GW-071

Ballard Ponds Closure, final

DATE:
09.19.11

Lowe, Leonard, EMNRD

From: Smith, David [DRSmith@eprod.com]
Sent: Friday, May 04, 2012 9:24 AM
To: Griswold, Jim, EMNRD; Lowe, Leonard, EMNRD
Subject: Enterprise Ballard Pond Photos / GW-071
Attachments: DSC01729 (Large).JPG; DSC01707 (Large).JPG; DSC01714 (Large).JPG; DSC01717 (Large).JPG

I have attached a few photos of the East Ballard Pond at our Chaco Plant following removal of the liners from the pond. Photos were taken on Tuesday the 1st, and Wednesday the 2nd. Jonathan with your Aztec office visited the site on Wednesday. The only visible soil impacts were present on the north and east side of the impoundment, where a historical fire had degraded the upper portion of the liner.

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CLOSURE PLAN - BALLARD PONDS
OCD Discharge Plan (GW-071)

Property:

CHACO GAS PLANT
895 County Road 7100
Section 16, Township 26N, Range 12W
San Juan County, New Mexico

September 19, 2011
SWG Project No. 0410001A

Prepared for:

Enterprise Field Services, LLC
1100 Louisiana Street
Houston, Texas 77002
Attn: Mr. David R. Smith, P.G.

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CLOSURE PLAN - BALLARD PONDS
OCD Discharge Permit (GW-071)

CHACO GAS PLANT
895 County Road 7100
Section 16, Township 26N, Range 12W
San Juan County, New Mexico

SWG Project No. 0410001A

1.0 EXECUTIVE SUMMARY

The Enterprise Field Services, LLC (Enterprise) Chaco Gas Plant consists of approximately 190-acres of land developed with a cryogenic gas plant, amine treatment unit and natural gas compression facilities, referred to hereinafter as the "Site" or "subject Site". The Site is located at 895 County Road (CR) 7100 in Section 16, Township 26N, Range 12W in San Juan County, New Mexico, approximately 17.5 miles south of Farmington.

The Ballard Ponds consist of two (2) lined contact water ponds originally designed as part of a hydrocarbon recovery system for liquids recovered from the Ballard operational area. The Ballard Ponds were constructed circa 1994 and lined with high density polyethylene (HDPE) sheeting. Design specifications indicate that each sub-grade pond is 120 feet long on each side, with sloping sidewalls measuring 4 feet vertically from the bottom of the pond. These ponds are predominantly sub-grade, excavated into the native silty sand soils, and possess shallow berms which assist in anchoring the primary and secondary high density polyethylene (HDPE) liners. A leak detection system underlies each of the ponds between the primary and secondary liners. The Ballard Ponds are currently out-of-service.

Southwest Geoscience (SWG) performed a Limited Site Investigation (LSI) during December 2010 to evaluate the presence of petroleum hydrocarbons in the on-Site soil and groundwater as a result of historic and current operational use of the Ballard Ponds. Analytical results from the LSI did not indicate adversely affected soil or groundwater at the perimeter of the ponds.

The proposed closure activities include the removal of the Ballard Ponds and return of the area to approximate surrounding grade. During closure activities, the liners and appurtenances associated with the pond will be removed, characterized and disposed off-site in accordance with applicable local, state and federal regulations.

Specific details concerning this plan are further explained in the following sections and should be read to fully comprehend the extent of the proposed scope of work.

Subsequent to the removal of the liners from the Ballard Ponds, four (4) soil samples (one from each quadrant) will be collected from the exposed floor at each of the two ponds. These soil samples will be analyzed for total petroleum hydrocarbons (TPH) gasoline range organics (GRO) and diesel range organics (DRO) and benzene, toluene, ethylbenzene and xylenes (BTEX).

Directly upon completion of liner removal activities and receipt of satisfactory confirmation sample analyses, the area will be backfilled and returned to approximate surrounding grade. The reclaimed Ballard Pond area will be compacted utilizing the on-Site equipment.

2.0 INTRODUCTION

2.1 Site Description & Background

The Enterprise Chaco Gas Plant consists of approximately 190-acres of land developed with a cryogenic[1] gas plant, amine treatment unit and natural gas compression facilities. The Site is located at 895 CR 7100 in Section 16, Township 26N, Range 12W in San Juan County, New Mexico, approximately 17.5 miles south of Farmington.

A topographic map of the Site vicinity is included as Figure 1, and an aerial photograph depicting the location of the Ballard Ponds is included as Figure 2. In addition, a Site map depicting improvements within the Site vicinity and the location of the previous LSI field activities is included in Appendix C. Photographs of the Site are provided in Appendix B.

The Ballard Ponds consist of two (2) lined water ponds originally designed as part of a hydrocarbon recovery system for liquids recovered from the Ballard operational area. The Ballard Ponds were constructed circa 1994 and lined with HDPE sheeting. Design specifications indicate that each sub-grade pond is 120 feet long on each side, with sloping sidewalls measuring 4 feet vertically from the bottom of the pond. These ponds are predominantly sub-grade, excavated into the native silty sand soils, and possess shallow berms which assist in anchoring the primary and secondary HDPE liners. A leak detection system underlies each of the ponds between the primary and secondary liners. Two (2) tanks and a separator are identified in the original Ballard discharge permit, and existed at the Site at one time. However, these tanks and the separator were never utilized, and were subsequently removed and placed in storage at the southwest corner of the Chaco Gas Plant. One unused concrete containment structure remains at the Site, located between the two ponds, and will be removed during closure activities. The Ballard Ponds are currently out of service. Photographic documentation of the Ballard Ponds is included in Appendix B.

2.2 Chronology of Events

Below is a list of significant milestones or events associated with the Site.

November 17, 1995 – EPNG notified the OCD that the "Ballard Pond" and the two (2) lined contact water evaporation/disposal ponds located at the Chaco Gas Plant had failed an integrity test. Eight (8) leaks were identified within the liner seams of the "Ballard Pond". The Ballard Pond leaks were subsequently repaired and the ponds placed back into service.

May 9, 1996 – The OCD approves the Groundwater Discharge Plan (GW-71-1) for the Ballard Hydrocarbon Recovery Facility (Supporting documentation provided in Appendix D).

[1] Cryogenic processes include dropping the temperature of the natural gas stream to around -120 degrees Fahrenheit to extract NGLs from natural gas.

July 2, 2001 – The OCD approves the transition of the Ballard Ponds into the Groundwater Discharge Plan for the Chaco Gas Plant (GW-71), terminating the discharge plan for the Ballard Hydrocarbon Recovery Facility (GW-71-1) (Supporting documentation provided in Appendix D).

July 14, 2009 – The OCD renews discharge permit GW-071 for the Chaco Plant, contingent on addressing conditions noted by the agency during their September 11, 2009 inspection of the facility. These conditions included removal of oil from one of the Ballard Ponds, and investigating the fluids present in the impoundment leak detection system.

September 1, 2009 – Enterprise responded to OCD concerns noted in the July 14, 2009 discharge plan permit renewal, including removing oil present in the Ballard Ponds for recycling, and stating that closure of the ponds was being scheduled during 2010.

February 3, 2011 – A limited site investigation (LSI) of soil and groundwater conditions adjacent to the Ballard Ponds is completed and submitted to the OCD. This investigation was conducted by Enterprise during December 2010 to determine if soil and groundwater had been impacted during historical impoundment operations what would require remedial actions during closure. No subsurface soil or groundwater impacts exceeding OCD actions levels were found during this investigation. Analytical data and maps from the LSI report are provided in Appendix C.

2.3 Proposed Scope of Work

The objective of the proposed closure activities is to permanently remove the Ballard Ponds from service and to evaluate and/or remediate potential hydrocarbon impact to soils, if any, in the vicinity of the ponds prior to restoration to natural grade.

2.4 Standard of Care & Limitations

The findings and recommendations contained in this report represent SWG's professional opinions based upon information derived from on-Site activities and other services performed under this scope of work, and were arrived at in accordance with currently acceptable professional standards. The findings were based, in part, upon analytical results provided by an independent laboratory. Evaluations of the geologic/hydrogeologic conditions at the Site for the purpose of this plan are made from a limited number of available data points (i.e. soil borings and ground water samples) and Site-wide subsurface conditions may vary from those observed at these data points. SWG makes no warranties, express or implied, as to the services performed hereunder. Additionally, SWG does not warrant the work of third parties supplying information used in the report (e.g. laboratories, regulatory agencies, or other third parties).

