Western Refining
GALLUP

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October 30, 2009

Mr. Carl Chavez
Environmental Engineer
Oil Conservation Division
Environmental Bureau
1220 S. St. Francis Dr.
Santa Fe, NM 87505

Re: Discharge Permit "Modification" to Discharge (GW-032)
Western Refining Southwest – Gallup Refinery
McKinley County, New Mexico

Dear Mr. Chavez:

This letter and application are in response to your letter dated July 30, 2009 requesting a modification if WRSW seeks to discharge to the "Waters of the State". The attached major modification request application would be to allow discharges according to the NPDES application submitted to the EPA on June 25, 2009 and copied to OCD. A check of $4300 is enclosed as the permit review fee.

Please contact Ed Riege at (505) 722-0217 if you have any comments or questions regarding this submittal.

Sincerely,

Mark B. Turri

C: Willie Lane EPA Region 6 (letter only)
Ms. Hope Monzeglio
Ed Riege
Gaurav Rajen

I-40 Exit 39, Jamestown, New Mexico 87347 • 505 722-3833 • www.wnr.com
Mail: Route 3 Box 7, Gallup, New Mexico 87301

DATE IN	SUSPENSE	ENGIN	LOGGED IN	TYPE	APP NO.

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION
- Engineering Bureau -
1220 South St. Francis Drive, Santa Fe, NM 87505

ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]
[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

[1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Simultaneous Dedication
☒ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☐ WFX ☐ PMX ☐ SWD ☐ IPI ☐ EOR ☐ PPR

[D] Other: Specify __Intermittent surface water discharge NPDES permit application

[2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or ☐ Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☐ Offset Operators, Leaseholders or Surface Owner

[C] ☒ Application is One Which Requires Published Legal Notice

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached

[3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

Mark B. Turri	Mark B Turri	Refinery Manager	10/30/09
Print or Type Name	Signature	Title	Date

MARK.TURRI@WNR.com
e-mail Address

NPDES DISCHARGE PERMIT NOTICE
(per NMAC 20.6.2.3108)

1. Name and Address of Proposed Discharger-

   Western Refining Southwest, Inc (Gallup Refinery)
   Rt. 3 Box 7
   Gallup, NM 87301

2. Location of the discharge, including street address, if available, and sufficient information to locate the facility with respect to surrounding landmarks

   I-40 / Exit 39 Jamestown, NM 87347; SE ¼, NE ¼ SECT 28, T15N, R15W (McKinley County)

3. A brief description of the activities that produce the discharge described in the application

   Western Refining Southwest, Inc. (Gallup Refinery) processes crude oil into a variety of petroleum products. The process wastewater collection system is a network of curbing, paving, catch basins, and underground piping that collects wastewater and stormwater from various processing areas within the refinery that is conveyed directly to a wastewater treatment system. The wastewater treatment system is designed for oil recovery and biological treatment in aeration basins prior to entering total retention evaporation ponds. In these ponds, further microbial degradation breaks down any hydrocarbon components into basic compounds, carbon dioxide and water. Under normal circumstances, no treated wastewater is ever discharged. In an extreme eventuality of the ponds not being able to hold all the wastewater generated, a temporary discharge is being planned for along with other contingency measures. Gallup Refinery will first attempt to build additional temporary evaporation ponds, pump water from downgradient ponds into upgradient ponds – if such measures are deemed inadequate, the wastewater will be treated using mobile treatment units to meet the standards of all designated uses of downstream receiving waters., and then discharged. This discharge will be only to the extent required to prevent a catastrophic breach of dikes and ponds and an unplanned spill occurring.

4. A brief description of the expected quality and volume of the discharge

   The anticipated volume is assumed to be of the order of 100,000 gallons (enough to lower levels in the most at-risk pond by 0.5 feet) and extremely rare – perhaps once over a ten-year period. The wastewater will have no hazardous components and levels of all contaminants will be below regulatory standards.

5. The depth to and total dissolved solids concentration of the groundwater most likely affected by the discharge

   The discharge will be into a dry wash leading to the South Fork of the Puerco River. The shallow groundwater below the wash is estimated to be at depths ranging from 50-150 feet. The total dissolved solids concentration is greater than 1000 ppm.

6. The address and phone number within the department by which interested persons may obtain information, submit comments, and request to be placed on a facility-specific mailing list for future notices

   Interested parties wishing either to obtain information, to submit comments on this permit modification, or to request placement on the facility mailing list may do so in care of the Oil Conservation Division (OCD), 1220 South St Francis Drive, Santa Fe, New Mexico 87505, Attention: Mr. Carl J. Chavez.

7. A statement that the department will accept comments and statements of interest regarding the application and will created a facility-specific mailing list for persons who wish to receive future notices.

   The Oil Conservation Division (OCD) will accept comments and statements of interest in reference to the modification to this permit application as requested. Interested persons, if requested, will be placed on the facility mailing for future notices.

PERMIT NOTICE

Western Refining Southwest, Inc (Gallup Refinery), in accordance with the State of New Mexico Regulation (NMAC 20.6.2.3108) and located at I-40 / Exit 39 Jamestown, NM 87347; mailing address Rt. 3 Box 7 Gallup, NM 87301, SE ¼, NE ¼ SECT 28, T15N, R15W (McKinley County), is requesting a major modification to its Groundwater Discharge Permit GW-032 to allow for intermittent (extremely rare) discharge of process wastewater to a dry wash leading to the South Fork of the Puerco River.

Western Refining Southwest, Inc. (Gallup Refinery) processes crude oil into a variety of petroleum products. The process wastewater collection system is a network of curbing, paving, catch basins, and underground piping that collects wastewater and stormwater from various processing areas within the refinery that is conveyed directly to a wastewater treatment system. The wastewater treatment system is designed for oil recovery and biological treatment in aeration basins prior to entering total retention evaporation ponds. In these ponds, further microbial degradation breaks down any hydrocarbon components into basic compounds, carbon dioxide and water. Under normal circumstances, no treated wastewater is ever discharged. In an extreme eventuality of the ponds not being able to hold all the wastewater generated, a temporary discharge is being planned for along with other contingency measures. Gallup Refinery will first attempt to build additional temporary evaporation ponds, pump water from downgradient ponds into upgradient ponds – if such measures are deemed inadequate, the wastewater will be treated using mobile treatment units to meet the standards based on all designated uses of downstream receiving waters., and then discharged. This discharge will be only from one of the ponds at most risk of overflowing, and will be limited to the extent required to prevent a catastrophic breach of pond dikes and an unplanned spill occurring.

The anticipated volume is assumed to be of the order of 100,000 gallons (enough to lower levels in the most at-risk pond by 0.5 feet) and extremely rare – perhaps once over a ten-year period. The wastewater will have no hazardous components and levels of all contaminants will be below regulatory standards. The discharge will be into a dry wash leading to the South Fork of the Puerco River. The shallow groundwater below the wash is estimated to be at depths ranging from 50-150 feet. The total dissolved solids concentration is greater than 1000 ppm in this shallow groundwater.

Interested parties wishing either to obtain information, to submit comments on this permit modification, or to request placement on the facility mailing list may do so in care of the Oil Conservation Division (OCD), 1220 South St Francis Drive, Santa Fe, New Mexico 87505, Attention: Mr. Carl J. Chavez.

The Oil Conservation Division (OCD) will accept comments and statements of interest in reference to the modification to this permit application as requested. Interested persons, if requested, will be placed on the facility mailing for future notices.

Public Notice

COUNTIES, CITIES, TRIBES - 10 MI RADIUS

Tom Trujillo
McKinley County Manager
P.O. Box 70
Gallup, NM 87301

Navajo Nation EPA
P.O. Box 529
Fort Defiance, AZ 86504

LAND OWNER

Red Cliffs Ranch LLC
42048 N. Stone Cutter Dr.
Scottsdale, AZ 85262

NEWSPAPER ADS

Gallup Independent
500 N. 9th Street
Gallup, NM 87305

GENERAL POSTING LOCATIONS

Facility (Giant) entrance
Jamestown, NM 87347

Federal Building
305 W. Hill Ave.
Gallup, NM 87301

Gallup Municipal Office Building
110 W. Aztec Ave.
Gallup, NM 87301

Octavia Fellin Public Library
115 W. Hill Ave.
Gallup, NM 87301

PUBLIC SERVICE ANNOUNCEMENT

Clear Channel Radio
1632 S. Second St
Gallup, NM 87301

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

State of New Mexico
Energy Minerals and Natural Resources

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

Revised June 10, 2

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District Of

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

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

☐ New ☐ Renewal ☒ Modification

1. Type: GW

2. Operator: Western Refining-Southwest (Gallup Refinery)

   Address: Rt 3 Box 7 Gallup, NM 87301; I-40 / Exit 39, Jamestown, NM 87347

   Contact Person: Mark B. Turri Phone: (505) 722-3833

3. Location: SE 1/4 NE 1/4 Section 28 Township 15 N Range 15 W
   A large scale topographic map showing exact location is provided in the attachment.

4. Attach the name, telephone number and address of the landowner of the facility site. Western Refining, 123 W. Mills Avenue, El Paso, TX 79901; Ph: (915) 534-1400 (Refer to Attachment)

5. Attach the description of the facility with a diagram indicating location of fences, pits, dikes and tanks on the facility. (Refer to Attachment)

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

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

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

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

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

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

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

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

14. CERTIFICATION

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

Name: MARK B. TURRI

Title: REFINERY MANAGER

Signature: Mark B. Turri

Date: 10/30/09

E-mail Address: MARK.TURRI@WNR.COM

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

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3.0 Location of the Discharge Plan Facility

Figure 1 shows the location of the refinery. The refinery is situated on an 810 acre irregular shaped tract of land that is substantially located within the lower one quarter of Section 28 and throughout Section 33 of Township 15 North, Range 15 West of the New Mexico Prime Meridian. A small component of the property lies within the northeastern one quarter of Section 4 of Township 14 North, Range 15 West. Figure 2 is a topographic map showing the general layout of the refinery in comparison to the local topography.

Figure 1: Regional map showing the location of the Gallup Refinery (red star along Interstate-40, 20 miles east of the City of Gallup).

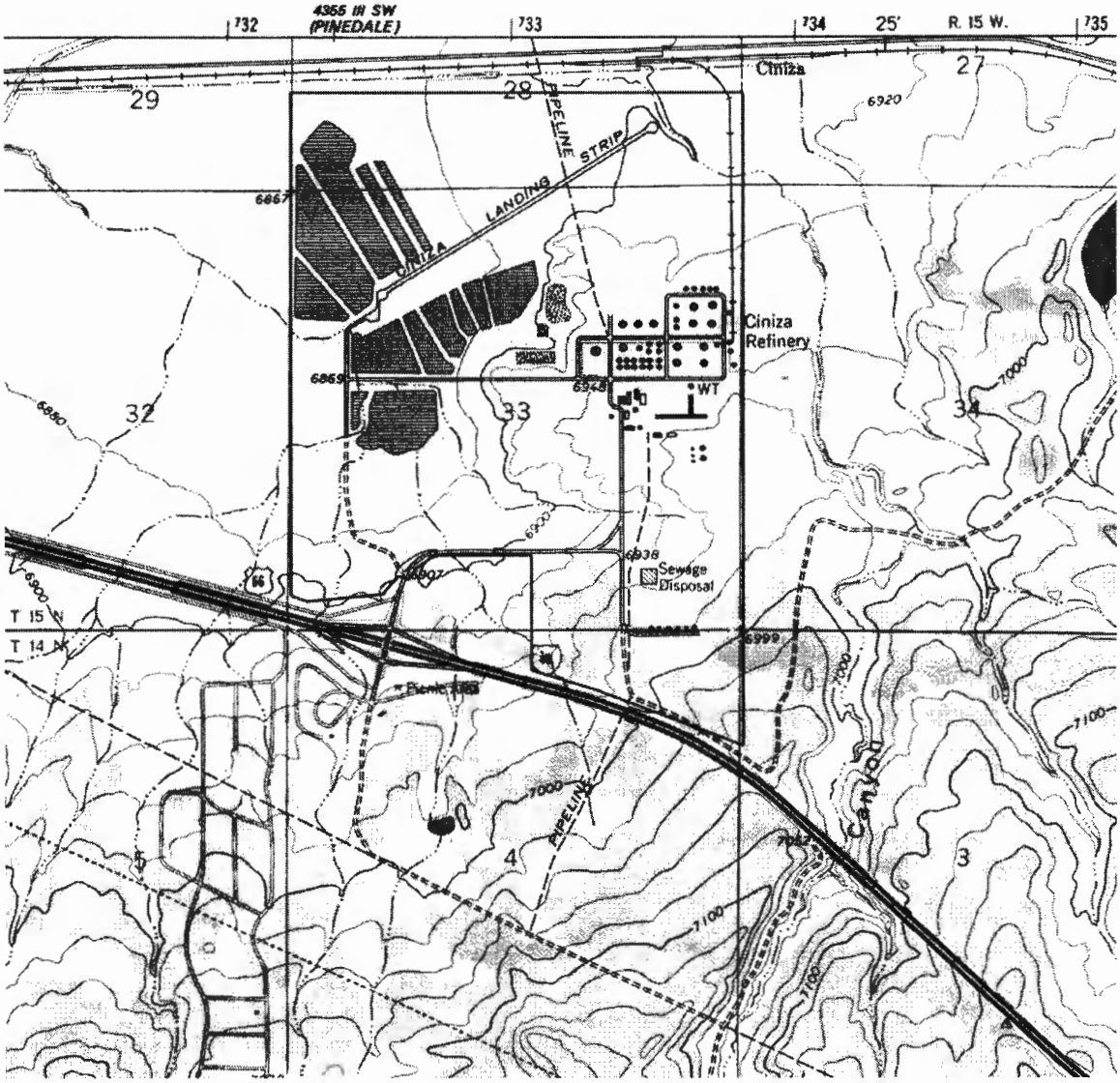


Figure 2: Topographic Map of the Gallup Refinery Site - USGS Topographical Map - Gallup Quadrangle (Revised 1980)

A detailed map of the plant site is also included with this application as Appendix A. This map is large format and measures 34 inches wide by 22 inches high.

4.0 Landowners

Prior to 1957, the land area encompassing the Gallup Refinery was federal land managed by the Bureau of Land Management (BLM).

In 1957, the El Paso Natural Gas Company obtained the land from the BLM and constructed the refinery on the current 810 acre tract.

In 1964, the Shell Oil Company purchased the refinery and associated property from the El Paso Natural Gas Company.

In 1982, Giant Industries Arizona, Inc. purchased the refinery and associated property from the Shell Oil Company.

