AP - 41

STAGE 1 & 2 REPORTS

DATE: Dec. 2008

PREMIER
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December 16, 2008

Mr. Edward Hansen
New Mexico Oil Conservation Division
Environmental Bureau
1220 Saint Francis Drive
Santa Fe, NM 87505

RE: Soil Closure Report, East Side NMSR18
Hugh Gathering Site, Lea County, NM
Unit Letters M of Section 12 and P of Section 11
Township 21 South, Range 37 East
Plains SRS No.: 2002 - 10235
Premier Project No. 207032
NMOCD Ref. No. AP-0041

Dear Mr. Hansen:

Please find enclosed one copy of the Soil Closure Report for remediation activities completed at the East Side of New Mexico State Road 18 – NMSR18 for the Hugh Gathering Site in Lea County, New Mexico. The activities were completed to meet the requirement specified in the approved State 1 and State 2 Abatement Plan.

Upon your review, if you have any questions or concerns, please call me at (281) 240-5200 ext. 2703.

Sincerely,

Chan Patel
Senior Project Manager

W.A. Shook, P.E.
Senior Engineer

Enclosure

cc: Mr. Jeff Dann, P.G. (Plains Marketing, L.P.)

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December 16, 2008

Mr. Jeff Dann, P.G.
Senior Environmental Specialist
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333 Clay Street, Suite 1600
Houston, Texas 77002

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Upon your review, if you have any questions or concerns, please call me at (281) 240-5200 ext. 2703.

Sincerely,

Chan Patel
Senior Project Manager

W.A. Shook, P.E.
Senior Engineer

Enclosure

cc: Mr. Edward Hansen
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1220 Saint Francis Drive, Santa Fe, NM 87505

Mr. Jason Henry
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3112 West US Highway 82
Lovington, NM 88260

Mr. Shane Diller, Field Supervisor Premier – Midland, TX (1 copy)
Chan Patel, Premier Environmental Services, Inc. – Houston, TX (2 copies)

SOIL CLOSURE REPORT
EAST SIDE NMSR18
HUGH GATHERING

PLAINS SRS NO.: 2002-10235

UL-P, SECTION 11, T21S, R37E

Lea County, New Mexico

NMOCD No. AP-0041

PREPARED FOR

PLAINS MARKETING, L.P.

333 CLAY STREET, SUITE 1600
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PREPARED BY

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Project No. 207032.00

December 2008

Chan Patel
Senior Project Manager

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1.0 INTRODUCTION

1.1 Objectives and Site Background

This report includes a summary of soil remediation activities completed on the east side of New Mexico State Road (NMSR18) at the Hugh Gathering Site, located in Unit Letter P (the SE¼ of the SE¼) of Section 11, T21S, R37E, of Lea County, New Mexico, approximately 3 miles northeast of Eunice, New Mexico (Figure 1, latitude 32°29'11.007"N and longitude 103°07'33.864"W). Premier Environmental Services Inc., (Premier) was retained by Plains Pipeline L.P. (Plains) to complete remediation and reporting activities undertaken at the Hugh Gathering Site, SRS No. 2002-10235. The release was initially reported internally May 2002, to be less than 1 barrel (bbl) of crude oil because of the small diameter size of the surface impact; however, during replacement of the line, EOTT Energy Pipeline (EOTT) amended the release quantity to 50 bbls. The initial response notification form (Form No. C-141, Appendix K), prepared by Plains, provides documentation of reporting of the release to Larry Johnson with the New Mexico Oil Conservation Division (NMOCD). The leak was apparently caused by corrosion of a 6" steel pipeline which was subsequently replaced, tested and put back into service. None of the 50-bbl crude oil release was recovered. Figures referenced in this report are located in Appendix A. Soil closure activities were previously conducted by Plains for the impacted soils on the west side of the New Mexico State Highway 18 and are discussed in the document titled *2006 Soil Closure Report for the West Side of NMSR18,* dated May 2007.

1.2 Previous Environmental Investigations

At the time of the intital release, the pipeline was owned by EOTT Energy Pipeline (the EOTT name changed to Link Energy in October 2003) and as of April 1, 2004, Plains Pipeline, L.P. (Plains) purchased the assets from Link Energy. According to Environmental Plus, Inc. (EPI) documents, the May 2002 release resulted in crude oil impacting two areas on either side of State Highway 18 (the East and West release areas). A surface area measuring approximately 98' x 12' was initially impacted by the release on the west side of New Mexico State Road 18 (NMSR 18). This impacted area was associated with a raised vent pipe connected to an underground conduit that passes under the highway. Near surface impacted soils were excavated and disposed of in an NMOCD approved landfarm.

West Side NMSR18

Soil and groundwater delineation activities were initiated in September 2002 when phase separated hydrocarbons (PSH) were found in groundwater from monitor well (MW-1) at approximately 60 feet below ground surface (bgs). In June and July 2003, with NMOCD approval, groundwater monitoring wells MW-2, MW-3, MW-4 and MW-5 were installed on the west side of NMSR 18. Recovery of PSH from groundwater monitoring wells MW-1, MW-2 and MW-4 was initiated on a weekly basis and in August 2003, daily recovery began using a gasoline-powered eductor type PSH recovery system.

