Box 7
Gallup, NM 87301

RE: Tank Modification
Discharge Plan # GW 32
Giant Ciniza Refinery

Dear Mr. Toomer:

The New Mexico Oil Conservation Division (OCD) has received Giant's letter dated February 16, 1995 requesting the replacement of the API oil/water separator with three 5,000 barrel internal floating roof tanks. Your request is considered a minor modification to the above referenced discharge plan and public notice was not issued.

The requested modification is hereby approved with the condition that Giant submit a "closure plan" for the existing API oil/water separator pit.

The Application for modification was submitted pursuant to Water Quality Control Commission (WQCC) Regulation 3-107.C and is approved pursuant to WQCC Regulation 3-109. Please note that "When a plan has been approved, discharges must be consistent with the terms and conditions of the plan". Pursuant to Section 3-107.C you are required to notify the Director of any facility expansion, production increase or process modification that would result in a significant modification in the discharge of potential ground water contaminants.

Note, that OCD approval does not relieve Giant of liability should your operation result in actual contamination of surface waters, ground waters or the environment which is result of this work plan. In addition , OCD approval does not relieve Giant of responsibility for compliance with any other Federal, State, or local laws and/or regulations.

If you have any questions please feel free to call Pat Sanchez at (505)-827-7156.

Sincerely,

William J. LeMay
Director

WJL/pws

XC: Denny Foust

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

March 3, 1995

CERTIFIED MAIL
RETURN RECEIPT NO.Z-765-962-646

RE: Tank Modification Approval
OCD Facility Discharge Plan # GW 32

Dear Mr. Toomer:

The New Mexico Oil Conservation Division (OCD) has received Giants letter dated February 16, 1995 and shall grant the changes in the facility without altering the existing discharge plan GW-32.

The only requirement that OCD would have is that Giant submit a "closure plan" for the existing API oil/water separator pit.

Note, that OCD approval does not relieve Giant of liability should it later be found that contamination exists which is beyond the scope of this work plan. In addition , OCD approval does not relieve Giant of responsibility for compliance with any other Federal, State , Tribal or other local laws and/or regulations. If you have any questions regarding this matter feel free to call me at (505)-827-7156.

Sincerely,

Patricio W. Sanchez
Petroleum Engineer, Environmental Bureau OCD

XC: Denny Foust

GIANT REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

February 16, 1995

Mr. Roger Anderson
Environmental Bureau Chief
Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87504-2088

VIA: CERTIFIED MAIL #P 009 767 290
RETURN RECEIPT REQUESTED

RE: Giant Refining - Ciniza
OCD Facility Discharge Plan #GW-32
Wastewater / Slop Oil Handling Revisions

Dear Mr. Anderson:

Giant Refining Company is planning to replace the existing API oil/water separator at Giant's Ciniza Refinery. Giant will employ three (3) 5,000 barrel internal floating roof tanks as new oil/water separation units. The use of internal floating roof tanks in refinery wastewater service will provide enhanced oil/water separation, VOC emissions control, operational flexibility, and high flow surge capacity.

By replacing the existing API oil/water separator with tankage, Giant expects improved physical treatment of the refinery wastewater. Given that this replacement will not adversely alter the character of the wastewater or the treatment process, the replacement does not qualify as an "*alteration*" as defined in Water Quality Control Commission Regulation 1-201 and, therefore, will not require a revision of Ciniza's current OCD Facility Discharge Plan #GW-32, approved August 21, 1992.

Per the requirement of OCD Facility Discharge Plan #GW-32, Section 9, Giant Refining submits this correspondence as notice to the OCD of its intention to revise the wastewater system at Giant's Ciniza Refinery as described herein. Due to the constraints of contractor availability, Giant requests verbal authorization from the OCD to begin construction as soon as possible, with written confirmation to follow by mail when convenient.

The environmental staff at Ciniza would be happy to discuss this matter with you and your staff in person. If you or your staff have any questions regarding this matter, please call me at (505) 722-0212.

Sincerely,

Walter D. Toomer
Environmental Engineer

WDT

cc: Mr. Denny Foust
Deputy Oil & Gas Inspector
Oil Conservation Division
1000 Reo Brazos Rd.
Aztec, NM 87410

J. Stokes
D. Pavlich
L. Shelton
WWT File

GIANT REFINING CO.
Route 3, Box 7
Gallup, New Mexico
87301
505
722-3833

August 24, 1994

Roger Anderson
Environmental Bureau Chief
Oil Conservation Division
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87504-2088

Re: GW-32 Groundwater Resampling

Dear Mr. Anderson:

Giant Refining Company - Ciniza notified your office by letter, on July 5, 1994 that additional sampling would be performed on wells OW-1 and OW-2 on or before July 8, 1994.

Results of that sampling were received on July 29, 1994 (see attachment). Those results showed no contamination in OW-1 but showed total xylenes in OW-2 at 2.2 ug/l. OW-1 and OW-2 were sampled again on August 11, 1994 and the analytical results showed non-detects of BTEX in both wells.

Giant has fulfilled its commitment to sample OW-1 quarterly. In reviewing the tabulated analytical data (see attachment), Giant has concluded that the next sampling of OW-1 and OW-2 should occur with the annual groundwater sampling event in the spring of 1995. If the results of that sampling are non-detects, Giant will sample on an annual basis as required by Discharge Permit GW-32.

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

Sincerely,

Lynn Shelton

Lynn Shelton
Senior Environmental Coordinator
Giant Refining Company

TLS:sp

cc: David Pavlich, HS&E Manager, Giant Refining Company
Kim Bullerdick, Corporate Counsel, Giant Industries Arizona, Inc.
Denny Foust, OCD, Aztec

TLS\RAOCD824

OW-1 Giant Refining Gallup, New Mexico

TCL Volatile Organics
Method 8240

Parameter	28 APR 93 Result	4 JUN 93 Result*	14 JUL 93 Result	29 OCT 93 Result	27 APR 94 Result	6 JUL 94 Result	11 AUG 94 Result	Units
Benzene	ND	0.9	ND	ND	ND	ND	ND	ug/L
Toluene	2.3	1.9	1.4	ND	0.9	ND	ND	ug/L
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ug/L
Xylenes (total)	ND	1.6	0.6	ND	2.7	ND	ND	ug/L

OW–2 Giant Refining Gallup, New Mexico

TCL Volatile Organics
Method 8240

Parameter	28 APR 93 Result	27 APR 94 Result	7 JUL 94 Result	11 AUG 94 Result	Units
Benzene	ND	ND	ND	ND	ug/L
Toluene	ND	ND	ND	ND	ug/L
Ethylbenzene	ND	ND	ND	ND	ug/L
Xylenes (total)	ND	1.1	2.2	ND	ug/L

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY RESULTS

TEST : BTEX, MTBE (EPA 8020)

CLIENT : GIANT REFINING ATI I.D.: 407325

PROJECT # : (NONE)

PROJECT NAME : GROUNDWATER

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
03	OW-1	AQUEOUS	07/06/94	NA	07/11/94	1
04	OW-2	AQUEOUS	07/07/94	NA	07/11/94	1

PARAMETER	UNITS	03	04
BENZENE	UG/L	<0.5	<0.5
TOLUENE	UG/L	<0.5	<0.5
ETHYLBENZENE	UG/L	<0.5	<0.5
TOTAL XYLENES	UG/L	<0.5	2.2
METHYL-t-BUTYL ETHER	UG/L	<2.5	<2.5
SURROGATE:			
BROMOFLUOROBENZENE (%)		102	103

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY RESULTS

TEST : BTEX (EPA 8020)

CLIENT : GIANT REFINING ATI I.D.: 408354

PROJECT # : (NONE)

PROJECT NAME : GROUNDWATER

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	OW-1	AQUEOUS	08/11/94	NA	08/16/94	1
02	OW-2	AQUEOUS	08/11/94	NA	08/16/94	1

PARAMETER	UNITS	01	02
BENZENE	UG/L	<0.5	<0.5
TOLUENE	UG/L	<0.5	<0.5
ETHELBENZENE	UG/L	<0.5	<0.5
TOTAL XYLENES	UG/L	<0.5	<0.5
SURROGATE:			
BROMOFLUOROBENZENE (%)		83	94

GIANT
REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

August 24, 1994

Benito Garcia
Director
Hazardous and Radioactive Material Bureau
New Mexico Environment Department
525 Camino De Los Marquez
Santa Fe, New Mexico 87502

Re: Additional Sampling, Annual Groundwater Reporting
NMD000333211-2

Dear Mr. Garcia:

In the letter to you dated June 29, 1994, Giant Refining Company - Ciniza reported the presence of acetone in one of the early detection wells, SMW-6, at Giant's Ciniza facility.

Giant committed to sampling and analyzing the well to verify the presence of acetone. The well was resampled on July 6, 1994 and the analytical data indicated that acetone was not present (see attachment). This corroborates Giant's belief that the presence of acetone in the sample collected April 29, 1994 was probably due to lab contamination.

Giant will resume routine sampling of SMW-6 as required by the facility's Part B Permit.

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

Sincerely,

Lynn Shelton
Senior Environmental Coordinator
Giant Refining Company

TLS:sp

cc: David Pavlich, HS&E Manager, Giant Refining Company
Kim Bullerdick, Corporate Counsel, Giant Industries Arizona, Inc.
Roger Anderson, OCD

TLS\BGERR0824

SMW-6 Giant Refining Gallup, New Mexico

Volatile Organics
Method 8240

Parameter	30 NOV 93 Result	29 APR 94 Result	6 JUL 94 Result	Units	Reporting Limit
Chloromethane	ND	ND	ND	ug/L	10
Bromomethane	ND	ND	ND	ug/L	10
Vinyl chloride	ND	ND	ND	ug/L	10
Chloroethane	ND	ND	ND	ug/L	10
Methylene chloride	ND	ND	ND	ug/L	5.0
Acetone	ND	11.0	ND	ug/L	10
Carbon disulfide	---	ND	ND	ug/L	5.0
1,1-Dichloroethene	ND	ND	ND	ug/L	5.0
1,1-Dichloroethane	ND	ND	ND	ug/L	5.0
1,2-Dichloroethene (cis/trans)	ND	ND	ND	ug/L	5.0
Chloroform	ND	ND	ND	ug/L	5.0
1,2-Dichloroethane	ND	ND	ND	ug/L	5.0
2-Butanone	---	---	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ND	ND	ug/L	10
Carbon tetrachloride	ND	ND	ND	ug/L	5.0
Vinyl acetate	---	---	ND	ug/L	5.0
Bromodichloromethane	ND	ND	ND	ug/L	10
trans-1,3-Dichloropropene	ND	ND	ND	ug/L	5.0
Trichloroethene	---	---	ND	ug/L	5.0
Chlorodibromomethane	---	---	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ND	ND	ug/L	5.0
Benzene	ND	ND	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ND	ND	ug/L	5.0
2-Chloroethyl vinyl ether	ND	ND	ND	ug/L	10
Bromoform	ND	ND	ND	ug/L	5.0
4-Methyl-2-pentanone	---	---	ND	ug/L	10
2-Hexanone	ND	ND	ND	ug/L	10
1,1,2,2-Tetrachloroethane	ND	ND	ND	ug/L	5.0
Tetrachloroethene	---	---	ND	ug/L	5.0
Toluene	ND	ND	ND	ug/L	5.0
Chlorobenzene	ND	ND	ND	ug/L	5.0
Ethylbenzene	ND	ND	ND	ug/L	5.0
Stryene	---	---	ND	ug/L	5.0
Xylenes (total)	ND	ND	ND	ug/L	5.0

Analytical Technologies, Inc.

VOLATILE ORGANICS

Method 624

Lab Name: Analytical Technologies, Inc.
Client Name: ATI-NM
Client Project ID: Giant -- 407325
Lab Sample ID: 94-07-074-02
Sample Matrix: Water

Sample ID: SMW-6

Date Collected: 07/06/94
Date Analyzed: 07/14/94
Dilution Factor: 10

Analyte	Results (ug/L)	Detection Limit (ug/L)
Chloromethane	ND	100
Bromomethane	ND	100
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	50
Acetone	ND	100
Carbon disulfide	ND	10
1,1-Dichloroethene	ND	10
1,1-Dichloroethane	ND	10
1,2-Dichloroethene (Total)	ND	10
Chloroform	ND	10
1,2-Dichloroethane	ND	10
2-Butanone (MEK)	ND	100
1,1,1-Trichloroethane	ND	10
Carbon tetrachloride	ND	10
Vinyl acetate	ND	100
Bromodichloromethane	ND	10
1,1,2,2-Tetrachloroethane	ND	10
1,2-Dichloropropane	ND	10
trans-1,3-Dichloropropene	ND	10
Trichloroethene	ND	10
Dibromochloromethane	ND	10
1,1,2-Trichloroethane	ND	10
Benzene	ND	10
cis-1,3-Dichloropropene	ND	10
2-Chloroethylvinylether	ND	100
Bromoform	ND	50
2-Hexanone (MBK)	ND	100
4-Methyl-2-pentanone (MIBK)	ND	100
Tetrachloroethene	ND	10
Toluene	ND	10
Chlorobenzene	ND	10
Ethylbenzene	ND	10
Styrene	ND	10
Total Xylenes	ND	10

SURROGATE RECOVERIES

Analyte	% Recovery
1,2-Dichloroethane-d4	98
Toluene-d8	98
Bromofluorobenzene	99

Analytical Technologies, Inc.

VOLATILE MATRIX SPIKE RECOVERY

Method 624

Lab Name: Analytical Technologies, Inc.
Client Name: ATI-NM
Client Project ID: Giant -- 407325
Lab Sample ID: 40749908/AZ

Sample ID: In House

Date Collected: N/A
Date Analyzed: 07/12/94
Sample Matrix: Water

Analyte	Spike Added (ug/L)	Sample Concentration (ug/L)	MS Concentration (ug/L)	MS % Rec
1,1-Dichloroethene	50	ND	51	102
Trichloroethene	50	ND	51	102
Chlorobenzene	50	ND	51	102
Toluene	50	ND	50	100
Benzene	50	ND	50	100

Analyte	Spike Added (ug/L)	MSD Concentration (ug/L)	MSD % Recovery	% RPD
1,1-Dichloroethene	50	50	100	2
Trichloroethene	50	49	98	4
Chlorobenzene	50	50	100	2
Toluene	50	49	98	2
Benzene	50	49	98	2

ND = Not Detected

Analytical Technologies, Inc.

VOLATILE ORGANICS

Method 624

Lab Name: Analytical Technologies, Inc.
Client Name: ATI-NM
Client Project ID: Giant -- 407325
Lab Sample ID: 94-07-074-RB
Sample Matrix: Water

Sample ID: Reagent Blank

Date Collected: N/A
Date Analyzed: 07/14/94

Analyte	Results (ug/L)	Detection Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	1
Chloroethane	ND	1
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
1,2-Dichloroethene (Total)	ND	1
Chloroform	ND	1
1,2-Dichloroethane	ND	1
2-Butanone (MEK)	ND	10
1,1,1-Trichloroethane	ND	1
Carbon tetrachloride	ND	1
Vinyl acetate	ND	10
Bromodichloromethane	ND	1
1,1,2,2-Tetrachloroethane	ND	1
1,2-Dichloropropane	ND	1
trans-1,3-Dichloropropene	ND	1
Trichloroethene	ND	1
Dibromochloromethane	ND	1
1,1,2-Trichloroethane	ND	1
Benzene	ND	1
cis-1,3-Dichloropropene	ND	1
2-Chloroethylvinylether	ND	10
Bromoform	ND	5
2-Hexanone (MBK)	ND	10
4-Methyl-2-pentanone (MIBK)	ND	10
Tetrachloroethene	ND	1
Toluene	ND	1
Chlorobenzene	ND	1
Ethylbenzene	ND	1
Styrene	ND	1
Total Xylenes	ND	1

SURROGATE RECOVERIES

Analyte	% Recovery
1,2-Dichloroethane-d4	99
Toluene-d8	98
Bromofluorobenzene	99

This Copy for B.U Olson

DISTRICT I
P.O.Box 1980, Hobbs, NM 88241-1980

DISTRICT II
P.O. Drawer DD, Artesia, NM 88211-0719

DISTRICT III
1000 Rio Brazos Rd, Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
RECEIVED
'94 JUL 28 AM 8 55

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

SUBMIT 2 COPIES TO APPROPRIATE DISTRICT OFFICE IN ACCORDANCE WITH RULE 116 PRINTED ON BACK SIDE OF FORM

NOTIFICATION OF FIRE, BREAKS, SPILLS, LEAKS, AND BLOWOUTS

OPERATOR: GIANT REFINING COMPANY						ADDRESS: JAMESTOWN, NM	TELEPHONE #: (505) 722-3833
REPORT OF	FIRE	BREAK	SPILL	LEAK		BLOWOUT	OTHER*: RUPTURE
TYPE OF FACILITY	DRLG WELL	PROD WELL	TANK BTRY	PIPE LINE	GASO PLNT	OIL RFY: X	OTHER*

FACILITY NAME: CINIZA REFINERY

LOCATION OF FACILITY Qtr/Qtr Sec. or Footage	SEC.	TWP.	RGE.	COUNTY
	33	15N	15W	McKINLEY

DISTANCE AND DIRECTION FROM NEAREST TOWN OR PROMINENT LANDMARK: 17 MILES EAST OF GALLUP, NM

DATE AND HOUR OF OCCURRENCE: 7-16-94 1940HRS				DATE AND HOUR OF DISCOVERY: 7-16-94 194 HRS	
WAS IMMEDIATE NOTICE GIVEN?	YES: X	NO	NOT REQUIRED	IF YES, TO WHOM: DENNY FOUST, OCD	
BY WHOM: LYNN SHELTON				DATE AND HOUR: 7-18-94 1350HRS	
TYPE OF FLUID LOST: HF ACID				QUANTITY OF LOSS: 250-750#	VOLUME RECOVERED: 9070
DID ANY FLUIDS REACH A WATERCOURSE?	YES	NO: X	QUANTITY		

IF YES, DESCRIBE FULLY**

DESCRIBE CAUSE OF PROBLEM AND REMEDIAL ACTION TAKEN**

PROPANE KOH TREATING TOWER RUPTURED, DUE TO EXOTHERMIC REACTION OF ABNORMAL ACID/BASE CONDITION. UNIT SHUTDOWN TO STOP RELEASE.

DESCRIBE AREA AFFECTED AND CLEANUP ACTION TAKEN**

AFFECTED AREA WAS ALKYLATION UNIT WHICH IS ON IMPERMEABLE CONCRETE PAD. ACID AND WATER WAS CONTAINED AND TREATED IN REFINERY PROCESS WASTEWATER SYSTEM.

DESCRIPTION OF AREA	FARMING	GRAZING	URBAN	OTHER*: REFINERY

SURFACE CONDITIONS	SANDY	SANDY LOAM	CLAY: X	ROCKY	WET	DRY: X	SNOW

DESCRIBE GENERAL CONDITIONS PREVAILING (TEMPERATURE, PRECIPITATION, ETC.)**

DRY, CLEAR, 5MPH WNW. 60°F

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

SIGNED: Lynn Shelton PRINTED NAME AND TITLE: LYNN SHELTON SR. ENVIRONMENTAL COORDINATOR DATE: 7-22-94

GIANT REFINING CO.
Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

July 5, 1994

Roger Anderson
Environmental Bureau Chief
Oil Conservation Division
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87504-2088

Re: GW-32 Annual Groundwater Sampling

Dear Mr. Anderson:

Giant Refining Company - Ciniza performed the annual groundwater sampling event during which groundwater monitoring wells OW-1, OW-2 and OW-3 were sampled as required by Giant's Discharge Permit GW-32.