This report is based upon a specific scope of work requested by Enterprise. The agreement between SWG and Enterprise outlines the scope of work, and only those tasks specifically authorized by that agreement or outlined in this report were performed. This report has been prepared for the intended use of Enterprise and their subsidiaries, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the Site) is prohibited without the express written authorization of Enterprise and SWG.

3.0 SITE CHARACTERIZATION

3.1 Geology & Hydrogeology

The Geologic Map of New Mexico (2003), published by the New Mexico Bureau of Geology and Mineral Resources, indicates the Site is located over soils formed from the Nacimiento Formation. The Nacimiento Formation in the area of the Site is composed of shale, siltstone, and sandstone, deposited in floodplain, fluvial and lacustrine settings, and made up of sediment shed from the San Juan uplift to the north and the Brazos-Sangre de Cristo uplift to the east.

Subsurface lithology was documented during the LSI activities in December 2010. The lithology encountered during the advancement of soil boring SB-2 included a moderate yellowish brown silty sand fill from the surface to a depth of approximately 8.0 feet bgs followed by native moderate yellowish brown silty sand from 8.0 feet bgs to a depth of 15.5 feet bgs. A moderate brown to reddish brown clay was encountered from 15.5 feet bgs to 28.0 feet bgs. The moderate brown to reddish brown clay was underlain by a moderate yellowish brown silty sandstone from 28.0 to 29.0 feet bgs. The lithology observed in soil borings SB-1, TSW-1, TSW-2, TSW-3, and TSW-4 was generally similar to that observed in soil boring SB-2. Detailed lithologic descriptions are presented on the soil boring logs included in Appendix C.

Groundwater was encountered in soil borings TSW-1, TSW-2, TSW-3, and TSW-4 between 18.0 and 22.0 feet bgs. The groundwater depth associated with the initial shallow, unconfined groundwater-bearing unit (Nacimiento Formation) varies depending upon seasonal variations in precipitation and the depth to the initial confining unit. Recharge areas for shallow unconfined units are typically local and can be influenced by surface development of impervious cover (buildings, parking lots, roads). The groundwater flow direction in these unconfined aquifer units is highly variable but is generally toward the nearest down-gradient water body (lakes, creeks, rivers) and can be approximated by observing the surface topography. The groundwater gradient in the vicinity of the Ballard Ponds is anticipated to be toward the west-northwest, based on the observed gradient from monitoring wells on the western side of the Chaco Gas Plant.

The major aquifer underlying the Site vicinity is listed as the Colorado Plateaus Aquifer, which is made up of four smaller aquifers, the Uinta-Animas, the Mesa Verde, the Dakota-Glen, and the Coconino-De Chelly. The Uinta-Animas is the uppermost of these aquifers, and is present in the San Juan Basin. The general composition of the aquifers is moderately to well-consolidated sedimentary rocks of an age ranging from Permian to Tertiary. Each aquifer is separated from the others by an impermeable confining unit. Two of the confining units are completely

impermeable and cover the entire area of the aquifers. The other two confining units are less extensive and are thinner. These units allow water to flow between the principal aquifers. There are countless streams, rivers, and lakes that overlay the Colorado Plateaus Aquifers. The surface water bodies in this region provide a place for the aquifers to discharge. Some of the high altitude rivers and lakes may also provide recharge.

Permanent monitoring wells are not present in the vicinity of the Ballard Ponds. However, based on monitoring information from the western portion of the site, it is inferred that groundwater in this area generally flows to the west-northwest at an average hydraulic gradient of 0.015 ft/ft.

3.2 Surface Water Hydrology

Stormwater from the Site surface flows to a stormwater retention pond located on the southwestern portion of the Site (non-contact water pond #8). The Site vicinity topographically slopes to the west, towards the West Fork of Gallegos Canyon, which flows north to the San Juan River.

3.3 Land Use & Classification

Land use was determined by comparison of existing land use of the Site to the definitions for residential and non-residential (commercial/industrial) land use published in the applicable regulatory guidance. The Site is currently utilized as a gas plant; therefore, commercial/industrial land use is deemed appropriate for the Site.

4.0 BALLARD PONDS CLOSURE

The proposed closure activities include the removal of the Ballard Ponds located on the east-central portion of the Site.

The Ballard Ponds consist of two (2) lined water ponds originally designed as part of a hydrocarbon recovery system for liquids recovered from the Ballard operational area. The Ballard Ponds were constructed circa 1994 and lined with HDPE sheeting. Design specifications indicate that each sub-grade pond is 120 feet long on each side, with sloping sidewalls measuring 4 feet vertically from the bottom of the pond. These ponds are predominantly sub-grade, excavated into the native silty sand soils, and possess shallow berms which assist in anchoring the primary and secondary HDPE liners. A leak detection system underlies each of the ponds between the primary and secondary liners. Two (2) tanks and a separator are identified in the original Ballard discharge permit, and existed at the Site at one time. However, these tanks and the separator were never utilized, and were subsequently removed and placed in storage at the southwest corner of the Chaco Gas Plant. One unused concrete containment structure remains at the Site, located between the two ponds, and will be removed during closure activities. The Ballard Ponds are currently out of service. A copy of the construction plans for the Ballard Ponds is included in the original discharge permit in Appendix D.

4.1 Liner Removal

The Ballard Ponds were constructed utilizing HDPE and geotextile liners. The bottom liner is an HDPE liner that directly overlies a fine-grained bedding material. A leak detection system constructed of perforated polyvinyl chloride (PVC) pipe is located above the bottom liner and possesses a gravel pack around the pipe and fine-grained bedding material above the gravel. The intermediate liner is a geotextile fabric that protects the top liner and provides added structural integrity. The top liner is an HDPE liner that is in direct contact with the pond contents. During the completion of the Ballard Ponds closure activities, each of the two (2) HDPE liners and the geotextile liner associated with each of the ponds will be removed, cleaned of debris, characterized and disposed off-site in accordance with applicable local, state and federal regulations.

4.2 Confirmation Sampling

Subsequent to the removal of the liners from the Ballard Ponds, four (4) soil samples (one from each quadrant) will be collected from the exposed floor at each of the two ponds utilizing hand tools. These soil samples will be analyzed for TPH GRO\DRO, BTEX, and RCRA-8 metals.

Non-disposable sampling equipment will be cleaned using an Alconox® wash and potable water rinse prior to commencement of the project and between collection of each sample.

Soil samples will also be scanned with a PID to provide a field evaluation for the presence of volatile petroleum hydrocarbons that are below the instruments ionization potential.

Soil samples will be collected and placed in laboratory prepared glassware, sealed with custody tape and placed on ice in a cooler, which will be secured with a custody seal. The sample coolers and completed chain-of-custody forms will be relinquished to Hall Environmental analytical laboratory in Albuquerque, NM on a normal turnaround basis.

The soil samples collected from the confirmation soil borings will be analyzed for TPH GRO/DRO utilizing EPA method SW-846 #8015M and BTEX utilizing EPA method SW-846 #8021B. RCRA-8 Metals will be analyzed utilizing EPA method SW-846 #6010 and EPA method #747. A summary of the analysis, sample type, and EPA-approved methods are presented below:

Analysis	Sample Type	Number of Samples	Method
TPH GRO/DRO	Soil	8	SW-846 #8015M
BTEX	Soil	8	SW-846 #8021B
RCRA-8	Soil	8	SW-846 #6010 and EPA #746

4.3 Site Restoration

Directly upon completion of liner removal activities and receipt of satisfactory confirmation sample analyses, the area will be backfilled and returned to approximate surrounding grade. The reclaimed Ballard Pond area will be compacted utilizing the on-Site equipment.

4.4 Future Use of Site

The Site is expected to be utilized for industrial use as a natural gas processing plant and compression facility.

5.0 CLOSURE REPORT

Upon completion of the Ballard Ponds removal activities, a final closure report will be prepared for submittal to the OCD that will include documentation of field activities, a site plan detailing pertinent site features, photographic documentation, laboratory analytical results, an evaluation of closure results and recommendations concerning further action, if necessary.