In 2004, with NMOCD approval, groundwater monitoring wells MW-6, MW-7, MW-8, MW-9, MW-10, MW-11 and MW-12 were installed on the west side of NMSR18 to further delineate the horizontal extent of PSH and dissolved phase hydrocarbons. PSH was observed in groundwater monitoring wells MW-8, MW-9 and MW-10. Dissolved phase hydrocarbons (benzene, toluene, ethylbenzene, and total xylenes (BTEX) and polynuclear aromatic hydrocarbons (PAH)) were detected in the 2004 analytical results for groundwater monitoring well MW-5. PSH was present in monitoring wells MW-1, MW-2, MW-3, MW-4, MW-8, MW-9 and MW-10 at thicknesses ranging from 0.25 feet to 11.13 feet. By December 2004, 600 gallons of PSH had been recovered.

In May 2005, Plains submitted a Stage 1 and Stage 2 Abatement Plan (Abatement Plan) to the NMOCD for approval (prepared by EPI). After a public comment period, the NMOCD subsequently approved implementation of the Abatement Plan in a November 5, 2005 letter to Plains (Appendix C). The Abatement Plan was implemented and a report titled (*2006 Soil Closure Report for the West Side of NMSR18*) was prepared, submitted, and received NMOCD approval in 2007. The 2006 Soil Closure Report for the West Side of NMSR18 details the activities associated with the investigations, excavations and remedial response actions completed on the west side of NMSR18 to address affected soil from the 2002 release. Since excavation work has been completed on the west side and the NMOCD closure has been secured, the remaining discussion in this report pertains only to the remediation conducted on the east side of NMSR18 as presented below.

East Side NMSR18

The release on the east side of NMSR18 was initially delineated with the installation of borings BH1 to BH8 in September 2002 and further delineated by borings BH9 to BH16. Soil samples collected from boring BH12 identified hydrocarbon impacted soils to 35 feet bgs. Additional details associated with the subsurface investigations undertaken at the site are discussed in Section 3.1 of this report.

To address the hydrocarbon impact on the east side of NMSR18, a work plan dated May 2, 2008 was prepared and submitted to the NMOCD and approved. A copy of the approved work plan is enclosed in Appendix D.

The remainder of this report details the activities associated with the implementation of the work plan and the investigations, excavations and remedial response actions completed only on the east side of NMSR18 to address the affected soil from the 2002 release.

1.3 Limitations

Premier has examined and relied upon the file information provided by Plains and their representatives and conversations with Plains personnel familiar with the site in question. Premier has not conducted an independent examination as to the validity of the information contained in the Plains files or the files of their representatives; furthermore, we assume the genuineness of the documents reviewed and that the information provided in these documents and revealed during the interviews of Plains personnel are true and

accurate. Premier has prepared this report using the level of care and professionalism in the industry for similar projects under similar conditions. Premier will not be responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed at the time this report was prepared. Premier believes the conclusions stated herein are factual, but no guarantee is made or implied.

2.0 REGULATORY FRAMEWORK

In New Mexico, the NMOCD oversees and regulates oil, gas and geothermal activities, including enforcement and compliance with environmental regulations. Guidance for cleanup of crude oil releases is provided in the NMOCD *Guidelines for Remediation of Leaks, Spills and Releases* (August 13, 1993) document. Primary contaminants, or chemicals of concern (COCs), associated with crude oil releases include TPH and BTEX. Guidelines for evaluation of these COCs in soil are evaluated based on a Site Ranking System. The ranking system estimates the likelihood of exposures to the COCs and is based on the following three parameters to protect groundwater and surface water resources:

- Depth to groundwater.
- Wellhead protection area.
- Distance to surface water body.

2.1 NMOCD Site Ranking

Based on the proximity of the Site to area water wells, surface water bodies, depth to groundwater and EPI's Abatement Plan, the Site has a NMOCD ranking score of **20 points**, with the soil remedial goals specified below in the Site Ranking Matrix.

Site Ranking Matrix

<table>
<tr><th>1. Groundwater</th><th>2. Wellhead Protection Area</th><th>3. Distance to Surface Water Body</th></tr>
<tr><td>If Depth to GW <50 feet: 20 points</td><td rowspan="2">If <1000' from water source, or, <200' from private domestic water source: 20 points</td><td><200 horizontal feet: 20 points</td></tr>
<tr><td>If Depth to GW >50 to 99 feet: 10 points</td><td rowspan="2">200-100 horizontal feet: 10 points</td></tr>
<tr><td>If Depth to GW >100 feet: 0 points</td><td rowspan="2">If >1000' from water source, or, >200' from private domestic water source: 0 points</td><td rowspan="2">>1000 horizontal feet: 0 points</td></tr>
<tr><td>Groundwater Score:20</td><td>Wellhead Protection Area Score: 0</td><td>Surface Water Score: 0</td></tr>
<tr><td colspan="3">Site Rank (1+2+3) =20+0+0=20</td></tr>
<tr><td colspan="4">Total Site Ranking Score and Initial Guidance Cleanup Concentrations</td></tr>
<tr><td>Parameter</td><td>20 or ></td><td>10</td><td>0</td></tr>
<tr><td>Benzene</td><td>10 ppm</td><td>10 ppm</td><td>10 ppm</td></tr>
<tr><td>BTEX</td><td>50 ppm</td><td>50 ppm</td><td>50 ppm</td></tr>
<tr><td>TPH</td><td>100 ppm</td><td>1000 ppm</td><td>5000 ppm</td></tr>
</table>

2.2 Soil Remediation Goals

Based on data gathered from previous investigations, guidelines outlined in EPI's ***Abatement Plan,*** and the November 5, 2005 NMOCD Remediation Plan approval letter, the following site-specific remediation standards were established:

- TPH target concentration of 1,000 mg/kg, benzene target concentration of 10 mg/kg and total BTEX target concentration of 50 mg/kg in excavation wall confirmation soil samples from surface to 8 feet bgs.