Toluene and total xylenes were detected in OW-1 and total xylenes were detected in OW-2. A copy of the original analytical results for BTEX is attached.

Although the levels of toluene and total xylenes are below the practical quantitation limit for those constituents in 40 CFR 264 Appendix IX, Groundwater Monitoring List, Giant plans to resample both wells on or before July 8, 1994 to verify the presence of toluene and total xylenes in OW-1 and OW-2.

Due to Giant's belief that the presence of those constituents is the result of outside contamination, Giant in considering installing dedicated pumping systems in the monitor wells to reduce the possibility of introducing contamination during the sampling process.

Giant will report the results of the additional sampling and analysis as soon as that information is available.

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

Sincerely,

Lynn Shelton

Lynn Shelton
Senior Environmental Coordinator

TLS:sp

cc: Denny Foust, Oil Conservation Division, Aztec
Kim Bullerdick, Corporate Counsel, Giant Industries Arizona, Inc.
David Pavlich, HS&E Manager, Giant Refining Company

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY RESULTS

TEST : BTEX, MTBE (EPA 8020)

CLIENT : GIANT REFINING CO. ATI I.D.: 404436

PROJECT # : (NONE)

PROJECT NAME : ANNUAL GDWTR

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	OW-2	AQUEOUS	04/27/94	NA	05/03/94	1
02	OW-1	AQUEOUS	04/27/94	NA	05/03/94	1

PARAMETER	UNITS	01	02
BENZENE	UG/L	<0.5	<0.5
TOLUENE	UG/L	<0.5	0.9
ETHYLBENZENE	UG/L	<0.5	<0.5
TOTAL XYLENES	UG/L	1.1	2.7
METHYL-t-BUTYL ETHER	UG/L	<2.5	<2.5
SURROGATE:			
BROMOFLUOROBENZENE (%)		99	101

Bill Olson

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

NOTIFICATION OF FIRE, BREAKS, SPILLS, LEAKS, AND BLOWOUTS

NAME OF OPERATOR	GIANT REFINING COMPANY				ADDRESS	RT. 3 BOX 7, GALLUP, N.M. 87301	
REPORT OF	FIRE	BREAK	SPILL	LEAK	BLOWOUT	OTHER* Expanding Vapor Incident	
TYPE OF FACILITY	DRLG WELL	PROD WELL	TANK BTTY	PIPE LINE	GASO PLNT	OIL RFY X	OTHER*
NAME OF FACILITY	CINIZA REFINERY						
LOCATION OF FACILITY (QUARTER/QUARTER SECTION OR FOOTAGE DESCRIPTION)	NE¼				SEC. 33	TWP. 15N	RGE. 15W	COUNTY McKINLEY
DISTANCE AND DIRECTION FROM NEAREST TOWN OR PROMINENT LANDMARK	~17 MILES EAST OF GALLUP, N.M. AT EXIT 39, I-40						
DATE AND HOUR OF OCCURENCE	9:20 p.m. 6-15-94				DATE AND HOUR OF DISCOVERY	Same	
WAS IMMEDIATE NOTICE GIVEN?	YES X	NO	NOT REQUIRED		IF YES, TO WHOM	Charles Gholson	
BY WHOM	John Stokes, Plant Manager				DATE AND HOUR	6-16-94 @ 10:00 a.m.	
TYPE OF FLUID LOST	Waste water containing Sodium Carbonate, HF Acid, and Propane				QUANTITY OF LOSS	10-20 gal. BO / BW	VOLUME RECOVERED	N/A BO / BW
DID ANY FLUIDS REACH A WATERCOURSE?	YES	NO X	QUANTITY				

IF YES, DESCRIBE FULLY**

DESCRIBE CAUSE OF PROBLEM AND REMEDIAL ACTION TAKEN**A Sodium Carbonate build-up in the bottom of a pipeline reacted with the HF Acid contained in some propane drainage through the pipe. The exothermic acid/base reaction caused a sudden expansion of the propane and an increase in pressure in the pipeline. The pressure increase resulted in failure of the pipeline and the ejection of 10-20 gallons of liquid to the surrounding area. Procedural and equipment changes have been instituted to prevent both build-up of Sodium (cont.)

DESCRIBE AREA AFFECTED AND CLEANUP ACTION TAKEN** The break/release occurred in the Refinery's Alkylation Unit. All affected areas are concrete with drainage to the plant's sewer system. No release to the environment occurred. The area was decontaminated and cleaned with water.

DESCRIPTION OF AREA	FARMING	GRAZING	URBAN	OTHER* Industrial Site			
SURFACE CONDITIONS	SANDY	SANDY LOAM	CLAY	ROCKY	WET	DRY X	SNOW

DESCRIBE GENERAL CONDITIONS PREVAILING (TEMPERATURE, PRECIPITATION, ETC.)**
Dry, Clear, 15-25 mph WSW Wind, 70°F

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

SIGNED David C. Parker TITLE HSE Manager DATE 6/20/94

*SPECIFY **ATTACH ADDITIONAL SHEETS IF NECESSARY

RECORD OF PHONE CONVERSATION (W/CHRIS EUSTICE)

Date: 7-18-94 Time: 130 pm

RE: Giant - Ceniza Refinery

Name: Lynn Shelton

Company: Giant Refining

Lynn called me as part of rule 116 requirement for spill reporting. (Verbal)

Ceniza had a release of Hydrofluric acid (250 - 750 lbs) as a ~~release~~ result of instrumentation failure.
This occured July 16, 1994 between 740 - 800 pm
1 minor injury occured to personell
Soils & groundwater was not impacted.
Atmosphere was impacted

Written report will be filed in OCD Aztec office.

Comments/Followup: Copies to file & OCD Aztec

GIANT REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

June 17, 1994

Mr. Denny Foust
Deputy Oil and Gas Inspector
New Mexico Oil Conservation Division
1000 Rio Brazos Road
Aztec, New Mexico 87410

Dear Mr. Foust:

On Wednesday, June 15, 1993, Giant's Ciniza refinery near Gallup experienced an incident is which an acid/base reaction in a pipeline caused an overpressure condition in the line. This pressure spike resulted in damage to the pipeline and the ejection of a small quantity of sodium carbonate, hydrofluoric acid and water to the surrounding area. All of the ejected material remained within the concreted process area where the incident occurred.

In compliance with OCD Rule 116, I am submitting the attached Spill Report form for this incident.

If you have any questions regarding the above, please do not hesitate to contact me at (505) 722-0217.

Sincerely,

David C. Pavlich

David C. Pavlich
Health, Safety, and Environmental Manager
Giant Refining Company

DCP:sp

PAV/OCD0617

SF 6/23/94

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

NOTIFICATION OF FIRE, BREAKS, SPILLS, LEAKS, AND BLOWOUTS

NAME OF OPERATOR GIANT REFINING COMPANY					ADDRESS RT. 3 BOX 7, GALLUP, N.M. 87301		
REPORT OF	FIRE	BREAK	SPILL	LEAK	BLOWOUT	OTHER* Expanding Vapor Incident	
TYPE OF FACILITY	DRLG WELL	PROD WELL	TANK BTTY	PIPE LINE	GASO PLNT	OIL RFY X	OTHER*
NAME OF FACILITY CINIZA REFINERY							
LOCATION OF FACILITY (QUARTER/QUARTER SECTION OR FOOTAGE DESCRIPTION) NE¼					SEC. 33	TWP. 15N	RGE. 15W / COUNTY McKINLEY
DISTANCE AND DIRECTION FROM NEAREST TOWN OR PROMINENT LANDMARK ~17 MILES EAST OF GALLUP, N.M. AT EXIT 39, I-40							
DATE AND HOUR OF OCCURENCE 9:20 p.m. 6-15-94					DATE AND HOUR OF DISCOVERY Same		
WAS IMMEDIATE NOTICE GIVEN?	YES X	NO	NOT REQUIRED		IF YES, TO WHOM Charles Gholson		
BY WHOM John Stokes, Plant Manager					DATE AND HOUR 6-16-94 @ 10:00 a.m.		
TYPE OF FLUID LOST Waste water containing Sodium Carbonate, HF Acid, and Propane					QUANTITY OF LOSS 10-20 gal.	BO / BW	VOLUME RECOVERED N/A	BO / BW
DID ANY FLUIDS REACH A WATERCOURSE?	YES	NO X	QUANTITY				

IF YES, DESCRIBE FULLY**

DESCRIBE CAUSE OF PROBLEM AND REMEDIAL ACTION TAKEN** A Sodium Carbonate build-up in the bottom of a pipeline reacted with the HF Acid contained in some propane drainage through the pipe. The exothermic acid/base reaction caused a sudden expansion of the propane and an increase in pressure in the pipeline. The pressure increase resulted in failure of the pipeline and the ejection of 10-20 gallons of liquid to the surrounding area. Procedural and equipment changes have been instituted to prevent both build-up of Sodium (cont.)

DESCRIBE AREA AFFECTED AND CLEANUP ACTION TAKEN** The break/release occurred in the Refinery's Alkylation Unit. All affected areas are concrete with drainage to the plant's sewer system. No release to the environment occurred. The area was decontaminated and cleaned with water.

DESCRIPTION OF AREA	FARMING	GRAZING	URBAN	OTHER* Industrial Site			
SURFACE CONDITIONS	SANDY	SANDY LOAM	CLAY	ROCKY	WET	DRY X	SNOW

DESCRIBE GENERAL CONDITIONS PREVAILING (TEMPERATURE, PRECIPITATION, ETC.)**
Dry, Clear, 15-25 mph WSW Wind, 70°F

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

SIGNED David C. Pankl TITLE HSE Manager DATE 6/20/94

*SPECIFY **ATTACH ADDITIONAL SHEETS IF NECESSARY

DESCRIBE CAUSE OF PROBLEM AND REMEDIAL ACTION TAKEN**
Carbonate in the line and the drainage of Propane/HF to the line.

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 1050	Date 6/16/94

Originating Party	Other Parties
Charlie Gohlson - OCD Aztec	Bill Olson - Envir. Bureau

Subject

Giant Ciniza Refinery Explosion

Discussion

He talked with John Stokes - Refinery Manager
Stokes said at 9:20 pm on 6/15/94 a high pressure line released to the sewer system and caused explosion which blew off the manhole covers. One employee was sent to the hospital with compound fractures of both legs. Said he would supply Aztec office with additional info when available Employee also received chemical burns.
He informed Stokes to file a written report within 10 days

Conclusions or Agreements

Giant will keep OCD informed and file report

Distribution

Giant Ciniza file

Signed Bill Olson

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 1030 hrs	Date 6/16/94
Originating Party	**Other Parties**	
Bill Olson - Envir. Bureau	Frank Chavez - OCD Aztec	

Subject

Giant Ciniza Refinery

Discussion Asked if Aztec notified of reported explosion by Hoskie Lee Request He had no knowledge of it

Conclusions or Agreements

He will call Giant to investigate
He will keep me ~~grand~~ informed.

Distribution Giant Ciniza file

Signed Bill Olson

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 1015 hrs	Date 6/16/94
Originating Party		**Other Parties**
Hoskie Kee - private citizen 876-2327		Bill Olson - Environmental Bureau

Subject

Giant Ciniza Refinery

Discussion

Called to report explosion at Giant Ciniza yesterday His brother was hospitalized. Hit in head with manhole cover Said the sewer system blew up

Conclusions or Agreements

I will contact OCD Aztec office to check it out

Distribution
Giant Ciniza file
Frank Chavez - OCD Aztec

Signed Bill Olson

GIANT REFINING CO.
Route 3, Box 7
Gallup, New Mexico
87301
505
722-3833

April 5, 1994

Roger Anderson
Environmental Bureau Chief
New Mexico Oil Conservation Division
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87504-2088

Re: 1993 Annual Groundwater and Quarterly Wastewater Sampling

Dear Mr. Anderson:

Pursuant to the water discharge permit, GW-32, Giant Refining Company - Ciniza submits the 1993 Annual OCD Groundwater Report, which is an addendum to the 1993 Annual Groundwater Report submitted to your office on February 15, 1994.

The material presented is arranged in the following sections:

I. Quarterly Aerated Lagoon and API Effluent
II. Tabulated Analytical Data - OW-1, 2, 3
III. Original Analytical Data - OW-1, 2, 3

Please note that due to an oversight, the fourth quarter sampling of the aerated lagoon and API separator effluent was not accomplished.

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

Sincerely,

Lynn Shelton

Lynn Shelton
Senior Environmental Coordinator
Giant Refining Company

TLS:sp

cc: David Pavlich - Health, Safety and Environmental Manager
Giant Refining Company

Kim Bullerdick - Corporate Counsel
Giant Industries Arizona, Inc.

TLS\RR4594

GIANT REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

April 1, 1994

Roger Anderson
Environmental Bureau Chief
New Mexico Oil Conservation Division
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87504-2088

Re: Freeboard Notification

Dear Mr. Anderson:

Pursuant to Section 8.0, Contingency Plan, of the Discharge Plan Application for Giant Refining Company's Ciniza Refinery, this report is submitted as notification that the freeboards of the evaporation lagoons at Ciniza have exceeded the minimum freeboard requirements for the second consecutive quarter.

Minimum freeboard requirements were exceeded in Lagoons #2, 3, 6a, 6b, 9a, 9b, and 9c during the fourth quarter of 1993. As of the end of the first quarter of 1994, the previously mentioned lagoons plus Lagoons #7, 8, 11, 12a, and 12b are in exceedance.

Due to extensive reconstruction and repair of the north series of lagoons (#7, 8, 11, 12a, 12b), the water levels are not as critical as they were at this time in 1993. Consequently, Giant proposes only to use the lagoon evaporation sprays to reduce the water levels. Normal freeboard conditions can be reasonably attained in approximately 30 days.

Wastewater reduction projects have been identified, budgeted and are currently being implemented. This step will assist in reaching and maintaining minimum freeboard requirements.

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

Sincerely,

Lynn Shelton

Lynn Shelton
Senior Environmental Coordinator
Giant Refining Company

TLS:sp

cc: David Pavlich, Health, Safety & Environmental Manager
Giant Refining Company

Kim Bullerdick, Corporate Counsel
Giant Industries Arizona, Inc.

Denny Foust, Deputy Inspector
New Mexico Oil Conservation Division, Aztec

TLS\RR4194

cc → Roger Anderson OCL

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

JAN 14 1994

REPLY TO: 6W-ET

CERTIFIED MAIL: RETURN RECEIPT REQUESTED (P 239 543 276)

Mr. Kim Bullerdick
Corporate Counsel
Giant Industries, Inc.
P.O. Box 12999
Scottsdale, Arizona 85267

Re: Consent Order
Docket No. VI-93-1683
Facility No. NMU000066

Dear Mr. Bullerdick:

This is to acknowledge receipt of your letter dated December 6, 1993, transmitting the "Consent Order" signed by Mr. Carl Shook. As no comments were received from the general public during the thirty (30) day public notice period, the Environmental Protection Agency hereby issues this Final Consent Order.

The Consent Order shall become effective thirty (30) days after the date of issuance noted therein. Penalty payment shall be due within thirty (30) days of the effective date of this Order.

If you have any questions regarding this matter, please contact Ms. Cecilia Kernodle at telephone (214) 655-6452.

Sincerely yours,

/s/

Roger C. Hartung
Chief
Enforcement Branch (6W-E)

Enclosure

cc: Mr. Jim Piatt, Chief
Surface Water Bureau
New Mexico Environment Department

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6

1991 JAN 14 AM 11:59

IN THE MATTER OF	§	
	§	CONSENT ORDER
GIANT INDUSTRIES ARIZONA, INC.	§	
P.O. Box 7	§	
Gallup, New Mexico 87301	§	DOCKET NO. VI-93-1683
	§	
FACILITY No. NMU000066	§	
	§	

STATUTORY AUTHORITY

This Consent Order is issued under the authority vested in the Administrator of the United States Environmental Protection Agency ("EPA") by Section 309(g)(2)(A) of the Clean Water Act ("Act"), 33 U.S.C. § 1319(g)(2)(A). The Administrator has delegated this authority to the Regional Administrator of EPA, Region 6, who has delegated it to the Water Management Division Director of EPA, Region 6, who in turn delegated the authority to the Chief of the Enforcement Branch of the Water Management Division, EPA, Region 6 ("Complainant"). In accordance with the "Consolidated Rules of Practice Governing Class 1 Civil Penalties under the Clean Water Act, 56 Fed. Reg. 29,996 (July 1, 1991)" ("Part 28"), the Branch Chief hereby issues this Consent Order.

STIPULATIONS AND FINDINGS

Giant Industries Arizona, Inc., ("Respondent"), by its attorney or other authorized representative stipulates, and EPA finds as follows:

1. On August 18, 1993, EPA issued an Administrative Complaint, Docket No. VI-93-1683, pursuant to Section 309(g)(2)(A) of the Act, alleging that Respondent was in

violation of Section 301 of the Act, 33 U.S.C. § 1311, and proposing a penalty of $10,000. In the Administrative Complaint EPA alleged that:

> The Respondent discharged approximately 750,000 gallons of wastewater from its Ciniza Refinery's evaporation pond.

2. On or about September 18, 1993, EPA notified the public of Administrative Complaint, Docket No. VI-93-1683.

3. On August 18, 1993, the State of New Mexico was given an opportunity to consult with EPA regarding the assessment of an administrative penalty against the Respondent.

4. Without admitting the facts and findings of violation as alleged in the Administrative Complaint as set forth above, Respondent consents to the issuance of this Consent Order and waives its right to a hearing under Section 309(g)(2)(A) of the Act, 33 U.S.C. § 1319(g)(2)(A) and to appeal this Order under Section 309(g)(8)(A) of the Act, 33 U.S.C. § 1319(g)(8)(A).

CONSENT ORDER

Based on the foregoing Stipulations and Findings, and having taken into account material information presented by commenters in this case, and under the authority of Section 309(g)(2)(A) of the Act, 33 U.S.C. § 1319(g)(2)(A), EPA HEREBY ORDERS AND RESPONDENT HEREBY CONSENTS, that:

General Provisions

1. The provisions of this Consent Order shall be binding upon Respondent, its officers, directors, agents, servants, employees, and successors or assigns.

2. This Consent Order does not constitute a waiver, suspension or modification of the requirements of the Act, 33 U.S.C. §§1251 et seq., or any regulations promulgated thereunder.

3. The Respondent shall mail two (2) copies of the Consent Order, each with original signatures, to the attention of Ms. Carlene Ellison (6W-EA) at the following address:

U.S. EPA Region 6
Water Enforcement Branch
1445 Ross Avenue
Dallas, Texas 75202-2733

Payment Terms

4. No later than thirty (30) days after the effective date of this Consent Order, the Respondent shall submit a cashier's or certified check in the amount of $5,000 payable to "Treasurer, United States of America" to:

EPA Region 6
P.O. Box 360582M
Pittsburgh, PA 15251

5. The Respondent shall note on the penalty payment check the title and docket number of this case. The Respondent shall send simultaneous notices of such payments, including copies of the money order, cashier's check or certified check to the following:

Regional Hearing Clerk (6C)
U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

Ms. Ruth Gibson (6W-EA)
Water Management Division
Enforcement Branch
U.S. EPA, Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

Mr. Ralph Corley (6C-A/W)
Associate Regional Counsel
U.S. EPA, Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

6. Docket No. VI-93-1683 should be clearly typed on the check to ensure credit.

7. Your adherence to these procedures will ensure proper credit when payments are received.

8. If EPA does not receive payment within thirty (30) days of the effective date, interest will accrue on the amount due from the due date at the current annual rate prescribed and published by the Secretary of the Treasury in the Federal Register and the Treasury Fiscal Requirements Manual Bulletin per annum through the date of payment.