6.0 SCHEDULE

Following OCD approval, it is estimated that closure of the Ballard Ponds will require approximately four (4) weeks; however, time estimations regarding the completion of proposed activities depend upon several factors, many of which cannot be pre-determined.

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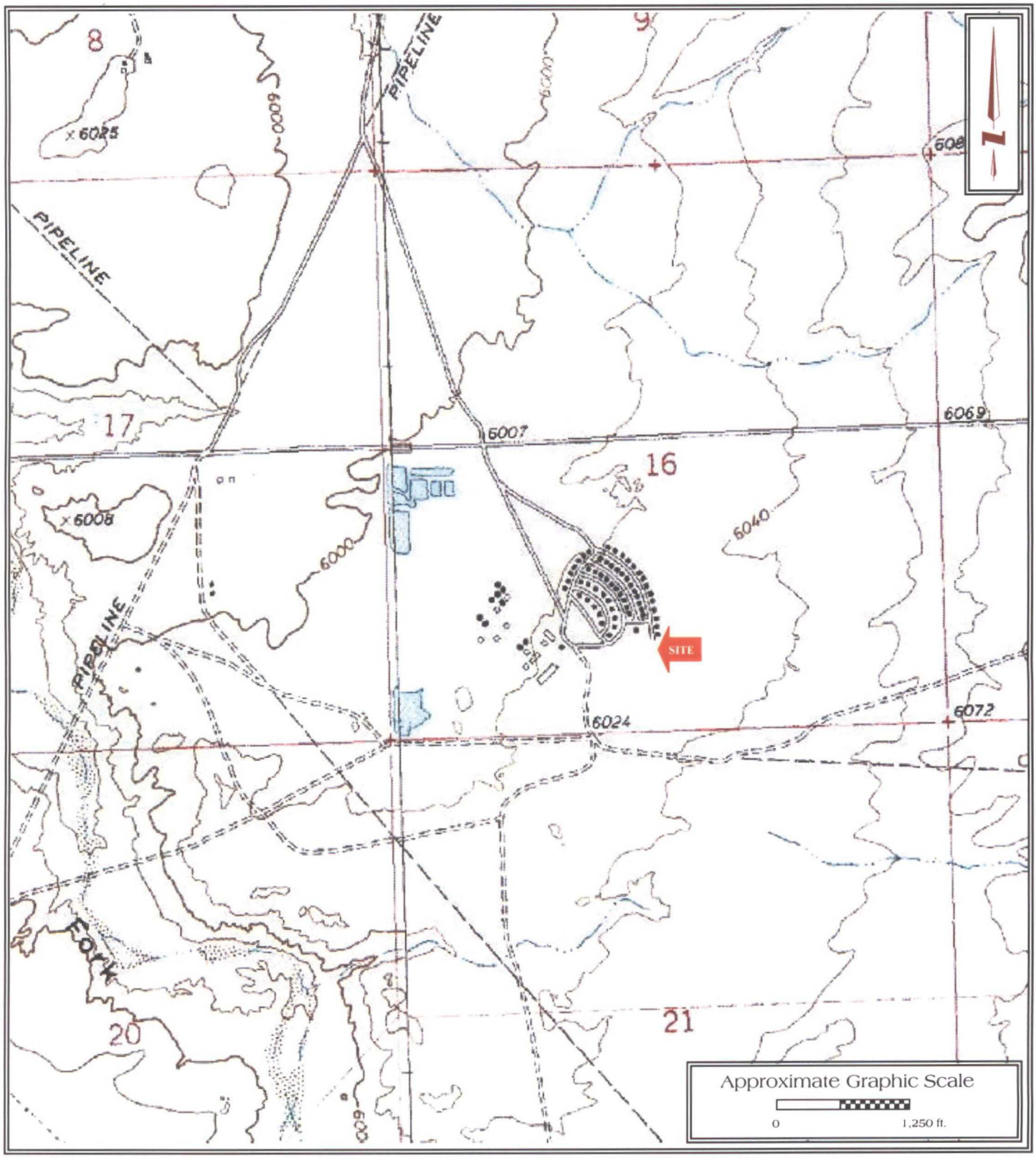
APPENDIX A

Figures



Ballard Pond Closure
Chaco Gas Plant – Ballard Ponds
NE ¼ of SW ¼, S16 T26N R12W
San Juan Co., New Mexico
N° 36' 28" 59.42"; W108° 07' 04.68"

SWG Project No. 0410001A

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FIGURE 1

Topographic Map
Carson Trading Post, NM Quadrangle
Contour Interval – 20 Feet
1995

Ballard Pond Closure
Chaco Gas Plant – Ballard Ponds
NE ¼ of SW ¼, S16 T26N R12W
San Juan Co., New Mexico
N° 36' 28" 59.42"; W108° 07' 04.68"

SWG Project No. 0410001A

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FIGURE 2
Site Vicinity Map
2010 Google Earth

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APPENDIX B

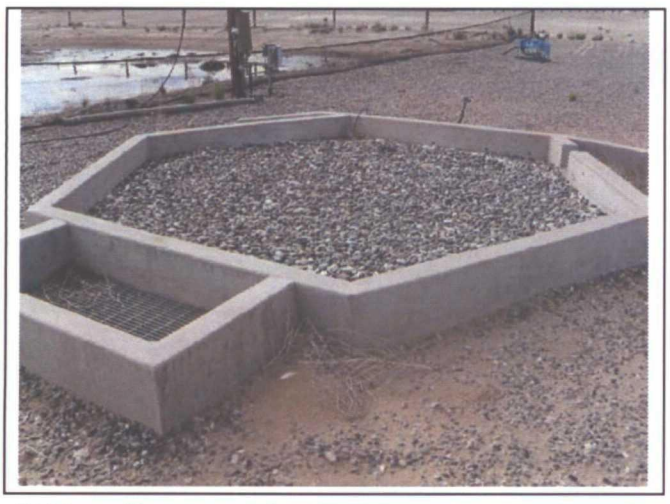
Photographic Documentation

1.) View of west Ballard Pond facing east.

2.) View of east Ballard Pond facing southwest.

3.) View of west Ballard Pond facing west.

4.) View of cable anchor.



5.) View of former containment structure.

6.) View of leak detection port.

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APPENDIX C

Limited Site Investigation Data

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TABLE 1
Chaco Gas Plant - Ballard Ponds
SOIL ANALYTICAL SUMMARY - from January 2011 LSI Report

Sample I.D.	Date	Sample Depth (feet)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)
New Mexico Entergy, Mineral & Natural Resources Department, Oil Conservation Division, Remediation Action Level			10	NE	NE	NE	50	100	
SB-1	11.30.10	10 to 11	<0.05	<0.05	<0.05	<0.10	<0.25	<5.0	<10
SB-1	11.30.10	23 to 24	<0.05	<0.05	<0.05	<0.10	<0.25	<5.0	<10
SB-2	11.30.10	15 to 16	<0.05	<0.05	<0.05	<0.10	<0.25	<5.0	<10
SB-2	11.30.10	18 to 19	<0.05	<0.05	<0.05	<0.10	<0.25	<5.0	<10
TSW-1	11.30.10	9 to 10	<0.05	<0.05	<0.05	<0.10	<0.25	<5.0	<10
TSW-2	11.30.10	10 to 11	<0.05	<0.05	<0.05	<0.10	<0.25	<5.0	<10
TSW-3	12.1.10	13 to 14	<0.05	<0.05	<0.05	<0.10	<0.25	<5.0	<10
TSW-4	12.1.10	17 to 18	<0.05	<0.05	<0.05	<0.10	<0.25	<5.0	<10

Note: Concentrations in **bold** and yellow exceed the applicable OCD Remediation Action Level
NE = Not Established