In 2007, Western Refining acquired the Gallup Refinery from Giant Industries Arizona, Inc.

The current Owner is:

	Western Refining 123 W. Mills Avenue El Paso, TX 79901	(parent corporation)
Operator:	Western Refining Southwest Inc Route 3, Box 7 Gallup, New Mexico 87301	(postal address)
	Western Refining Southwest Inc I-40, Exit 39 Jamestown, New Mexico 87347	(physical address)
Key Contact:	Mark B. Turri, Refinery Manager	
Telephone:	(505) 722-3833	

5.0 Facility Description

The Gallup Refinery is a crude oil refining facility. The Standard Industrial Classification (SIC) code is 2911 and the NAIC is 32411.

The refinery receives and processes crude oil and other feedstocks, and then produces various finished products. These include propane, butane, naphtha, unleaded gasoline, diesel (low sulfur and ultra-low sulfur), kerosene, and residual fuel.

The following regulatory identification and permit governs the Gallup Refinery:

- U.S. EPA ID Number NMD000333211
- OCD Discharge Permit No. GW-032

The Gallup Refinery is located within a rural and sparsely populated section of McKinley County. The setting is a high desert plain on the western slope of the continental divide. The nearest population centers are the Pilot (formerly Giant) Travel Center refueling plaza, the Interstate 40 highway corridor, and a small cluster of residential homes located on the south side of Interstate 40 approximately 2 miles southwest of the Refinery. The surrounding land is comprised primarily of public lands and is used for cattle and sheep grazing at a density of less than six cattle or 30 sheep per section. McKinley County is predominantly rural, as are the adjoining portions of neighboring counties.

The refinery primarily receives crude oil via two 6 inch diameter pipelines; Bisti Pipeline comes down from the Four Corners Area and enters the refinery property from the north and Hospah Pipeline comes in from the northeast. In addition, the refinery also receives natural gasoline feedstocks via a 4 inch diameter pipeline that comes in from the west along the Interstate 40 corridor. These feedstocks are then stored in tanks until refined into products.

The refinery incorporates various processing units that convert crude oil and natural gasoline into finished products. These units are briefly described as follows.

- The crude distillation unit separates crude oil into various fractions; including gas, naphtha, light oil, heavy oil, and residuum.

- The fluidized catalytic cracking unit breaks up long-chain hydrocarbon molecules into smaller molecules, and essentially converts heavier oils into naphtha and lighter oils.

- The alkylation unit combines specific types of hydrocarbon molecules into a high octane gasoline blending component.

- The reforming unit combines low octane naphtha molecules to form high octane naphtha.

- The hydrotreating unit removes undesirable sulfur and nitrogen compounds from intermediate feedstocks, and also saturates these feedstocks with hydrogen.

- The isomerization unit converts low octane hydrocarbon molecules into high octane molecules.

- The treater units remove impurities from various intermediate and blending feedstocks in order to produce finished products that comply with sales specifications.

- The ammonium thiosulfate unit accepts high H2S and ammonia containing gas streams from the Amine and the Sour Water Stripper units, and converts these into a useful fertilizer product, ammonium thiosulfate.

- The sulfur recovery unit converts and recovers various sulfur compounds from the gases and liquids produced in other processing units to create a solid elemental sulfur product. This unit only operates when the ammonium thiosulfate unit is inoperable or cannot handle incoming loads.

As a result of these processing steps, the Refinery produces a wide range of petroleum products including propane, butane, unleaded gasoline, diesel, kerosene, and residual fuel.

In addition to the aforementioned processing units, various other equipment and systems support the operation of the refinery and are briefly described as follows.

Storage tanks are used throughout the Refinery to hold and store crude oil, natural gasoline, intermediate feedstocks, finished products, chemicals, and water. These tanks are all located aboveground and range in size from 80,000 barrels to less than a 1,000 barrels. A grouping of tanks is commonly referred to as a "tank farm."

Pumps, valves, and piping systems are used throughout the Refinery to transfer various liquids among tankage and processing units.

A railroad spur track and a railcar loading rack are used to transfer feedstocks and products from refinery tankage both into and out of railcars.

Several tank truck loading racks are used at the Refinery to load out finished products and also may receive crude oil, other feedstocks, additives, and chemicals.

A pipeline connects the Refinery to the Pilot (formerly Giant) Travel Center and is used to supply gasoline and diesel fuel to the refueling plaza.

A firefighting training facility is used to conduct employee firefighting training.

The process wastewater system is a network of curbing, paving, catch basins, and underground piping that collects rainwater and other effluent from various processing areas within the Refinery and then conveys this wastewater to the new API separator.

The new API separator is a large double-walled concrete containment structure with an internal stainless steel lining (and leak detection systems) that utilizes gravity and residence time to separate wastewater into three components; a sludge layer that sinks to the bottom, an oily layer that floats to the top and is recovered for processing, and a clarified water effluent remaining in the middle. The clarified water effluent then flows onward to the stripper columns.

At the stripper columns, ambient air is blown upwards through a falling cascade of clarified wastewater and, as a result, dissolved gases and light hydrocarbons are disengaged and vented. Effluent from the stripper columns flows onward to the aeration basins.

At the aeration basins, the clarified and stripped wastewater is further mixed with ambient air in order to oxidize any remaining constituents and increase the dissolved oxygen concentration in the water in order to enhance biological activity and degradation. Effluent from the aeration basins flows onward to the evaporation ponds.

At the evaporation ponds, wastewater is converted into vapor via solar and mechanical wind-effect evaporation. Liquid wastewater is not discharged from the Refinery. It is normally held in the evaporation ponds. In an extreme eventuality of the ponds not being able to hold all the wastewater generated, a temporary discharge is being planned for along with other contingency measures.

The anticipated volume is assumed to be of the order of 100,000 gallons (enough to lower levels in the most at-risk pond by 0.5 feet) and extremely rare – perhaps once over a ten-year period. The wastewater will have no hazardous components and levels of all contaminants will be below regulatory standards. The discharge will be into a dry wash leading to the South Fork of the Puerco River. The shallow groundwater below the wash is estimated to be at depths ranging from 50-150 feet. The total dissolved solids concentration is greater than 1000 ppm in this shallow groundwater.

The storm water system is a network of valves, gates, berms, embankments, culverts, trenches, ditches, natural arroyos, and retention ponds that collect, convey, control, treat, and release storm water that falls within or passes through refinery property. Storm water that falls within the process areas is treated as process water and enters the refinery's wastewater treatment system. It first is held in the old API separator, and is then metered into the new API separator. A system of two new storm water tanks is currently being designed, and use of the old API separator will be discontinued.

Figure 3 provides a schematic of oil and water flows through the Gallup Refinery.

<u>Items Specifically Requested in the OCD Guidance Document</u>

Location of fences

The refinery incorporates an outer perimeter fence that substantially consists of barbed wire and posts, and roughly corresponds to the property boundaries. In addition, interior zones of 8 foot high chain link fencing are installed around the process areas, warehouse yards,

storage pads, loading racks, and other sensitive areas. The locations of these fence lines are shown on the plant site drawing in Appendix A.

Location of pits

The refinery no longer uses earthen pits for waste accumulation. All of these former pits have been excavated, remediated, and backfilled with clean soil.

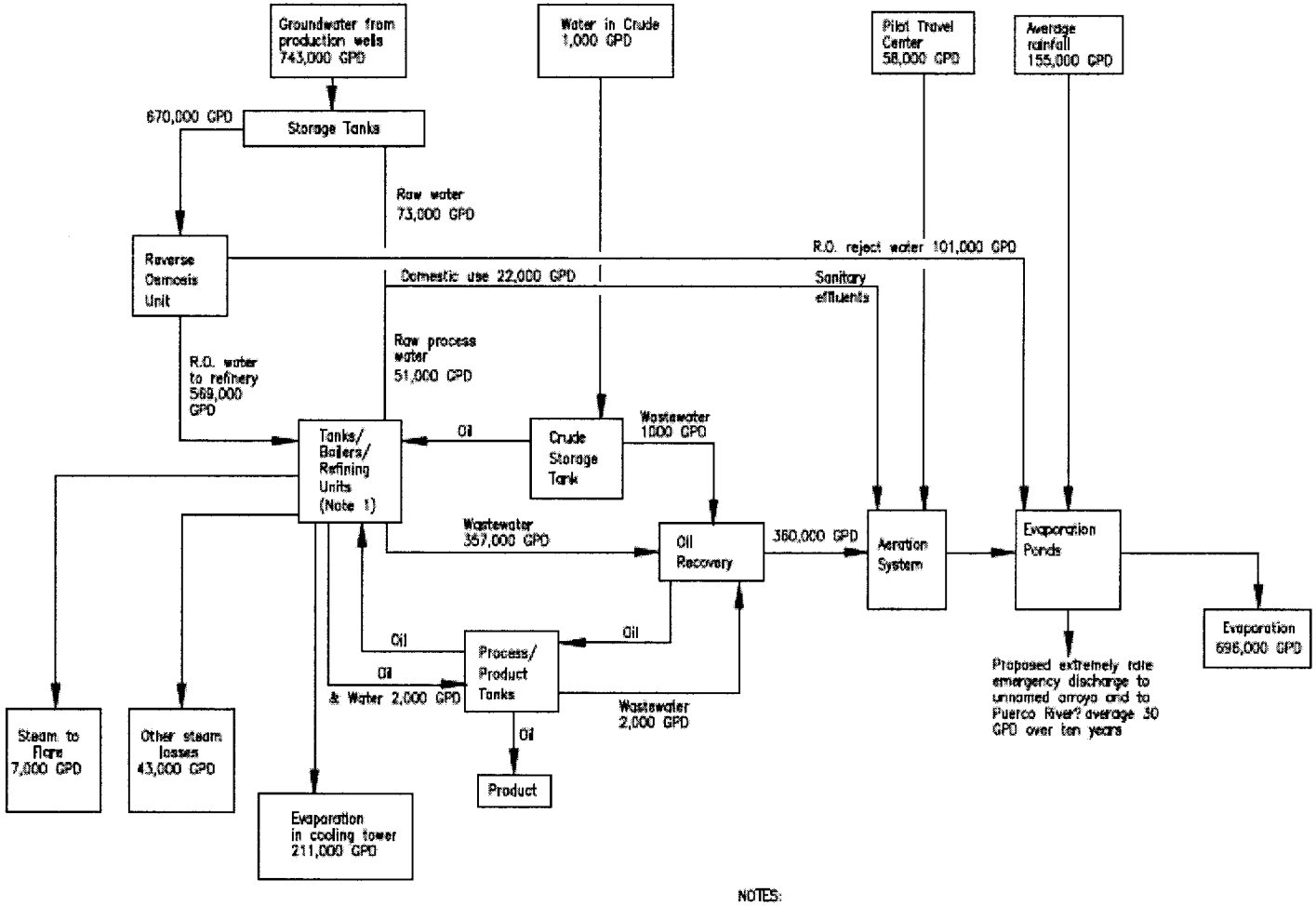


Figure 3: Schematic of water flows within the Gallup Refinery

Location of berms

The refinery uses earthen berms to form secondary containment basins for tankage and also for storm water flow control and outlying retention basins. The locations of these berms are shown on the plant site drawing in Appendix A. All earthern berms were compacted during the summer of 2009.

Location of tanks

The refinery uses aboveground tanks for storage at various locations within the refinery. The locations of these tanks are shown on the plant site drawing in Appendix A. Large groupings of tanks are identified as named tank farms. These include the following:

Main Tank Farm

Hot Oil Tank Farm

Tank Truck Loading Rack Tankage Area

High Pressure Storage Bullets Area

Hydrogen Storage Bullets Area

Location of discharges

Treated process wastewater is evaporated at the evaporation ponds.

Storm water that is not contained on-site is released off-site at two outfall locations on the western boundary of refinery property. During extreme rainfall events, some storm water may exit refinery property via sheet run-off at the northern and western boundaries.

Sanitary sewage was treated and released at septic fields located within the refinery. A new lift station now accepts this sanitary sewage and transports it to the aeration lagoons.

The locations of the evaporation ponds, storm water outfalls, and new lift station are shown on the plant site drawing in Appendix A.

Location of storage facilities

The Refinery uses warehouses, outdoor yards, and curbed pads for storage of various materials and equipment within the refinery. The locations of these storage facilities are shown on the plant site drawing in Appendix A.

Location of disposal facilities

The Refinery uses an OCD-permitted landfarm to treat non-hazardous oily residue that is intermittently generated within the Refinery. A temporary landfarm is also being used to treat non-hazardous oily waste material that is being generated at the refinery.

The Refinery formerly operated other land treatment units in order to treat and dispose of various waste materials generated within the refinery. These sites are no longer in use.

Some are closed and others are in the process of closure. Additional discussion of these sites is included in Section 13.

The locations of the current OCD-permitted landfarm, former land treatment units, and former disposal sites are all shown on the plant site drawing in Appendix A.

Location of processing facilities

The refinery uses various processing units and support systems as described above. The locations of these facilities are shown on the plant site drawing in Appendix A.

Location of other relevant facilities including drum storage

The locations of drum storage and other relevant facilities are labeled and shown on the plant site drawing in Appendix A.

6.0 Description of Materials Stored or Used at the Facility

The Refinery receives, stores, and processes crude oil and other petroleum-based feedstocks, and then produces various intermediate feedstocks and finished products, including propane, butane, unleaded gasoline, diesel, kerosene, and residual oil. These materials are stored in aboveground atmospheric and pressurized tanks, and are listed in Table 1. These tables include the following information.

- tank number or description
- year built
- approximate capacity
- product
- tank style
- floor style
- containment style

The Refinery also receives, stores, and uses a variety of additives, chemicals, and other sensitive materials in order to support the operation of the refinery. These materials are listed 1n Table 2. This table includes the following information.

- material name
- maximum quantity stored on-site at any given time
- location

<u>Items Specifically Requested in the OCD Guidance Document</u>

The OCD guidance document specifically requires that the following categories be included in the material list.

- process specific chemicals
- acids / caustics
- detergents / soaps
- solvents / inhibitors / degreasers
- paraffin treatment / emulsion breakers
- biocides
- other

Table 2 provides this information.