9. If the payment is overdue, EPA will also impose a late-payment handling charge of $15, with an additional delinquent notice charge of $15 for each subsequent 30-day period. Finally, EPA will apply a six (6) percent per annum penalty on any

principal amount not paid within ninety (90) days of the due date.

10. Failure by Respondent to pay in full the penalty assessed by this Consent Order by its due date may subject Respondent to a civil action to collect the assessed penalty plus interest, attorneys' fees, costs, and an additional quarterly nonpayment penalty pursuant to Section 309(g)(9) of the Act, 33 U.S.C. § 1319(g)(9). In any such collection action, the validity, amount, and appropriateness of the penalty and of this Consent Order shall not be subject to review.

11. The due date is thirty (30) days after the effective date specified in the Consent Order.

12. Other penalties for failure to make a timely payment may also apply.

Effective Date

13. This Consent Order shall become effective thirty (30) days from the date of issuance noted below unless a petition to the Regional Administrator to set aside the Order is filed by a commenter pursuant to Part 28 and Section 309(g)(4)(C) of the Act, 33 U.S.C. § 1319(g)(4)(C). If the Regional Administrator denies the petition, this Consent Order shall become effective thirty (30) days after such denial.

Date: December 6, 1993

Mr. Carl Shook
Senior Vice President
Refining/Processing Operations
Giant Industries Arizona, Inc.
Route 3, Box 7
Gallup, New Mexico 87301

U.S. ENVIRONMENTAL PROTECTION AGENCY

Issued this JAN 14 1994 day of _____, 1993.

Roger C. Hartung
Chief
Enforcement Branch (6W-E)
Water Management Division
1445 Ross Avenue
Dallas, Texas 75202-2733

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	Date
	10:30	12/29/93

Originating Party	Other Parties
Bobby Myers - OCD	John Stokes - Giant Refinery

Subject: Aeration Pond Lift Pump

Discussion: pump is still down & sewage/truck wash fluids are still ~~being bypp~~ bypassing aeration ponds. Pump was scheduled to be replaced this week.

Stokes will be leaving message for Lynn Shelton to call me Monday 1/3/94 to inform of status

* pump ~~was~~ on-line Jan 7, 1994

Conclusions or Agreements

Distribution

Signed Robert Myers

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	Date
	8:00	Dec 22, 1993

Originating Party	Other Parties
Denny Foust - Aztec	Bobby Myers

Subject: Giant Ciniza Refinery

Discussion:
- Semi-raw sewage from truck ~~stop~~ being dumped to pond.
- 2 temp ponds to be diked for permanent use - they should have them permitted before they make them perm - Denny thinks that we're not permitting any more ponds out there

new guy David Pavlich runs enviro. program →
722-3833
722-0227 Lynn Shelton

Conclusions or Agreements:
- will talk w/ Roger & Bill about this, call Giant

Distribution

Signed Robert D. Myers II

Robert Myers

From: Denny Foust
To: Robert Myers
Subject: GIANT CINIZA REFINERY
Date: Wednesday, December 29, 1993 8:57AM

Ciniza evaporation ponds receiving semi-raw septic sewage from truck stop including remmanents of toilet paper and truck wash effluent, this material has gone through a septic tank--normally pumped up to aereation ponds and produces no problems after aereation. The lift pump is out, Ciniza doesn't seem in a hurry to get it fixed. Temporary ponds are being diked for permanent use, advised Lynn Shelton and Dave Pavlich to submit a discharge plan modification before spending more money diking temporary ponds. Some of the permanent pond banks are starting to cut back with incised rills --not a problem now but real easy to remdy at this point before a major rain creates an immediate substantial threat to breaching the dikes. Inspection on 12/21/93 with Lynn Shelton and David Pavlich of Ciniza Refining.

CC→ Roger Anderson - OCD

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

NOV 17 1993

CERTIFIED MAIL: RETURN RECEIPT REQUESTED (P 104 195 370)

Mr. Kim Bullerdick
Corporate Counsel
Giant Industries Arizona, Inc.
P.O. Box 12999
Scottsdale, Arizona 85267

Re: Consent Order
Docket No. VI-93-1683
Facility No. NMU000066

Dear Mr. Bullerdick:

Enclosed are two copies of the "Consent Order" as agreed upon. You should mail the two (2) copies of the Consent Order, each with original signatures, to the attention of Ms. Carlene Ellison (6W-EA) within ten (10) days of receipt of these Consent Orders. This Consent Order shall become effective thirty (30) days after the date it is signed by the Regional Administrator and issued.

Failure by Respondent to pay in full the penalty assessed by this Consent Order by its due date may subject Respondent to a civil action to collect the assessed penalty plus interest, attorney's fees, costs, and an additional quarterly nonpayment penalty pursuant to Section 309(g)(9) of the Act, 33 U.S.C. § 1319(g)(9).

Payment of the penalty is to be made to the designated lockbox for this Region listed in the enclosed Consent Order. The check must include the docket number referenced above.

If you have any questions regarding this matter, please contact Ms. Cecilia Kernodle at telephone (214) 655-6452.

Sincerely yours,

/s/ Roger C. Hartung
Roger C. Hartung
Chief
Enforcement Branch (6W-E)

Enclosure

cc: Mr. Jim Piatt, Chief
Surface Water Bureau
New Mexico Environment Department

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6

IN THE MATTER OF	§	
	§	CONSENT ORDER
GIANT INDUSTRIES ARIZONA, INC.	§	
P.O. Box 7	§	
Gallup, New Mexico 87301	§	DOCKET NO. VI-93-1683
	§	
FACILITY No. NMU000066	§	
	§	

STATUTORY AUTHORITY

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> The Respondent discharged approximately 750,000 gallons of wastewater from its Ciniza Refinery's evaporation pond.

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4. Without admitting the facts and findings of violation as alleged in the Administrative Complaint as set forth above, Respondent consents to the issuance of this Consent Order and waives its right to a hearing under Section 309(g)(2)(A) of the Act, 33 U.S.C. § 1319(g)(2)(A) and to appeal this Order under Section 309(g)(8)(A) of the Act, 33 U.S.C. § 1319(g)(8)(A).

CONSENT ORDER

Based on the foregoing Stipulations and Findings, and having taken into account material information presented by commenters in this case, and under the authority of Section 309(g)(2)(A) of the Act, 33 U.S.C. § 1319(g)(2)(A), EPA HEREBY ORDERS AND RESPONDENT HEREBY CONSENTS, that:

General Provisions

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3. The Respondent shall mail two (2) copies of the Consent Order, each with original signatures, to the attention of Ms. Carlene Ellison (6W-EA) at the following address:

U.S. EPA Region 6
Water Enforcement Branch
1445 Ross Avenue
Dallas, Texas 75202-2733

Payment Terms

4. No later than thirty (30) days after the effective date of this Consent Order, the Respondent shall submit a cashier's or certified check in the amount of $5,000 payable to "Treasurer, United States of America" to:

EPA Region 6
P.O. Box 360582M
Pittsburgh, PA 15251

5. The Respondent shall note on the penalty payment check the title and docket number of this case. The Respondent shall send simultaneous notices of such payments, including copies of the money order, cashier's check or certified check to the following:

Regional Hearing Clerk (6C)
U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

Ms. Ruth Gibson (6W-EA)
Water Management Division
Enforcement Branch
U.S. EPA, Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

Mr. Ralph Corley (6C-A/W)
Associate Regional Counsel
U.S. EPA, Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

6. Docket No. VI-93-1683 should be clearly typed on the check to ensure credit.

7. Your adherence to these procedures will ensure proper credit when payments are received.

8. If EPA does not receive payment within thirty (30) days of the effective date, interest will accrue on the amount due from the due date at the current annual rate prescribed and published by the Secretary of the Treasury in the Federal Register and the Treasury Fiscal Requirements Manual Bulletin per annum through the date of payment.

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Effective Date

13. This Consent Order shall become effective thirty (30) days from the date of issuance noted below unless a petition to the Regional Administrator to set aside the Order is filed by a commenter pursuant to Part 28 and Section 309(g)(4)(C) of the Act, 33 U.S.C. § 1319(g)(4)(C). If the Regional Administrator denies the petition, this Consent Order shall become effective thirty (30) days after such denial.

Date: _____

_____
Mr. Carl Shook
Senior Vice President
Refining/Processing Operations
Giant Industries Arizona, Inc.
Route 3, Box 7
Gallup, New Mexico 87301

U.S. ENVIRONMENTAL PROTECTION AGENCY

Issued this _____ day of _____, 1993.

_____
Roger C. Hartung
Chief
Enforcement Branch (6W-E)
Water Management Division
1445 Ross Avenue
Dallas, Texas 75202-2733

GIANT
REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

October 14, 1993

Ed Horst
Program Manager
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
535 Camino De Los Marquez
Santa Fe, New Mexico 87502

Re: Semi-Annual Groundwater

Dear Mr. Horst:

Giant Refining Company - Ciniza plans to begin its semi-annual groundwater sampling event on October 20, 1993. The tentative schedule is:

October 20	Pump Wells OW-11, MW-1, MW-2, MW-4 and OW-1
	Bail Wells SMW-3, SMW-4, SMW-5, SMW-6
October 21	Sample Wells Specified Above

This sampling event is to satisfy the requirements of Giant's Part B Permit, with the exception of OW-1, which is to satisfy our sampling requirements for NMOCD.

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

Sincerely,

Lynn Shelton

Lynn Shelton
Senior Environmental Coordinator
Giant Refining Company - Ciniza

TLS:sp

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

Roger Anderson, NMOCD

Denny Foust, NMOCD

Barbara Driscoll, Region VI
USEPA

STATE OF NEW MEXICO
ENERGY, MINERALS AND [illegible] RESOURCES DEPARTMENT
OIL CON[illegible]VATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

September 21, 1993

CERTIFIED MAIL
RETURN RECEIPT NO. P-667-242-389

Mr. Lynn Shelton
Giant Refining Company
Route 3, Box 7
Gallup, New Mexico 87301

RE: MONITOR WELL OW-1
GIANT CINIZA REFINERY
MCKINLEY COUNTY, NEW MEXICO

Dear Mr. Shelton:

The New Mexico Oil Conservation Division (OCD) has reviewed Giant Refining Company's September 7, 1993 correspondence proposing a modification of the sampling schedule for monitor well OW-1 at the Giant Ciniza Refinery. The proposed modification is a result of recent laboratory analytical results showing low levels of aromatic hydrocarbons in ground water from this monitor well.

The above referenced monitoring proposal **is hereby approved with the following conditions:**

1. Giant will submit the results of the sampling to OCD on a quarterly basis.

2. Giant will submit the proposed assessment of the quarterly sampling to OCD by December 1, 1994.

Please be advised that OCD approval does not relieve Giant of future liability should the contaminants in this well exceed New Mexico Water Quality Control Commission ground water standards or pose a threat to public health or surface waters. In addition, OCD approval does not relieve Giant of responsibility for compliance with any other federal, state or local laws and/or regulations.

If you have any questions, please contact me at (505) 827-5885.

Sincerely,

William C. Olson
Hydrogeologist
Environmental Bureau

xc: OCD Aztec Office

Affidavit of Publication

STATE OF NEW MEXICO,

) ss

COUNTY OF McKINLEY

Barbara Garrett being duly sworn upon oath, deposes and says:

As Legal Clerk of the Gallup Independent, a newspaper published in and having a general circulation in McKinley County, New Mexico, and in the City of Gallup, therein: that this affiant makes this affidavit based upon personal knowledge of the facts herein sworn to. That the publication, a copy of which is hereto attached was published in said newspaper during the period and time of publication and said notice was published in the newspaper proper, and not in a supplement thereof,

for One (1) Time, the first publication being on the

15th day of January, 19 91 the

second publication being on the _____ day of

_____, 19____ the third publication

on the _____ day of _____, 19____,

and the last publication being on the _____ day of

_____, 19____.

That such newspaper, in which such notice or advertisement was published, is now and has been at all times material hereto, duly qualified for such purpose, and to publish legal notices and advertisements within the meaning of Chapter 12, of the statutes of the State of New Mexico, 1941 compilation.

Affiant.

Sworn and subscribed to before me this 15th day of January, A.D., 19 91.

Notary Public.

My commission expires 6-22-93

LEGAL NOTICE
STATE OF NEW MEXICO

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 Regulations, the following discharge plan applications and renewal applications have been submitted to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

(GW-32) - Giant Refining Company, Claud Rosendale, Environmental Manager, Route 3, Box 7, Gallup, New Mexico 87301, has submitted a renewal application for its previously approved discharge plan for its Ciniza Refinery located 17 miles east of Gallup, New Mexico on Interstate Highway 40. The refinery and associated waste-management facilities are located in the S/4 of Section 28 and the N 3/4 of Secion 33 of Township 15 North, Range 15 West, NMPM, McKinley County, New Mexico. The refinery discharges approximately 161,000 gallons per day of process and non-process wastewater. The wastewater, with an approximate concentration of 2000 to 3000 mg/l total dissolved solids, is discharged to 11 unlined evaporation ponds with a total of 117 acres of capacity. These ponds are constructed in and of the shales of the upper Chinle Formation, which have a permeability of less than six inches per year. The uppermost ground water likely to be affected by refinery discharges is in thin localized sand lenses at depths of 30 to 65 feet, with a total dissolved solids concentration of approximately 1100 mg/l. The uppermost ground water at the site known to be areally extensive is the Sonsela Sandstone at depths from 20 to 140 feet, with a total dissolved solids concentration of approximately 800 mg/l. Ground water in localized sands and the Sonsela is confined under artesian conditions. The discharge plan application in addresses how spills, leaks and other accidental discharges to the surface will be managed.

(GW-55) - Thriftway Marketing Corporation, F. L. Stark, Vice President, 710 East 20th Street, Farmington, New Mexico 87401, has submitted a discharge plan application for its Bloomfield Refinery located in the SE/4, Section 32, and SW/2 SW/4, Section 33, Township 29 North, Range 11 West, and the NE/4 NE/4, Section 9, Township 28 North, Range 11 West, NMPM, San Juan County, New Mexico. Approximately 1225 gallons per day of wastewater is disposed of in a synthetically double-lined evaporation pond equipped with leak detection. The wastewater has a total dissolved solids concentration of 1670 mg/l. Groundwater most likely to be affected by an discharge to the surface is at a depth of from 5 feet to 30 feet with a total dissolved solids concentration of approximately 4300 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed and also covers remediation of contaminated groundwater.

(GW-2) - Phillips 66 Natural Gas Company, David Jelmini, Environmental Specialist, 4001 Penbrook, Odessa, Texas 79762, has submitted an application for renewal of its previously approved discharge plan for its Lee Plant located in SW/4 SE/4, Section 30, Township 17 South, Range 35 East, NMPM, Lea County, New Mexico. Approximately 47,000 gallons per day of process wastewater with a total dissolved solids concentration of approximately 5300 mg/l is disposed of in an OCD approval offsite commercial Class II disposal well. Groundwater most likely to be affected by a spill, leak and other accidental discharge to the surface is at a depth of 85 feet with a total dissolved solids concentration of approximately 600 mg/l. The discharge plan application addresses how spills, leaks and other accidental discharges to the surface will be managed and also covers remediation of contaminated groundwater.

(GW-60) - Williams Field Services, H. Spencer George, Manager, Processing Engineering, P.O. Box 10368, Salt Lake City, Utah, 84158-0900, has submitted a discharge plan application for its Milagro Plant located in the SW/4 SE/4, Section 12, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico. Approximately 1500 gallons per day of process wastewater will be disposed of in synthetically double-lined evaporation basins equipped with leak detection. The total dissolved solids concentration of the wastewater will not be known until the plant begins operation. Groundwater most likely to be affected by a spill, leak and other accidental discharge to the surface is at a depth in excess of 60 feet with a total dissolved solids concentration of approximately 5800 mg/l. The discharge plan application addresses 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. 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 should be held. A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on 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 7th day of January, 1991. To be published on or before January 18, 1991.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY, Director

Legal #6450 published in the Independent January 15, 1991.

Affidavit of Publication

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

Joyce Clemens being first duly sworn on oath deposes and says that he is Adv. 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

Notice Of Publication

and numbered ..... in the

..... Court of Lea County, New Mexico, was published in a regular and entire issue of THE LOVINGTON DAILY LEADER and not in any supplement thereof, once each week on the same day of the week, for one (1) consecutive weeks, beginning with the issue of January 18, 1991 and ending with the issue of January 18, 1991

And that the cost of publishing said notice is the sum of $48.08 which sum has been (Paid) (Assessed) as Court Costs

Joyce Clemens

Subscribed and sworn to before me this 21st day of January, 1991

Notary Public, Lea County, New Mexico

My Commission Expires: Sept. 24, 1994

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

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan applications and renewal applications have been submitted to the Director of the Oil Conservation Division, State Land Office Building, P. 0. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

(GW-32) - Giant Refining Company, Claud Rosendale, Emriromnental Manager, Route 3, Box 7 Gallup, New Mexico 87301, has submitted a renewal application for its previously approved discharge plan for its Ciniza Refinery located 17 miles east of Ga]lup, New Mexico on Interstate Highway 40. The refinery and associated waste-management facilities are located in the S/4 of Section 28 and the N 3/4 of Section 33 of Township 15 North, Range 15 West, NMPM, McKinley County, New Mexico. The refinery discharges approximately 161,000 gallons per day of process and non-process wastewater. The wastewater, with an approximate concentration of 2000 to 3000 mg/l total dissolved solids, is discharged to 11 unlined evaporation ponds with a total of 117 acres of capacity. These ponds are constructed in and of the shales of the upper Chinle Formation, which have a permeability of less than six inches per year. The uppermost ground water likely to be affected by refinery discharges is in thin localized sand lenses at depths of 30 to 65 feet, with a total dissolved solids concentration of approximately 1100 mg/l. The uppermost ground water at the site known to be areally extensive is the Sonsela Sandstone at depths from 20 to 140 feet, with a total dissolved solids concentration of approximate]y 800 mg/l. Ground water in loca]ized sands and the Sonsela is confined under artesian conditions. The discharge plan application in addresses how spills, leaks and other accidental discharges to the surface will be managed.

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GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 7th day of January, 1991. To be published on or before January 18, 1991.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
WILLIAM J LEMAY,
Director

S E A L

Published in the Lovington Daily Leader January 18, 1991.

AFFIDAVIT OF PUBLICATION

No. 27090

STATE OF NEW MEXICO,
County of San Juan:

CHRISTINE HILL being duly sworn, says: "That she is the NATIONAL AD MANAGER of The Farmington Daily Times, a daily newspaper of general circulation published in English in Farmington, said county and state, and that the hereto attached LEGAL NOTICE

was published in a regular and entire issue of the said Farmington Daily Times, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for ONE consecutive (days) (//////) on the same day as follows:

First Publication SUNDAY, JANUARY 13, 1991

Second Publication

Third Publication

Fourth Publication

and that payment therefore in the amount of $ 81.66 has been made.

Christine Hill

Subscribed and sworn to before me this 14TH day of JANUARY, 1991.

Connie Andrae

Notary Public, San Juan County, New Mexico

My Comm expires: JULY 3, 1993

COPY OF PUBLICATI

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

Notice is herby given that pursuant to New Mexico Water Quality Control Commission Regulation, the following discharge plan applications and renewal applications have been submitted to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

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If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan 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 7th day of January, 1991.

STATE OF NEW
MEXICO OIL
CONSERVATION
DIVISION
WILLIAM J.
LEMAY, Director
SEAL

Legal No. 27090 published in the Farmington Daily Times, Farmington, New Mexico on Sunday, January, 13, 1991.