- TPH target concentration of 100 mg/kg, benzene target concentration of 10 mg/kg and total BTEX target concentration of 50 mg/kg in excavation wall confirmation soil samples from 8 feet bgs to groundwater at 58 feet bgs.

- For the base of the excavation, NMOCD approved a risk-based closure as an alternative to total removal of soils impacted above the site specific NMOCD remedial goals. The installation of an engineered barrier to prevent surface water infiltration and migration of COC to groundwater, and eliminating the groundwater exposure pathway (vertical transport mechanism) with a compacted clay or 20-mil high density polyethylene liner was required by NMOCD for a risk-based closure.

3.0 2006 SITE INVESTIGATIONS AND RESULTS

3.1 EPI Investigations – East Side of NMSR 18

EPI initially investigated the affected soils on the east side of NMSR18 in September 2002 with a subsurface investigation at the site that included the installation of eight borings (BH1 through BH8). This investigation was intended to define the extent of hydrocarbon impacts at the site, and therefore the borings were placed around the surface flow path of the crude oil release. The borings ranged in total depth from 15 to 30 feet bgs. Borings BH2, BH3, BH4, BH6, BH7 and BH8 were drilled to 15 feet bgs, BH1 was drilled to 20 feet bgs, and BH5 was drilled to 30 feet bgs. Analytical results for the soil samples collected from the east side of NMSR18 are presented in Table 1. Tables referenced in this report are located in Appendix B.

The analytical results showed hydrocarbon-affected soils at the base of boring BH1 (20 feet) at a TPH concentration of 11,740 mg/Kg. Analytical data from boring BH5 showed TPH concentration of 3,740 mg/Kg at a depth 25 feet bgs. However, at 30 feet bgs in BH5, the TPH concentration was lower than the method detection limit. EPI completed a second investigation on the east side of NMSR18 with the installation of boring BH14 (SB1) in June 2006. This boring was completed to a depth of 23 feet bgs where it met refusal. The analytical data collected from soil samples showed TPH and BTEX concentrations below NMOCD cleanup goals or below the method detection limit. The investigation was resumed in mid July 2006. Soil borings SB9 through SB13 were completed and soil samples collected and analyzed for TPH and BTEX. The analytical

results showed TPH concentration at 4,396 mg/kg, at 20 feet bgs in boring SB11. The boring could not be advanced beyond a depth of 22 feet bgs as a dense red brown sandstone layer was encountered. Boring BH13 was completed to 46 feet bgs. TPH concentration was below regulatory limit and the method detection limit at 40 feet bgs. Borings BH9 and BH10 were completed to 20 feet bgs. Soil samples collected and analyzed from these borings were all below the regulatory limit and below the method detection limit. Boring BH12 could not be advanced beyond 9 feet bgs. The soil sample at 5 feet was collected and analyzed and the concentrations were below regulatory limits and the method detection limit. Therefore, based on the evaluation of the soil data, groundwater was believed to be unaffected by the release.

4.0 2008 SOIL REMEDIATION ACTIVITIES - EAST SIDE OF NMSR 18

The objectives presented in the approved Abatement Plan were to:

- Excavate, where possible, the contaminated soil in the sidewalls of the excavation adjacent to NMSR 18
- Remove the bulk of the affected soil to the extent practicable
- Isolate and minimize migration of residual COCs in the base of the excavation in order to prevent further impact to groundwater. This could be achieved by installing a 2-foot thick compacted clay barrier.

To meet the objectives of the NMOCD approved Abatement Plan, a work plan dated May 2, 2008 was prepared, submitted to the NMOCD and approved. The implementation of the Abatement Plan and the work plan commenced with the excavation of the impacted surface soils containing the highest COC concentrations during July 2008. Premier supervised the removal of hydrocarbon-affected soil around the release area by Hungry Horse LLC. Approximately 960 cubic yards of impacted soils were excavated and transported to Lea Station Land Farm for treatment.

During July through October 2008, Premier supervised the excavation of affected soil, installation of the clay liner, and backfilling of the site by Hungry Horse. Premier collected confirmation soil samples, completed treatment of residual soils using Micro-Blaze Spill Control® (Micro-Blaze) in the side walls and base of the excavation, and installed a passive vapor ventilation system, at the site located on the Eastside of NMSR 18 (the McNeill Property) to meet NMOCD-approved remediation activities. The details of these activities are presented below.

4.1 Excavation Activities

Excavation of the upper 19 feet of hydrocarbon affected soil began on the east side of NMSR18 on July 7, 2008. Site limitations to excavation activities were associated with the right-of-way of NMSR18, overhead power lines, and a recently installed (April 2008) oil

well and its associated drilling pit located to the south of the planned excavation. Photographs taken during the 2008 excavation through backfilling activities are included in Appendix E.

A backhoe was used initially to excavate soil around the pipeline in the vicinity of the NMSR18 right-of-way directly under the power lines (Photograph No.1). The upper 4-5 feet of soil was removed in an area 20 feet by 10 feet around the pipeline. The backhoe was replaced with a track-hoe (excavator) that continued to remove affected soil from the excavation cautiously under the power lines. The affected soil removed was stockpiled on the east side of the excavation. Clean soil removed to create the ramps into the excavation, was stockpiled on the north side of the excavated area (Photograph No.2). The excavation was deepened in five foot intervals to allow treatment of residual affected soil in the west wall under NMSR18 right-of-way (Photograph Nos.3 & 4). The treatment process included injecting Micro-Blaze solution into the west wall of the excavation to a depth of five feet, using 3,300 pounds per square inch of pressure. The solution was injected at an angle at the base of the excavation to prevent the side walls from slumping into the open excavation.