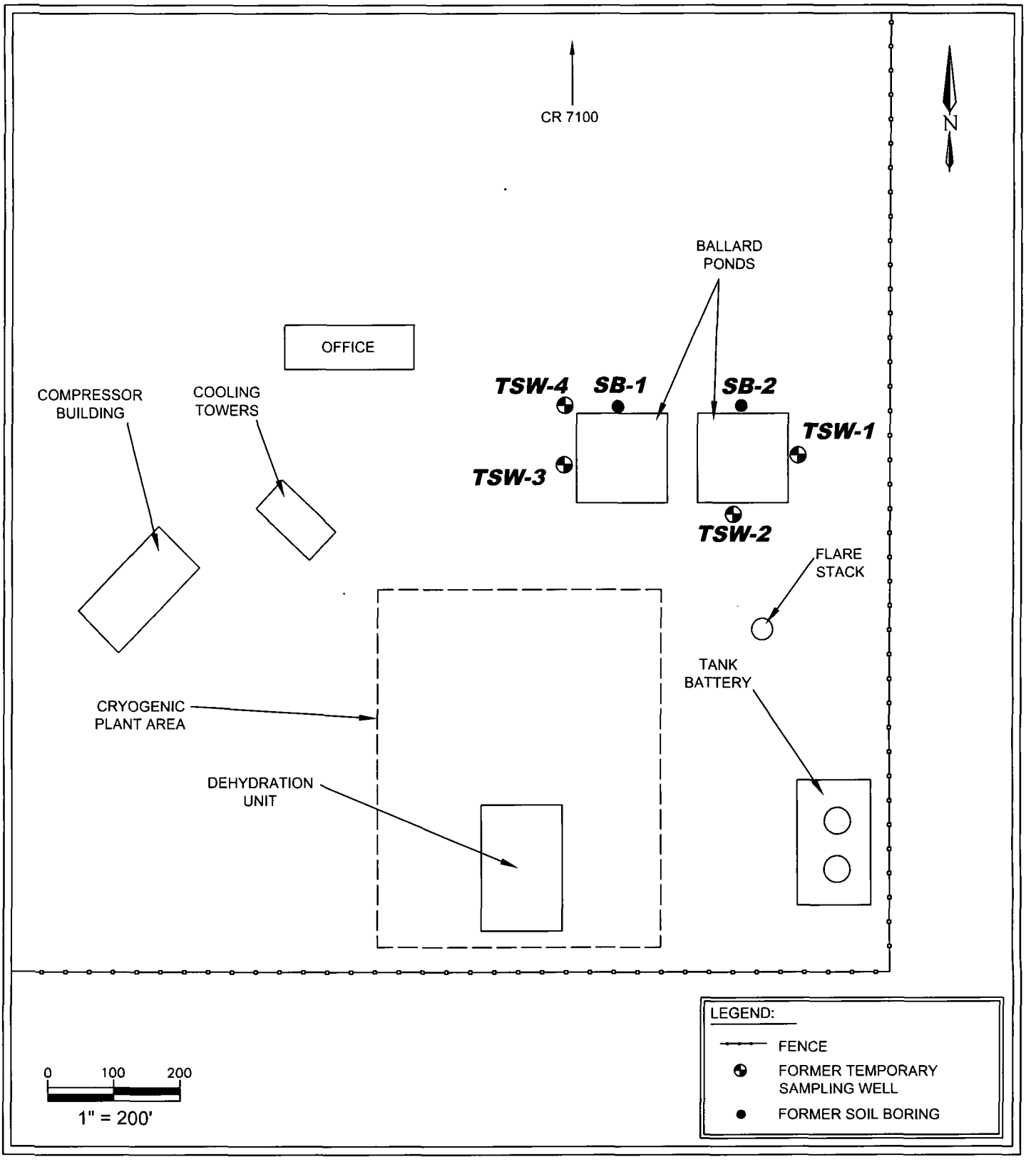
Southwest GEOSCIENCE

TABLE 2
Chaco Gas Plant - Ballard Ponds
GROUNDWATER ANALYTICAL SUMMARY - from January 2011 LSI Report

Sample I.D.	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TPH GRO (mg/L)	TPH DRO (mg/L)
New Mexico Water Quality Control Commission Groundwater Quality Standards		10	750	750	620	NE	NE
TSW-1	12.8.10	<1.0	<1.0	<1.0	<2.0	<0.05	<1.0
TSW-2	12.8.10	<1.0	1.3	<1.0	11	0.11	1.9
TSW-3	12.8.10	<1.0	<1.0	<1.0	<2.0	<0.05	<1.0
TSW-4	12.8.10	<1.0	<1.0	<1.0	<2.0	<0.05	<1.0

Note: Concentrations in **bold** and yellow exceed the applicable OCD Remediation Action Level

NE = Not Established



Ballard Pond Closure
Chaco Gas Plant - Ballard Ponds
NE 1/4 of SW 1/4, S16 T26N R12W
San Juan Co, New Mexico
N36° 28' 59.42"; W108° 07' 04.68"

SWG Project No. 0410001A

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SITE MAP ADAPTED FROM JANUARY 17, 2011 LSI REPORT

Client: Enterprise Field Services, LLC
Project Name: Chaco Gas Plant - Ballard Ponds
Project Location: San Jaun Co., NM
Project Manager: Kyle Summers

SOIL BORING LOG

DRILLING & SAMPLING INFORMATION

Date Started: 11.30.10
Date Completed: 11.30.10
Drilling Company: Earth Worx
Driller: Louis Trujillo
Geologist: Kyle Summers, C.P.G.
Boring Method: GP
Bore Hole Dia: 2.25"
Sampler OD: 2"

Soil Boring: SB-1
Project #: 0410001A
Drawn By: JWM
Approved By: KS

Well Diam: NA
Screen Size: NA
Screen Length: NA
Casing Length: NA

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
GP - GEOPROBE
AR - AIR ROTARY

SAMPLER TYPE
CB - FIVE FOOT CORE BARREL
SS - DRIVEN SPLIT SPOON
ST - PRESSED SHELBY TUBE

GROUNDWATER DEPTH
▽ AT COMPLETION
▽ AT WELL STABILIZATION

Monitor Well Detail	SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Interval	% Recovery	Groundwater Depth	FID/PID Readings (ppm)	BORING AND SAMPLING NOTES
	SURFACE ELEVATION:								
	SILTY SAND FILL, Moderate Yellowish Brown, with gravel, loosley to moderately compacted, no odor.							0	Native soil cleared using hydrovac from 0 to 8 feet bgs.
	SILTY SAND, Moderate Yellowish Brown, unconsolidated, no odor.		5					0	
				10'-11' 1245				0	
								0	
								0	
								0	
								0	
								0	
								0	
								0	
								0	
								3	
								0	
								0	
								0	
			15					0	
	SILTY CLAY, Moderate Yellowish Brown to Reddish Brown, semi-consolidated, well compacted, dry, no odor.							0	
								0	
								0	
								0	
			20					0	
								0	
								0	
				23'-24' 1300				0.	
	SILTY SANDSTONE, Moderate Yellowish Brown, very hard, dry, no odor.							0	
	Bottom of Boring @ 25'		25						
			30						

NOTE: This log is not to be used outside of the original report.

Southwest GEOSCIENCE

Client: Enterprise Field Services, LLC
Project Name: Chaco Gas Plant - Ballard Ponds
Project Location: San Jaun Co., NM
Project Manager: Kyle Summers

SOIL BORING LOG

DRILLING & SAMPLING INFORMATION

Date Started: 11.30.10
Date Completed: 11.30.10
Drilling Company: Earth Worx
Driller: Louis Trujillo
Geologist: Kyle Summers, C.P.G.
Boring Method: GP
Bore Hole Dia: 2.25"
Sampler OD: 2"

Soil Boring: SB-2
Project #: 04100001A
Drawn By: JWM
Approved By: KS

Well Diam: NA
Screen Size: NA
Screen Length: NA
Casing Length: NA

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
GP - GEOPROBE
AR - AIR ROTARY

SAMPLER TYPE
CB - FIVE FOOT CORE BARREL
SS - DRIVEN SPLIT SPOON
ST - PRESSED SHELBY TUBE

GROUNDWATER DEPTH
▽ AT COMPLETION
▼ AT WELL STABILIZATION

Monitor Well Detail	SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Interval	% Recovery	Groundwater Depth	FID/PID Readings (ppm)	BORING AND SAMPLING NOTES
	SURFACE ELEVATION:								
	SILTY SAND FILL, Moderate Yellowish Brown, with gravel, unconsolidated, moderately compacted, no odor.							<5	Native soil cleared using hydrovac from 0 to 8 feet bgs.
	SILTY SAND, Moderate Yellowish Brown, no odor. Slightly moist at 15.5 feet bgs.							<5	
	CLAY, Moderate Brown to Reddish Brown, stiff, moist to dry, no odor.							<5	
	SILTY SANDSTONE, Moderate Yellowish Brown, hard, dry, no odor.							<5	
	Bottom of Boring @ 29'							<5	

NOTE: This log is not to be used outside of the original report.