GIANT REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

January 3, 1991

Julie Wanslow
N.M. Environmental Improvement Division
Water Resource Specialist III
Harold Runnels Building
1190 St. Francis Drive
Santa Fe, New Mexico 87504-0968

RE: Annual Ground Water Sampling Schedule

Dear Julie,

Giant Refining Company's, Ciniza Refinery is scheduling the annual ground water sampling event for the week of March 4, 1991. The projected sampling schedule is as follows:

March 4, 1991 - 10:00 a.m. to 4:00 p.m.
Pump MW-1, MW-2, MW-4, MW-5 and OW-11

March 5, 1991 - 7:00 a.m. to 2:00 p.m.
Sample MW-1, MW-2, MW-4, MW-5 and OW-11

March 5, 1991 - 3:00 p.m. to 7:00 p.m.
Bail SMW-1, SMW-2, SMW-3, SMW-4, SMW-5 and SMW-6

March 6, 1991 - 7:00 a.m. to 2:00 p.m.
Sample SMW-1, SMW-2, SMW-3, SMW-4, SMW-5 and SMW-6

March 6, 1991 - 3:00 p.m. to 6:00 p.m.
Pump OW-1, OW-2 and OW-3 (Oil Conservation Division Wells) 5, 7, 9, 10

March 7, 1991 - 8:00 a.m. to 2:00 p.m.
Sample OW-1, OW-2, OW-3, API Separator Effluent and Aerated Lagoon Effluent

The proposed time frames are estimates and may vary. However, the "sampling" events must be completed by 2:00 p.m. each day to allow packaging of samples and delivery of samples to Federal Express for next day delivery to the contracting laboratory.

If you have any questions, contact me at (505) 722-0217.

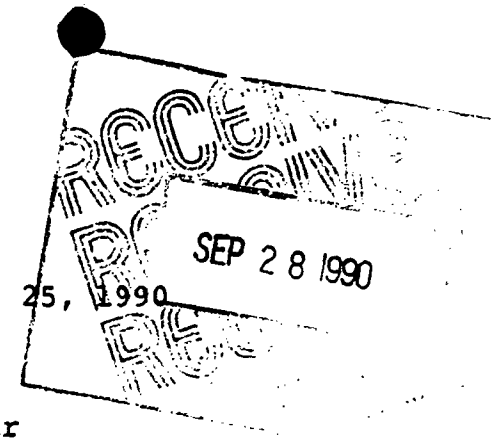
Sincerely,

Claud Rosendale

Claud Rosendale
Environmental Manager
Ciniza Refinery

cc: David Boyer - Oil Conservation Division
Kim Bullerdick - Giant Industries Arizona, Inc.

CCR/sp

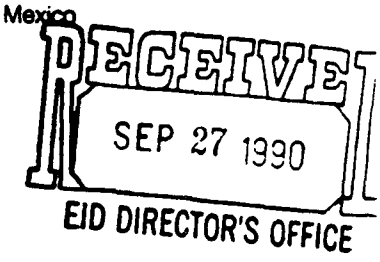


Kathy

GIANT
REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833



September 25, 1990

Rich Mayer
United States Environmental Protection Agency
Region VI
1445 Ross Avenue, Suite 1200
Dallas, TX 75202

RE: New Guideline Clarifications

Dear Mr. Mayer:

The API effluent at Giant Refining Co. has been affected by the Toxicity Characteristic rule that was adopted on March 29, 1990. As a result of this rule, Giant has installed a benzene stripper to remove the benzene prior to discharging the effluent into the lagoons which are permitted by the New Mexico Oil Conservation Division. The effluent overflows into a forty foot section of pipe which feeds directly to the benzene stripper. Prior to installation of the benzene stripper, the effluent was discharged directly to the lagoons where areators were used for removal of volatiles.

Giant has submitted a revised Part A which notifies the agencies of the presence of the newly listed D018 waste. However, for the last two months, Giant has been attempting to clarify the following questions with the New Mexico Environmental Improvement Division and the Environmental Protection Agency.

1) Is the effluent in the forty foot section of pipe between the two treatment units considered hazardous waste (D018)?

2) Does the installation of the benzene stripper require any permitting? The New Mexico Air Quality Bureau has indicated no permitting is required. The New Mexico Hazardous Waste Bureau has indicated that permitting is the responsibility of the EPA as the State is not authorize for the new rule. EPA has indicated the benzene stripper is a subpart X unit and should be permitted by the State. Please clarify!

3) It appears the newly listed D018 waste is not land banned. If the waste is regulated by EPA and Giant's land treatment unit is regulated by the State, who do we request approval from to land apply D018 contaminated soils?

Please respond to the above questions. If you have any questions, contact my office at (505) 722-3833.

Sincerely,

Claud C Rosendale

Claud C. Rosendale
Environmental Manager
Ciniza Refinery

CCR:smb

cc: Richard Mitzlefelt - Director, NMEID

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

August 27, 1990

Mr. Claud Rosendale
Environmental Manager
Giant Refining Company
Route 3, Box 7
Gallup, New Mexico 87301

RE: Discharge Plan GW-32
Ciniza Refinery
McKinley County, New Mexico

Dear Mr. Rosendale:

The Oil Conservation Division (OCD) has received your renewal application for the above referenced discharge plan. The renewal application, dated July 24, 1990, was received by the OCD on July 30, 1990.

Review procedures for discharge plan renewals include an inspection of the facility by OCD personnel. I will be in contact with you in the near future to schedule a mutually convenient time for the inspection.

If you have any questions, please do not hesitate to call me at (505) 827-5884.

Sincerely,

Roger C. Anderson
Environmental Engineer

RCA/sl

cc: OCD Aztec Office

GIANT REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

July 24, 1990

David Boyer
Environmental Bureau Chief
New Mexico Oil Conservation Division
P. O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87504

RE: DISCHARGE PLAN GW-32 RENEWAL REQUEST
CINIZA REFINERY
MCKINLEY COUNTY, NEW MEXICO

Dear Mr. Boyer:

As required by the Water Quality Control Commission (WQCC) regulations, Giant Refining Company is applying for renewal of ground water Discharge Plan GW-32. The application is for Giant's, Ciniza Refinery located in Section 28 and 33, Township 15 North, Range 15 West, NMPM, McKinley County, New Mexico. The original plan was approved on August 1, 1986 and will expire on August 1, 1991.

The original plan application consisted of submittals dated November 25, 1985, February 3, 1986, April 30, 1986, June 26, 1986 and July 30, 1986. The approval to this plan application was dated August 1, 1986. The first modification to the plan requesting approval for discharge of the Travel Center water consisted of submittals dated December 12, 1986, March 5, 1987 and June 4, 1987. The second modification request dated February 20, 1990 affected monitoring requirements and was approved on February 28, 1990. The most recent modification requests consisted of a notification on July 10, 1990 of sump modifications at the Travel Center and a request for evaporation enhancement on July 13, 1990. These approvals were granted on July 19, 1990.

During the renewal request process Giant will, at a minimum, be reviewing and possibly submitting requests involving modifications to waste water treatment processes prior to discharge and non EPA regulated solid waste disposal. The waste water treatment process must be modified and in operation by September 25, 1990 to comply with the new Toxicity Characteristics revisions outlined by EPA in the Thursday, March 29, 1990 issue of the Federal Register. This will not modify

the volumes of water discharged however, it will improve the quality of water being discharged. Giant currently has approval from the New Mexico Environmental Improvement Division for disposal of facility trash. Giant requests guidance in transferring that approval to the Oil Conservation Division and expanding it to include additional non EPA or NMEID regulated debris such as soils or empty drums.

Please notify my office of the subsequent steps required for completion of the renewal application.

If you have any questions, please contact me at (505) 722-3833 extension 217.

Sincerely,

Claud Rosendale

Claud Rosendale
Environmental Manager
Ciniza Refinery

CR:ctf

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

July 19, 1990

Mr. Claud Rosendale
Giant Refining Company
Route 3, Box 7
Gallup, New Mexico 87301

RE: Discharge Plan (GW-32) Modification - Ciniza Refinery and Travel Center
McKinley County, New Mexico

Dear Mr. Rosendale:

The Oil Conservation Division (OCD) has received your discharge plan modification requests dated July 10, 1990 and July 13, 1990. The proposed modification dated July 10, 1990 is for the installation of a drain sump at the Travel Center and the proposed modification dated July 13, 1990 is for installation of a spray evaporation system at pond #2 at the refinery. The modifications will not alter the volumes of effluent discharged and are hereby approved with the following conditions:

1. Individual sprinklers in the spray system will be oriented to direct the fluid spray so that no direct spray or windblown draft will leave the confines of Pond #2.

2. The spray system will not be operated when wind conditions will allow spray or salt precipitates to drift outside the confines of Pond #2.

The modifications do not appreciably alter the volumes or characteristics of your discharges, therefore public notice was not issued.

Please be aware that approval of these modifications does not relieve you of liability should your operation result in actual pollution of surface or ground waters or the environment actionable under other laws and/or regulations.

If you have any questions, please do not hesitate to contact Roger Anderson at (505) 827-5884.

Sincerely,

William J. LeMay
Director

WJL/RCA/sl

cc: OCD Aztec Office

GIANT REFINING CO.

July 13, 1990

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

David Boyer
Environmental Bureau Chief
New Mexico Oil Conservation Division
P.O. Box 2088
State Land Office Building
Santa Fe, NM 87504

RE: Request for Modification to Groundwater Discharge Plan (GW-32)

Dear Mr. Boyer:

Giant's Ciniza Refinery is requesting a modification to the existing groundwater discharge plan which will allow enhanced evaporation of the lagoon water.

The addition of the Travel Center water collection and disposal of rainwater from the process area, operational fluctuations, and the distinct seasonal variations affecting evaporation rates, has made it very difficult to maintain the required pond freeboards during late winter and early spring. Table 6-1 of the original permit application indicates that 91.6% of the pan evaporation occurs during the months of April to October. Due to variable overflows and pond depths, the lower ponds will evaporate dry while substantial volumes of water remain in the upper ponds. This affects the actual pond evaporative capacities. As a result, Giant proposes to spray pond water into the air via pump and sprinklers.

This system would be operated with the following equipment:

1) Engine: Cummins 6 Cylinder Turbo Charged Diesel
2) Pump: Fairbanks Morse 8 X 6 rated at 1500 gpm at 100 psi
3) Pipe: Aluminum irrigation pipe with bolt type flanges
4) Sprinklers: Rain Bird type 105C Rain Gun with straight bore nozzles. Straight bore fire nozzles may be added if pump capacity is sufficient.

The engine and pump is currently being used as a back-up firewater system which supplies pond 2 water as an emergency back-up water supply. A valve installation on the pump discharge would allow switching the water to either the firewater system or the evaporation system. The evaporation system water supply would

be transferred through the aluminum irrigation pipe. This pipe would include a pressure release valve that would drain to Pond 2. The pipe and sprinkler system would all be installed on the dike between Pond #2 and #3. Six (6) 105C rain gun sprinklers would be installed along the line with additional fire nozzles being installed to help maintain the pressure. The sprinklers would be locked in place and would only spray out and over Pond #2. This operation would occur between the hours of 8:00am and 10:00pm, from April 1 to October 31. The system would be shut down and drained during the winter months.

The following attachments are included:

Attachment A: Table 6-1 of the original application
Attachment B: Drawings of installation location and detail
Attachment C: Detail of Rain Bird 105C Rain Gun
Attachment D: Pond #2 Analytical-Sample May 17, 1990

If you have any questions, contact my office at (505) 722-3833, ext. 217.

Sincerely,

Claud Rosendale

Claud Rosendale
Environmental Manager
Ciniza Refinery

CCR:smb

cc: w/attachments:
John Stokes - Refinery Manager; Giant Refining
Kim Bullerdick - Corporate Counsel; Giant Ind. Inc.

TABLE 6-1

WATER BALANCE FOR EVAPORATION PONDS

MONTH	PRECIP. (IN.)	PAN EVAP. (IN.)	DIFFERENCE (IN.)
Jan	.56	.38	+.18
Feb	.50	.50	0.00
Mar	.61	.84	-.23
Apr	.43	2.05	-1.62
May	.43	3.82	-3.39
June	.52	5.81	-5.29
July	1.83	7.11	-5.28
Aug	1.65	5.92	-4.27
Sep	.99	3.89	-2.90
Oct	1.17	2.03	-.86
Nov	.62	.70	-.08
Dec	.68	.39	+.29
	9.99	33.44	-23.45

Average discharge = 161,000 gallons/day

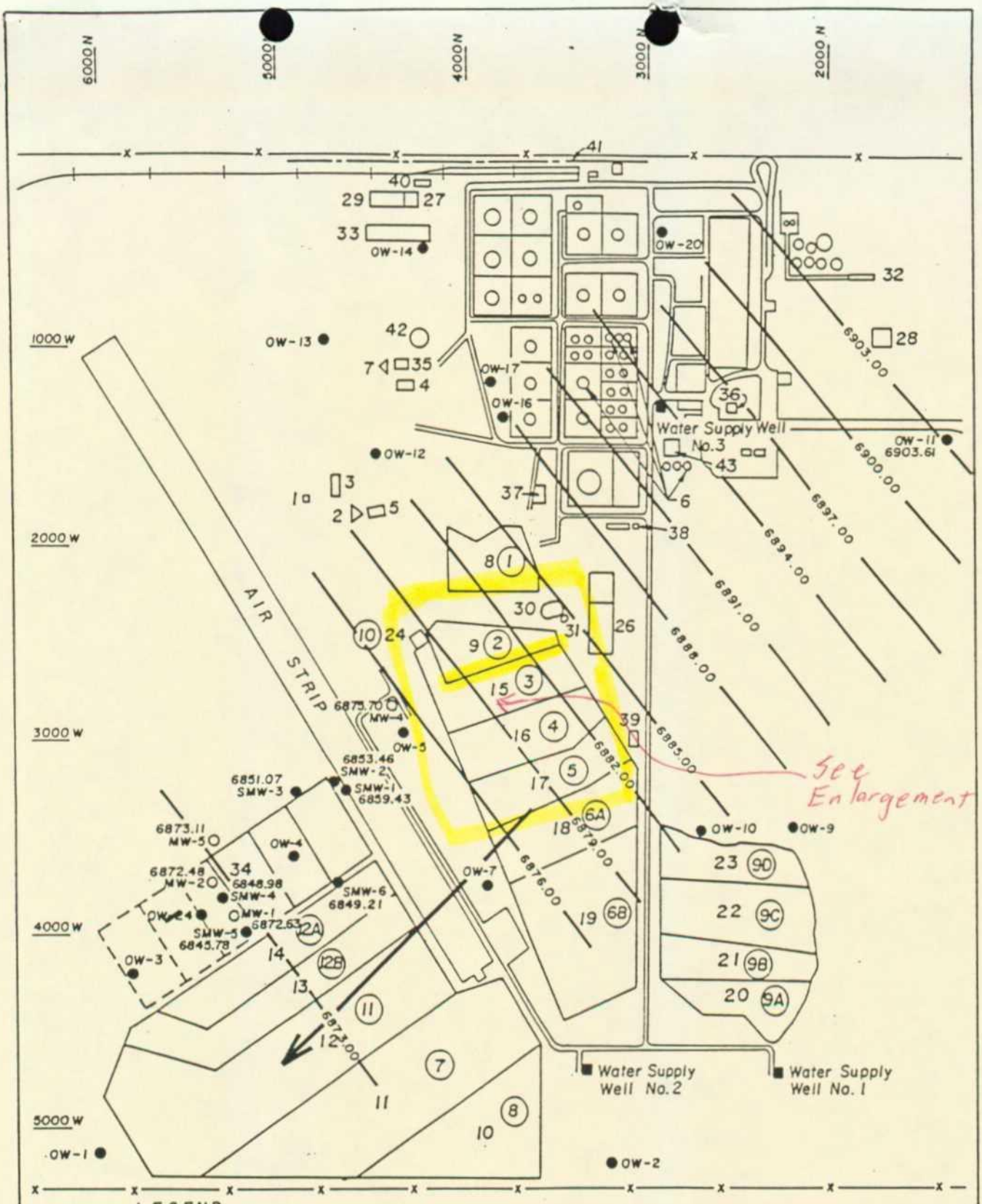
Yearly Discharge = 365 days x 161,000 gallons/day = 58,765,000 gallons/year

58,765,000 gallons/year x 1 Acre-Foot/325,742 gallons = 180.4 AF/year

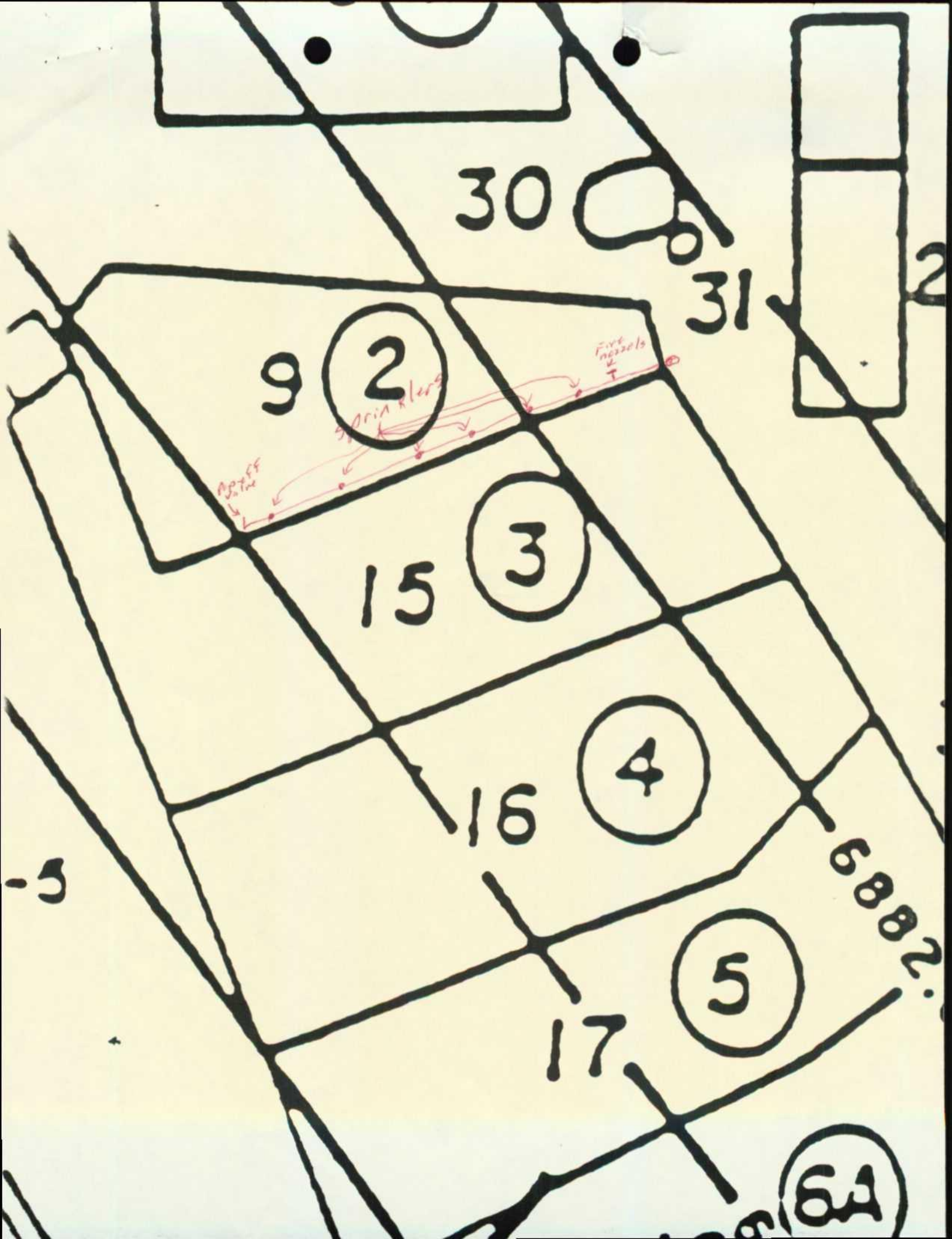
Net Pond Evaporation = 23.45 in/year = 1.954 ft/year