The impacted soil immediately under the pipeline was visually observed to extend up to 26 feet east of the west wall of the excavation. The removal of these affected soils continued until the base of the excavation extended 22 feet east of the west wall, 28 feet wide (north to south) and 19 feet deep (Photograph No.5). Stained soil at the base of the excavation covered an area 16 feet wide (north to south) extending 18 feet from the west wall (Figure 2). This demonstrates that the pit was over-excavated at least an additional 5 feet laterally beyond the residual affected soil at the base of excavation as required prior to placement of the impermeable clay liner (Photograph No.6). The affected soils directly beneath the pipeline were removed by extending the excavation 40 feet to the east as illustrated in Figure 3. The ramp into the excavation was graded with a slope of 4:1 to allow a truck mounted drilling rig access into the base of the excavation to install the passive soil vapor ventilation wells and 4 soil borings (Photograph No.7). The borings were used for placement of Micro-Blaze into the subsurface to treat the residual hydrocarbons. On July 15, 2008, an attempt was made to add additional benches along the north and south walls of the excavation. However, due to adverse weather conditions, this operation was stopped. The benching resumed and was completed on August 11, prior to the installation of soil borings in the base of the excavation (Photograph No.8).

During the period of July 21 through July 23, 2008, the affected soil stockpiled east of the excavation was loaded onto trucks and transported to Plains' Lea Station Land farm for treatment.

On August 12, 2008, a truck mounted drilling rig was used to install two passive organic vapor ventilation system wells and four borings into the base of the excavation. Based on the difficulties encountered with positioning and leveling the rig, the base of the excavation

was increased in length from 22 to 30 feet and the ramp was re-graded to account for the change.

4.1.1 Confirmation Excavation Sidewall Samples

On July 11, 2008, six soil samples were collected from the sides of the excavation, after the walls were screened with an OVM to determine the highest concentration of residual hydrocarbons. Each soil sample collected was split into two parts. One portion of the sample was placed into a glass sample container and placed on ice. The other portion was placed in an air tight Ziploc bag and hydrocarbons were allowed to volatilize from the soil for a head space analysis. OVM readings recorded from the head space analysis are presented in Table 2. All six samples collected from the excavation sidewalls indicated TPH concentrations below the NMOCD target concentration of 100 mg/Kg and the method detection limit (Table 3). The sample from the north wall, ENSW was collected at 11 feet bgs and the south wall sample ESSW at 9 feet bgs. Four soil samples (EESW, PLBHW, PLBHN and PLBHS) were collected from underneath and around the pipeline. The sample locations are presented in Table 4 and illustrated in Figure 4. The samples collected from the excavation showed concentrations below the 100 mg/Kg TPH regulatory limit, demonstrating that further excavation was not necessary. Figure 5 displays a summary of the analytical results for the confirmation samples.

Analytical results of sidewall confirmation samples collected in 2008 are presented in Table 3. The laboratory reports for these samples are included in Appendix F.

4.1.2 Confirmation Stockpile Sampling

On July 8, 2008, Premier collected one composite stockpile soil sample (SP1) from the excavated affected soil stockpile. Analytical results from the stockpile sample demonstrated that the sample did not contain constituents of concern above the method detection limit and the regulatory limit (Table 5).

The total volume of soil removed from the July 2008 excavation activities was estimated at 2,160 cubic yards. According to Hungry Horse documents and correspondence, approximately 960 cubic yards of affected soil was transported for off-site treatment. Appendix G includes form C-138, the request for approval to accept solid waste for land farm treatment and the certificate of "non-exempt" waste for the affected soil. The remaining clean overburden soil obtained from excavating the ramps that were removed and stockpiled on-site during excavation (approximately 884 cubic yards) and from additional benching (approximately 316 cubic yards), was used to backfill the excavation.

4.1.3 Installation of Soil Borings

To treat the soil in the base of the excavation, four soil borings and two passive organic vapor ventilation wells were installed in the base of the excavation to a depth of 15 feet below the base of excavation in the hydrocarbon affected soil (Figure 6) on August 12, 2008. The first boring (SB1) was screened for hydrocarbons using an OVM. Soil samples

were collected and headspace readings recorded. The OVM readings are presented in Table 2. The borings for the two passive ventilation wells were drilled to a total depth of 20 feet, to allow for drill cuttings (sandy soil) to collect in the base of the open borehole while removing the augers and also to allow the well to be set at a minimum of 15 feet below the base of the excavation. The last 5 feet of the boring was drilled very slowly and with great difficulty as it penetrated a caliche rock layer. This was apparently the maximum depth the truck mounted drilling rig could drill down through the lithologies encountered.

Soil samples collected during the installation of the two borings for the two passive ventilation wells (SV-1 and SV-2) were submitted to the laboratory for chemical analyses for TPH and BTEX. The results are presented in Table 6 and displayed in Figure 7. Analytical data from samples collected from SV-1, located closest to the west wall of the excavation showed TPH concentrations ranging from 4,794 mg/Kg to 11,401 mg/Kg. Analytical data from samples collected from SV-2 showed TPH concentrations ranging from <16 mg/Kg to 633.3 mg/Kg.