Table 1: Storage Tanks at the Gallup Refinery

Count #	TANK NUMBER or DESCRIPTION	YEAR BUILT	APPROX. CAPACITY (BBLS)	PRODUCT	TANK STYLE	FLOOR STYLE		CONTAINMENT STYLE
						as of 9/08	Double Floor Installed mo/yr	As of 9/08
1	P-V19A	1957	668.7 ft^3	Sweet HYDROGEN GAS	Bullet	Elevated	n/a	Soil/Gravel
2	P-V19B	1957	668.7 ft^3	Sweet HYDROGEN GAS	Bullet	Elevated	n/a	Soil/Gravel
3	P-V19C	1957	668.7 ft^3	Sweet HYDROGEN GAS	Bullet	Elevated	n/a	Soil/Gravel
4	TK-115	1957	5,000	DHT PRODUCT	Cone	Double	Mar-08	Soil/Gravel
5	TK-2	1965	4,000	UNLEADED PREMUM	Cone	Single		Soil/Gravel
6	TK-228	1957	5,000	K-1	Cone	Single		Soil/Gravel
7	TK-343	1957	5,000	ETHANOL	Cone	Single		Soil/Gravel
8	TK-4	1970	3,800	83.0 OCTANE	Cone	Single		Soil/Gravel
9	TK-446	1945	700	OLEFINS/ISO BUTANE	Bullet	Elevated	n/a	Soil/Gravel
10	TK-447	1957	1,373	ISO-BUTANE	Bullet	Elevated	n/a	Soil/Gravel
11	TK-555	1974	2,073	ISO-BUTANE	Bullet	Elevated	n/a	Soil/Gravel
12	TK-556	1957	718	PROPANE	Bullet	Elevated	n/a	Soil/Gravel
13	TK-560	1957	2,300	BUTANE	Bullet	Elevated	n/a	Soil/Gravel
14	TK-564	1957	5,000	NAT.GASOLINE/ISOMERATE	Elyps.	Single		Soil/Gravel
15	TK-565	1957	5,000	ISOM/NAT GASO/TOL	Elyps.	Single		Soil/Gravel
16	TK-575	1957	10,000	JET-A/K1	Cone	Single		Soil/Gravel
17	TK-102	1991	80,000	CRUDE	Cone	Single		Soil/Gravel
18	TK-106	1957	5,000	TRANSMIX	Cone	Single		Soil/Gravel
19	TK-18570		54	NALCO 7359	Cone	Single		Soil/Gravel
20	TK-18571		54	NALCO 7359	Cone	Single		Soil/Gravel
21	TK-5	1963	1,800	ETHANOL	Cone	Single		Soil/Gravel
22	TK-563	1986	20,000	NAT. GASOLINE	Elyps.	Single		Soil/Gravel
23	TK-7	1946	330	ISOMERATE	Bullet	Elevated	n/a	Concrete
24	TK-703	1963	25,000	RESIDUE/FCC FEED	Cone	Single		Soil/Gravel
25	TK-704	1963	10,000	FUEL OIL	Cone	Single		Soil/Gravel
26	TK-912		188	Add. Gasoline (6331)	Hor. Cyl.	Elevated	n/a	Concrete

Table 1 (continued): Storage Tanks at the Gallup Refinery

Count #	TANK NUMBER or DESCRIPTION	YEAR BUILT	APPROX. CAPACITY (BBLS)	PRODUCT	TANK STYLE	FLOOR STYLE		CONTAINMENT STYLE
						as of 9/08	Double Floor Installed mo/yr	As of 9/08
27	TK-913		206	Add. Gasoline (NAP 96)	Hor. Cyl.	Elevated	n/a	Concrete
28	Z81-T1	1998	1,000	TREATED WATER	Cone	Single		Concrete
29	Z81-T9		60	DIESEL	Hor. Cyl.	Elevated	n/a	Concrete
30	Q-T2	1956	112	CAUSTIC	Cone	Single		Concrete
31	Q-T8	1963	226	CAUSTIC	Cone	Single		Concrete
32	TK-1001		72	DIESEL TANK	Hor. Cyl.	Elevated	n/a	Concrete
33	TK-1002		72	GASOLINE TANK	Hor. Cyl.	Elevated	n/a	Concrete
34	TK-1003		57	DIESEL POUR POINT ADDITIVE	Hor. Cyl.	Elevated	n/a	Concrete
35	TK-1004		112	DIESEL LUBRICITY ADDITIVE	Hor. Cyl.	Elevated	n/a	Concrete
36	TK-235	1957	5,000	TRANSMIX	Cone	Single		Soil/Gravel
37	TK-337	1977	20,000	ETHANOL	Cone	Single		Soil/Gravel
38	TK-345	1977	20,000	REFORMATE/ETOH	Cone	Single		Soil/Gravel
39	TK-448	1957	1,373	ISO-BUTANE	Bullet	Elevated	n/a	Soil/Gravel
40	TK-570	1957	25,000	87.0 UNLD REG.	Cone	Single		Soil/Gravel
41	TK-576	1968	40,000	PREMUM BASE	Cone	Single		Soil/Gravel
42	TK-108	1957	5,000	ALKLATE	Cone	Single		Soil/Gravel
43	TK-342	1957	5,000	ETHANOL	Cone	Single		Soil/Gravel
45	TK-706	1963	10,000	FUEL OIL	Cone	Single		Soil/Gravel
46	TK-707	1963	1,000	SLOP OIL	Cone	Single		Soil/Gravel
47	TK-714	1969	30,000	FCC FEED	Cone	Single		Soil/Gravel
48	Z81-T10	1957	63	CAUSTIC	Cone	Single		Concrete
49	Z81-T6	1962	880	DOMESTIC WATER	Cone	Single		Concrete
73	TK-705	1963	10,000	FUEL OIL	Cone	Single		Soil/Gravel
51	A-V61.1		140	Caustic	Cone	Single		Concrete
50	TK-701	1963	37,000	FCC FEED	Cone	Single		Soil/Gravel

Table 1 (continued): Storage Tanks at the Gallup Refinery

Count #	TANK NUMBER or DESCRIPTION	YEAR BUILT	APPROX. CAPACITY (BBLS)	PRODUCT	TANK STYLE	FLOOR STYLE		CONTAINMENT STYLE
						as of 9/08	Double Floor Installed mo/yr	As of 9/08
52	Q-T6		29,800	DRAIN HOLDING TK	Cone	Single		Concrete
53	TK-557	1957	718	PROPANE	Bullet	Elevated	n/a	Soil/Gravel
54	TK-702	1963	25,000	FCC FEED	Cone	Single		Soil/Gravel
55	TK-709	1963	1,000	RESIDUE	Cone	Single		Soil/Gravel
56	Z81-T15		80	DIESEL	Hor. Cyl.	Elevated	n/a	Concrete
57	Z84-T105	2001	400	SLOP OIL	Cone	Single		Soil/Gravel
58	Z86-T1	1966	5,000	RAW WATER	Cone	Single		Soil/Gravel
59	Z86-T2	2002	10,832	RAW WATER	Cone	Single		Concrete
60	Foam Tk		10	Fire Fighting Foam Concentrate	Hor. Cyl.	Elevated	n/a	Concrete
61	SR-T10		20	CA-299 SETTLING AGENT	Cone	Single		Concrete
62	TK-581	1957	25,000	LCO	Cone	Single		Soil/Gravel
63	SR-T4	1992	106	IRON CHELATE SOLUTION	Cone	Single		Concrete
64	SR-T5	1992	76	IC-110 IRON CHELATE	Cone	Single		Concrete
65	SR-T6	1992	76	IC-210 FREE CHELATE	Cone	Single		Concrete
66	SR-T7	1993	3	Caustic	Cone	Single		Concrete
67	SR-T8	1993	20	CA-100 DEGRADATION INHIBITOR	Cone	Single		Concrete
68	SR-T9	1993	20	CA-2102 SETTLING AGENT	Cone	Single		Concrete
69	TK-231	1957	5,000	TRANSMIX	Cone	Single		Soil/Gravel
70	TK-232	1957	5,000	TRANSMIX	Cone	Single		Soil/Gravel
71	TK-338	1964	25,000	SWEET NAPHTHA	Cone	Single		Soil/Gravel
72	TK-571	1957	25,000	87.0 UNLD REG.	Cone	Single		Soil/Gravel
44	TK-344	1977	20,000	REFORMATE	Cone	Single		Soil/Gravel
74	TK-107	1957	5,000	SLOP OIL	Cone	Single		Soil/Gravel
75	TK-227	1957	5,000	K-1	Cone	Single		Soil/Gravel
76	TK-561	1957	2,300	BUTANE	Bullet	Elevated	n/a	Soil/Gravel
77	TK-572	1957	25,000	87.0 UNLD REG.	Cone	Single		Soil/Gravel
78	Z81-T20		22	TRI-ACT® 1820	Hor. Cyl.	Elevated	n/a	Concrete

Table 1 (continued): Storage Tanks at the Gallup Refinery

Count #	TANK NUMBER or DESCRIPTION	YEAR BUILT	APPROX. CAPACITY (BBLS)	PRODUCT	TANK STYLE	FLOOR STYLE		CONTAINMENT STYLE
						as of 9/08	Double Floor Installed mo/yr	As of 9/08
79	Z81-V11		63	CAUSTIC	Cone	Single		Concrete
80	FW Pp Fuel		12	Diesel for Fire Water Pump	Cone	Single		Concrete
81	Mercaptan		12	Mercaptan	Hor. Cyl.	Elevated	n/a	Concrete
82	TK-3	1965	4,000	87.0 OCTANE	Cone	Single		Soil/Gravel
83	TK-554	1974	2,073	BUTANE/PROPANE	Bullet	Elevated	n/a	Soil/Gravel
84	TK-574	1968	40,000	ST.RUN	Cone	Single		Soil/Gravel
85	TK-902		237	Additive Tk. (Western)	Cone	Single		Concrete
102	TK-909		5	Power Service	Hor. Cyl.	Elevated	n/a	Concrete
86	Z71-V2	1987	453	ANHYDROUS AMMONIA	Bullet	Elevated	n/a	Soil/Gravel
87	Z75-V2	1998	168	HYDROCARBON VAPORS	Cone	Single		Concrete
88	Z81-T7	1998	920	BRINE WATER	Cone	Single		Concrete
89	Z88-V16	2000	55	RO WATER	Cone	Elevated	n/a	Concrete
90	Z88-V17	2000	55	RO WATER	Cone	Elevated	n/a	Concrete
91	SWS-TK1	2006	1,000	SOUR WATER	Cone	Single		Soil/Gravel
92	TK-1	1965	3,000	DIESEL	Cone	Single		Soil/Gravel
93	TK-101	1957	80,000	CRUDE	Cone	Single		Soil/Gravel
94	TK-111	1957	5,000	DHT PRODUCT	Cone	Single		Soil/Gravel
95	TK-112	1957	5,000	DHT PRODUCT	Cone	Single		Soil/Gravel
96	TK-116	1957	5,000	DHT PRODUCT	Cone	Single		Soil/Gravel
97	TK-225	1957	25,000	DISTILLATE	Cone	Double	Jul-06	Soil/Gravel
98	TK-226	1957	25,000	KERSOSENE	Cone	Double	May-06	Soil/Gravel
99	TK-339	1957	25,000	SOUR NAPHTHA	Cone	Single		Soil/Gravel
100	TK-567	1969	20,000	83.O UNLD. REG.	Cone	Single		Soil/Gravel
101	TK-568	1998	2,000	AMMONIUM THIOSULFATE	Cone	Single		Soil/Gravel
102	TK-577	1957	10,000	DIESEL	Cone	Double	Aug-08	Soil/Gravel
103	TK-579	1957	20,000	DIESEL	Cone	Single		Soil/Gravel
104	TK-582	1957	25,000	UNLEADED PREMUM	Cone	Single		Soil/Gravel
105	TK-708	1963	1,000	Residue	Cone	Single		Soil/Gravel

Table 1 (continued): Storage Tanks at the Gallup Refinery

Count #	TANK NUMBER or DESCRIPTION	YEAR BUILT	APPROX. CAPACITY (BBLS)	PRODUCT	TANK STYLE	FLOOR STYLE		CONTAINMENT STYLE
						as of 9/08	Double Floor Installed mo/yr	As of 9/08
106	Z71-TK-716	2006	997	AMMONIUM THIOSULFATE	Cone	Single		Soil/Gravel
107	A-V59	1958	164	Baume/Caustic	Hor. Cyl.	Elevated	n/a	Concrete
108	TK-562	1986	20,000	ISOMERATE	Cone	Single		Soil/Gravel
109	TK-569	1957	25,000	83.O UNLD. REG.	Cone	Single		Soil/Gravel
110	TK-583	1996	55,000	DIESEL	Cone	Sec.		Soil/Gravel
111	TK-6	1963	1,800	LT STRAIGHT RUN	Cone	Single		Soil/Gravel
112	TK-910		13	Red Dye (Western)	Hor. Cyl.	Elevated	n/a	Concrete
113	Tk-915		50	Diesel-Gasoline Blend	Hor. Cyl.	Elevated	n/a	Soil/Gravel
114	Z75-V1	1998	168	HYDROCARBON VAPORS	Cone	Single		Concrete
115	Z81-T14		9	DIESEL	Cone	Single		Concrete
116	Z81-T5	1979	5,000	TREATED WATER	Cone	Single		Concrete
117	Z83-TK-3		161	Sulfuric Acid	Cone	Single		Soil/Gravel
118	TK-27	1979	5,000	STORM WATER (Future)	Cone	Single		Soil/Gravel
119	TK-28	1979	5,000	STORM WATER (Future)	Cone	Single		Soil/Gravel
120	Z81-T16	1953	69	STARTING AIR	Hor. Cyl.	Elevated	n/a	Concrete
122	TK-901	3Pty	237	Additive Tk. (Chevron)	Cone	Single		Concrete
123	TK-903	3Pty	48	Additive Tk. (Texaco)	Hor. Cyl.	Elevated	n/a	Concrete
124	TK-906	3Pty	143	Additive Tk. (Exxon)	Hor. Cyl.	Elevated	n/a	Concrete
125	TK-911	3Pty	191	Add. Tk.(Conoco)	Hor. Cyl.	Elevated	n/a	Concrete
126	TK-914	3Pty	191	Add. Tk. (Shell)	Hor. Cyl.	Elevated	n/a	Concrete
127	TK-117	1983	250	OUT OF SERVICE (De-Icer)	Cone	Double		Soil/Gravel
128	Q-T3		671	OUT OF SERVICE (Caustic)	Cone	Single		Concrete
129	Z81-T17		161	OUT OF SERVICE (Water Softener)	Cone	Single		Concrete