Pond Evaporative Capacity = 117 Acres x 1.954 ft/year = 228.6 AF/year

Relative Capacity = $\frac{228.6 \text{ AF/year}}{180.4 \text{ AF/year}}$ = 127%



Applied Earth Sciences	NAME: GIANT REFINERY, Gallup, New Mexico	Ground Water Elevation-Contour Map, June 12, 1989	FIGURE 2
FILE No. 5202	MADE BY: R.G. DATE: 3-14-90	CHECKED BY: DATE:	


30
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6882
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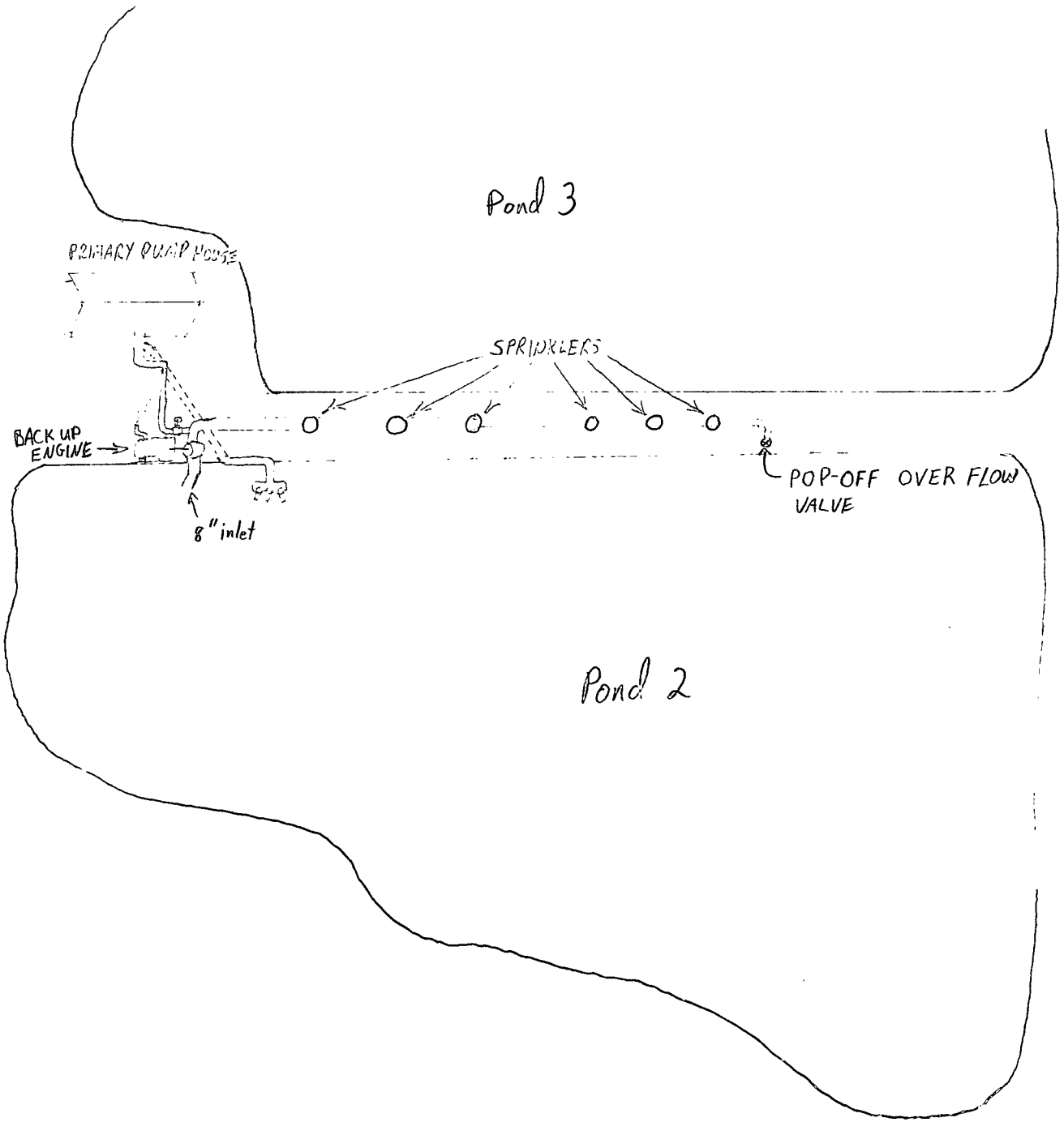
Detailed Sprinkler Drawing



Please Read Completely Before Operating 105C Rain Gun®

RAIN BIRD
P.O. BOX 37, GLENDORA, CALIFORNIA 91740
(602) 895-9225

Instructions for Operation of 105C Rain Gun

The 105C Rain Gun is factory adjusted and, in most cases, is ready for use after completing these three steps.

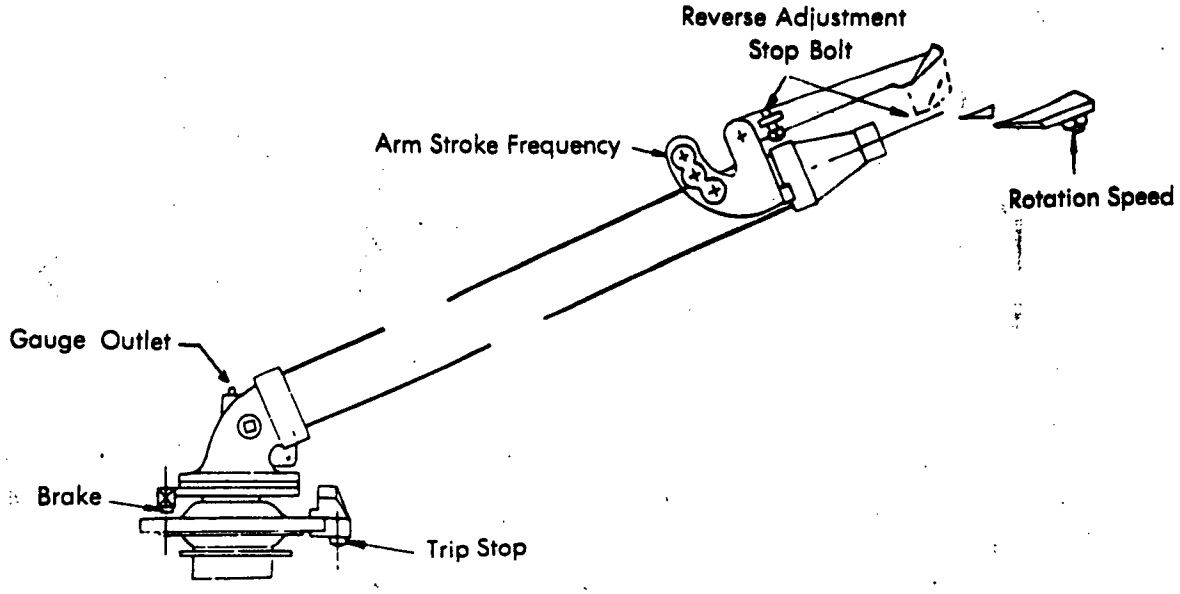
1. Select the nozzle size best suited for your application and install. Performances for the various sizes are listed in the chart on reverse side.
2. Mount the 105C on a threaded (3" or 3½"-8 NPT) riser, tightening it securely to prevent accidental unthreading of the sprinkler in operation, or, if you ordered flange mount, seat the gasket, and bolt the sprinkler in place with the six cap screws and nuts provided.
3. Adjust the part-circle trip stops for desired arc of operation. The forward (longer) stop should be located to the right of the range tube when looking at the back of the elbow along the range tube in direction of water flow, and the reverse (shorter) stop to the left.

WARNING: The 105C has a rapid reverse. When the sprinkler is operating, STAND CLEAR!

Adjustments

Patented adjustments are provided so the 105C Rain Gun may be "Tailored" to your exact requirements, depending on field conditions.

A. Rotation speed. The forward spoon has four numbered and detented settings in order to vary the time of rotation and the drive strength of the spoon. To adjust the spoon, loosen the flange nut, relocate spoon to desired position (1 — slow; 4 — fast) and tighten nut. The spoon should be set for strong enough drive to assure tripping of the part-circle mechanism and for uphill drive on non-vertical risers.



B. Arm stroke frequency. The pendulum has three settings marked "A", "B", and "C". To adjust the pendulum, loosen the flange nut, reposition and tighten nut. Position "A" gives long, lazy strokes and position "C" gives short, choppy strokes. For maximum distance of throw and most uniform water distribution, Position "A" is recommended. For increased stream break-up, the pendulum may be adjusted toward position "C".

C. Reverse time and force. The length of time and force of the reverse swing of the 105C Rain Gun is adjustable by raising or lowering the reverse spoon stop bolt. Slightly higher settings will decrease the reverse time and slightly lower will increase reverse time. Jam nut must be locked securely after adjustments.

D. Brake (Hillside coasting). In order to assuure even rotation on non-vertical risers, the brake should be adjusted accordingly. The amount of braking is increased by raising or decreased by lowering the three brake spring adjusting nuts.

Your 105C Rain Gun may be used as a full circle sprinkler by (1) adjusting the reverse arm stop bolt downward four full turns to prevent accidental engagement of the reverse spoon and (2) removing the forward and reverse stops. CAUTION: STEP (1) MUST BE PERFORMED FIRST FOR THE SAKE OF SAFETY.

Lubrication

Proper lubrication will assure long and satisfactory performance. Lubricate all grease fittings before and after each irrigation season or every six months, using Mobilgrease Special or equal. Under severe operating conditions, lubrications should be performed more often.

Performance — 23° Trajectory 105C Rain Gun®

STRAIGHT BORE

Elbow Pressure	.69		.79		.89		.99		1.09		1.19		1.29	
	Dia.	GPM	Dia.	GPM	Dia.	GPM	Dia.	GPM	Dia.	GPM	Dia.	GPM	Dia.	GPM
60	269	110	292	142	313	185	329	226	348	275	366	331	385	390
70	281	118	304	154	324	199	347	245	363	295	381	354	400	418
80	291	127	316	164	336	214	357	263	375	315	395	374	414	447
90	300	136	325	177	347	227	367	276	390	336	410	400	427	475
100	310	142	334	185	357	235	377	290	400	352	420	422	440	500
110	320	150	342	195	365	249	386	305	410	372	430	444	450	525
120	330	157	351	202	375	262	395	323	420	392	440	465	460	550

RING ORIFICE

Elbow Pressure	.87		.99		1.10		1.20		1.29		1.38		1.45	
	Dia.	GPM	Dia.	GPM	Dia.	GPM	Dia.	GPM	Dia.	GPM	Dia.	GPM	Dia.	GPM
60	264	110	284	142	300	185	318	226	335	275	352	324	365	385
70	275	118	295	154	314	200	332	243	350	295	367	353	383	418
80	285	127	306	164	326	213	345	263	364	315	383	374	398	447
90	295	136	315	175	337	227	358	276	378	336	396	400	414	475
100	305	142	326	185	348	238	371	290	390	352	409	422	425	500
110	315	150	335	195	357	250	382	305	402	372	421	441	438	525
120	322	157	344	202	366	259	392	323	412	392	431	465	450	550

Save this instruction sheet for future use.

P/N 102,185

IR 10-73. Printed in U.S.A.

Rocky Mountain
Analytical Laboratory

Enseco

ANALYTICAL RESULTS

FOR

GIANT REFINING

ENSECO-RMAL NO. 009591

JUNE 8, 1990

Reviewed by:

Julie Essey

Jeanne B. Howbert

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

Introduction

This report presents the analytical results as well as supporting information to aid in the evaluation and interpretation of the data and is arranged in the following order:

- o Sample Description Information
- o Analytical Test Requests
- o Analytical Results
- o Quality Control Report

Metals Data Review

Enseco protocol states that samples analyzed by graphite furnace atomic absorption (GFAA), will have a spiked aliquot analyzed with each sample. If the spike recovery does not meet established criteria, the reporting limit for that analysis is raised proportionately. Poor spike recoveries of this type are typically due to interferences from the sample matrix.

In reviewing the GFAA metals data it is necessary to know what the nominal reporting limits are in order to determine whether or not those limits were raised due to matrix interference. The most common GFAA elements and their nominal reporting limits are listed in the table below. These are provided to facilitate the review of the GFAA metals data.

Common GFAA Elements

	Reporting Limit / Units			
Element	Aqueous (mg/L)	Soil (mg/kg)	Waste (mg/kg)	Leachate (mg/L)
Arsenic	0.005	0.5 **	0.5 **	0.05 **
Lead	0.005	0.5	0.5 **	0.05 **
Selenium	0.005	0.5	0.5	0.05
Thallium	0.005	0.5	0.5	0.05

** *For the matrix listed, the preferred method for this element is by Method 6010*

Mercury by cold vapor atomic absorption (CVAA), Method 245.1/7470/7471 , and analytes performed by Inductively Coupled Plasma (ICP), Method 200.7/6010 are not subject to the same type of interferences as GFAA metals and therefore do not require a spiked aliquot for each sample. The nominal reporting limits for analytes by these methods are given in the method blank report. Typically a raised reporting limit by these methods is also due to matrix interferences. However, for all methods mentioned here, a raised reporting limit may also be the result of target analyte concentrations or blank contamination.

Sample Description Information

The Sample Description Information lists all of the samples received in this project together with the internal laboratory identification number assigned for each sample. Each project received at Enseco - RMAL is assigned a unique six digit number. Samples within the project are numbered sequentially. The laboratory identification number is a combination of the six digit project code and the sample sequence number.

Also given in the Sample Description Information is the Sample Type (matrix), Date of Sampling (if known) and Date of Receipt at the laboratory.

Analytical Test Requests

The Analytical Test Requests lists the analyses that were performed on each sample. The Custom Test column indicates where tests have been modified to conform to the specific requirements of this project.

Enseco
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SAMPLE DESCRIPTION INFORMATION
for
Giant Refining

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
009591-0001-SA	Pond #2	AQUEOUS	17 MAY 90	12:15	18 MAY 90
009591-0002-SA	Trip Blank	AQUEOUS			18 MAY 90

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A CORNING Company

ANALYTICAL TEST REQUESTS
for
Giant Refining

Lab ID: 009591	Group Code	Analysis Description	Custom Test?
0001	A	Halogenated Volatile Organics	N
		Aromatic Volatile Organics	N
		ICP Metals (Dissolved)	Y
		Ammonia	N
		Alkalinity,	N
		Total/Carbonate/Bicarbonate/Hydroxide	N
		Chloride, Ion Chromatography	N
		Sulfate, Ion Chromatography	N
		Nitrate Plus Nitrite	N
		Fluoride, Electrode	N
		Total Dissolved Solids (TDS)	N
		Specific Conductance	N
		pH	N
		Total Kjeldahl Nitrogen (TKN)	N
		ICP Metals (Total)	Y
		Prep - Total Metals, ICP	N
		Lead, Furnace AA (Total)	N
		Prep - Total Metals, Furnace AA	N
		Ion Balance Calculation	N
		Ion Balance Components	N
0002	B	Halogenated Volatile Organics	N
		Aromatic Volatile Organics	N

Analytical Results

The analytical results for this project are presented in the following data tables. Each data table includes sample identification information, and when available and appropriate, dates sampled, received, authorized, prepared and analyzed. The authorization data is the date when the project was defined by the client such that laboratory work could begin.

Data sheets contain a listing of the parameters measured in each test, the analytical results and the Enseco reporting limit. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis, i.e. no correction is made for moisture content.

Enseco-RMAL is no longer routinely blank-correcting analytical data. Uncorrected analytical results are reported, along with associated blank results, for all organic and metals analyses. Analytical results and blank results are reported for conventional inorganic parameters as specified in the method. This policy is described in detail in the Enseco Incorporated Quality Assurance Program Plan for Environmental Chemical Monitoring, Revision 3.3, April, 1989.

The results from the Standard Enseco QA/QC Program, which generates data which are independent of matrix effects, is provided subsequently.

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Halogenated Volatile Organics

Method 8010

Client Name: Giant Refining
Client ID: Pond #2
Lab ID: 009591-0001-SA Enseco ID: 1076515
Matrix: AQUEOUS Sampled: 17 MAY 90 Received: 18 MAY 90
Authorized: 18 MAY 90 Prepared: NA Analyzed: 22 MAY 90

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2 Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
EDB (1,2-Dibromoethane)	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

ND = Not detected
NA = Not applicable

Reported By: William Sullivan Approved By: Greg Gustina

Enseco
A CORNING Company

Halogenated Volatile Organics

Method 8010

Client Name: Giant Refining
Client ID: Trip Blank
Lab ID: 009591-0002-SA Enseco ID: 1076518
Matrix: AQUEOUS Sampled: Unknown Received: 18 MAY 90
Authorized: 18 MAY 90 Prepared: NA Analyzed: 22 MAY 90

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2 Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
EDB (1,2-Dibromoethane)	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

ND = Not detected
NA = Not applicable

Reported By: William Sullivan Approved By: Greg Gustina

Enseco
A CORNING Company

Aromatic Volatile Organics

Method 8020

Client Name: Giant Refining
Client ID: Pond #2
Lab ID: 009591-0001-SA
Matrix: AQUEOUS
Authorized: 18 MAY 90

Enseco ID: 1076515
Sampled: 17 MAY 90
Prepared: NA

Received: 18 MAY 90
Analyzed: 22 MAY 90

Parameter	Result	Units	Reporting Limit
Benzene	3.7	ug/L	0.50
Toluene	6.4	ug/L	0.50
Chlorobenzene	0.84	ug/L	0.50
Ethylbenzene	1.3	ug/L	0.50
Xylenes (total)	12	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	0.50
1,4-Dichlorobenzene	ND	ug/L	0.50
1,2-Dichlorobenzene	ND	ug/L	0.50

ND = Not detected
NA = Not applicable

Reported By: William Sullivan

Approved By: Greg Gustina

Enseco
A CORNING Company

Aromatic Volatile Organics

Method 8020

Client Name: Giant Refining
Client ID: Trip Blank
Lab ID: 009591-0002-SA Enseco ID: 1076518
Matrix: AQUEOUS Sampled: Unknown Received: 18 MAY 90
Authorized: 18 MAY 90 Prepared: NA Analyzed: 22 MAY 90

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	0.50
1,4-Dichlorobenzene	ND	ug/L	0.50
1,2-Dichlorobenzene	ND	ug/L	0.50

ND = Not detected
NA = Not applicable

Reported By: William Sullivan Approved By: Greg Gustina

Enseco
A CORNING Company

Metals

Total Metals

Client Name: Giant Refining
Client ID: Pond #2
Lab ID: 009591-0001-SA
Enseco ID: 1076515
Matrix: AQUEOUS
Sampled: 17 MAY 90
Received: 18 MAY 90
Authorized: 18 MAY 90
Prepared: See Below
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Aluminum	ND	mg/L	0.30	6010	23 MAY 90	25 MAY 90
Antimony	ND	mg/L	0.15	6010	23 MAY 90	25 MAY 90
Barium	0.030	mg/L	0.030	6010	23 MAY 90	25 MAY 90
Beryllium	ND	mg/L	0.0060	6010	23 MAY 90	25 MAY 90
Cadmium	ND	mg/L	0.015	6010	23 MAY 90	25 MAY 90
Chromium	ND	mg/L	0.030	6010	23 MAY 90	25 MAY 90
Cobalt	ND	mg/L	0.030	6010	23 MAY 90	25 MAY 90
Copper	ND	mg/L	0.030	6010	23 MAY 90	25 MAY 90
Lead	ND	mg/L	0.0050	7421	21 MAY 90	28 MAY 90
Manganese	0.46	mg/L	0.030	6010	23 MAY 90	25 MAY 90
Molybdenum	ND	mg/L	0.060	6010	23 MAY 90	25 MAY 90
Nickel	ND	mg/L	0.12	6010	23 MAY 90	25 MAY 90
Silver	ND	mg/L	0.030	6010	23 MAY 90	25 MAY 90
Vanadium	ND	mg/L	0.030	6010	23 MAY 90	25 MAY 90
Zinc	0.041	mg/L	0.030	6010	23 MAY 90	25 MAY 90