Three soil borings and two passive ventilation wells were drilled before the cable-end on the rig broke, further illustrating the drilling rig's limited capability. The cable-end was repaired the following day and the last soil boring was completed. The two passive ventilation wells were screened with 15 feet of 4 inch diameter, 0.020 inch slotted screen PVC pipe and 5 feet of solid riser extending two feet below the ground surface and three feet above the base of the excavation. The annulus was filled with a sand pack and sealed with bentonite. A removable cap was placed on the open end of the three feet section of riser. The passive ventilation wells were completed by adding five-foot sections of solid riser during back fill operations to bring the well above the ground surface. Additional bentonite was placed around the base of wells prior to placement of the clay liner, forming a seal between the liner and well (Photograph No.9). The boring logs are enclosed in Appendix J.

4.1.4 Micro-Blaze Treatment

To address residual contamination in the side wall and the base of the excavation, a 5% Micro-Blaze solution was applied to affected soil. Micro-Blaze is a phosphate-based surfactant solution, inoculated with petrophilic facultative bacteria that consumes petroleum hydrocarbon as a substrate. Approximately 100 gallons of the solution was prepared in a 125-gallon container consisting of 5 gallons of Micro-Blaze and 95 gallons of water. The mixture was injected using 3,300 pounds per square inch of pressure into the affected sidewalls to a horizontal depth of at least 5-feet on 5-foot horizontal and 3-foot vertical centers (Photograph No.10). The Micro-Blaze solution was also applied to the exposed sidewall surface of the west wall of the excavation that was impacted by hydrocarbons. The excavation was deepened in five foot intervals to prevent slumping of the sidewall during treatment of residual hydrocarbon-affected soil in the west wall under NMSR18 right-of-way.

To treat the soil at the base of the excavation, the 5% Micro-Blaze solution was injected into the open borings and the SVE boreholes and allowed to flow into the surrounding formation. The base of the excavation impacted by hydrocarbons was also sprayed with the Micro-Blaze solution. This treatment was repeated 12 times during the month of August 2008 while the excavation remained open (Figure 8). A total of 75 gallons of Micro-Blaze in approximately 1500 gallons of water was used to treat the residual contamination in the side wall and base of the excavation. On September 2, 2008, the borings were plugged and abandoned by placing 3 bags of bentonite into each boring and then hydrating the bentonite with water. Bentonite was also placed and hydrated around the outside of the SVE wells to create a seal before the installation of the clay liner.

4.1.5 Clay Barrier Placement

A clay barrier was installed at the base of the excavation over areas with affected soils exhibiting COC concentrations above NMOCD standards. In areas in the base of the excavation where these soils could not physically be excavated, they were allowed to remain in place with the understanding that they would be covered by the clay liner. Such areas were easily identified by visual and olfactory senses. Figure 3 illustrates the affected soil in the base of the excavation. A five-foot wide area to the east, north and south of the impacted soil in the base of the excavation consisted of non-impacted soil.

On September 2, 2008, after the base of the excavation was cleared of debris and gently sloped with a central high point to allow for drainage and to prevent accumulation and pooling of infiltrated water, the clay barrier was placed at the base of the excavation in the area beneath the leak source (Figure 8). The 2-feet thick clay barrier was installed in 6-8 inch lifts and compacted down to 4 to 5 inches using a 36-inch wide, ride on roller compactor (Photograph No.11). Water was added to attain the required soil moisture for proper compaction. Each one foot compacted clay layer was tested to 95% of the proctor density and documented by Pettigrew & Associates P.A. (Pettigrew), a qualified engineering firm (Photograph No.12). The laboratory analytical results for the soil properties and the field readings are enclosed in Appendix H. The clay barrier extended at least 5-feet laterally beyond the impacted soil in the floor of the excavation and was contoured to shed water (Photograph No.13). Approximately 72 cubic yards of red clay was transported to the site for construction of the impermeable clay barrier. The clay barrier is approximately 30 feet long by 28 feet wide.

4.1.6 Passive Soil Vapor Ventilation System

To promote attenuation and remediate affected soil isolated below the compacted clay barrier, a passive organic vapor ventilation system was installed in the base of the excavation. The system was constructed of solid and slotted 4" PVC pipe with cemented slip joints. Two borings were completed in the base of the excavation, one on either side of the pipeline in close proximity to the west wall. The 15-foot deep borings were placed within the impacted section of the floor of the excavation. The slotted 4" PVC pipe was placed into the borings and the annulus partially filled with coarse sand to the top of the

base of the excavation and then the annulus was sealed with bentonite. Solid PVC risers were added during backfill as the well was constructed to bring it to grade. Three feet of riser was left above the ground surface and an 8-inch diameter wind turbine was permanently affixed to the 4" PVC riser (Photograph No.14). The turbine, when rotated by the wind, creates a negative pressure inside the slotted laterals, pulling vadose zone vapors into the system and exhausting the vapor to the atmosphere.

4.1.7 Backfill and Grade Excavation

During the week of September 8, 2008, after the clay barrier was placed and overlain with 6 inches of non-impacted soil, the excavation was backfilled with a combination of clean soil that was transported to the site and with clean overburden soil that was stockpiled on-site, west of the excavation (Figure 9). The backfill material was compacted using the track-hoe where possible, except adjacent to the pipeline, fence and around the SVE wells (Photograph Nos.15 & 16). During backfilling activities, a mixture made up of a combination of clean caliche and clean top soil was imported to properly grade the site. To bring the site to original grade, approximately 960 cubic yards of clean caliche and 204 cubic yards of clean top soil were transported to the site.

Some settlement of soil occurred after a heavy rainfall and additional top soil was placed into the low areas and re-graded. The surface vegetation was restored by reseeding.