Table 1 (continued): Storage Tanks at the Gallup Refinery

Count #	TANK NUMBER or DESCRIPTION	YEAR BUILT	APPROX. CAPACITY (BBLS)	PRODUCT	TANK STYLE	FLOOR STYLE		CONTAINMENT STYLE
						as of 9/08	Double Floor Installed mo/yr	As of 9/08
130	Z81-T8		250	OUT OF SERVICE (Fuel Oil)	Cone	Single		Concrete
131	TK-451	1957	1,000	OUT OF SERVICE	Cone	Single		Soil/Gravel
132	TK-452	1957	1,000	OUT OF SERVICE	Cone	Single		Soil/Gravel
133	TK-453	1957	5,000	OUT OF SERVICE	Cone	Single		Soil/Gravel
134	TK-573	1957	250	OUT OF SERVICE (Kerosene)	Cone	Single		Soil/Gravel
135	TK-713		1,000	OUT OF SERVICE	Cone	Single		Soil/Gravel
136	TK-905		232	Add. Tk (Empty-Unocal)	Hor. Cyl.	Elevated	n/a	Concrete
137	TK-907		25	EMPTY TANK	Hor. Cyl.	Elevated	n/a	Concrete
138	TK-7135		16	EMPTY TANK (UNICHEM 7376)	Cone	Single		Concrete
139	Z81-T11		161	EMPTY TANK	Cone	Single		Soil/Gravel

Table 2: Other Materials Stored At Western Refining – Gallup Refinery

PRODUCT	MAXIMUM VOLUME	LOCATION
Antifreeze	12 55-gal drums	Whse[1] yard/Process area
Ethylene glycol	5 350-gal totes	SATs Unit/Whse Yard
Z Seal (ethylene glycol)	6 55-gal drums	VRU and Whse yard
Automatic Transmission Fluid	4 55-gal drums	Flammable Whse/Main Shops
Engine Oil	10 55-gal drums	Flammable Whse/Diesel Bldg
Turbine Oil	22 55-gal drums	Flammable Whse/Process Area
Hydraulic Oil	4 55-gal drums	Flammable Whse/FCCU
Gear Oil	8 55-gal drums	Flammable Whse/Process Area
Transformer Oil	5 55-gal drums	Flammable Whse/Process Area
Grease	>100 14-oz tubes	Flammable Whse/Process Area
Spindle Oil	2 55-gal drums	Flammable Whse/Process Area
Lube Oil	1,000-gal bulk tank	Gas Compressor Area
80 Octane Additive	4 55-gal drums	Whse Yard/Lab Storage
Isopropyl Alcohol	8 55-gal drums	Whse Yard/Platformer
Percholoroethylene	4 55-gal drums	Whse Yard/Platformer
Salt	50 50-lb sacks	Combustor/LE Whse
Salt	30 2,000-lb supersacks	Whse Yard/Treater Area
Salt	100,000-lb bulk storage	Boiler Area
Neutralizing Amine	400-gal bulk tank	Boiler Area
Anti Foam Agent	400-gal bulk tank	Boiler Area
Scale Inhibitor	400-gal bulk tank	Boiler Area
Biocide/bromocide	4,800 lbs	Whse Yard/Cooling Tower
Bioscrubber I	4 55-gal drums	Whse Yard/API Shed
Corrosion Inhibitor	10,000-lb bulk storage	Cooling Tower Area
Scale Dispersant	10,000-lb bulk storage	Cooling Tower Area
Bleach	1 300-gal tote	Whse Yard/Cooling Tower Area
HTH Tablets	6 10-gal pails	Whse Yard/Cooling Tower Area
Sulfuric Acid	50,000-lb bulk storage	Cooling Tower Area
Hydrofluroic Acid	50,000-lb bulk storage	Alkylation Unit
Potassium Hydroxide	5 300-gal totes	Whse Yard/Alky Unit
Potassium Hydroxide	20-tons bulk storage	Alky Unit/SATs
Potassium Hydroxide	15 2,000-lb sacks	Whse Yard/Alky Unit
Sodium Carbonate	10 55-lb bags	Flammable Whse/Alky Unit
Antifoam	10-gallons	Whse Yard/SATs
Methanol	2 400-gal totes	Whse Yard/SATs/Fuel Gas
Ammonium Thiosulfate	1 300-gal tote	Sulfur Recovery Unit (SRU)
Iron Chelate Mixture	2 3,500-gal bulk tanks	SRU
Merox	30 1-gal jugs	Whse/Treaters
Promoter	2 400-lb drums	Flammable Whse/FCCU

[1] Whse = warehouse

Table 2 (Continued): Other Materials Stored At Western Refining – Gallup Refinery

PRODUCT	MAXIMUM VOLUME	LOCATION
Stabilizing Amine	500-gal bulk tank	FCCU
Corrosion Inhibitor	220-gal bulk tank	Crude Unit
Corrosion Inhibitor	220-gal bulk tank	Crude Unit
Scale Inhibitor	500-gal bulk tank	Crude Unit
Neutralizing Amine	500-gal bulk tank	Crude Unit
Demulsifier	550-gal bulk tank	Crude Unit/Whse Yard
Xylene (Red Dye)	4 330-gal totes	Whse Yard/Loading Rack
Ethyl Hitech 3023	60,000-lb bulk tank	Loading Rack
Ethyl Mercaptan	2,000-lb bulk tank	Loading Rack
Pour Point Depressant	2,000-gal bulk tank	Tank Farm
T-3512	2 500-gal totes	Tank Farm/Whse Yard
DGS-105	3 500-gal totes	Tank Farm/Whse Yard

7.0 Sources and Quantities of Effluent & Waste Solids Generated at the Facility

The following processing units, systems, equipment, and categories are potential sources of wastewater effluent or waste solids generated at the refinery.

Sources of wastewater effluent are described in section 7.1. Most of these discharges are collected in the refinery process sewer system and flow to the new API separator. An exception is the boiler feedwater treatment system, which has a drainage line to Evaporation Pond No. 2, and can be routed either to the new API separator or to the Evaporation Pond No. 2. The Gallup Refinery is considering altering the routing of its cooling tower and boiler blowdowns to also have the option of sending these wastewaters directly to Evaporation Pond No. 2. In such an eventuality, samples of the cooling tower and boiler blowdown wastewaters will be collected and sampled for parameters to be specified by the OCD.

7.1 Wastewater

Boiler Feedwater Treatment System

Raw water is treated in this equipment in order to remove impurities before being supplied as feedwater to the refinery boilers. Wastewater containing dissolved solids is routinely discharged to Evaporation Pond No. 2 via in a dedicated drainage line from the water softening units and reverse osmosis (RO) units. This water can be diverted to pass through the new API separator.

This discharge typically ranges from 70,000 to 120,000 gallons per day.

Boilers

Five boilers are in service at the Refinery: two cogeneration boilers, two utility boilers, and one CO boiler. Wastewater containing dissolved solids is routinely discharged to the process sewer from these boilers.

This discharge typically ranges from 35,000 to 45,000 gallons per day.

Cooling Towers

Two cooling towers are in service at the Refinery. Wastewater containing dissolved solids and biocide residue is routinely discharged to the process sewer from this equipment.

This discharge typically ranges from 50,000 to 70,000 gallons per day.

Crude Unit

Two desalters at the crude distillation unit are used to remove impurities and water from crude oil. Wastewaters containing dissolved solids and trace hydrocarbons are routinely discharged to an air stripper and then to the process sewer from this equipment.

This discharge typically ranges from 25,000 to 40,000 gallons per day.

Naphtha Hydrotreater Unit (NHT)

One overhead accumulator drum at this processing unit is used to remove condensed water. Wastewater containing trace hydrocarbons is routinely discharged to the process sewer from this accumulator drum.

This discharge typically ranges from 600 to 800 gallons per day.

Alkylation Unit Scrubber

At the Alkylation Unit impurities and entrained water are removed from a gas stream. Wastewaters containing dissolved solids and trace hydrocarbons are intermittently discharged to the process sewer from this equipment.

This discharge typically ranges from 1,500 to 2,000 gallons per week.

Straight-Run Gasoline Treater Columns

A caustic wash column and a water wash column at this treater unit are used to remove impurities from an intermediate gasoline feedstock. Occasionally, the caustic solution must be replaced and, at that time, the spent solution is drained to the sewer. Wastewaters containing dissolved solids and trace hydrocarbons are intermittently discharged to the process sewer from the caustic wash column and routinely discharged from the water wash column.

This discharge typically ranges from 900 to 1,000 gallons per event when changing out the caustic wash solution, approximately 2 to 3 times per year.

Alkylate Treater Column

A caustic wash column at this treater unit is used to remove impurities from an intermediate gasoline feedstock. Occasionally, the caustic solution must be replaced and, at that time, the spent solution is discarded. Wastewater containing dissolved solids and trace hydrocarbons are intermittently discharged to the process sewer from this equipment.

This discharge typically ranges from 900 to 1,000 gallons per event when changing out the caustic wash solution, approximately 2 to 3 times per year.

KOH Treater Columns

Scrubber towers at these treater units are used to remove impurities from propane and butane product streams. Wastewater containing dissolved solids and trace hydrocarbons are routinely discharged to the process sewer from this equipment. The liquids are first held in a drum, wastewater is drained off, and floating hydrocarbons are pumped back to processing.

This discharge of wastewater typically ranges from 100 to 150 gallons per day.

Sulfur Recovery Unit (SRU)

At the SRU, sulfur compounds are recovered from refinery feedstocks and then converted into a wet solid. Wastewater from a rinsing operation and a belt press dewatering operation is routinely discharged to the process sewer. This wastewater contains dissolved solids and trace sulfur compounds.

This discharge typically ranges from 25,000 to 35,000 gallons per day, when this unit is in operation. This unit is typically on stand-by – it operates approximately two weeks a year.

Ammonium Thiosulfate Unit

This unit accepts high H2S and ammonia containing gas streams from the Amine and the Sour Water Stripper Units, and converts these into a useful fertilizer product, ammonium thiosulfate. Wastewater from the Sour Water Stripper containing ammonia, sulfides, and other trace hydrocarbons is routinely discharged to the sewer.

This discharge typically ranges from 25,000 to 35,000 gallons per day.

Storage Tanks

Numerous aboveground storage tanks are used within the refinery to store various products and intermediate feedstocks. Wastewater containing dissolved solids and trace hydrocarbons are occasionally drained from these tanks as bottom water or decanted water, and then discharged to the process sewer.

This discharge typically ranges from 1,800 to 2,500 gallons per day. Most of this discharge comes from the crude oil storage tanks.

7.2 Solid (Non-wastewater) Wastes

Sources of solid waste include the following. Most of these waste materials are generated intermittently and then removed, collected, containerized, and stored until shipped off-site for recycling or disposal.

Fluid Catalytic Cracking Unit (FCCU) Catalyst

A metallic (alumina) catalyst is used within the FCCU to convert hydrocarbon molecules. This catalyst is periodically replaced and the spent catalyst is stored in drums or supersacks until disposed at an off-site landfill. This material is a dry metallic solid and is non hazardous.

Approximately 350 to 450 tons of spent FCCU catalyst is generated each year.

Defluorinator Unit Catalyst

A metallic (alumina) catalyst is used within the Defluorinator Unit to remove trace fluorides from propane and butane products. This catalyst is periodically replaced and the spent catalyst is stored in supersacks until disposed at an off-site landfill. This material is a dry metallic solid and is non hazardous.

Approximately 600 to 900 tons of spent Defluorinator catalyst is generated each year.

Reforming Unit Catalyst

A metallic (platinum) catalyst is used in the Reforming Unit to treat hydrocarbon molecules. This catalyst is periodically replaced and the spent catalyst is recycled by an off-site metal recovery service. This material is a dry metallic solid and is shipped as a D018 hazardous waste due to the presence of trace benzene.
Approximately 10 to 15 tons of reformer catalyst is generated every one to two years.

Naphtha/Diesel Hydrotreating Units (NHT/DHT) Catalyst

Metallic catalysts are used in these treating units to treat hydrocarbon molecules. These catalysts are periodically replaced and the spent catalysts are recycled by an off-site metal recovery service. This material is a dry metallic solid and is shipped as a K171 hazardous waste.

Approximately 7 tons of naphtha hydrotreater catalyst and 10 tons of diesel hydrotreater catalyst are generated each year.

Spent Zinc Oxide Catalyst

A metallic (zinc) catalyst is used in the isomerization unit to treat hydrocarbon molecules. This catalyst is periodically replaced and the spent catalyst is recycled by an off-site metal recovery service. This material is a dry metallic solid and is non hazardous.

Approximately 2 to 3 tons of zinc oxide catalyst is generated every two years.

Sulfur Byproduct

An elemental sulfur byproduct is generated at the Sulfur Recovery Unit when it is in operation. This solid residue is stored in supersacks until shipped off-site for disposal at a landfill.

Approximately 45 tons of sulfur byproduct is generated each year.

Ammonium Thiosulfate Unit

This unit accepts high H2S and ammonia containing gas streams from the Amine and the Sour Water Stripper Units, and converts these into a useful fertilizer product, ammonium thiosulfate.

Approximately 2400 tons of ammonium thiosulfate products are generated each year, and is sold for use as fertilizer.

Vapor Recovery Unit (VRU) Used Seal Fluid

An air pollution control system is used to capture vapor emissions during tank truck loading. This system uses ethylene glycol as a seal fluid in a vacuum pump. Periodically, this fluid must be replaced.

Approximately 4200 gallons of used ethylene glycol is generated per year.

Heat Exchanger Bundle Cleaning Pad Oily Sludge

Heat exchanger bundles are occasionally cleaned in order to restore heat transfer performance. This cleaning activity is conducted within a concrete enclosure that incorporates a wastewater accumulation sump. Oily sediment and sludge may accumulate in the bottom of this sump. Wastewater overflows from this sump and is discharged into the process sewer.

The heat exchanger bundle cleaning sludge is a listed hazardous waste (K051) and is collected and contained in 55 gallon drums until disposed at an off-site hazardous waste disposal facility.

The quantity of this waste typically ranges from 1 to 3 tons per year.

Process Sewer System Sludge, Tank Bottom & API Separator Sludge

Sediment, sludge, and other debris can occasionally accumulate within the piping, junction boxes, and interceptor manholes that comprise the process sewer system. These materials are periodically removed via a vacuum truck and upon removal are classified as a hazardous waste (F037). These wastes are stored in a tank, until shipped off-site for disposal.

The quantity of this waste typically ranges from 1 to 5 tons per year.

API separator sludge is removed via vacuum trucks, stored in a tank and shipped off-site for disposal. This sludge ranges to about 500 tons/year.

Periodically, tank bottom sludge is cleaned out, stored in a tank and shipped off-site for disposal. This sludge ranges to about 50 tons per year.

Maintenance Shops

Most process equipment and mobile equipment is repaired and maintained at the refinery maintenance shops. Waste oils and antifreeze are collected in 55 gallon drums and recycled.

Approximately 2 drums of antifreeze and 4 drums of used motor oil are generated each year.