ND = Not detected
NA = Not applicable

Reported By: Sandra Jones
Approved By: Kimberly Conroy

Enseco
A CORNING Company

Metals

Dissolved Metals

Client Name: Giant Refining
Client ID: Pond #2
Lab ID: 009591-0001-SA
Matrix: AQUEOUS
Authorized: 18 MAY 90
Enseco ID: 1076515
Sampled: 17 MAY 90
Prepared: See Below
Received: 18 MAY 90
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Calcium	130	mg/L	0.40	6010	NA	25 MAY 90
Iron	1.3	mg/L	0.20	6010	NA	25 MAY 90
Magnesium	37.4	mg/L	0.40	6010	NA	25 MAY 90
Potassium	19.0	mg/L	10.0	6010	NA	25 MAY 90
Sodium	1570	mg/L	10.0	6010	NA	25 MAY 90

ND = Not detected
NA = Not applicable

Reported By: Sandra Jones

Approved By: Kimberly Conroy

Enseco
A CORNING Company

General Inorganics

Client Name: Giant Refining
Client ID: Pond #2
Lab ID: 009591-0001-SA
Matrix: AQUEOUS
Authorized: 18 MAY 90

Enseco ID: 1076515
Sampled: 17 MAY 90
Prepared: See Below
Received: 18 MAY 90
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Alkalinity, Total as CaCO3 at pH 4.5	411	mg/L	5.0	310.1	NA	18 MAY 90
Alkalinity, Bicarb. as CaCO3 at pH 4.5	411	mg/L	5.0	310.1	NA	18 MAY 90
Alkalinity, Carb. as CaCO3 at pH 8.3	ND	mg/L	5.0	310.1	NA	18 MAY 90
Alkalinity, Hydrox. as CaCO3	ND	mg/L	5.0	310.1	NA	18 MAY 90
Chloride	1710	mg/L	15.0	300.0	NA	03 JUN 90
Fluoride	73.2	mg/L	0.20	340.2	NA	31 MAY 90
Ion Balance Difference	1.7	%	0.1	104C	NA	05 JUN 90
Total Anions	82.6	meq/L	0.30		NA	05 JUN 90
Total Cations	85.3	meq/L	0.10		NA	05 JUN 90
Ammonia as N	97.6	mg/L	5.0	350.1	NA	29 MAY 90
Nitrate plus Nitrite	ND	mg/L	0.10	353.2	NA	22 MAY 90
pH	7.9	units	--	9040	NA	18 MAY 90
Sulfate	1070	mg/L	25.0	300.0	NA	03 JUN 90
Specific Conductance at 25 deg.C	7090	umhos/cm	1.0	120.1	NA	24 MAY 90
Total Kjeldahl Nitrogen as N	121	mg/L	10.0	351.2	NA	29 MAY 90
Total Dissolved Solids	4810	mg/L	10.0	160.1	NA	21 MAY 90

ND = Not detected
NA = Not applicable

Reported By: Mary Grehl

Approved By: Mary Grehl

Quality Control Results

The Enseco laboratories operate under a vigorous QA/QC program designed to ensure the generation of scientifically valid, legally defensible data by monitoring every aspect of laboratory operations. Routine QA/QC procedures include the use of approved methodologies, independent verification of analytical standards, use of duplicate Laboratory Control Samples to assess the precision and accuracy of the methodology on a routine basis, and a rigorous system of data review.

In addition, the Enseco laboratories maintain a comprehensive set of certifications from both state and federal governmental agencies which require frequent analyses of blind audit samples. Enseco - Rocky Mountain Analytical Laboratory is certified by the EPA under the EPA/CLP program for both Organic and Inorganic analyses, under the USATHAMA (U.S. Army) program, by the Army Corps of Engineers, and the states of Colorado, New Jersey, New York, Utah, and Florida, among others.

The standard laboratory QC package is designed to:

1) establish a strong, cost-effective QC program that ensures the generation of scientifically valid, legally defensible data

2) assess the laboratory's performance of the analytical method using control limits generated with a well-defined matrix

3) establish clear-cut guidelines for acceptability of analytical data so that QC decisions can be made immediately at the bench, and

4) provide a standard set of reportables which assures the client of the quality of his data.

The Enseco QC program is based upon monitoring the precision and accuracy of an analytical method by analyzing a set of Duplicate Control Samples (DCS) at frequent, well-defined intervals. Each DCS is a well-characterized matrix which is spiked with target compounds at 5-100 times the reporting limit, depending upon the methodology being monitored. The purpose of the DCS is not to duplicate the sample matrix, but rather to provide an interference-free, homogeneous matrix from which to gather data to establish control limits. These limits are used to determine whether data generated by the laboratory on any given day is in control.

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/- 3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. These control limits are fairly narrow based on the consistency of the matrix being monitored and are updated on a quarterly basis.

For each batch of samples analyzed, an additional control measure is taken in the form of a Single Control Sample (SCS). The SCS consists of a control matrix that is spiked with either representative target compounds or surrogate compounds appropriate to the method being used. An SCS is prepared for each sample lot for which the DCS pair are not analyzed.

Accuracy for DCS and SCS is measured by Percent Recovery.

$$\% \text{ Recovery} = \frac{\text{Measured Concentration}}{\text{Actual Concentration}} \times 100$$

Precision for DCS is measured by Relative Percent Difference (RPD).

$$\text{RPD} = \frac{|\ \text{Measured Concentration DCS1} - \text{Measured Concentration DCS2}\ |}{(\text{Measured Concentration DCS1} + \text{Measured Concentration DCS2})/2} \times 100$$

All samples analyzed concurrently by the same test are assigned the same QC lot number. Projects which contain numerous samples, analyzed over several days, may have multiple QC lot numbers associated with each test. The QC information which follows includes a listing of the QC lot numbers associated with each of the samples reported, DCS and SCS (where applicable) recoveries from the QC lots associated with the samples, and control limits for these lots. The QC data is reported by test code, in the order that the tests are reported in the analytical results section of this report.

Enseco
A CORNING Company

QC LOT ASSIGNMENT REPORT
Volatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
009591-0001-SA	AQUEOUS	601-A	21 MAY 90-F	21 MAY 90-F
009591-0001-SA	AQUEOUS	602-A	21 MAY 90-H	21 MAY 90-H
009591-0002-SA	AQUEOUS	601-A	21 MAY 90-F	21 MAY 90-F
009591-0002-SA	AQUEOUS	602-A	21 MAY 90-H	21 MAY 90-H

Enseco
A CORNING Company

DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: 601-A Matrix: AQUEOUS QC Lot: 21 MAY 90-F Concentration Units: ug/L								
1,1-Dichloroethane	5.0	4.64	4.75	4.70	94	80-130	2.3	20
Chloroform	5.0	5.86	6.19	6.02	121	80-120	5.5	20
Bromodichloromethane	10	10.1	10.5	10.3	103	80-120	3.9	20
Trichloroethene	5.0	5.05	5.27	5.16	103	70-120	4.3	20
Chlorobenzene	5.0	4.54	4.74	4.64	93	80-120	4.3	20
Category: 602-A Matrix: AQUEOUS QC Lot: 21 MAY 90-H Concentration Units: ug/L								
Benzene	5.0	5.32	5.47	5.40	108	80-120	2.8	15
Toluene	5.0	5.16	5.27	5.22	104	80-120	2.1	15
Ethylbenzene	5.0	5.15	5.29	5.22	104	80-120	2.7	15
Xylenes (total)	5.0	5.09	5.21	5.15	103	80-120	2.3	15
1,3-Dichlorobenzene	5.0	5.13	5.23	5.18	104	80-120	1.9	15

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A CORNING Company

SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured	Accuracy(%) SCS	Limits
Category: 601-A Matrix: AQUEOUS QC Lot: 21 MAY 90-F QC Run: 21 MAY 90-F Concentration Units: ug/L				
Bromochloromethane	5.00	6.06	121	20-160
Category: 602-A Matrix: AQUEOUS QC Lot: 21 MAY.90-H QC Run: 21 MAY 90-H Concentration Units: ug/L				
a,a,a-Trifluorotoluene	5.00	4.54	91	20-160

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A CORNING Company

METHOD BLANK REPORT
Volatile Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 601-A			
Matrix: AQUEOUS			
QC Lot: 21 MAY 90-F QC Run: 21 MAY 90-F			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2 Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
EDB (1,2-Dibromoethane)	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0
Test: 602-AP			
Matrix: AQUEOUS			
QC Lot: 21 MAY 90-H QC Run: 21 MAY 90-H			
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	0.50
1,4-Dichlorobenzene	ND	ug/L	0.50
1,2-Dichlorobenzene	ND	ug/L	0.50

Enseco
A CORNING Company

METHOD BLANK REPORT
Volatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 601-A Matrix: AQUEOUS QC Lot: 21 MAY 90-F QC Run: 21 MAY 90-F			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2 Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
EDB (1,2-Dibromoethane)	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0
Test: 602-AP Matrix: AQUEOUS QC Lot: 21 MAY 90-H QC Run: 21 MAY 90-H			
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	0.50
1,4-Dichlorobenzene	ND	ug/L	0.50
1,2-Dichlorobenzene	ND	ug/L	0.50

Enseco
A CORNING Company

QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
009591-0001-SA	AQUEOUS	ICP-AD	25 MAY 90-A	-
009591-0001-SA	AQUEOUS	ICP-AT	23 MAY 90-D	23 MAY 90-D
009591-0001-SA	AQUEOUS	PB-FAA-AT	21 MAY 90-F	21 MAY 90-F

Enseco
A CORNING Company

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: ICP-AD Matrix: AQUEOUS QC Lot: 25 MAY 90-A Concentration Units: mg/L								
Aluminum	2.0	1.93	1.92	1.92	96	75-125	0.5	20
Antimony	0.5	0.470	0.468	0.469	94	75-125	0.4	20
Arsenic	0.5	0.460	0.459	0.460	92	75-125	0.2	20
Barium	2.0	1.71	1.70	1.70	85	75-125	0.6	20
Beryllium	0.05	0.0451	0.0448	0.0450	90	75-125	0.7	20
Cadmium	0.05	0.0460	0.0439	0.0450	90	75-125	4.7	20
Calcium	100	96.5	96.2	96.4	96	75-125	0.3	20
Chromium	0.2	0.194	0.192	0.193	97	75-125	1.0	20
Cobalt	0.5	0.458	0.456	0.457	91	75-125	0.4	20
Copper	0.25	0.250	0.248	0.249	100	75-125	0.8	20
Iron	1.0	0.971	0.964	0.968	97	75-125	0.7	20
Lead	0.5	0.470	0.470	0.470	94	75-125	0.0	20
Magnesium	50	48.9	48.8	48.8	98	75-125	0.2	20
Manganese	0.5	0.487	0.484	0.486	97	75-125	0.6	20
Nickel	0.5	0.448	0.446	0.447	89	75-125	0.4	20
Potassium	50	48.3	48.2	48.2	97	75-125	0.2	20
Silver	0.05	0.0499	0.0483	0.0491	98	75-125	3.3	20
Sodium	100	98.4	97.6	98.0	98	75-125	0.8	20
Vanadium	0.5	0.463	0.461	0.462	92	75-125	0.4	20
Zinc	0.5	0.490	0.491	0.490	98	75-125	0.2	20
Category: ICP-AT Matrix: AQUEOUS QC Lot: 23 MAY 90-D Concentration Units: mg/L								
Aluminum	2.0	1.86	1.88	1.87	94	75-125	1.2	20
Antimony	0.5	0.467	0.468	0.467	93	75-125	0.1	20
Arsenic	0.5	0.448	0.447	0.447	89	75-125	0.2	20
Barium	2.0	1.65	1.67	1.66	83	75-125	1.1	20
Beryllium	0.05	0.0435	0.0440	0.0437	87	75-125	1.1	20
Cadmium	0.05	0.0488	0.0436	0.0462	92	75-125	11	20
Calcium	100	92.7	94.4	93.5	94	75-125	1.8	20
Chromium	0.2	0.187	0.189	0.188	94	75-125	0.9	20
Cobalt	0.5	0.433	0.439	0.436	87	75-125	1.3	20
Copper	0.25	0.236	0.268	0.252	101	75-125	13	20
Iron	1.0	0.919	0.928	0.924	92	75-125	1.0	20
Lead	0.5	0.447	0.458	0.453	91	75-125	2.4	20
Magnesium	50	47.4	48.3	47.8	96	75-125	1.9	20

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A CORNING Company

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation (cont.)

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: ICP-AT Matrix: AQUEOUS QC Lot: 23 MAY 90-D Concentration Units: mg/L								
Manganese	0.5	0.464	0.474	0.469	94	75-125	2.3	20
Nickel	0.5	0.426	0.432	0.429	86	75-125	1.5	20
Potassium	50	46.8	47.9	47.4	95	75-125	2.3	20
Silver	0.05	0.0496	0.0496	0.0496	99	75-125	0.0	20
Sodium	100	93.9	96.1	95.0	95	75-125	2.3	20
Vanadium	0.5	0.448	0.453	0.450	90	75-125	1.2	20
Zinc	0.5	0.457	0.467	0.462	92	75-125	2.1	20
Category: PB-FAA-AT Matrix: AQUEOUS QC Lot: 21 MAY 90-F Concentration Units: mg/L								
Lead	0.02	0.0240	0.0223	0.0232	116	75-125	7.3	20

Calculations are performed before rounding to avoid round-off errors in calculated results.

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A CORNING Company

METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: ICP-AT Matrix: AQUEOUS QC Lot: 23 MAY 90-D QC Run: 23 MAY 90-D			
Aluminum	ND	mg/L	0.10
Antimony	ND	mg/L	0.050
Barium	ND	mg/L	0.010
Beryllium	ND	mg/L	0.0020
Cadmium	ND	mg/L	0.0050
Chromium	ND	mg/L	0.010
Cobalt	ND	mg/L	0.010
Copper	ND	mg/L	0.010
Manganese	ND	mg/L	0.010
Molybdenum	ND	mg/L	0.020
Nickel	ND	mg/L	0.040
Silver	ND	mg/L	0.010
Vanadium	ND	mg/L	0.010
Zinc	ND	mg/L	0.010
Test: PB-FAA-AT Matrix: AQUEOUS QC Lot: 21 MAY 90-F QC Run: 21 MAY 90-F			
Lead	ND	mg/L	0.0050

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A CORNING Company

QC LOT ASSIGNMENT REPORT
Wet Chemistry Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
009591-0001-SA	AQUEOUS	NH3-A	29 MAY 90-A	-
009591-0001-SA	AQUEOUS	ALK-A	18 MAY 90-A	-
009591-0001-SA	AQUEOUS	CL-IC-A	03 JUN 90-M	-
009591-0001-SA	AQUEOUS	SO4-IC-A	03 JUN 90-M	-
009591-0001-SA	AQUEOUS	NO3-A	22 MAY 90-A	-
009591-0001-SA	AQUEOUS	F-A	31 MAY 90-A	-
009591-0001-SA	AQUEOUS	TDS-A	21 MAY 90-A	21 MAY 90-A
009591-0001-SA	AQUEOUS	COND-A	24 MAY 90-S	-
009591-0001-SA	AQUEOUS	PH-A	18 MAY 90-A	-
009591-0001-SA	AQUEOUS	TKN-A	28 MAY 90-A	28 MAY 90-A

Enseco
A CORNING Company

DUPLICATE CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: NH3-A Matrix: AQUEOUS QC Lot: 29 MAY 90-A Concentration Units: mg/L								
Ammonia as N	9.1	8.39	8.65	8.52	94	93-107	3.1	10
Category: ALK-A Matrix: AQUEOUS QC Lot: 18 MAY 90-A Concentration Units: mg/L								
Alkalinity, Total as CaCO3 at pH 4.5	210	218	210	214	102	90-110	3.7	10
Category: CL-IC-A Matrix: AQUEOUS QC Lot: 03 JUN 90-M Concentration Units: mg/L								
Chloride	100	98.4	98.0	98.2	98	92-108	0.4	20
Category: SO4-IC-A Matrix: AQUEOUS QC Lot: 03 JUN 90-M Concentration Units: mg/L								
Sulfate	200	194	194	194	97	93-107	0.0	20
Category: NO3-A Matrix: AQUEOUS QC Lot: 22 MAY 90-A Concentration Units: mg/L								
Nitrate as N	3.8	3.66	3.68	3.67	97	91-109	0.5	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A CORNING Company

DUPLICATE CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation (cont.)

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: F-A Matrix: AQUEOUS QC Lot: 31 MAY 90-A Concentration Units: mg/L								
Fluoride	5.27	5.02	5.27	5.14	98	88-112	4.9	15
Category: TDS-A Matrix: AQUEOUS QC Lot: 21 MAY 90-A Concentration Units: mg/L								
Total Dissolved Solids	935	883	873	878	94	90-110	1.1	10
Category: COND-A Matrix: AQUEOUS QC Lot: 24 MAY 90-S Concentration Units: umhos/cm								
Specific Conductance at 25 deg.C	1160	1130	1120	1120	97	95-105	0.9	20
Category: PH-A Matrix: AQUEOUS QC Lot: 18 MAY 90-A Concentration Units: units								
pH	9.1	9.05	9.06	9.06	100	98-102	0.1	5
Category: TKN-A Matrix: AQUEOUS QC Lot: 28 MAY 90-A Concentration Units: mg/L								
Total Kjeldahl Nitrogen as N	5.2	5.24	5.39	5.32	102	78-122	2.8	20

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A CORNING Company

METHOD BLANK REPORT
Wet Chemistry Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: TDS-BAL-A Matrix: AQUEOUS QC Lot: 21 MAY 90-A QC Run: 21 MAY 90-A			
Total Dissolved Solids	ND	mg/L	10.0
Test: TKN-TEC-A Matrix: AQUEOUS QC Lot: 28 MAY,90-A QC Run: 28 MAY 90-A			
Total Kjeldahl Nitrogen as N	ND	mg/L	0.50

Appendix

Enseco - Rocky Mountain Analytical

4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Facsimile: 303/431-7171

Attn: Julie Essey

CHAIN OF CUSTODY

No.

Enseco Client: Giant Refining Co.
Project: Pond 2
Sampling Co.: Ciniza Refinery
Sampling Site: Ciniza Refinery
Team Leader: Claud Rosendale

RMAL 9591

SAMPLE SAFE™ CONDITIONS

1. Packed by: _____ Seal # _____
2. Seal Intact Upon Receipt by Sampling Co.: (Yes) No
3. Condition of Contents: Good
4. Sealed for Shipping by: C Rosendale
5. Initial Contents Temp.: — °C Seal # —
6. Sampling Status: (Done) Continuing Until _____
7. Seal Intact Upon Receipt by Laboratory: Yes No
8. Contents Temperature Upon Receipt by Lab: _____ °C
9. Condition of Contents: _____

Date	Time	Sample ID/Description	Sample Type	No. Containers	Analysis Parameters	Remarks
5-17-90	12:15pm	Pond #2 - 1'	Water	2 - #1	See Attached	
				1 - #2		
				1 - #4		Filtered
				1 - #4		
				6 - #11		
				1 - #11		Trip Blank

CUSTODY TRANSFERS PRIOR TO SHIPPING

	Relinquished by: (signed)	Received by: (signed)	Date	Time
1	Claud Rosendale		5-17-90	2:30pm
2				
3				

SHIPPING DETAILS

Delivered to Shipper by: Claud Rosendale
Method of Shipment: Federal Express Airbill #
Received for Lab: RMAL Signed: Date/Time 5/18/90 0800
Enseco Project No.