Southwest GEOSCIENCE

Client: Enterprise Field Services, LLC
Project Name: Chaco Gas Plant - Ballard Ponds
Project Location: San Jaun Co., NM
Project Manager: Kyle Summers

SOIL BORING/TEMPORARY SAMPLING WELL LOG

DRILLING & SAMPLING INFORMATION

Soil Boring / Temporary Sampling Well Number: TSW-1
Date Started: 11.30.10
Project #: 04100001A
Date Completed: 11.30.10
Drawn By: JWM
Drilling Company: Earth Worx
Approved By: KS
Driller: Louis Trujillo
Geologist: Kyle Summers, C.P.G.
Well Diam: 1"
Boring Method: GP
Screen Size: 0.010
Bore Hole Dia: 2.25"
Screen Length: 10'
Sampler OD: 2"
Casing Length: 12'

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
GP - GEOPROBE
AR - AIR ROTARY

SAMPLER TYPE
CB - FIVE FOOT CORE BARREL
SS - DRIVEN SPLIT SPOON
ST - PRESSED SHELBY TUBE

GROUNDWATER DEPTH
▽ AT COMPLETION
▼ AT WELL STABILIZATION

Monitor Well Detail	SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Interval	% Recovery	Groundwater Depth	PID/FID Readings (ppm)	BORING AND SAMPLING NOTES
	SURFACE ELEVATION:								
	SILTY SAND FILL, Moderate Yellowish Brown, with gravel, moderately compacted, no odor.							<5	Native soil cleared using hydrovac from 0 to 8 feet bgs.
								5	
								5	
								<5	
			5					3	
								5	
								3	
								2	
	SILTY SAND, Moderate Yellowish Brown, slightly moist, no odor. Saturated at 22 feet bgs.							8	
			10	9' to 10' 1500				10	
								12	
								7	
								10	
								8	
			15					6.7	Thin clay lenses at 13 feet bgs and 19 feet bgs.
								6	
								7	
								9	
								8	
			20					<5	
								6	
							▽	5	
	CLAY, Moderate Yellowish Brown, dry, no odor.							6.7	
	Bottom of Boring @ 23'		25						
			30						

NOTE: This log is not to be used outside of the original report.

Southwest GEOSCIENCE

Client: Enterprise Field Services, LLC
Project Name: Chaco Gas Plant - Ballard Ponds
Project Location: San Jaun Co., NM
Project Manager: Kyle Summers

SOIL BORING/TEMPORARY SAMPLING WELL LOG

DRILLING & SAMPLING INFORMATION

Soil Boring / Temporary Sampling Well Number: TSW-2
Date Started: 11.30.10
Project #: 0410001A
Date Completed: 11.30.10
Drawn By: JWM
Drilling Company: Earth Worx
Approved By: KS
Driller: Louis Trujillo
Geologist: Kyle Summers, C.P.G.
Well Diam: 1"
Boring Method: GP
Screen Size: 0.010
Bore Hole Dia: 2.25"
Screen Length: 10'
Sampler OD: 2"
Casing Length: 14'

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
GP - GEOPROBE
AR - AIR ROTARY

SAMPLER TYPE
CB - FIVE FOOT CORE BARREL
SS - DRIVEN SPLIT SPOON
ST - PRESSED SHELBY TUBE

GROUNDWATER DEPTH
▽ AT COMPLETION
▼ AT WELL STABILIZATION

Monitor Well Detail	SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Interval	% Recovery	Groundwater Depth	FID/PID Readings (ppm)	BORING AND SAMPLING NOTES
	SURFACE ELEVATION:								
	SILTY SAND FILL, Moderate Yellowish Brown, with gravel, no odor.							<5	Native soil cleared using hydrovac from 0 to 8 feet bgs.
	SANDY CLAY, Moderate Yellowish Brown, slightly moist, no odor.		5					<5	
	SILTY SAND, Moderate Yellowish Brown, moist, no odor. Saturated at 19 feet bgs.		10					<5	
	Clay, Moderate Yellowish Brown, moist, no odor. Dry from 22.5 feet bgs to 24 feet bgs.		15					<5	Thin lenses of silty sand at 10.5 feet bgs and 13 feet bgs.
	Bottom of Boring @ 24'		20				▽	<5	
			25					<5	
			30					<5	

NOTE: This log is not to be used outside of the original report.

Southwest GEOSCIENCE

Client: Enterprise Field Services, LLC
Project Name: Chaco Gas Plant - Ballard Ponds
Project Location: San Jaun Co., NM
Project Manager: Kyle Summers

SOIL BORING/TEMPORARY SAMPLING WELL LOG

DRILLING & SAMPLING INFORMATION

Date Started: 12.01.10
Date Completed: 12.01.10
Drilling Company: Earth Worx
Driller: Louis Trujillo
Geologist: Kyle Summers, C.P.G.
Boring Method: GP
Bore Hole Dia: 2.25"
Sampler OD: 2"

Soil Boring / Temporary Sampling Well Number: TSW-3
Project #: 04100001A
Drawn By: JWM
Approved By: KS
Well Diam: 1"
Screen Size: 0.010
Screen Length: 10'
Casing Length: 14'

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
GP - GEOPROBE
AR - AIR ROTARY

SAMPLER TYPE
CB - FIVE FOOT CORE BARREL
SS - DRIVEN SPLIT SPOON
ST - PRESSED SHELBY TUBE

GROUNDWATER DEPTH
▽ AT COMPLETION
▼ AT WELL STABILIZATION

Monitor Well Detail	SOIL CLASSIFICATION SURFACE ELEVATION:	Stratum Depth	Depth Scale	Sample No.	Sample Interval	% Recovery	Groundwater Depth	FID/PID Readings (ppm)	BORING AND SAMPLING NOTES
	SILTY SAND FILL, Moderate Yellowish Brown, with gravel, no odor.							<5	Native soil cleared using hydrovac from 0 to 8 feet bgs.
	SILTY SAND, Moderate Yellowish Brown, slightly moist, no odor. Saturated at 19 feet bgs.		5					<5	
								<5	
								<5	
								<5	
								<5	
								<5	
								<5	
								<5	
			10					<5	
								<5	
								<5	
								<5	
								<5	
				13' to 14' 1015				5	
			15					<5	
								<5	
								<5	
							▽	<5	
								<5	
	CLAY, Moderate Brown to Reddish Brown, dry, no odor.		20					<5	
								<5	
								<5	
								<5	
	Bottom of Boring @ 24'		25						
			30						

NOTE: This log is not to be used outside of the original report.

Southwest GEOSCIENCE

Client: Enterprise Field Services, LLC
Project Name: Chaco Gas Plant - Ballard Ponds
Project Location: San Jaun Co., NM
Project Manager: Kyle Summers

SOIL BORING/TEMPORARY SAMPLING WELL LOG

DRILLING & SAMPLING INFORMATION

Date Started: 12.01.10
Date Completed: 12.01.10
Drilling Company: Earth Worx
Driller: Louis Trujillo
Geologist: Kyle Summers, C.P.G.
Boring Method: GP
Bore Hole Dia: 2.25"
Sampler OD: 2"

Soil Boring / Temporary Sampling Well Number: TSW-4
Project #: 04100001A
Drawn By: JWM
Approved By: KS

Well Diam: 1"
Screen Size: 0.010
Screen Length: 10'
Casing Length: 14'

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
GP - GEOPROBE
AR - AIR ROTARY

SAMPLER TYPE
CB - FIVE FOOT CORE BARREL
SS - DRIVEN SPLIT SPOON
ST - PRESSED SHELBY TUBE

GROUNDWATER DEPTH
▽ AT COMPLETION
▼ AT WELL STABILIZATION

Monitor well Detail	SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Interval	% Recovery	Groundwater Depth	FID/PID Readings (ppm)	BORING AND SAMPLING NOTES
	SURFACE ELEVATION:								
	SILTY SAND FILL, Moderate Yellowish Brown, with gravel, no odor.							<2	Native soil cleared using hydrovac from 0 to 8 feet bgs.
	SILTY SAND, Moderate Yellowish Brown, slightly moist, no odor. Saturated at 18.5 feet bgs.		5					<2	
								<2	
								<2	
								<2	
			10					<2	
								<2	
								<2	
								<2	
								<2	
								<5	
								<5	
								<5	
			15					<5	
								<5	
								<5	
								<5	
				17' to 18' 1105			▼	<3	
			20					<3	
								<3	
								<3	
								<3	
								<3	
	CLAY, Dark Yellowish Brown, dry, no odor.								
	Bottom of Boring @ 24'		25						
			30						

NOTE: This log is not to be used outside of the original report.