Quality Control Laboratory

Residual petroleum products are recycled in the refinery. Residual or expired reagents and other discarded chemicals are stored in lab packs until disposed off-site.

OCD Land Farms

Oily non hazardous solid waste is treated at the main on-site OCD-permitted land farm and a temporary land farm located in the NE-section of the Refinery.

The quantity of oily solid waste typically ranges from zero to 10 tons per year.

RCRA 90 Day Storage Pad

All hazardous wastes are stored at the RCRA 90 Day Storage (concrete) Pad until shipped off-site for recycling, treatment, or disposal. All hazardous wastes are placed in containers and stored on this dedicated concrete pad.

Aerosol Spray Cans

Most aerosol spray cans at the refinery contain paint. All aerosol spray cans that have been used up or that have been discarded for other reasons are collected and taken to the 90-day storage area, checked for contents,punctured and drained using an AEROSOLV can puncturing system over a 55-gallon drum.

Typically 200 to 350 aerosol spray cans are discarded each year.

Asbestos Containing Material (ACM)

Historically, asbestos containing materials have been used within the refinery for pipe and tank insulation. Occasionally, these materials must be removed and disposed as part of normal maintenance activities. All friable asbestos containing materials are abated in compliance with EPA and NMED regulations. These materials are put in drums and stored in a segregated and secure area specifically designated for ACM.

The quantity of ACM disposed each year is highly variable, and ranges from zero to as much as 50 cubic yards.

Lead/Acid Batteries

Discarded lead acid batteries are placed in a segregated area of the Mechanics Shop until shipped off-site for recycling.

The number of batteries discarded each year is highly variable and ranges from zero to as much as 50 units.

Spent Sand Blasting Media

Sand blasting is occasionally conducted at the refinery as part of normal maintenance activities. After repeated reuse, the sand grit becomes degraded and loses its abrasive action. When this occurs, the spent sand blasting media must be replaced. This material is then stored in drums or supersacks until disposed at an off-site landfill. This material is non hazardous.

The quantity of spent sand blasting media typically ranges from zero to 2 tons per year.

Naptha Hydro Treating Gasoline Filters

Used gasoline filters from the Naptha Hydro Treating unit are routinely generated. These are classified as hazardous wastes (D018), stored in a container and then shipped off-site to a permitted hazardous waste landfill.

Approximately, 10 cubic yards of these materials (loosely packed) are shipped off-site for disposal.

8.0 Description of Current Liquid & Solid Waste Collection / Storage / Disposal Procedures

The following procedures are used to manage the wastewater effluents and solid wastes that are generated within the refinery as described in Section 7.0.

Process Wastewater

Process wastewater is generated at various refinery processing units, storage tanks, utility systems, and maintenance activities as described in Section 7.0. This water is collected in a segregated sewer system located throughout the refinery processing and tankage areas. This collection system is substantially composed of concrete paving and curbing, concrete catch basins and trenches, and buried concrete and carbon steel pipe. Process wastewater flows by gravity to the API separator where solids, sludge, and floating scum are removed. From the API separator, the clarified effluent flows down to the benzene strippers and then on to the aerations basins and evaporation ponds. This wastewater is ultimately converted into vapor via solar and mechanical wind-effect evaporation.

Liquid wastewater is not discharged from the refinery and is held in the evaporation ponds. In an extreme eventuality of the ponds not being able to hold all the wastewater generated, a temporary discharge is being planned for along with other contingency measures. If faced with a need to discharge wastewater, Gallup Refinery will first attempt to build additional temporary evaporation ponds, pump water from downgradient ponds into upgradient ponds – if such measures are deemed inadequate, the wastewater will be treated using mobile treatment units to meet the standards based on all designated uses of downstream receiving waters, and then discharged. This discharge will be only from one of the ponds at most risk of overflowing, and will be limited to the extent required to prevent a catastrophic breach of pond dikes and an unplanned spill occurring.

The anticipated volume is assumed to be of the order of 100,000 gallons (enough to lower levels in the most at-risk pond by 0.5 feet) and extremely rare – perhaps once over a ten-year period. The wastewater will have no hazardous components and levels of all contaminants will be below regulatory standards.

Process Sewer System Sludge & API Separator Sludge

Oily sediment and sludge accumulates within the piping, junction boxes, and manholes of the process sewer system. This sludge is periodically removed using vacuum trucks and stored in a tank. Oily sediment and sludge also accumulates at the bottom of the API separator. The API separator's bottom sludge is removed via vacuum trucks, and stored in a tank.

Sewer system sludge and separator sludge is recycled as a feedstock to a petroleum coker at the Norco Refinery:

15536 River Road
Norco, LA 70079
EPA ID: LAD008186579

Storage Tank Bottom Sludge

Oily sludge accumulates at the bottom of storage tanks (e.g. crude oil, FCCU feed tanks). These tanks are periodically taken out of service and the sludge is removed, containerized, and shipped off-site for oil recovery, treatment, and disposal.

Tank bottom sludge is typically recycled as a feedstock to a petroleum coker at the Norco Refinery:

Motiva Enterprises, LLC – Norco Refinery
15536 River Road
Norco, LA 70079
EPA ID: LAD008186579

If this sludge is contaminated with heavy metals it is drummed and shipped off to the following facility:

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

Heat Exchanger Bundle Cleaning Pad Sludge

Oily sludge accumulates at the bottom of the cleaning pad sump. At the conclusion of the exchanger cleaning operation, this sludge is removed, placed in 55 gallon drums, then shipped off-site for oil recovery, treatment, and disposal.

Heat exchanger sludge is typically incinerated or disposed at the following facility:

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

Oily Non Hazardous Soil & Debris

Oily soil and debris is occasionally generated within the refinery due to maintenance activities, leaks, or spills. This material is collected, containerized, and then may either be treated at the OCD landfarm or shipped off-site for oil recovery, treatment, and disposal.

When sent off-site, oily soil and debris is typically disposed at either of the following facilities:

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

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

We plan to add the following landfill to our current list –

San Juan County Regional Landfill
78 CR 3140
Aztec, NM 87410
87323
Permit No. SWM- 241102

Spent FCCU Catalyst

This material is a non hazardous dry solid that is stored in containers after removal from the FCCU and shipped off-site via truck.

Spent FCCU catalyst is typically disposed at either of the following facilities:

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

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

Spent Reformer Catalyst

This material is a dry solid that is stored in containers after removal from the reformer. Occasionally it is regenerated in situ on-site and then reused in the reformer. On other occasions, it is shipped out via truck as a D018 hazardous waste and then reprocessed at an off-site facility.

When sent off-site, spent reformer catalyst is reprocessed at either of the following facilities:

Tricat, Inc.
Spent Catalyst Regeneration Facility
100 Taylor Blvd.
McAlester, OK 74501
EPA ID: OKD987097151

Multimetco, Inc.
1610 Frank Akers Road
Anniston, AL 36207
EPA ID: ALD980837959

Spent NHT/DHT Catalyst

This material is a dry solid that is stored in drums or supersacks after removal from the treater units. After removal, it is shipped out via truck as a K171 hazardous waste and recycled at an off-site facility.

When sent off-site, spent treater catalyst is recycled at either of the following facilities:

Tricat, Inc.
Spent Catalyst Regeneration Facility
100 Taylor Blvd.
McAlester, OK 74501
EPA ID: OKD987097151

Eurecat
13100 Bay Park Road
Pasadena, TX 77505
EPA ID: TXD06829963

Spent Defluorinator Catalyst

This material is a non hazardous dry solid that is stored in drums or supersacks after removal from the defluorinator.

Spent defluorinator catalyst is typically disposed at either the following facilities:

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

Northwest New Mexico Regional Solid Waste Authority

101 Red Mesa Bluffs Drive
Thoreau, New Mexico 87323
Permit No. SWM-172203

Zinc Oxide Catalyst

Spent zinc oxide catalyst from the isomerization unit is collected in supersacks and then shipped by truck to UNICAT Catalyst Technologies, Inc., the original product manufacturer, who then contracts with the following company for recycling and disposal of this material. This material is non hazardous.

Cameron Chemical Corporation
830 Old Dill Road
Suffolk, VA 23434

Alternatively, depending on costs of shipping and disposal, Western Refining may dispose of this material at the Northwest New Mexico Regional Solid Waste Authority in Thoreau.

SRU Sulfur Byproduct

This material is a non hazardous wet solid that is drained and stored in supersacks after being generated at the SRU.

Sulfur byproduct is typically disposed at either the following facilities:

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

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

Mercury Contaminated Waste Materials

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

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

Excess or off-spec chemicals

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

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

Asbestos Containing Material

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

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

Cooling Tower Sludge and Salt

This material is generated in the cleaning of cooling towers and contains primarily sodium and chloride. This material is non hazardous and non-detect for TCLP metals. Western Refinery disposes this material at a local landfill.

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

9.0 Description of proposed modifications to existing collection/treatment/disposal system.

Liquid wastewater is not discharged from the refinery and is held in the evaporation ponds. In an extreme eventuality of the ponds not being able to hold all the wastewater generated, a temporary discharge is being planned for along with other contingency measures. If faced with a need to discharge wastewater, Gallup Refinery will first attempt to build additional temporary evaporation ponds, pump water from downgradient ponds into upgradient ponds – if such measures are deemed inadequate, the wastewater will be treated using mobile treatment units to meet the standards based on all designated uses of downstream receiving waters, and then discharged. This discharge will be only from one of the ponds at most risk of overflowing, and will be limited to the extent required to prevent a catastrophic breach of pond dikes and an unplanned spill occurring. Discharge is anticipated to be from Pond 5 which feeds into Pond 6 (which is one of the most downgradient and at-risk ponds). The water quality in Pond 5 is better than in Pond 6. From evaporation, wastewater in Pond 6 begins to build higher levels of salts, etc.

More details of the proposed modification, including discharge location, are provided in the attached NPDES permit application.

The anticipated volume of discharge is assumed to be of the order of 100,000 gallons (enough to lower levels in the most at-risk pond by 0.5 feet) and extremely rare – perhaps once over a ten-year period. The wastewater will be treated to have no hazardous components and levels of all contaminants will be below regulatory standards. The discharge location and nearby surface water drainages and ponds are shown in Figures 4 and 5.

10.0 Routine inspection and maintenance plan to ensure permit compliance.

Refinery personnel and contractors routinely conduct inspection, maintenance, and repair of all processing units, systems, tanks, equipment, instrumentation, valves, piping, and other items necessary for the continued operation of the refinery. Some of these activities are conducted under the auspices of applicable regulations (e.g. 29 CFR 1910.119 – OSHA Process Safety Management Standard) and involve detailed recordkeeping and reporting. Specific procedures that relate to sources of liquid effluent and solid waste are described as follows.

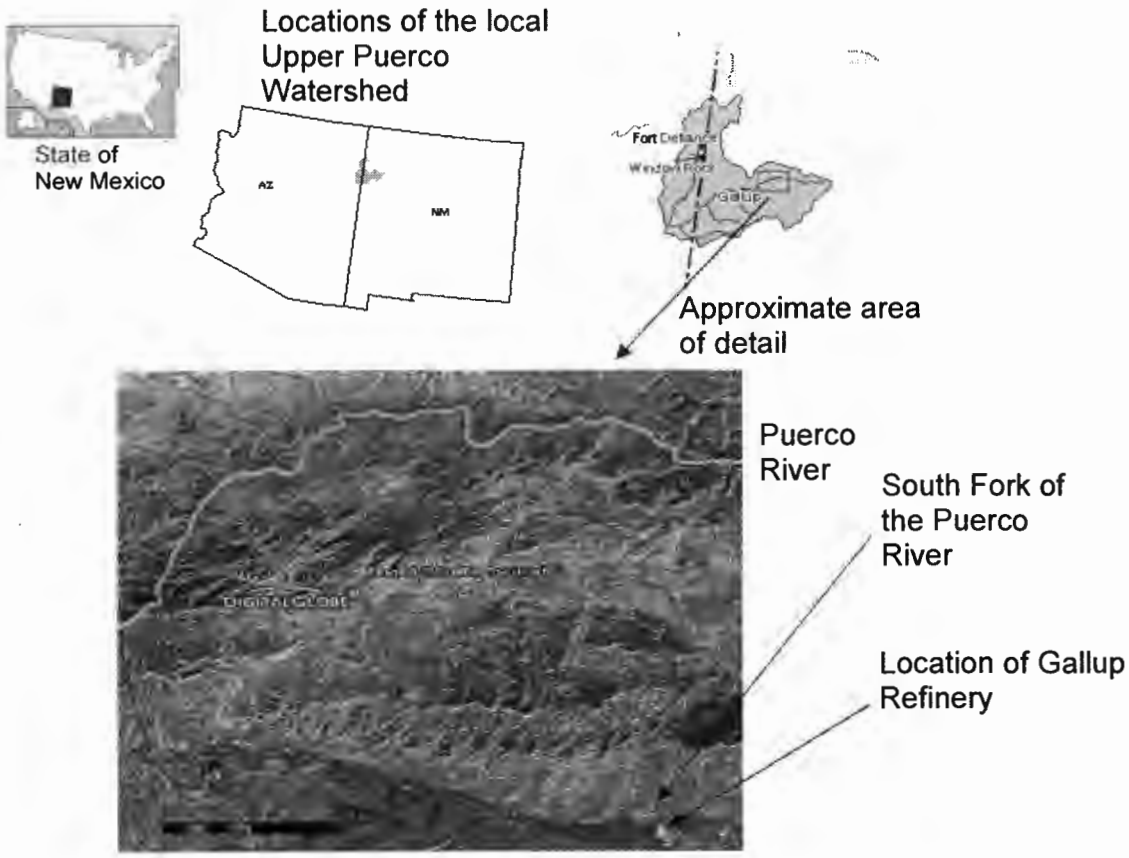


Figure 4: Regional scale: Flow lines and major surface water bodies (from: EPA Enviromapper - http://map24.epa.gov/EMR/?ZoomToWatershed=15020006) North is towards the top of the page.

Proposed emergency discharge point

Figure 5: Localized scale: Flow lines and major surface water bodies (from: EPA Enviromapper - http://map24.epa.gov/EMR/?ZoomToWatershed=15020006) North is towards the top of the page. Discharge would enter an unnamed arroyo and flow to the South Fork of the Puerco River.

Process Wastewater Collection System

Paving, curbing, catch basins, and trenches are routinely inspected for integrity. Previously, a video inspection technique was used to examine sewer system piping and components. As required by OCD, Western Refining has now begun utilizing the pressure test technique to verify the integrity of sewer system components. Western Refining conducts this pressure testing in increments of 20% per year over the next 5 years, until the entire system has been checked. The 20% increment will be based on nominal sewer pipe length and Western refining has tested the most important sections first. This test program uses OCD methodology and criteria.