White and Pink Copies to Lab Yellow to Sampler

SS-001

July 10, 1990

GIANT REFINING CO.
Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

David Boyer
Environmental Bureau Chief
New Mexico Oil Conservation Division
P.O. Box 2088
State Land Office Building
Santa Fe, NM 87504

RE: Discharge of Travel Center Washwater (GW-32)

Dear Mr. Boyer:

Because of existing problems with the transfer of the Giant Travel Center wastewater, changes are being made to the washwater handling system. In order to eliminate pumping the solids laden water directly to the refinery process system, a new system has been installed to remove more of the solids prior to transfer of the water. The truck washwater is drained to a coated concrete basin which is designed to allow the solids to precipitate and filter out. The supernatant or washwater is then pumped to the water processing system at the refinery. The solids that accumulate in the concrete basin will periodically be removed and transferred to the refinery for disposal. These solids will be analyzed to determine the appropriate handling method.

Drawings of the sand trap basin are attached for your review.

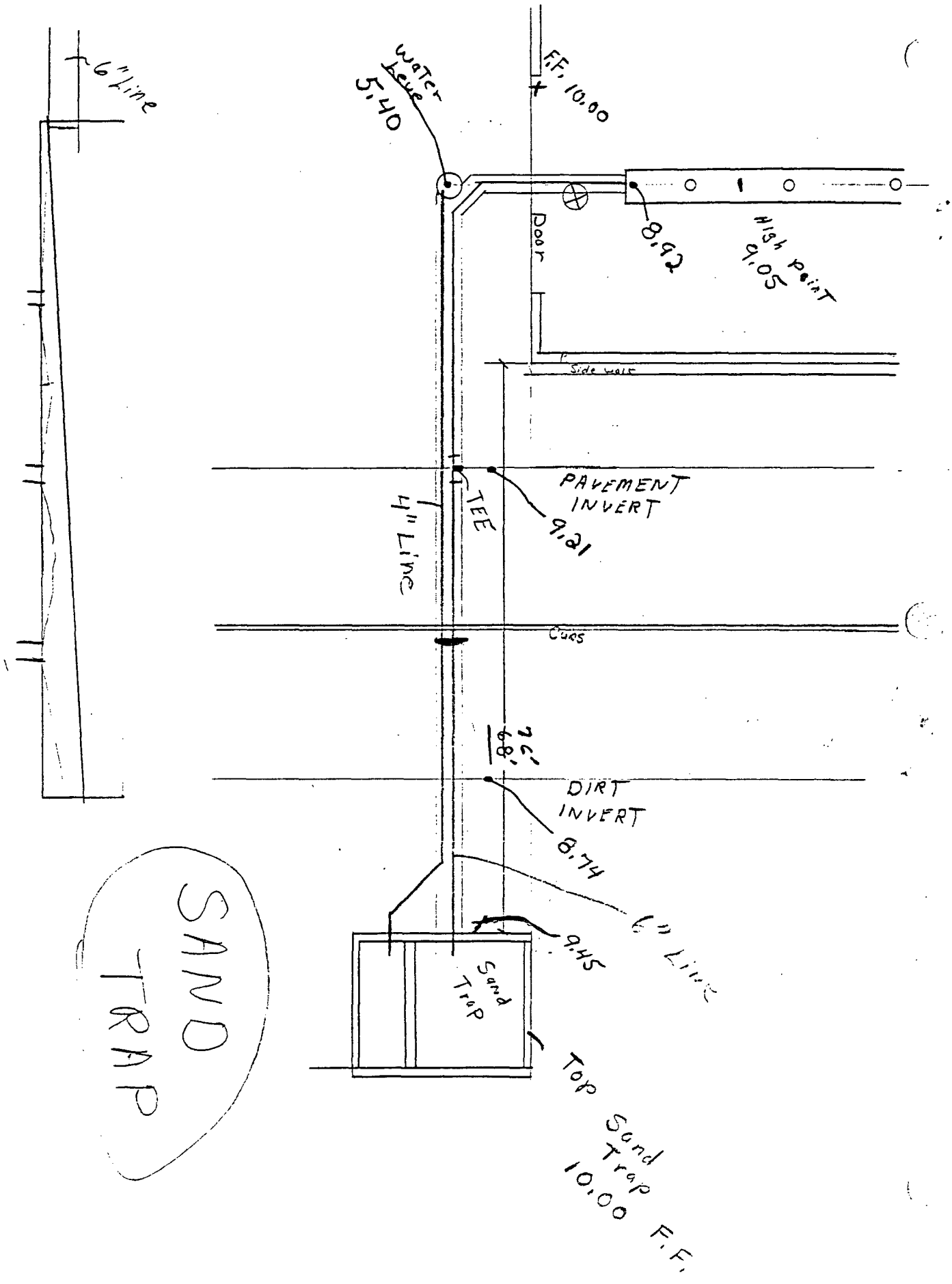
Giant anticipates no problems with these modifications as it will improve the quality of the water being discharged and has no affect on the original volumes proposed in the discharge plan amendment.

If you have any questions, contact my office at (505)722-3833, ext. 217.

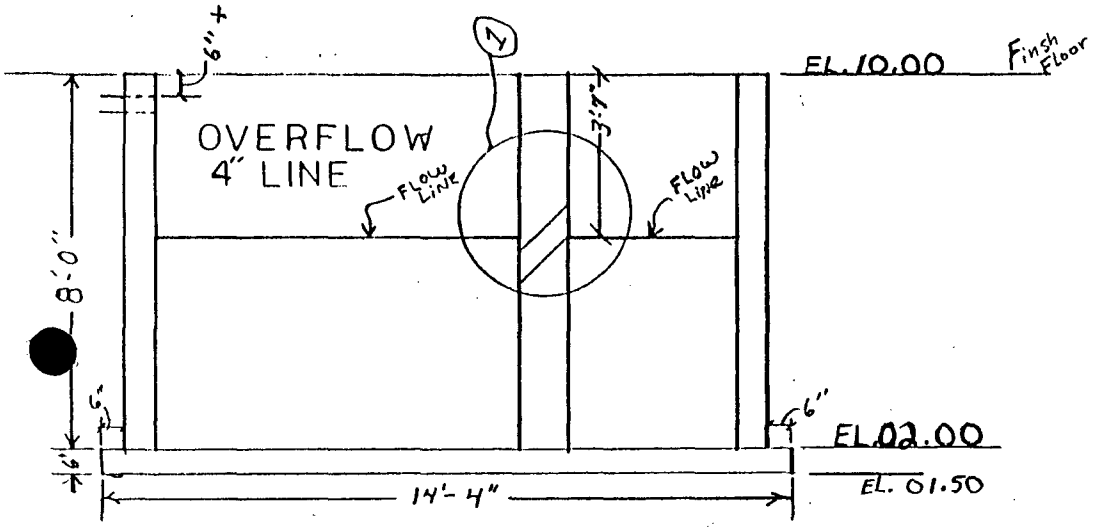
Claud Rosendale
Environmental Manager
Ciniza Refinery

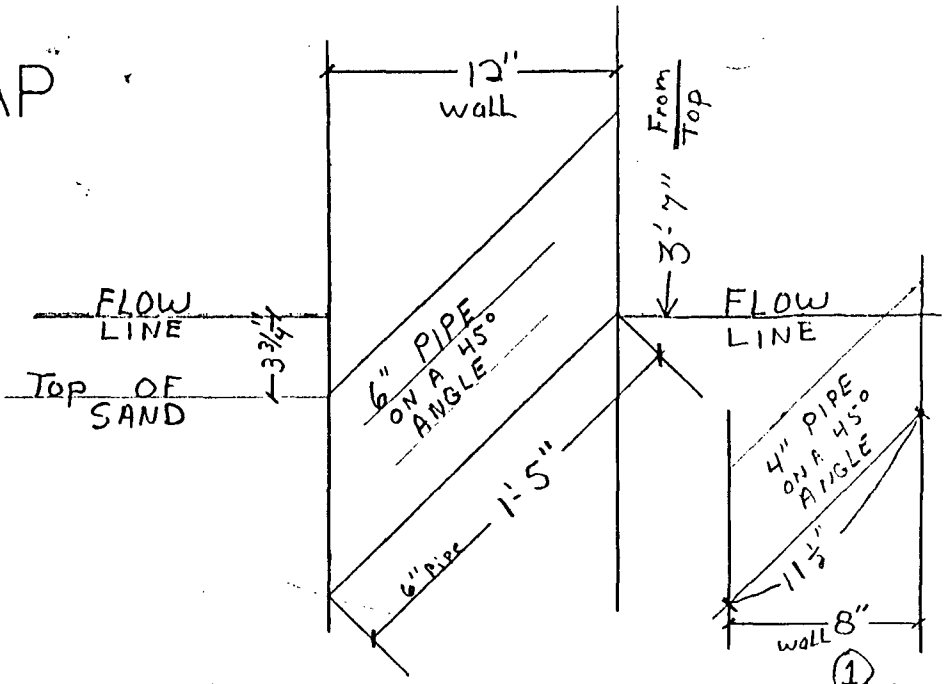
CCR:smb

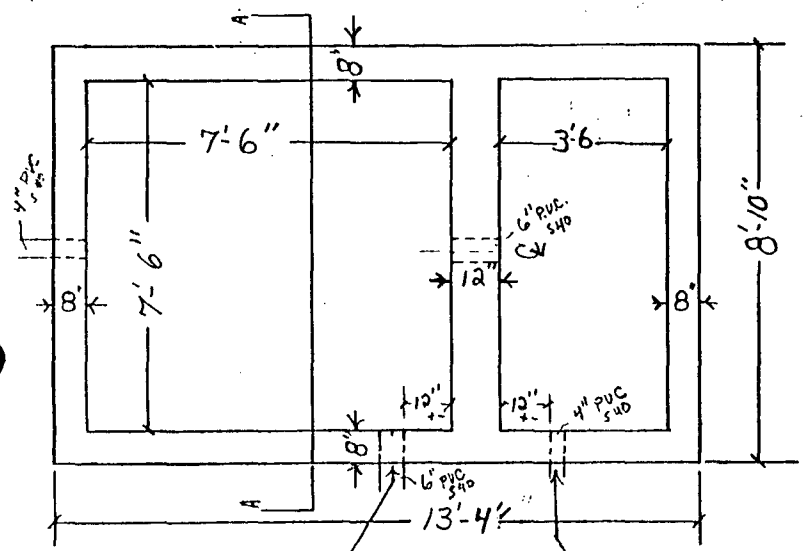
cc: w/attachments:
Barry Zeigler-Project Manager; Giant Ind. Inc.
Ray Horton-General Manager; Giant Travel Center
Kim Bullerdick-Corporate Counsel; Giant Ind. Inc.
John Stokes-Refinery Manager; Giant Refinery
Jay Mills-Maintenance & Security; Giant Travel Center

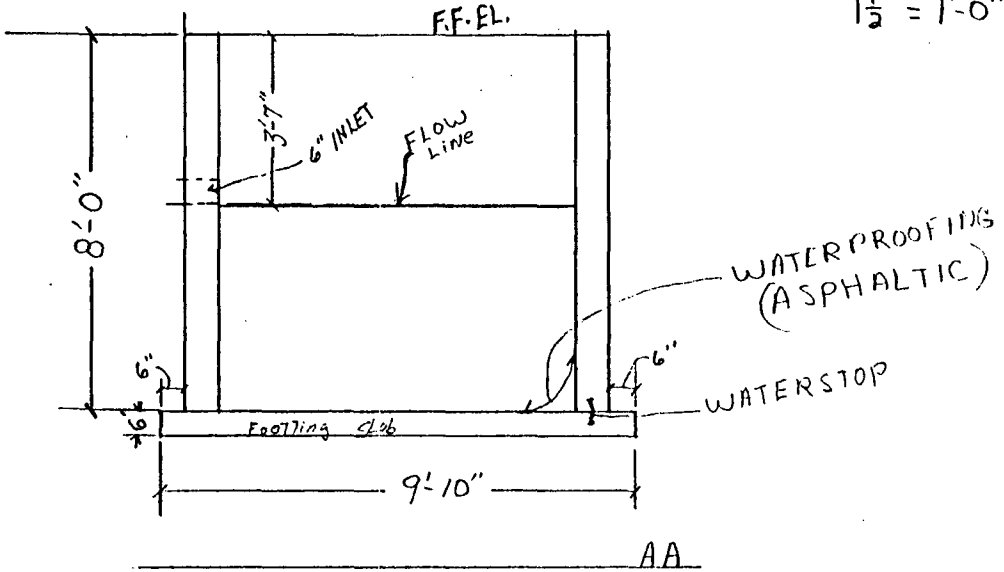

6" Line
Water Level 5.40
F.F. 10.00
Door
8.92
High point 9.05
Side walk
PAVEMENT INVERT
9.21
TEE
4" Line
Curb
7.5'
68'
DIRT INVERT
8.74
6" Line
9.45
Sand Trap
Top Sand Trap 10.00 F.F.
SAND TRAP

SAND TRAP









AA

INLET FROM WASH BAY 6" LINE

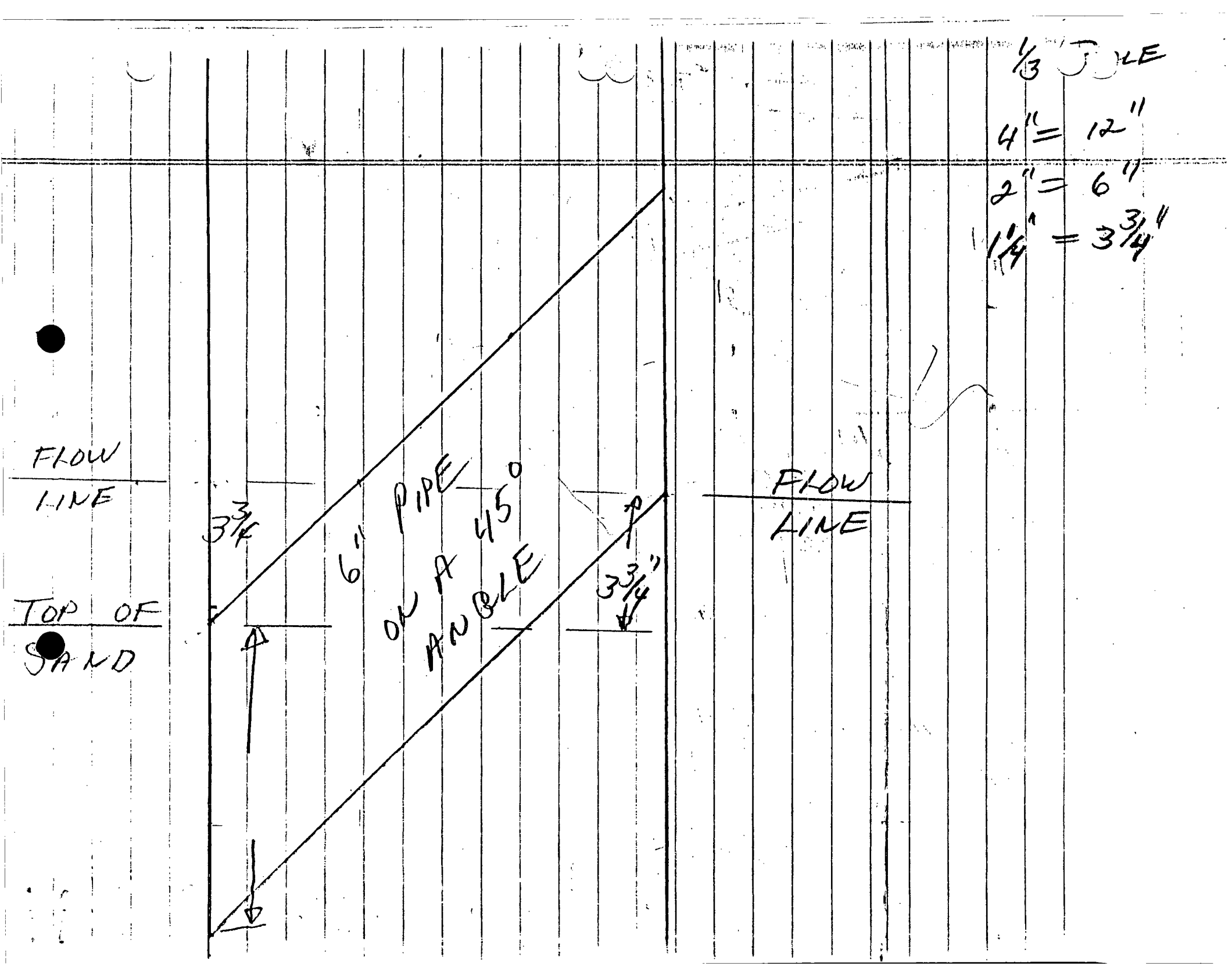
3'-7" To Bottom of 6" Line

USE SAME TRENCH

OUTLET TO SEWER 4" LINE

3'7" To Bottom of 4" Line 45° ANGLE

1/4" = 1'-0"


1/3 SCALE
4" = 12"
2" = 6"
1 1/4" = 3 3/4"
FLOW LINE
TOP OF SAND
3 3/4"
6" PIPE ON A 45° ANGLE
33 3/4"
FLOW LINE

Enseco

June 8, 1990 Pond #2

Mr. Claud Rosendale
Giant Refining
17 Miles East of Gallup
I-40, Exit 39
Gallup, NM 87301

Dear Mr. Rosendale:

Enclosed is the report for one aqueous sample we received at Enseco-Rocky Mountain Analytical Laboratory on May 18, 1990.

Included with the report is a quality control summary.

Please call if you have any questions.

Sincerely,

Julie Essey
Program Administrator

JE/JBH/ldc
Enclosures

RMAL #009591

Reviewed by:

Jeanne B. Howbert
Technical Manager

4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

Rocky Mountain
Analytical Laboratory

Enseco

ANALYTICAL RESULTS

FOR

GIANT REFINING

ENSECO-RMAL NO. 009591

JUNE 8, 1990

Reviewed by:

Julie Essey

Jeanne B. Howbert

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

Introduction

This report presents the analytical results as well as supporting information to aid in the evaluation and interpretation of the data and is arranged in the following order:

- Sample Description Information
- Analytical Test Requests
- Analytical Results
- Quality Control Report

Metals Data Review

Enseco protocol states that samples analyzed by graphite furnace atomic absorption (GFAA), will have a spiked aliquot analyzed with each sample. If the spike recovery does not meet established criteria, the reporting limit for that analysis is raised proportionately. Poor spike recoveries of this type are typically due to interferences from the sample matrix.

In reviewing the GFAA metals data it is necessary to know what the nominal reporting limits are in order to determine whether or not those limits were raised due to matrix interference. The most common GFAA elements and their nominal reporting limits are listed in the table below. These are provided to facilitate the review of the GFAA metals data.