Southwest GEOSCIENCE

Southwest GEOSCIENCE

APPENDIX D

Supporting Documentation

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

GARY E. JOHNSON
Governor
Jennifer A. Salisbury
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

July 2, 2001

Mr. David Bays
El Paso Natural Gas Co.
614 Reilly Avenue
Farmington, NM 87401

Dear Mr. Bays:

Your request, of April 26, 2001, to close the discharge plan on the Ballard Hydrocarbon Recovery Facility (GW-71-1) is hereby approved. This facility will be incorporated into GW-71 for the Chaco Gas Plant.

My inspection of June 28, 2001 showed that this facility apparently had never been operated and was located on the Chaco Plant property. Since the wastewater ponds have already been incorporated into the Chaco Plant, it is practical to incorporate the HC recovery unit as well.

Should El Paso Field Services place this HC recovery unit back in operation, please advise this office.

If you have any questions please contact me at (505) 476-3492, or e-mail me at emartin@state.nm.us.

New Mexico Oil Conservation Division

Edwin E. Martin
Environmental Bureau

cc: OCD Aztec Office

EPFS

EL PASO FIELD SERVICES

BALLARD HYDROCARBON RECOVERY FACILITY DISCHARGE PLAN Number GW-071-1

January 1996

Prepared for:

NEW MEXICO OIL CONSERVATION DIVISION

2040 S. Pacheco

Santa Fe, New Mexico 87505

El Paso Field Services Company
P. O. Box 99234
El Paso, Texas 79999-9234
(915) 541-5200

This Discharge Plan has been prepared in accordance with Oil Conservation Division "Guidelines for the Preparation of Ground Water Discharge Plans at Natural Gas Processing Plants".

I. Type of Operation

El Paso Natural Gas Company (EPNG) proposes to modify the existing wastewater handling facilities at the Ballard Hydrocarbon Recovery Facility by the addition of a second lined evaporation pond. Construction drawings for the proposed pond are attached behind tab C Currently installed Facility equipment is:

one 120 barrel aboveground steel tank
one 50 barrel below ground classifier tank
one electrically heated separator
a 120 foot by 120 foot by 4 foot deep evaporation pond.

El Paso Field Services Company is the owner and will operate the facility.

II. Operator/Legally Responsible Party and Local Representative

Legally Responsible Party:
Hugh A. Shaffer
Vice President, Operations and Engineering
El Paso Field Services Company
100 N. Stanton
El Paso, TX 79901
(915) 541-5200

Local Representative:
Sandra Miller
Superintendent, Environmental Compliance
El Paso Field Services Company
614 Reilly Ave.
Farmington New Mexico 87401
(505) 599-2141 24 hour - (505) 325-2841

Facility Operator:
El Paso Field Services Company
Ballard Pipeline District
Bloomfield, New Mexico 87413
(505) 632-0619

III. Location of Facility

The Facility is located in the southwest 1/4 of Section 16, T26N, R12W, of San Juan County, New Mexico. The Facility is approximately 18 miles southwest of Bloomfield, NM, adjacent to the El Paso Natural Gas Co. Chaco Gasoline Plant. A topographic map is attached under Tab A.

IV. Landowner

El Paso Field Services Company
P. O. Box 99234
El Paso, Texas 79999-9234

V. Facility Description

A plot plan of the facility indicating location of fences, gates, and equipment on the facility is attached at Tab B. The proposed new evaporation pond cell is located immediately west of the existing pond.

VI. Sources and Quantities of Effluent

The Ballard Hydrocarbon Recovery Facility primarily receives excess water transferred from the Kutz Hydrocarbon Recovery Facility lined pond. (See Discharge Plan GW-049-1).

The Facility also receives produced water and nonhazardous industrial wastewater from each of the following facilities:

Liquids Source	Est. Volume (barrels per year)
Ballard Station	250
Kutz Station	250
Largo Station	200
Lindrith Station	150
Hart Canyon #1 Station	150
Hart Canyon #2 Station	150
Hart Canyon #3 Station	150
San Juan Basin Gathering System	2,000
Transferred from Kutz Hydrocarbon Recovery Facility	17,000
Total Estimated Throughput	20,300

VII. Transfer and Storage of Process Fluids and Effluent

A. Water and Wastewater Schematic

The plot plan at Tab B indicates the location of the wastewater system components. All waste water delivered to the Facility is off loaded directly into the evaporation pond(s).

B. Specifications

Pipelines - All wastewater and hydrocarbon liquids piping is above ground.

C. Fluids Disposal and Storage Tanks

The hydrocarbons recovered at the Facility are recycled. The water fraction is separated and is discharged into the double lined evaporation pond(s).

D. Prevention of Unintentional and Inadvertent Discharges

The above ground storage tank is bermed to contain one-third more that the tank contents. It is also placed on a gravel so that leaks can be visually detected. The below grade 50 bbl. tank is constructed of single walled steel. All Facility equipment except the evaporation pond is currently out of service.

There will be no chemical or drum storage area. No chemicals are used at the Facility.

VIII. Effluent Disposal

Offsite Disposal

All liquids from this site will be handled in accordance with OCD and NMED regulations. All hydrocarbon liquids will be recycled if possible.

EPNG has the following hauling/disposal contracts:

Hauling Agent:

Three Rivers Trucking
603 E. Murray Drive
Farmington, NM 87401
(505) 325-8017

or

Chief Transport Co.
604 West Piñon
Farmington, NM 87401
(505) 325-2396

Final Disposal:

Oil:
Hay Hot Oil, Inc.
P.O. Box 2
Cortez, CO 81321
(303) 565-8637

Water:
On Site Evaporation Pond(s)

IX. Inspection, Maintenance and Reporting

The site will be visited on a regular basis by EPNG employees. The tanks, piping, and pond leak detection system will be inspected for any leaks or spills.

X. Spill/Leak Prevention and Reporting (Contingency Plans)

Since the site will be visited on a regular basis by EPNG, any leaks, spills, and or drips will be identified. Regular scheduled maintenance procedures will also help to assure that the equipment remains functional and thus the possibility of spills or leaks is further minimized. EPNG Compliance will be notified upon discovery of any leaks which result in any soil contamination.

Leaks, spills, and drips will be handled in accordance with NMWQCR 1-203 and OCD Rule 116 as follows:

A) Small spills will be absorbed with soil and shoveled into drums for off-site disposal. If the soil is an "exempt" waste, the soil will be disposed at Envirotech or other OCD approved landfarm facility. If the soil is an "nonexempt" waste the soil will be characterized and disposed according to the analytical profile.

B) Large spills will be contained with temporary berms. Free liquids will be pumped out by a vacuum truck. Any hydrocarbon liquids will be recycled. Any contaminated soil will be disposed of as discussed in the paragraph above.

C) Verbal and written notification of leaks or spills will be made to OCD in accordance with Rule 116.

D) All areas identified during operations as susceptible to leaks or spills will be bermed or otherwise contained to prevent the discharge of effluent.

E) EPNG personnel will carry oil absorbent booms in their trucks. The booms will be used as needed to contain any spills or leaks. The booms will be disposed of according to OCD and NMED guidelines.