4.1.8 Disposition of Affected Soil

The total volume of soil removed from the excavation was estimated at 2,160 cubic yards. Approximately 960 cubic yards of affected soil was transported for off-site treatment at Plains Lea Station Land farm. Table 7 presents a summary of manifests for the affected soil transported to Lea Station land farm for treatment. Copies of the manifests are enclosed in Appendix I.

5.0 2008 GROUNDWATER ACTIVITIES

5.1 2008 Activities

On September 5, 2008, one monitor well was installed using air rotary drilling techniques at the Site to determine if groundwater had been affected by the crude oil release at the site. The location of the well was placed as close to the excavation as practically possible and down gradient of the release point. The groundwater gradient was based on the groundwater gauging data collected from sampling events at the Hugh Gathering Site immediately west across NMSR18. The groundwater gradient at the Site is towards the south-southeast (Figure 10).

The borehole for monitor well MW-13 was located approximately 37 feet to the south of the gathering line and 35 feet east of fence associated with the right-of-way for NMSR18 (Photograph No.17). The borehole was advanced to a total depth of 70 feet bgs

(Attachment J). Groundwater was first encountered in the boring for monitor well MW-13 at approximately 60 feet bgs. No visible PSH was observed on the drill rod, sample tools, or produced groundwater encountered during the drilling of this borehole. No hydrocarbon odors or elevated OVM readings were recorded in the soil samples collected from the boring. A single soil sample was collected at the soil-groundwater interface and submitted for laboratory analyses for TPH and BTEX. The analytical data for the sample showed concentrations below TPH and BTEX regulatory standards and below the method detection limits (Table 8).

The PVC casing was installed using 20 feet of 0.010-inch slotted screen and 53 feet of riser. A 20/40 screened silica sand filter pack was placed from total depth up to two feet above the top of the PVC screen at approximately 48 feet bgs. Bentonite chips were placed from the top of the filter pack up to two feet bgs and hydrated. A metal shroud was mounted in a two feet by two feet concrete pad for the well (Photograph No.18). The driller's Well Record and Log (Appendix J) submitted to the New Mexico Office of the State Engineer is attached.

The well was sampled for the following parameters to determine the chemicals of concern (COC) in groundwater.

- General Chemistry
- Resource Conservation and Recovery Act (RCRA) Metals
- Additional Water Quality Control Commission (WQCC) Metals
- All compounds listed in U.S. Environmental Protection Agency (EPA) SW-846 Methods: 8260 Volatile Organic Compounds (VOCs) & 8270 Semi Volatile Organic Compounds (SVOCs)

Details of the well installation and analytical results were presented in the Well Installation Report dated October 8, 2008.

In summary, the only COCs associated with the crude oil release that were detected in the groundwater sample from monitor well MW 13 that are above the regulatory limits are benzene and bis(2-ethylhexyl)phthalate.

6.0 SUMMARIES OF ACTIVITIES

Soil excavation activities at the Site were conducted in accordance with the Abatement Plan approved by NMOCD in November 2005 and Work Plan dated May 2008. In 2008, Premier supervised the excavation, clay barrier installment, and backfilling activities on the east side of NMSR18 by Hungry Horse. Premier also supervised the installation of 4 borings and two SVE wells by Talon as well as the installation of one monitor well by Straub Drilling. Premier completed confirmation sampling and treatment activities of

residual soils in the side walls and base of the excavation using Micro-Blaze. The following activities were completed during July through September 2008:

- The excavation of the top 19 feet of hydrocarbon impacted soil was completed on the east side of the site. Confirmation soil samples were initially collected from the base and sidewalls of the excavation on July 11, 2008. The data indicated that no additional excavation was required to remove the hydrocarbons from the north south and east walls of the excavation.

- A passive organic vapor ventilation system was installed in the floor of the excavation. The system was constructed of 18 feet of solid and 15 feet of slotted 4" PVC pipe placed into two borings each with a total depth of 34 feet bgs. The borings were located on each side of the pipeline in the impacted portion of the floor of the excavation. The borings were converted into passive soil vapor ventilation wells with an 8-inch diameter wind turbine permanently affixed to the 4" PVC riser. The wind turbines create a negative pressure inside the slotted pipe and help exhaust the vapors from the subsurface soil into the atmosphere.

- Analytical data from soil boring SV-1 indicate residual hydrocarbon contamination in the base of the excavation in close proximity to the west wall. Visual staining on the west wall and in the base of the excavation within 18 feet of the west wall also denotes residual hydrocarbon contamination.

- To address residual contamination in the side wall of the excavation, a 5% Micro-Blaze solution was applied to affected soil. The mixture was injected using 3,300 pounds per square inch of pressure into the impacted sidewalls to a horizontal depth of at least 5-feet on 5-foot horizontal and 3-foot vertical centers. The Micro-Blaze solution was also applied to the exposed face of the excavation that was impacted by hydrocarbons. Residual contamination in the base of the excavation was treated by placing a 5% Micro-Blaze solution into 4 soil borings and two SVE wells. The Micro-Blaze was installed in the base of the excavation (to a depth of 15 feet) in the hydrocarbon affected soil and allowed to flow into the surrounding formation. The base of the excavation impacted by hydrocarbons was also sprayed with the Micro-Blaze.

- A 2-foot thick clay barrier was installed in 6-8 inch lifts and compacted down to 4 to 5 inches using a 36 inch wide, ride on roller compactor. Water was added to attain the required soil moisture for proper compaction. Each one foot compacted clay layer was tested to 95% of the proctor density and the compaction was documented by Pettigrew. The clay barrier measures approximately 40 feet long by 28 feet wide in the base of the excavation. The clay barrier was then covered with clean soil

- Approximately 960 cubic yards of affected soil was excavated and transported for off-site treatment at Plains land farm treatment facility. The Site was backfilled with 1200 cubic yards of clean overburden soil that was stockpiled on-site during

excavation of the ramps. Approximately 772 cubic yards of clean fill was also transported to the site to bring the site to original grade. The surface vegetation was restored by reseeding in October 2008.