The API separator is emptied and inspected regularly. If a crack or seam failure is discovered, it is repaired before placing the API separator back in service. A secondary containment and leak detection system is installed and inspected weekly.

The benzene strippers are inspected periodically. During major maintenance, the packing is removed. At this time, the stripper vessels are emptied and internally inspected. If needed, repairs are made before placing the strippers back in service.

Refinery operations personnel routinely conduct visual surveillance of process areas and monitor the integrity of concrete paving, curbing, catch basins, and trenches. Problems with containment systems are reported to the maintenance department for repair.

Storm Water Collection System

Storm water system "Best Management Practices" are described in detail in the Storm Water Pollution Prevention Plan (SWPPP) provided separately to the OCD.

Storage Tanks, Petroleum, and Chemical Storage Areas

Refinery Operations, Warehouse, Safety, Environmental, Technical Services, and Laboratory Field personnel routinely conduct visual surveillance of storage areas and monitor the integrity of containment and check for leakage or other problems. All incidents and near-misses are reported to refinery management for follow-up action and response. Additional information is included in the refinery ICP and SPCC.

11.0 Contingency Plan for Reporting and Clean-up of Spills or Releases

The Gallup Refinery has developed, implemented, and is currently utilizing an Integrated Contingency Plan (ICP) as described in the Federal Register Notice "The National Response Team's Integrated Contingency Plan Guidance (One Plan)" dated June 5, 1996 (Volume 61, Number 109, pages 28641 – 28664). This document describes the recommended method for developing and adopting a comprehensive and integrated contingency plan for complying with the numerous and overlapping safety and environmental requirements of OSHA, DOT, EPA, USCG, RSPA and other federal and state regulations. This includes the following regulations.

- EPA Spill Prevention, Control, & Countermeasures Plan (40 CFR Part 112.7)
- EPA Facility Response Plan (40 CFR Parts 112.20 & 112.21)
- EPA Risk Management Program (40 CFR Part 68)
- EPA Contingency Planning Requirements (40 CFR Parts 264, 265, & 279.52)
- USCG Facility Response Plan (33 CFR Part 154, Subpart F)
- DOT/RSPA Pipeline Response Plan (49 CFR Part 194)
- DOT Emergency Response Plans (49 CFR Parts 130 & 172)
- OSHA Process Safety Management Standard (29 CFR 1910.119)
- OSHA Emergency Action Plan (29 CFR 1910.38)
- OSHA Training & Response Requirements (29 CFR 1910.120)
- NMED/OCD Emergency Response Requirements

Included within the ICP is a plan for addressing Spill Prevention, Control, and Countermeasures (SPCC) as required by the Oil Pollution Act (40 CFR Part 112.7). The requirements of the ICP and SPCC encompass and comply with the requirements of NMOCD Rule 116 and WQCC Section 1203.

In addition, a Storm Water Pollution Prevention Plan (SWPPP), as required by Clean Water Act NPDES Multi-sector General Permit requirements, has been developed and implemented.

12.0 Geological/hydrological information for facility. Include depth to groundwater and quality of groundwater)

The Gallup Refinery is located within a rural and sparsely populated section of McKinley County. The setting is a high desert plain on the western flank of the continental divide. The surrounding land is comprised primarily of public lands and is used for cattle and sheep grazing at a density of less than six cattle or 30 sheep per section. Surface vegetation predominantly consists of native grasses, shrubs, cacti, and small trees. Average rainfall is less than 7 inches per year.

Local topography consists of a gradually inclined downslope from high ground in the southeast to a lowland fluvial plain in the northwest. The highest point on refinery property is located at the southeast corner boundary (elevation approximately 7,040 feet) and the lowest point is located at the northwest corner boundary (elevation approximately 6,860 feet). The refinery processing facility is located on a flat man-made terrace at an elevation of approximately 6,950 feet.

Surface water in this region predominantly consists of the man-made evaporation ponds and aeration basins located within the refinery, a cattle watering pond (Jon Myer's Pond) located east of the refinery, two small unnamed spring fed ponds located south of the refinery, and the South Fork of the Puerco River and its tributary arroyos. The various ponds and basins typically contain water consistently throughout the year. The South Fork of the Puerco River and its tributaries are intermittent and generally contain water only during and immediately after the occurrence of precipitation.

The 810 acre refinery property site is located on a layered geologic formation. Surface soils generally consist of fluvial and alluvial deposits; primarily clay and silt with minor inter-bedded sand layers. Below this surface layer is the Chinle Formation, which consists of very low permeability claystones and siltstones that comprise the shales of this formation. As such, the Chinle Formation effectively serves as an aquiclude. Inter-bedded within the Chinle Formation is the Sonsela Sandstone bed, which represents the uppermost potential aquifer in the region.

The Sonsela Sandstone bed lies within and parallels the dip of the Chinle Formation. As such, its high point is located southeast of the refinery and it slopes downward to the northwest as it passes under the refinery. Due to the confinement of the Chinle Formation aquiclude, the Sonsela Sandstone bed acts as a water-bearing reservoir and is artesian at its lower extremis. Artesian conditions exist throughout the central and western portions of the refinery property.

Groundwater flow within the Chinle Formation is extremely slow and typically averages less than 10^{-10} centimeters per second (less than 0.01 feet per year). Groundwater flow within the surface soil layer above the Chinle Formation is highly variable due to the presence of complex and irregular stratigraphy; including sand stringers, cobble beds, and dense clay layers. As such, hydraulic conductivity may range from less than 10^{-2} centimeters per second in the gravelly sands immediately overlying the Chinle Formation up to 10^{-8} centimeters per second in the clay soil layers located near the surface.

Shallow groundwater located under refinery property generally flows along the upper contact of the Chinle Formation. The prevailing flow direction is from the southeast and toward the northwest; however, a subsurface ridge has been identified and is thought to deflect some flow in a northeasterly direction in the vicinity of the refinery tank farm.

Items Specifically Requested in the OCD Guidance Document

Section A – Hydrologic/Geologic Information

1. Provide the name, description, and location of any bodies of water, streams, or other watercourses; and groundwater discharge sites within one mile of the outside perimeter of the facility. For water wells, locate wells within one-quarter mile of the outside perimeter of the facility and specify use of water.

The following water bodies are located within one mile of the outside perimeter of the refinery.

Aeration Basins

The aeration basins are shown on the plant site drawing in Appendix A.

Evaporation Ponds

The evaporation ponds are shown on the plant site drawing in Appendix A.

Storm Water Retention Areas

The storm water retention areas are shown on the plant site drawing in Appendix A.

The South Fork of the Puerco River & its Tributaries

The South Fork of the Puerco River and its tributary arroyos are shown in Figure 4.

Jon Myer's Pond (NE 1/4, Section 34, T15N, R15W)

Jon Myer's Pond is located approximately one mile east of the plant site and is shown in Figure 5. This pond is a source of water for cattle.

Unnamed Ponds (NW 1/4, Section 4, T14N, R15W)

These unnamed ponds are located approximately 1/4 mile south of Interstate 40 and are shown on the topographical map in Section 3.0.

Unnamed Artesian Surface Seep (south of Pond 9)

A small marshy area is located south of Evaporation Pond No. 9. This marsh results from a surface seep of artesian water from the Sonsela Sandstone Bed.

2. Provide the depth to and total dissolved solids concentration of the groundwater most likely to be affected by any discharge. Include the source of information and how it was determined. Provide a recent water quality analysis of the groundwater, if available, including name of analyzing laboratory and sample date.

In this permit application, shallow groundwater is defined to be groundwater that lies above the Chinle Formation aquiclude. Shallow groundwater is the groundwater most likely to be

affected by any discharge at the refinery, and also by the extremely rare intermittent discharge to a surface drainage.

Shallow groundwater located under the refinery is irregular, intermittent, and frequently discontinuous. As such, it represents an unreliable and unpredictable potential water source, and consequently is not extracted for beneficial use in this region.

Due to irregular surface topography and the inclined nature of the Chinle Formation, depth to groundwater is highly variable in the vicinity of refinery property. Groundwater may be encountered in as little as 1 foot below ground surface in the marsh area south of Pond 9 and as much as 180 feet below ground surface at the northwest corner of the refinery.

Sampling and analysis of shallow groundwater has been ongoing at the refinery since the mid 1980's and this data has been supplied to OCD in the annual groundwater reports.

3. Provide the following information and attach or reference source information.

   a. Soil type(s)

      Soil types vary from fine sands at the southeast boundary of the refinery to highly plastic clays located at the northwestern boundary of the refinery.

      This information was obtained from the Natural Resources Conservation Service McKinley County Soil Map. Figure 6 provides a map of soils in the refinery area.

   b. Name of aquifer(s)

      The uppermost useable aquifer is the SONSELA SANDSTONE BED located within the PETRIFIED FOREST MEMBER of the CHINLE FORMATION. Mr. Bill Kingsley, P.E, supplied this information.

   c. Composition of aquifer material

      The Sonsela Sandstone Bed is composed of sandstone. This information is from numerous drilling logs. Copies of these logs have been provided separately to the OCD.

   d. Depth to rock at base of alluvium

      Bedrock depth ranges from exposed to over 85 feet below ground surface at the northwest corner boundary.

4. Provide information on:

   a. The flooding potential at the discharge site with respect to major precipitation and/or run-off events

      The alluvial flatlands located at the north, northwestern, and western sections of the refinery are located within a flood plain as shown on the FEMA maps.

   b. Flood protection measures

      The evaporation ponds are protected against flood impacts by the minimum 8 foot high earthen berms which form the containment of the ponds.

Section B – Additional Information

1. Provide stratigraphic information including formation and member names, thickness, lithologies, lateral extent, etc.
   A stratigraphic profile diagram of the refinery site is provided in Appendix A.

2. Provide generalized maps and cross-sections.
   A plant site drawing is provided in Appendix A and a stratigraphic profile diagram of the refinery site is provided in Appendix A.

3. Provide potentiometric maps for aquifers potentially affected.
   A potentiometiic map of the Chinle/Alluvium water bearing zone is provided in Appendix A.

4. Provide porosity, hydraulic conductivity, storativity and other hydrologic parameters of the aquifer.

Porosity	10 - 20 percent
Conductivity	0.01 - 0.05 cm/s

5. Provide specific information on the water quality of the aquifer.
   Sampling and analysis of shallow groundwater has been ongoing at the refinery since the mid 1980's and this data has been supplied to OCD in the annual groundwater reports.

6. Provide information on expected alteration of contaminants due to sorption, precipitation or chemical reaction in the unsaturated zone, and expected reactions and/or dilution in the aquifer.

The predominant type of contaminant at the refinery is petroleum hydrocarbons.

Petroleum hydrocarbons are easily adsorbed onto soil particles and tend to remain in the interstitial voids until washed out by precipitation or consumed by microorganisms.

Petroleum hydrocarbons do not tend to react with soil particles.

Symbol	
53	Hawaikuh clay loam, 0 to 2 percent slopes
205	Penistaja-Tintero complex, 1 to 10 percent slopes
212	Rehobeth silty clay loam, 0 to 1 percent slopes
225	Aquima-Hawaikuh silt loams, 1 to 5 percent slopes
308	Fikel-Venzuni complex, 1 to 6 percent slopes
336	Nuffel-Venadito complex, 1 to 3 percent slopes
345	Rock outcrop-Tuces complex, 20 to 70 percent slopes
352	Zia sandy loam, 1 to 5 percent slopes

Figure 6: Soils in the Refinery Area

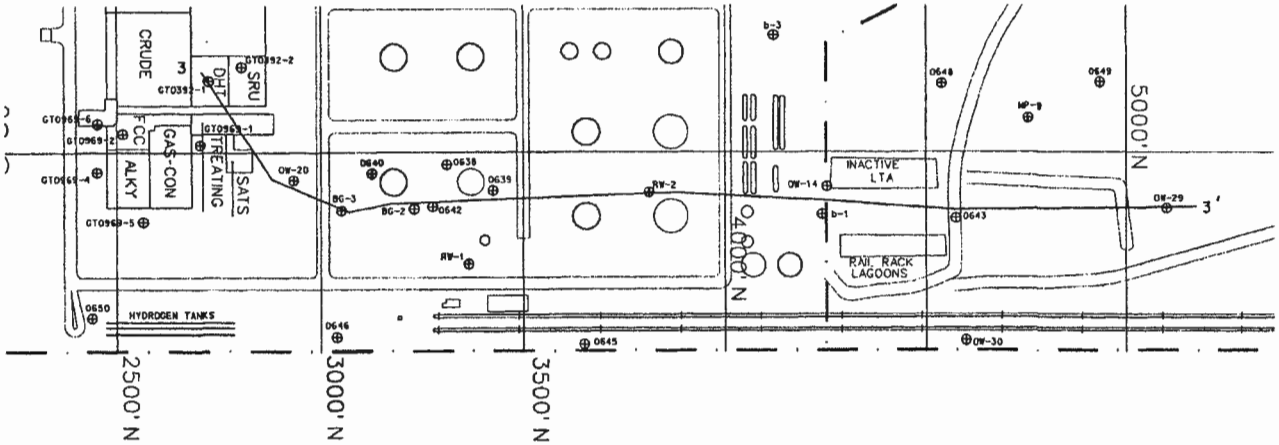
13.0 Facility Closure Plan to Demonstrate Compliance with OCD Rules, Regulations, and/or Orders.

The Gallup Refinery was constructed in 1957 and has been in continuous operation since that time. Over the years, various releases of petroleum-based products and other materials have occurred, largely as a result of minor spills, equipment leaks, waste treatment activities, and from former impoundments and disposal sites. As a result, surface soil, subsurface soil, and groundwater has been impacted at various locations and over various time periods spanning the past 46 years. All of the impacted areas have been classified as Solid Waste Management Units (SWMUs) and identified.