XI. Site Characteristics

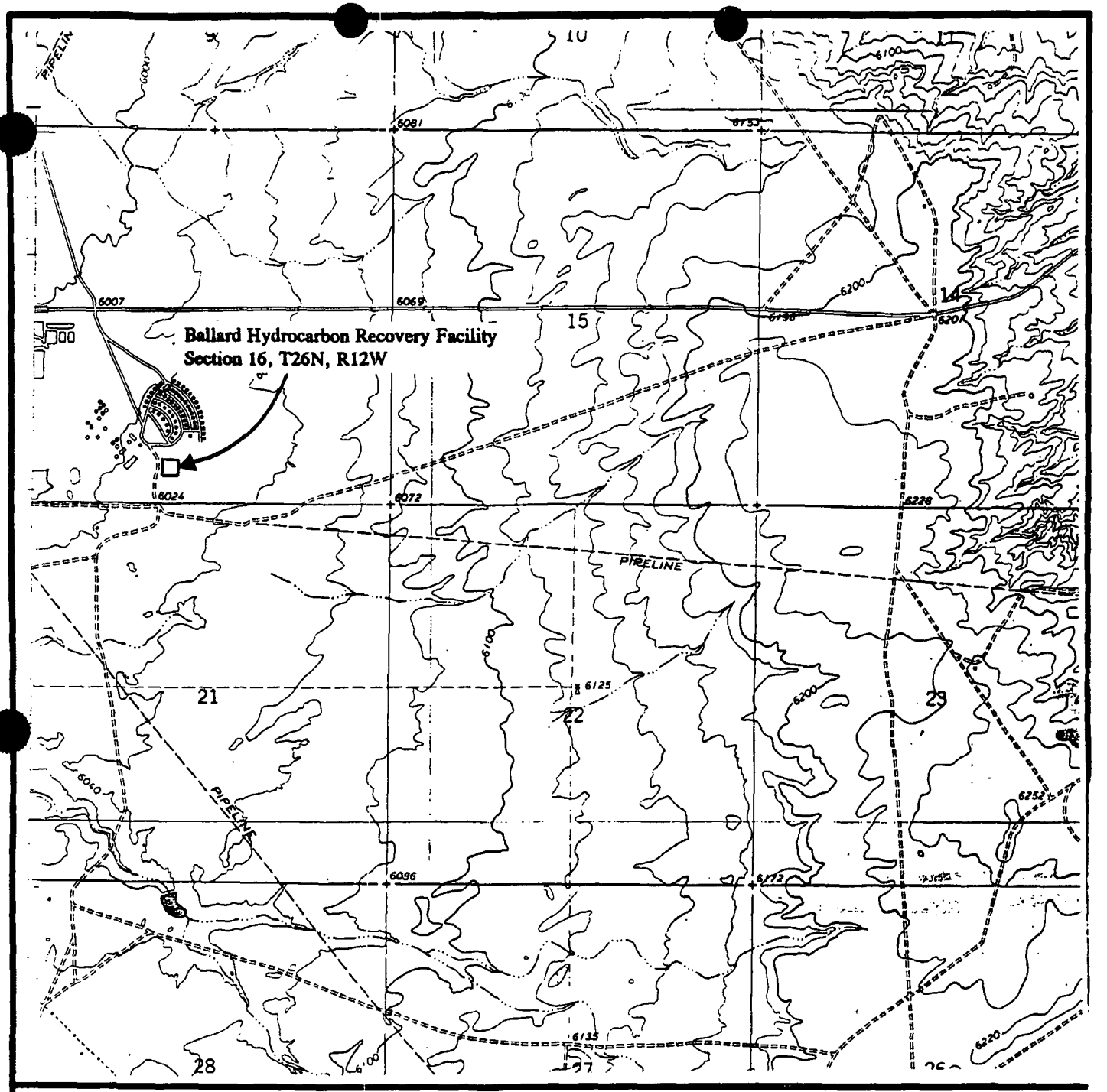
The facility is located immediately adjacent to the El Paso Natural Gas Co. Chaco Gas Plant. Hydrogeological information is detailed in the Chaco Discharge Plan, Number GW-071.

XIII. Affirmation

I here by certify that I am familiar with the information contained in and submitted with this discharge plan for the Trunk A Compressor Station, and that such information is true, accurate, and complete to the best of my knowledge and belief.

David Bays, REM
Sr. Environmental Scientist

Date: January 30, 1995



N
W E
S

Carson Trading Post Quadrangle
7.5 Minute Series Quadrangle
Prepared for: Ballard Hydrocarbon Recovery Facility