The remedial activities completed to date including the excavation, placement of clay barrier, and backfill activities described in this report to fulfill the requirements of the Abatement Plan for the portion of the site located on the east side of Highway 18.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the field monitoring and analytical results of the groundwater sample collected and analyzed from monitor well MW-13, and based on site activities completed July through October 2008, the following recommendations are made to address groundwater issues at this Site:

- Measure groundwater levels monthly and collect quarterly groundwater samples from monitor well MW-13. Incorporate this data into the groundwater gradient from the Hugh Gathering Site located west of NMSR18.

- Evaluate concentrations of benzene and bis(2-ethylhexyl)phthalate in the first quarterly sampling event from MW-13 during 2009 to confirm the 2008 results, and adjust the analytical parameters accordingly prior to sampling monitor well MW-13 during the remaining three quarters of 2009.

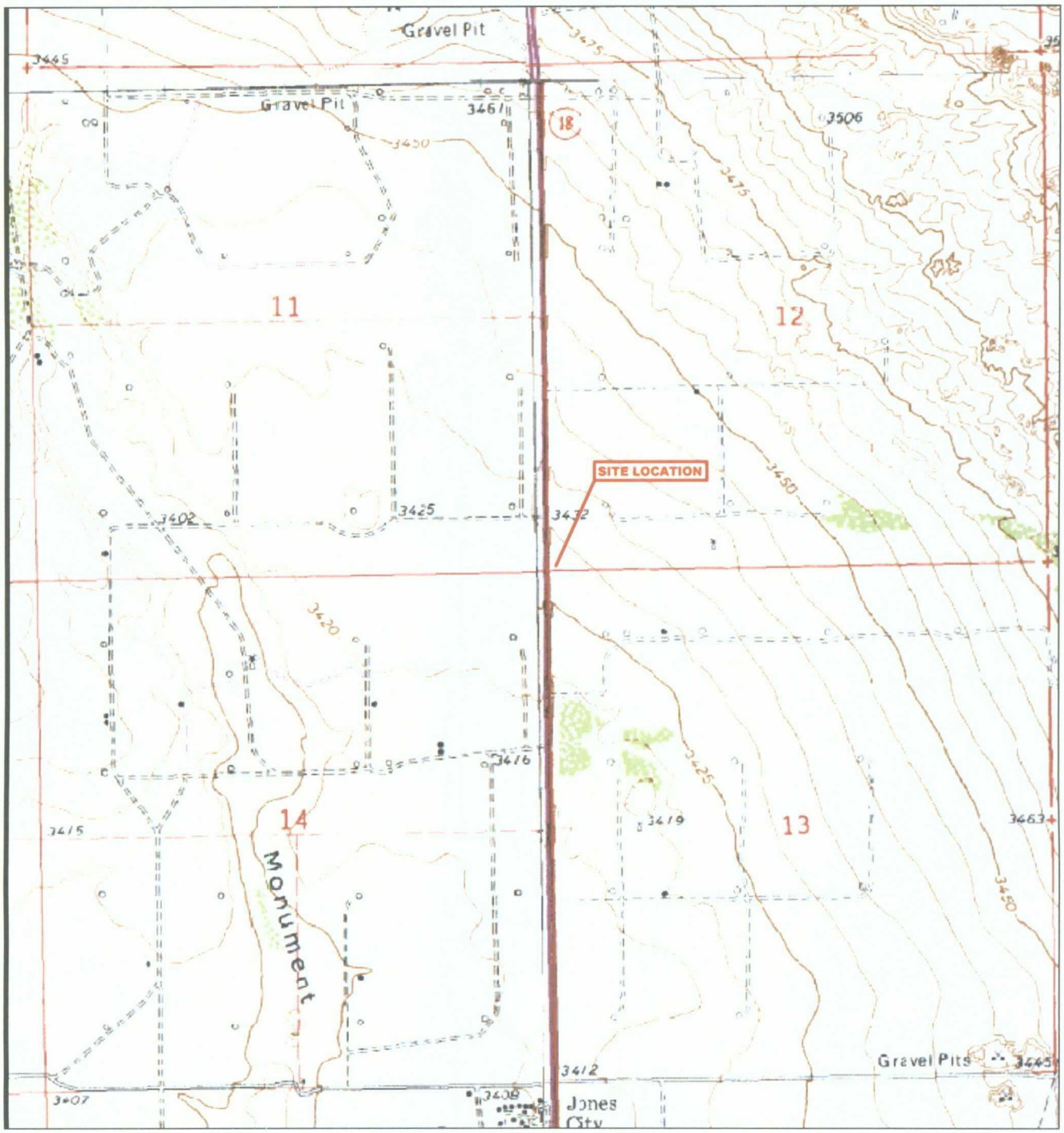
- Install two additional wells, one to the southeast and one directly east of monitor well MW-13, to delineate the lateral extent of dissolved phase hydrocarbons in groundwater.

Premier recommends that Plains submit this report to the NMOCD for final regulatory approval and closure of soil issues on the east side of Highway 18 at this Site, and request a "No Further Action Required for Soil Remediation" letter from the NMOCD for the east side of Highway 18.