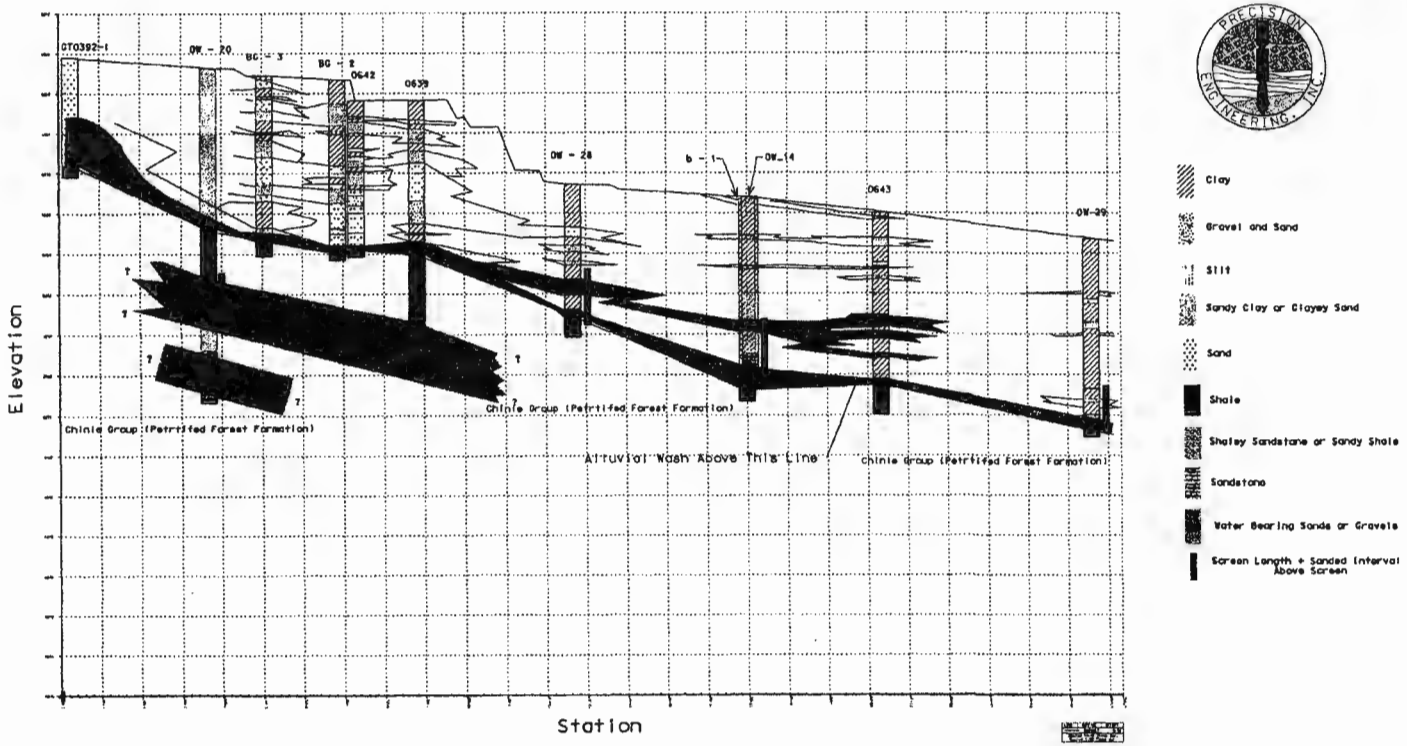
Some sources of prior contamination are still in the process of investigation or remediation, and consequently may represent a continuing source of release. An example of this is the Tank Farm. Although the original source of the release (a hole in a storage tank bottom) has been repaired, residual hydrocarbons are present in the soil and groundwater located under the Main Tank Farm. A hydrocarbon recovery system has been installed and is continuing to operate. Another example is the Railroad Rack Lagoon and Fan-out Area. This former retention pond was taken out of service in the 1980's and no longer receives wastewater from the Railcar Loading Rack. Corrective action is being implemented to remove and treat oily sludge from the lagoon and the site will be closed in 2009 upon completion of the clean-up plan.

A Corrective Measures Implementation plan is being developed for clean closure of two aeration basins at the Refinery. These will be cleaned when a new wastewater treatment system is built and begins to operate.

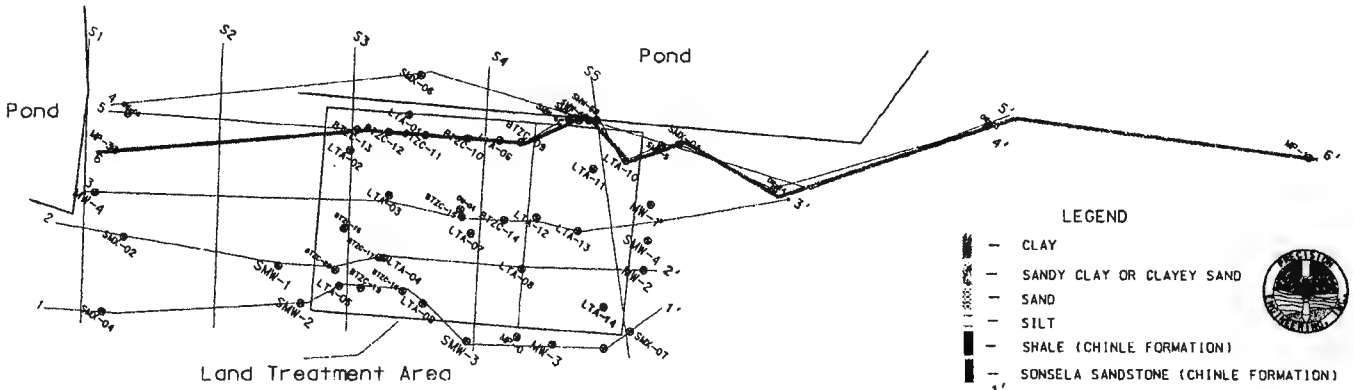
APPENDIX A


CRUDE
DHT
SRU
FCC
ALKY
GAS-CON
TREATING
SATS
HYDROGEN TANKS
INACTIVE LTA
RAIL RACK LAGOONS
2500' N
3000' N
3500' N
4000' N
5000' N
3
3'

Profile 3 - 3'

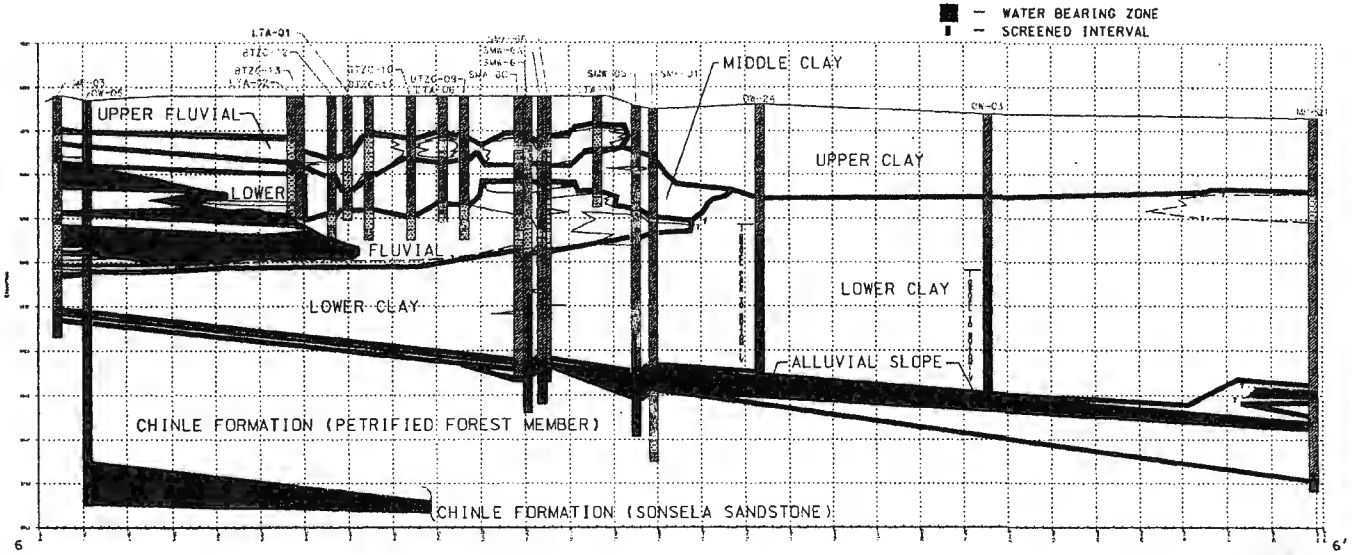

Elevation
Station
Chinle Group (Petrified Forest Formation)
Alluvial Wash Above This Line
Clay
Gravel and Sand
Silt
Sandy Clay or Clayey Sand
Sand
Shale
Shaley Sandstone or Sandy Shale
Sandstone
Water Bearing Sands or Gravels
Screen Length + Sanded Interval Above Screen

North - South Section Westerly Plant Area



LEGEND

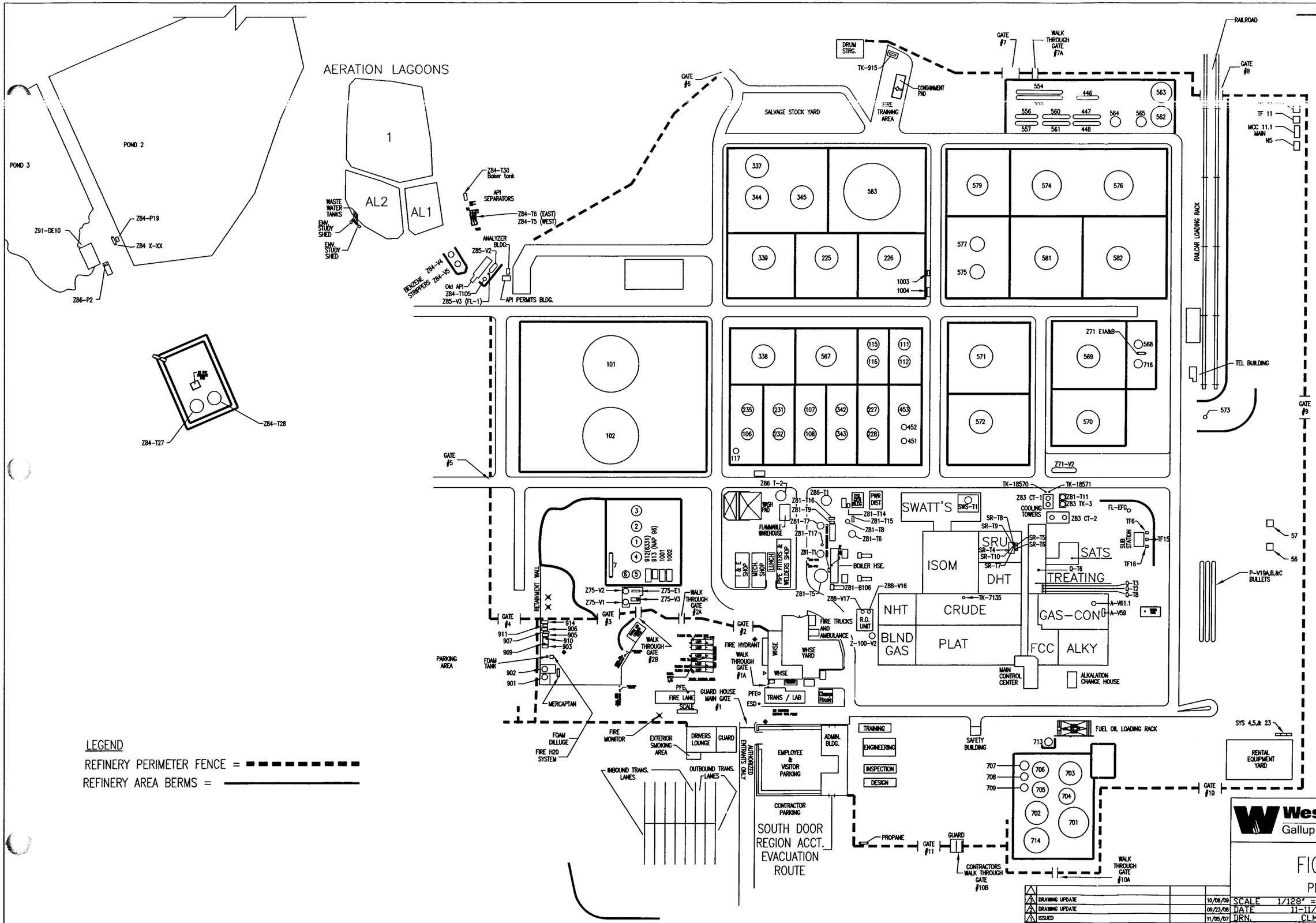
- CLAY
- SANDY CLAY OR CLAYEY SAND
- SAND
- SILT
- SHALE (CHINLE FORMATION)
- SONSELA SANDSTONE (CHINLE FORMATION)
- PROFILE LINE
- WATER BEARING ZONE
- SCREENED INTERVAL



Profile 6-6'