Quadgrangle Location

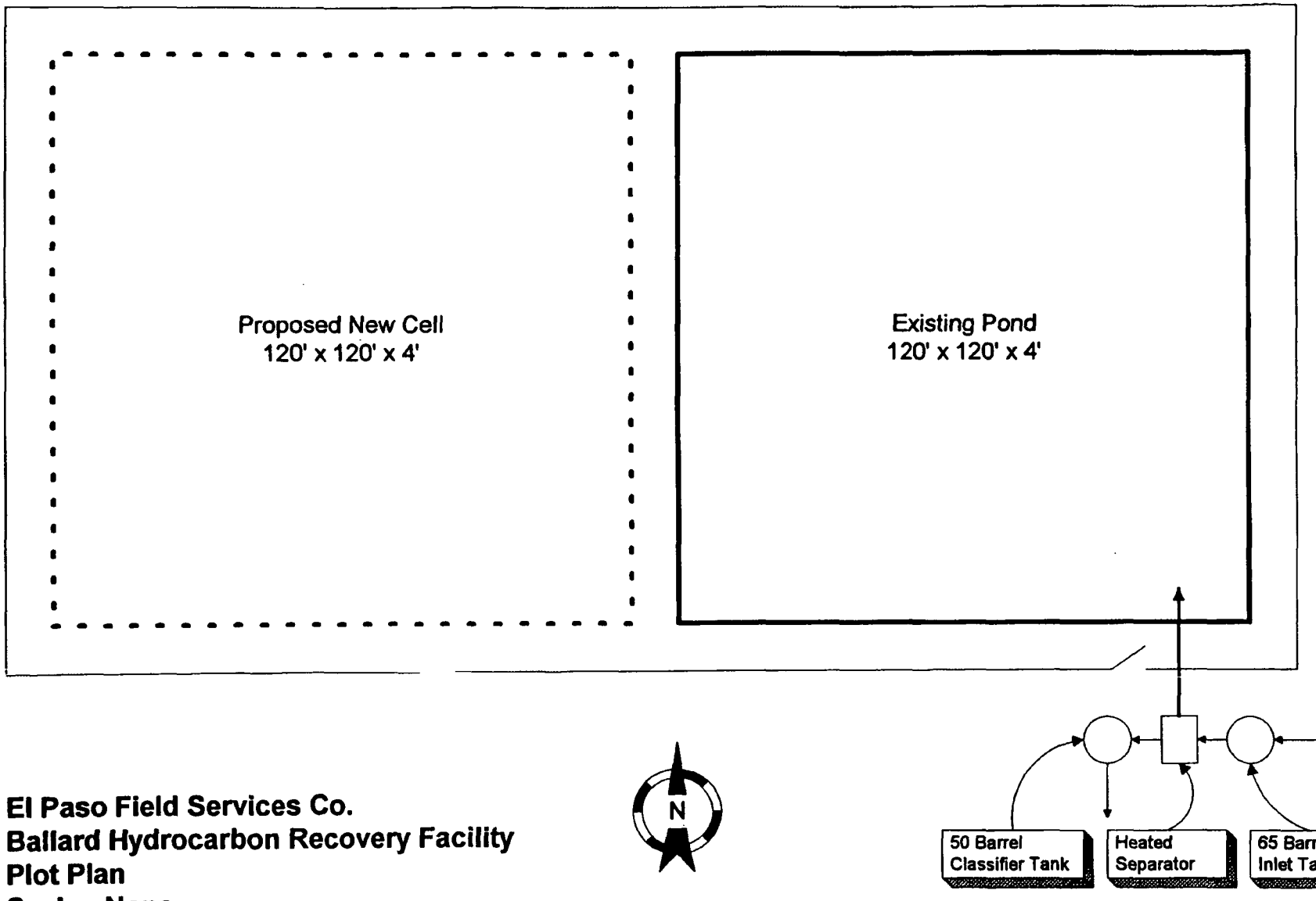
SCALE 1:24 000

1 0 1/2 1 MILE

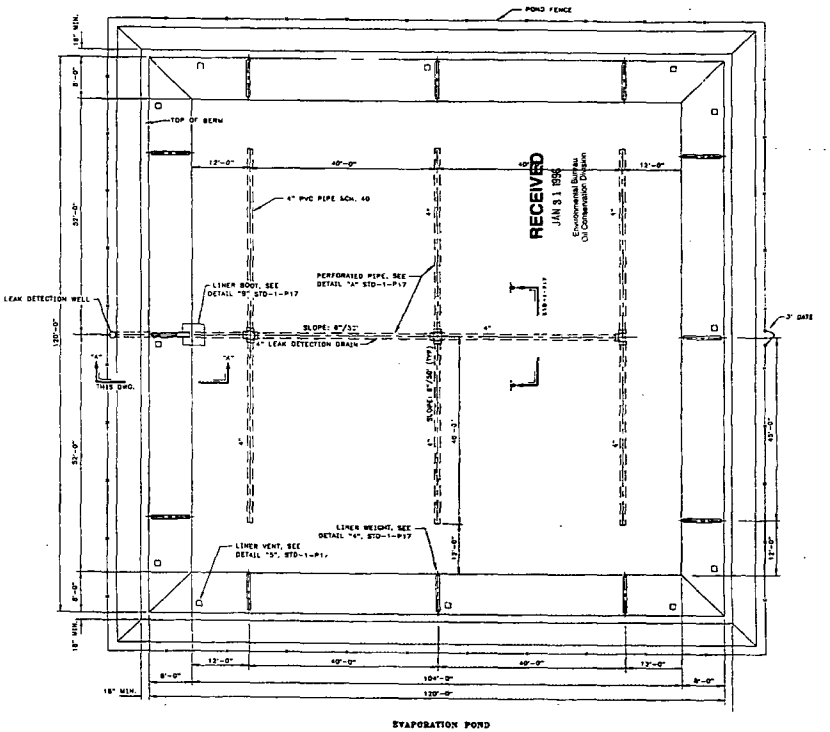
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

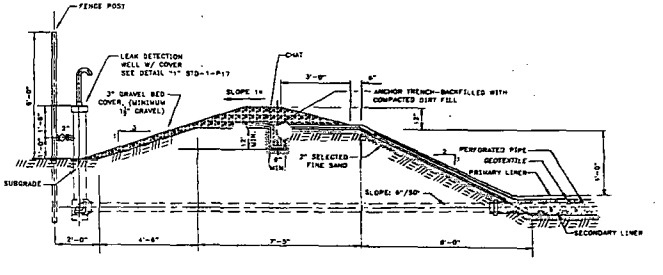
CONTOUR INTERVAL 20 FEET



El Paso Field Services Co.
Ballard Hydrocarbon Recovery Facility
Plot Plan
Scale: None



EVAPORATION POND
PLAN
SCALE: 1/32"=1'-0"



SECTION "A-A"
SCALE: 3/8 = 1'-0"

LEGEND

DWG. NO.	TITLE
REFERENCE DRAWINGS	

NO.	DATE	BY	DESCRIPTION
REVISIONS			

W.O.	APP. PRT. SEP.	DATE	TO	W.O.
PRINT RECORD				

ENG. RECORD		DATE
DRAFTING DESIGN	JM	1/29/87
COMPUTER GRAPHICS	MD	2/29/87
CHECKED		
PROJECT APPROVAL		
DESIGN APPROVAL		
COMPUTER SAME NAME		STD117

El Paso NATURAL GAS COMPANY

EVAPORATION POND
PLANS AND SECTIONS

SCALE: NOTED	DWG. NO.	STD-1-P16	REV.
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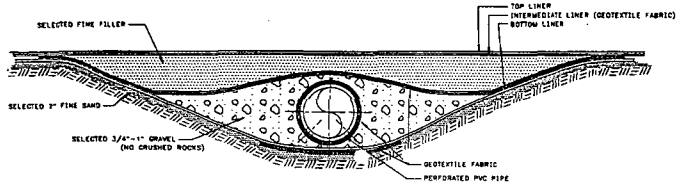

SECTION "B-B"
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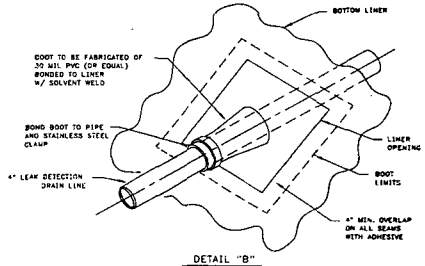
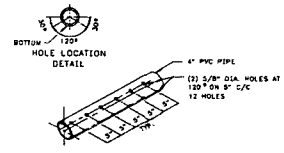
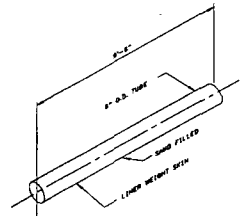


DETAIL "B"
LINER BOOT
SCALE: NONE
STD-1-P16



DETAIL "A"
PERFORATED PIPE
SCALE: NONE



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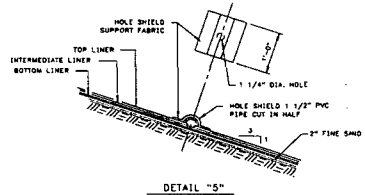
POND LINER WEIGHT
STD-1-P16
SCALE: NONE



DETAIL "5"
LINER VENT DETAIL
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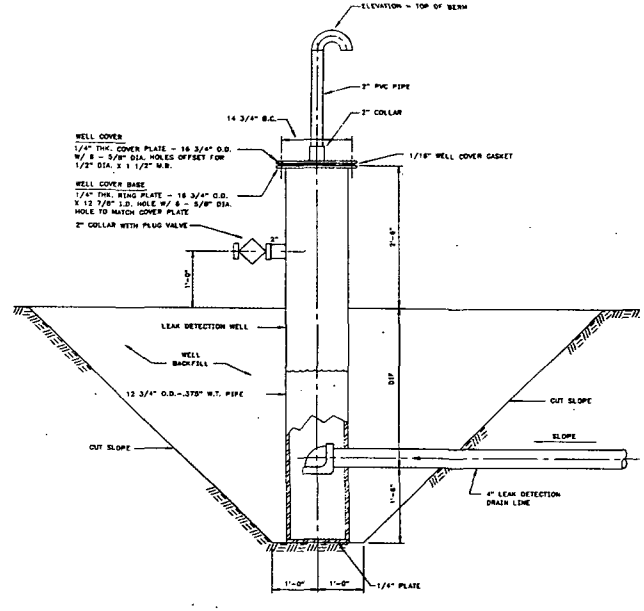
TYPICAL 16 PLACES
SCALE: NONE



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LEAK DETECTION WELL
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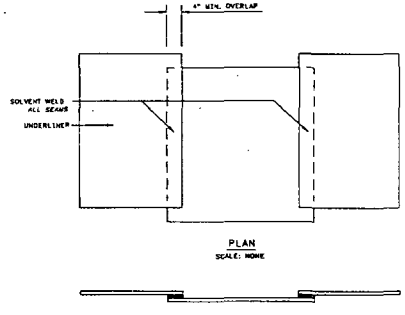
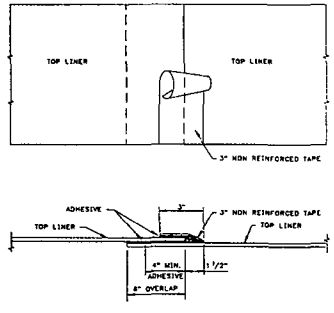


PLAN
SCALE: NONE

ELEVATION

UNDERLINER SEAM SEALING DETAIL



TOP LINER
SEAM SEALING DETAIL
SCALE: NONE

LEGEND

REFERENCE DRAWINGS	
STD-1-P17	EVAPORATION POND
DWG. NO.	TITLE

NO.	DATE	BY	DESCRIPTION	W.O.	APP.	PRT. REF.	DATE	TO	W.O.
REVISIONS				PRINT RECORD					

ENG. RECORD		DATE
DRAFTING DESIGN	JH	9/17/87
COMPUTER GRAPHICS	MB	9/17/87
CHECKED		
PROJECT APPROVAL		
DESIGN APPROVAL		
COMPUTER SAVE NAME	STD144	

El Paso
NATURAL GAS COMPANY

EVAPORATION POND
MISCELLANEOUS SECTIONS AND DETAILS

SCALE: NOTED	DWG. NO. STD-1-P17	REV.
W.O.:		