Common GFAA Elements

	Reporting Limit / Units			
Element	Aqueous (mg/L)	Soil (mg/kg)	Waste (mg/kg)	Leachate (mg/L)
Arsenic	0.005	0.5 **	0.5 **	0.05 **
Lead	0.005	0.5	0.5 **	0.05 **
Selenium	0.005	0.5	0.5	0.05
Thallium	0.005	0.5	0.5	0.05

** For the matrix listed, the preferred method for this element is by Method 6010

Mercury by cold vapor atomic absorption (CVAA), Method 245.1/7470/7471 , and analytes performed by Inductively Coupled Plasma (ICP), Method 200.7/6010 are not subject to the same type of interferences as GFAA metals and therefore do not require a spiked aliquot for each sample. The nominal reporting limits for analytes by these methods are given in the method blank report. Typically a raised reporting limit by these methods is also due to matrix interferences. However, for all methods mentioned here, a raised reporting limit may also be the result of target analyte concentrations or blank contamination.

Sample Description Information

The Sample Description Information lists all of the samples received in this project together with the internal laboratory identification number assigned for each sample. Each project received at Enseco - RMAL is assigned a unique six digit number. Samples within the project are numbered sequentially. The laboratory identification number is a combination of the six digit project code and the sample sequence number.

Also given in the Sample Description Information is the Sample Type (matrix), Date of Sampling (if known) and Date of Receipt at the laboratory.

Analytical Test Requests

The Analytical Test Requests lists the analyses that were performed on each sample. The Custom Test column indicates where tests have been modified to conform to the specific requirements of this project.

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SAMPLE DESCRIPTION INFORMATION
for
Giant Refining

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
009591-0001-SA	Pond #2	AQUEOUS	17 MAY 90	12:15	18 MAY 90
009591-0002-SA	Trip Blank	AQUEOUS			18 MAY 90

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ANALYTICAL TEST REQUESTS
for
Giant Refining

Lab ID: 009591	Group Code	Analysis Description	Custom Test?
0001	A	Halogenated Volatile Organics	N
		Aromatic Volatile Organics	N
		ICP Metals (Dissolved)	Y
		Ammonia	N
		Alkalinity,	N
		Total/Carbonate/Bicarbonate/Hydroxide	N
		Chloride, Ion Chromatography	N
		Sulfate, Ion Chromatography	N
		Nitrate Plus Nitrite	N
		Fluoride, Electrode	N
		Total Dissolved Solids (TDS)	N
		Specific Conductance	N
		pH	N
		Total Kjeldahl Nitrogen (TKN)	N
		ICP Metals (Total)	Y
		Prep - Total Metals, ICP	N
		Lead, Furnace AA (Total)	N
		Prep - Total Metals, Furnace AA	N
		Ion Balance Calculation	N
		Ion Balance Components	N
0002	B	Halogenated Volatile Organics	N
		Aromatic Volatile Organics	N

Analytical Results

The analytical results for this project are presented in the following data tables. Each data table includes sample identification information, and when available and appropriate, dates sampled, received, authorized, prepared and analyzed. The authorization data is the date when the project was defined by the client such that laboratory work could begin.

Data sheets contain a listing of the parameters measured in each test, the analytical results and the Enseco reporting limit. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis, i.e. no correction is made for moisture content.

Enseco-RMAL is no longer routinely blank-correcting analytical data. Uncorrected analytical results are reported, along with associated blank results, for all organic and metals analyses. Analytical results and blank results are reported for conventional inorganic parameters as specified in the method. This policy is described in detail in the Enseco Incorporated Quality Assurance Program Plan for Environmental Chemical Monitoring, Revision 3.3, April, 1989.

The results from the Standard Enseco QA/QC Program, which generates data which are independent of matrix effects, is provided subsequently.

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Halogenated Volatile Organics

Method 8010

Client Name: Giant Refining
Client ID: Pond #2
Lab ID: 009591-0001-SA Enseco ID: 1076515
Matrix: AQUEOUS Sampled: 17 MAY 90 Received: 18 MAY 90
Authorized: 18 MAY 90 Prepared: NA Analyzed: 22 MAY 90

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2 Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
EDB (1,2-Dibromoethane)	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

ND = Not detected
NA = Not applicable

Reported By: William Sullivan Approved By: Greg Gustina

Enseco
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Halogenated Volatile Organics

Method 8010

Client Name: Giant Refining
Client ID: Trip Blank
Lab ID: 009591-0002-SA
Enseco ID: 1076518
Matrix: AQUEOUS
Sampled: Unknown
Received: 18 MAY 90
Authorized: 18 MAY 90
Prepared: NA
Analyzed: 22 MAY 90

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2 Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
EDB (1,2-Dibromoethane)	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

ND = Not detected
NA = Not applicable

Reported By: William Sullivan
Approved By: Greg Gustina

Enseco
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Aromatic Volatile Organics

Method 8020

Client Name: Giant Refining
Client ID: Pond #2
Lab ID: 009591-0001-SA Enseco ID: 1076515
Matrix: AQUEOUS Sampled: 17 MAY 90 Received: 18 MAY 90
Authorized: 18 MAY 90 Prepared: NA Analyzed: 22 MAY 90

Parameter	Result	Units	Reporting Limit
Benzene	3.7	ug/L	0.50
Toluene	6.4	ug/L	0.50
Chlorobenzene	0.84	ug/L	0.50
Ethylbenzene	1.3	ug/L	0.50
Xylenes (total)	12	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	0.50
1,4-Dichlorobenzene	ND	ug/L	0.50
1,2-Dichlorobenzene	ND	ug/L	0.50

ND = Not detected
NA = Not applicable

Reported By: William Sullivan Approved By: Greg Gustina

Enseco
A CORNING Company

Aromatic Volatile Organics

Method 8020

Client Name: Giant Refining
Client ID: Trip Blank
Lab ID: 009591-0002-SA Enseco ID: 1076518
Matrix: AQUEOUS Sampled: Unknown Received: 18 MAY 90
Authorized: 18 MAY 90 Prepared: NA Analyzed: 22 MAY 90

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	0.50
1,4-Dichlorobenzene	ND	ug/L	0.50
1,2-Dichlorobenzene	ND	ug/L	0.50

ND = Not detected
NA = Not applicable

Reported By: William Sullivan Approved By: Greg Gustina

Enseco
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Metals

Total Metals

Client Name: Giant Refining
Client ID: Pond #2
Lab ID: 009591-0001-SA Enseco ID: 1076515
Matrix: AQUEOUS Sampled: 17 MAY 90 Received: 18 MAY 90
Authorized: 18 MAY 90 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Aluminum	ND	mg/L	0.30	6010	23 MAY 90	25 MAY 90
Antimony	ND	mg/L	0.15	6010	23 MAY 90	25 MAY 90
Barium	0.030	mg/L	0.030	6010	23 MAY 90	25 MAY 90
Beryllium	ND	mg/L	0.0060	6010	23 MAY 90	25 MAY 90
Cadmium	ND	mg/L	0.015	6010	23 MAY 90	25 MAY 90
Chromium	ND	mg/L	0.030	6010	23 MAY 90	25 MAY 90
Cobalt	ND	mg/L	0.030	6010	23 MAY 90	25 MAY 90
Copper	ND	mg/L	0.030	6010	23 MAY 90	25 MAY 90
Lead	ND	mg/L	0.0050	7421	21 MAY 90	28 MAY 90
Manganese	0.46	mg/L	0.030	6010	23 MAY 90	25 MAY 90
Molybdenum	ND	mg/L	0.060	6010	23 MAY 90	25 MAY 90
Nickel	ND	mg/L	0.12	6010	23 MAY 90	25 MAY 90
Silver	ND	mg/L	0.030	6010	23 MAY 90	25 MAY 90
Vanadium	ND	mg/L	0.030	6010	23 MAY 90	25 MAY 90
Zinc	0.041	mg/L	0.030	6010	23 MAY 90	25 MAY 90

ND = Not detected
NA = Not applicable

Reported By: Sandra Jones Approved By: Kimberly Conroy

Enseco
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Metals

Dissolved Metals

Client Name: Giant Refining
Client ID: Pond #2
Lab ID: 009591-0001-SA
Matrix: AQUEOUS
Authorized: 18 MAY 90

Enseco ID: 1076515
Sampled: 17 MAY 90
Prepared: See Below

Received: 18 MAY 90
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Calcium	130	mg/L	0.40	6010	NA	25 MAY 90
Iron	1.3	mg/L	0.20	6010	NA	25 MAY 90
Magnesium	37.4	mg/L	0.40	6010	NA	25 MAY 90
Potassium	19.0	mg/L	10.0	6010	NA	25 MAY 90
Sodium	1570	mg/L	10.0	6010	NA	25 MAY 90

ND = Not detected
NA = Not applicable

Reported By: Sandra Jones

Approved By: Kimberly Conroy

Enseco
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General Inorganics

Client Name: Giant Refining
Client ID: Pond #2
Lab ID: 009591-0001-SA
Matrix: AQUEOUS
Authorized: 18 MAY 90

Enseco ID: 1076515
Sampled: 17 MAY 90
Prepared: See Below
Received: 18 MAY 90
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Alkalinity, Total as CaCO3 at pH 4.5	411	mg/L	5.0	310.1	NA	18 MAY 90
Alkalinity, Bicarb. as CaCO3 at pH 4.5	411	mg/L	5.0	310.1	NA	18 MAY 90
Alkalinity, Carb. as CaCO3 at pH 8.3	ND	mg/L	5.0	310.1	NA	18 MAY 90
Alkalinity, Hydrox. as CaCO3	ND	mg/L	5.0	310.1	NA	18 MAY 90
Chloride	1710	mg/L	15.0	300.0	NA	03 JUN 90
Fluoride	73.2	mg/L	0.20	340.2	NA	31 MAY 90
Ion Balance Difference	1.7	%	0.1	104C	NA	05 JUN 90
Total Anions	82.6	meq/L	0.30		NA	05 JUN 90
Total Cations	85.3	meq/L	0.10		NA	05 JUN 90
Ammonia as N	97.6	mg/L	5.0	350.1	NA	29 MAY 90
Nitrate plus Nitrite	ND	mg/L	0.10	353.2	NA	22 MAY 90
pH	7.9	units	--	9040	NA	18 MAY 90
Sulfate	1070	mg/L	25.0	300.0	NA	03 JUN 90
Specific Conductance at 25 deg.C	7090	umhos/cm	1.0	120.1	NA	24 MAY 90
Total Kjeldahl Nitrogen as N	121	mg/L	10.0	351.2	NA	29 MAY 90
Total Dissolved Solids	4810	mg/L	10.0	160.1	NA	21 MAY 90

ND = Not detected
NA = Not applicable

Reported By: Mary Grehl

Approved By: Mary Grehl

Quality Control Results

The Enseco laboratories operate under a vigorous QA/QC program designed to ensure the generation of scientifically valid, legally defensible data by monitoring every aspect of laboratory operations. Routine QA/QC procedures include the use of approved methodologies, independent verification of analytical standards, use of duplicate Laboratory Control Samples to assess the precision and accuracy of the methodology on a routine basis, and a rigorous system of data review.

In addition, the Enseco laboratories maintain a comprehensive set of certifications from both state and federal governmental agencies which require frequent analyses of blind audit samples. Enseco - Rocky Mountain Analytical Laboratory is certified by the EPA under the EPA/CLP program for both Organic and Inorganic analyses, under the USATHAMA (U.S. Army) program, by the Army Corps of Engineers, and the states of Colorado, New Jersey, New York, Utah, and Florida, among others.

The standard laboratory QC package is designed to:

1) establish a strong, cost-effective QC program that ensures the generation of scientifically valid, legally defensible data

2) assess the laboratory's performance of the analytical method using control limits generated with a well-defined matrix

3) establish clear-cut guidelines for acceptability of analytical data so that QC decisions can be made immediately at the bench, and

4) provide a standard set of reportables which assures the client of the quality of his data.

The Enseco QC program is based upon monitoring the precision and accuracy of an analytical method by analyzing a set of Duplicate Control Samples (DCS) at frequent, well-defined intervals. Each DCS is a well-characterized matrix which is spiked with target compounds at 5-100 times the reporting limit, depending upon the methodology being monitored. The purpose of the DCS is not to duplicate the sample matrix, but rather to provide an interference-free, homogeneous matrix from which to gather data to establish control limits. These limits are used to determine whether data generated by the laboratory on any given day is in control.

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/- 3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. These control limits are fairly narrow based on the consistency of the matrix being monitored and are updated on a quarterly basis.

For each batch of samples analyzed, an additional control measure is taken in the form of a Single Control Sample (SCS). The SCS consists of a control matrix that is spiked with either representative target compounds or surrogate compounds appropriate to the method being used. An SCS is prepared for each sample lot for which the DCS pair are not analyzed.

Accuracy for DCS and SCS is measured by Percent Recovery.

$$\% \text{ Recovery} = \frac{\text{Measured Concentration}}{\text{Actual Concentration}} \times 100$$

Precision for DCS is measured by Relative Percent Difference (RPD).

$$\text{RPD} = \frac{\left| \text{Measured Concentration DCS1} - \text{Measured Concentration DCS2} \right|}{(\text{Measured Concentration DCS1} + \text{Measured Concentration DCS2})/2} \times 100$$

All samples analyzed concurrently by the same test are assigned the same QC lot number. Projects which contain numerous samples, analyzed over several days, may have multiple QC lot numbers associated with each test. The QC information which follows includes a listing of the QC lot numbers associated with each of the samples reported, DCS and SCS (where applicable) recoveries from the QC lots associated with the samples, and control limits for these lots. The QC data is reported by test code, in the order that the tests are reported in the analytical results section of this report.

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QC LOT ASSIGNMENT REPORT
Volatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
009591-0001-SA	AQUEOUS	601-A	21 MAY 90-F	21 MAY 90-F
009591-0001-SA	AQUEOUS	602-A	21 MAY 90-H	21 MAY 90-H
009591-0002-SA	AQUEOUS	601-A	21 MAY 90-F	21 MAY 90-F
009591-0002-SA	AQUEOUS	602-A	21 MAY 90-H	21 MAY 90-H

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DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: 601-A Matrix: AQUEOUS QC Lot: 21 MAY 90-F Concentration Units: ug/L								
1,1-Dichloroethane	5.0	4.64	4.75	4.70	94	80-130	2.3	20
Chloroform	5.0	5.86	6.19	6.02	121	80-120	5.5	20
Bromodichloromethane	10	10.1	10.5	10.3	103	80-120	3.9	20
Trichloroethene	5.0	5.05	5.27	5.16	103	70-120	4.3	20
Chlorobenzene	5.0	4.54	4.74	4.64	93	80-120	4.3	20
Category: 602-A Matrix: AQUEOUS QC Lot: 21 MAY 90-H Concentration Units: ug/L								
Benzene	5.0	5.32	5.47	5.40	108	80-120	2.8	15
Toluene	5.0	5.16	5.27	5.22	104	80-120	2.1	15
Ethylbenzene	5.0	5.15	5.29	5.22	104	80-120	2.7	15
Xylenes (total)	5.0	5.09	5.21	5.15	103	80-120	2.3	15
1,3-Dichlorobenzene	5.0	5.13	5.23	5.18	104	80-120	1.9	15

Calculations are performed before rounding to avoid round-off errors in calculated results.

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SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured	Accuracy(%) SCS	Limits
Category: 601-A Matrix: AQUEOUS QC Lot: 21 MAY 90-F QC Run: 21 MAY 90-F Concentration Units: ug/L				
Bromochloromethane	5.00	6.06	121	20-160
Category: 602-A Matrix: AQUEOUS QC Lot: 21 MAY 90-H QC Run: 21 MAY 90-H Concentration Units: ug/L				
a,a,a-Trifluorotoluene	5.00	4.54	91	20-160

Calculations are performed before rounding to avoid round-off errors in calculated results.

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METHOD BLANK REPORT
Volatile Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 601-A			
Matrix: AQUEOUS			
QC Lot: 21 MAY 90-F QC Run: 21 MAY 90-F			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2 Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
EDB (1,2-Dibromoethane)	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0
Test: 602-AP			
Matrix: AQUEOUS			
QC Lot: 21 MAY 90-H QC Run: 21 MAY 90-H			
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	0.50
1,4-Dichlorobenzene	ND	ug/L	0.50
1,2-Dichlorobenzene	ND	ug/L	0.50

METHOD BLANK REPORT
Volatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 601-A Matrix: AQUEOUS QC Lot: 21 MAY 90-F QC Run: 21 MAY 90-F			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2 Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
EDB (1,2-Dibromoethane)	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0
Test: 602-AP Matrix: AQUEOUS QC Lot: 21 MAY 90-H QC Run: 21 MAY 90-H			
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	0.50
1,4-Dichlorobenzene	ND	ug/L	0.50
1,2-Dichlorobenzene	ND	ug/L	0.50

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QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
009591-0001-SA	AQUEOUS	ICP-AD	25 MAY 90-A	-
009591-0001-SA	AQUEOUS	ICP-AT	23 MAY 90-D	23 MAY 90-D
009591-0001-SA	AQUEOUS	PB-FAA-AT	21 MAY 90-F	21 MAY 90-F

Enseco
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DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: ICP-AD Matrix: AQUEOUS QC Lot: 25 MAY 90-A Concentration Units: mg/L								
Aluminum	2.0	1.93	1.92	1.92	96	75-125	0.5	20
Antimony	0.5	0.470	0.468	0.469	94	75-125	0.4	20
Arsenic	0.5	0.460	0.459	0.460	92	75-125	0.2	20
Barium	2.0	1.71	1.70	1.70	85	75-125	0.6	20
Beryllium	0.05	0.0451	0.0448	0.0450	90	75-125	0.7	20
Cadmium	0.05	0.0460	0.0439	0.0450	90	75-125	4.7	20
Calcium	100	96.5	96.2	96.4	96	75-125	0.3	20
Chromium	0.2	0.194	0.192	0.193	97	75-125	1.0	20
Cobalt	0.5	0.458	0.456	0.457	91	75-125	0.4	20
Copper	0.25	0.250	0.248	0.249	100	75-125	0.8	20
Iron	1.0	0.971	0.964	0.968	97	75-125	0.7	20
Lead	0.5	0.470	0.470	0.470	94	75-125	0.0	20
Magnesium	50	48.9	48.8	48.8	98	75-125	0.2	20
Manganese	0.5	0.487	0.484	0.486	97	75-125	0.6	20
Nickel	0.5	0.448	0.446	0.447	89	75-125	0.4	20
Potassium	50	48.3	48.2	48.2	97	75-125	0.2	20
Silver	0.05	0.0499	0.0483	0.0491	98	75-125	3.3	20
Sodium	100	98.4	97.6	98.0	98	75-125	0.8	20
Vanadium	0.5	0.463	0.461	0.462	92	75-125	0.4	20
Zinc	0.5	0.490	0.491	0.490	98	75-125	0.2	20
Category: ICP-AT Matrix: AQUEOUS QC Lot: 23 MAY 90-D Concentration Units: mg/L								
Aluminum	2.0	1.86	1.88	1.87	94	75-125	1.2	20
Antimony	0.5	0.467	0.468	0.467	93	75-125	0.1	20
Arsenic	0.5	0.448	0.447	0.447	89	75-125	0.2	20
Barium	2.0	1.65	1.67	1.66	83	75-125	1.1	20
Beryllium	0.05	0.0435	0.0440	0.0437	87	75-125	1.1	20
Cadmium	0.05	0.0488	0.0436	0.0462	92	75-125	11	20
Calcium	100	92.7	94.4	93.5	94	75-125	1.8	20
Chromium	0.2	0.187	0.189	0.188	94	75-125	0.9	20
Cobalt	0.5	0.433	0.439	0.436	87	75-125	1.3	20
Copper	0.25	0.236	0.268	0.252	101	75-125	13	20
Iron	1.0	0.919	0.928	0.924	92	75-125	1.0	20
Lead	0.5	0.447	0.458	0.453	91	75-125	2.4	20
Magnesium	50	47.4	48.3	47.8	96	75-125	1.9	20

Calculations are performed before rounding to avoid round-off errors in calculated results.