REFERENCE DRAWINGS

APPENDIX - D
PERIMETER FENCE EVACUATION POINTS



LEGEND

REFINERY PERIMETER FENCE = - - - - - - - -

REFINERY AREA BERMS = ————————

Western Refining
Gallup Refinery

FIGURE A.1
PLANT LAYOUT

REV.	REVISION DESCRIPTION	RFC No.	DATE
3	DRAWING UPDATE		10/08/09
2	DRAWING UPDATE		09/23/08
1	ISSUED		11/05/07

SCALE	1/128" = 1'-0"	APRV'D.	
DATE	11-11/98	APRV'D	
DRN.	CLM	1	REV. 3
CHK'D.	DWG NO.	Z-01-126	

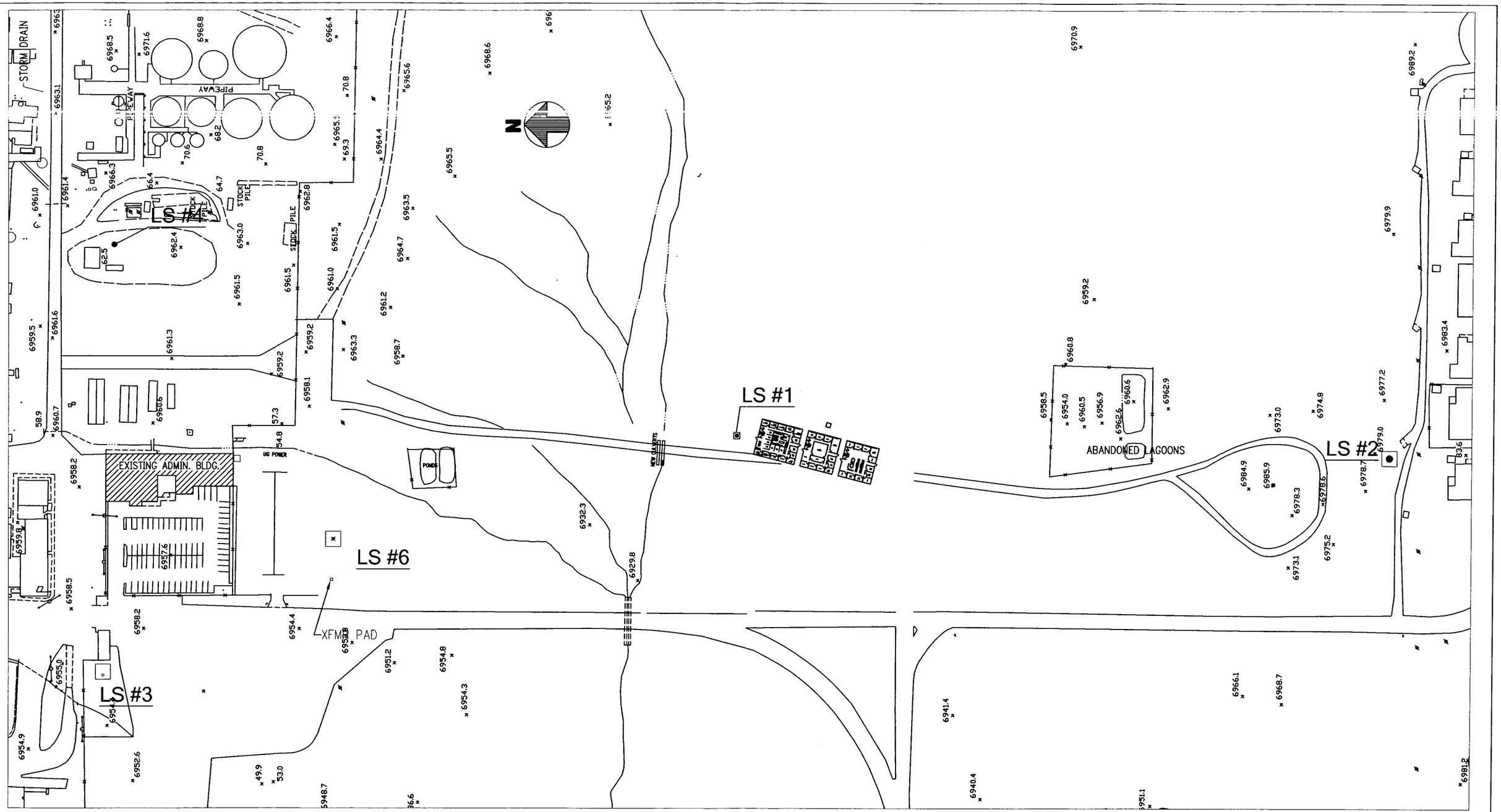
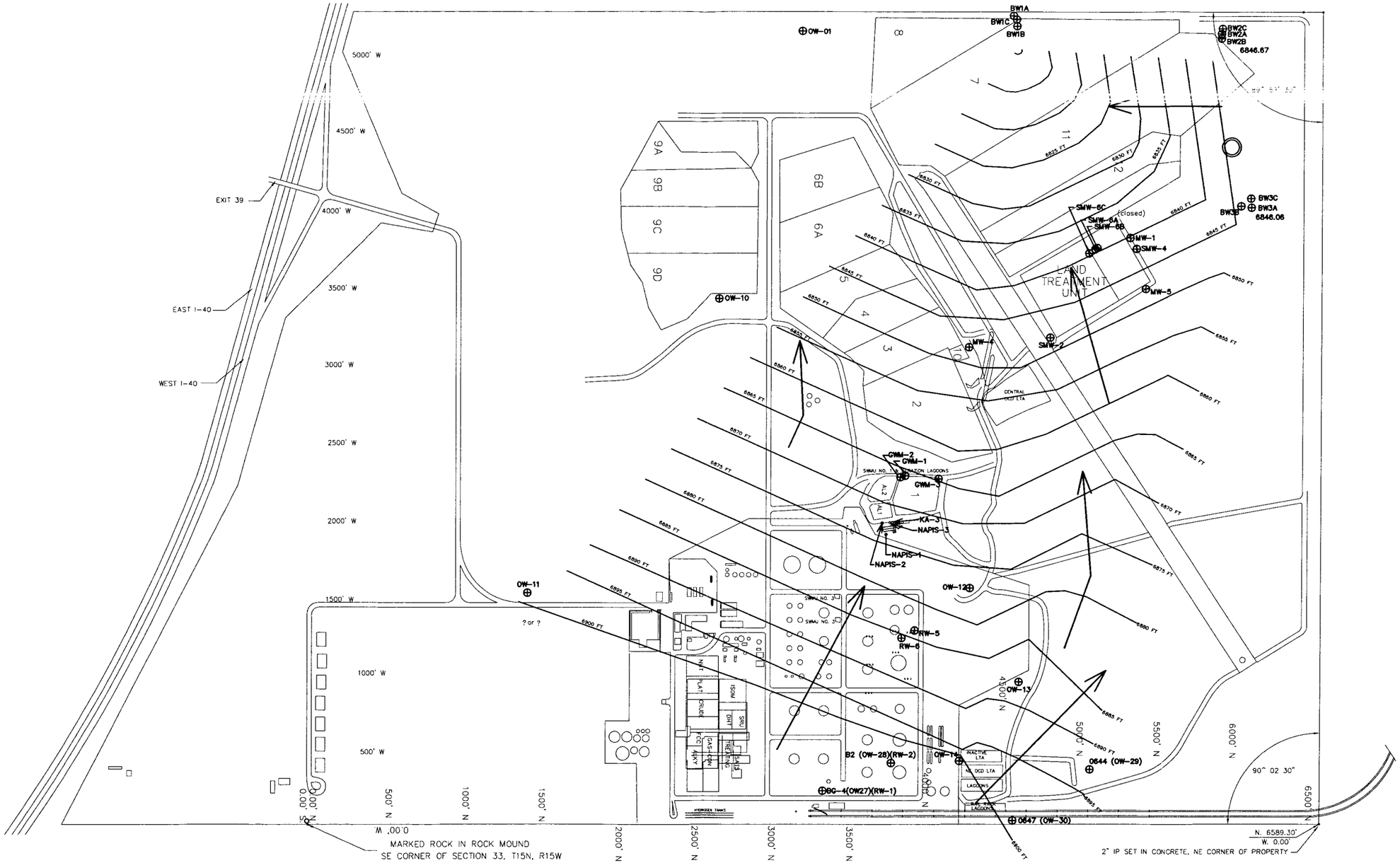


FIGURE A.2

Western Refining
Gallup Refinery

PROPOSED
OFFICE BUILDING/FIRE STA.
UTILITIES SITE PLAN

RFE No:		INSP/RT/UT:	
DRN. BY: NLH	DATE:	WELD SPEC:	
CHK'D. BY:	DATE:	PAINT:	
APP'D. BY:	DATE:	CAD REF:	
DRAWING NO.		SHEET 1	REV



File 06-054

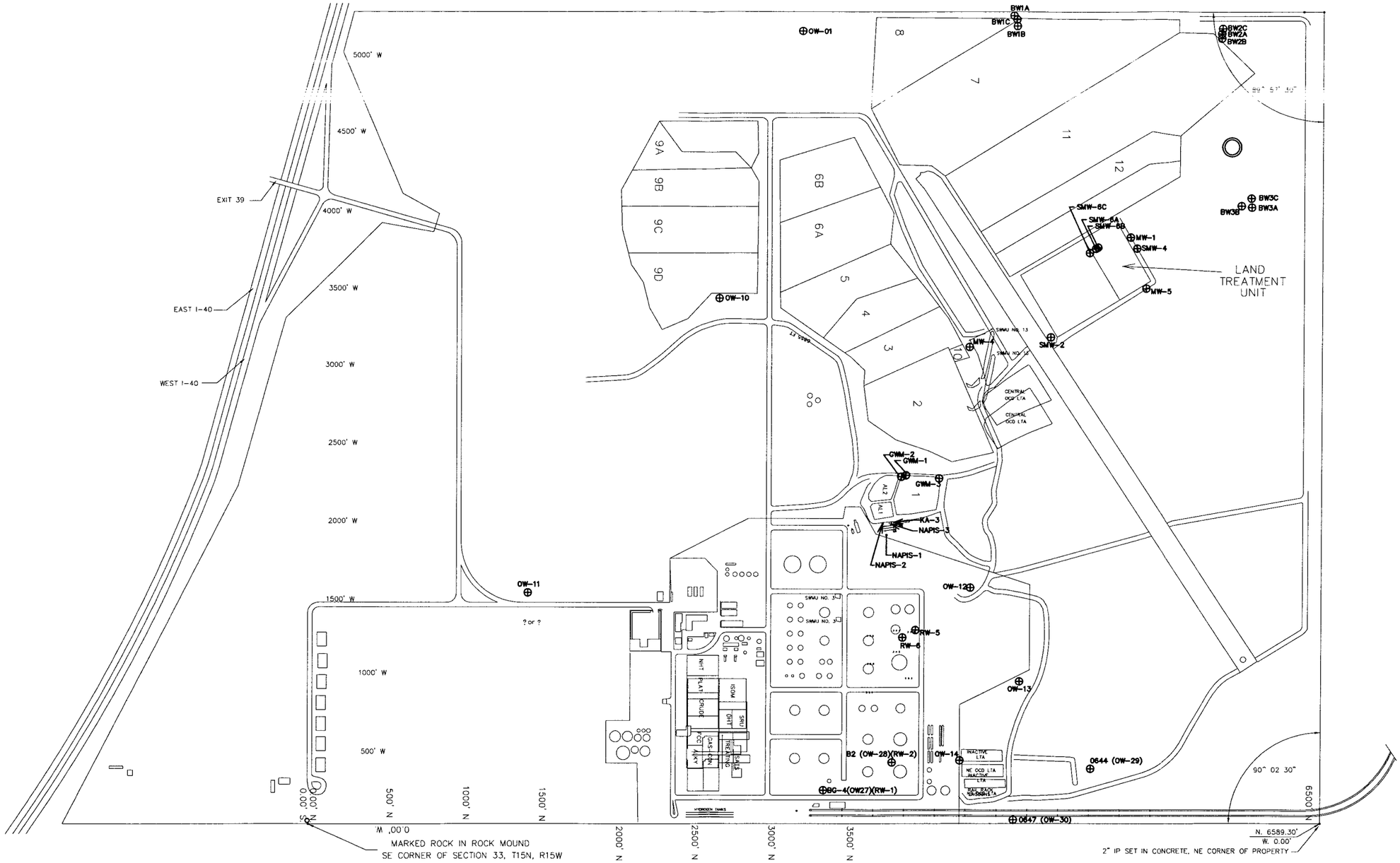
Figure A.3

Potentiometiric Map Showing Groundwater Elevations at the Chinle/Alluvium Interface

July 2008

Western Refining
Gallup Refinery

Interstate 40, Exit 39
Jamestown, New Mexico 87347
Date: August 22, 2007

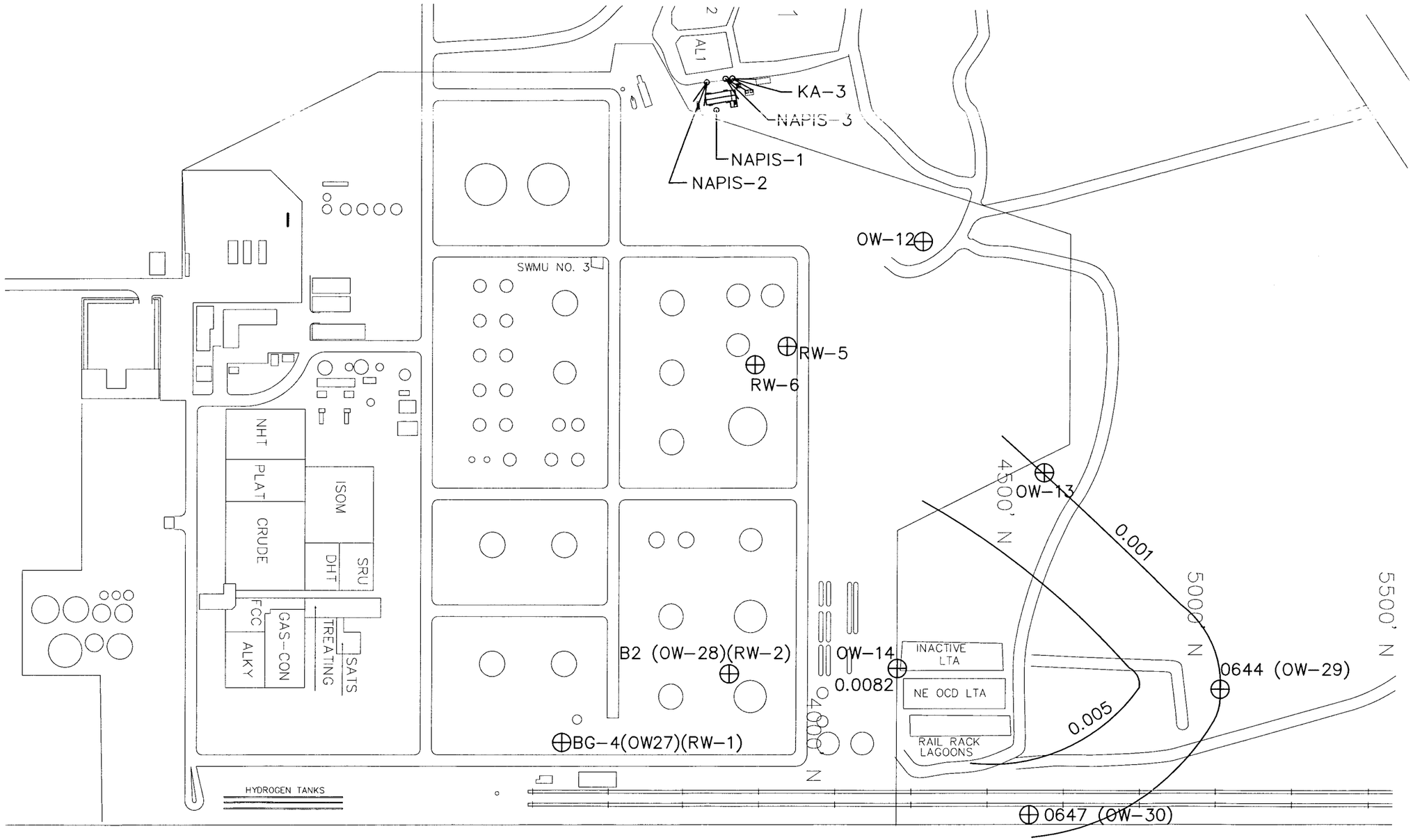


File 06-054

Figure A.4
Well Locations

Western Refining
Gallup Refinery

Interstate 40, Exit 39
Jamestown, New Mexico 87347
Date: August 22, 2007



File 06-054

Figure A.5

Benzene Iso Concentration Contours

Western Refining
Gallup Refinery

Interstate 40, Exit 39
Jamestown, New Mexico 87347
Date: August 22, 2007

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