Appendix A

Figures

Figure 1	Site Location Map
Figure 2	Site Layout Map
Figure 3	Excavation Cross Sections
Figure 4	Excavation and Confirmation Sample Map
Figure 5	Excavation and Confirmation Analytical Data Map
Figure 6	Excavation and Soil Boring Location Map
Figure 7	Soil Boring Analytical Data Map
Figure 8	Open Excavation Cross Section Along Pipeline
Figure 9	Backfilled Excavation Cross Section
Figure 10	3rd Quarter 2008 - Groundwater Gradient Map



Eunice NE Quadrangle
32°29'11"N Latitude & 103°07'31"W Longitude

0 1/2 mile 1 mile
Distance in Miles

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ENVIRONMENTAL SERVICES, INC.

Figure 1
Site Location Map
Hugh Gathering
Plains Marketing, L.P.
SRS. #: 2002-10235
Lea County, New Mexico

PROJ. NO: 207032.00	CK:	DATE: 10/08

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Over Head power Lines

Edge of Excavation

Bench

Bench

Bench

Fence

Limit of Base of Excavation

NMSR18
Right-of-Way

Ramp

Spill Area
Perimeter

Exposed Pipeline

PL PL PL PL PL PL PL PL PL PL PL PL PL PL PL PL

Support
Stand

Buried
Pipeline

Buried
Pipeline

Clean Soil under Pipeline

Area of Visually
Stained Soil

Ramp

Bench

Bench

Bench

Fence

Edge of Excavation

MW-13

0 10
FEET

LEGEND:

■ -Pipe Support Stand

⌖ -Monitor Well

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Figure 2
Site Layout Map
Hugh Gathering East
Plains Marketing, L.P.
SRS. #: 2002-10235
Lea County, New Mexico

PROJ. NO: 207032.00	CK:	DATE: 10/08

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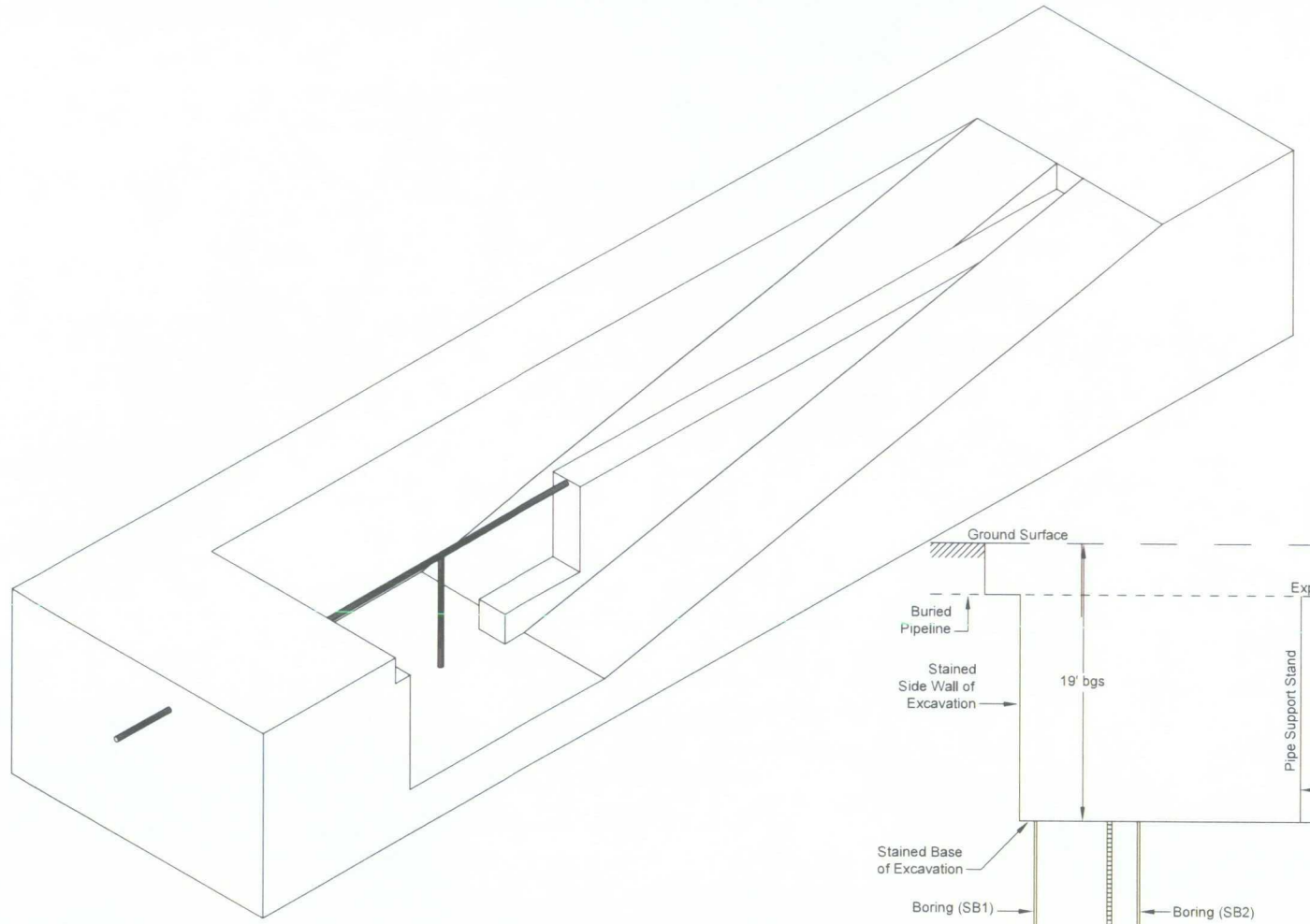

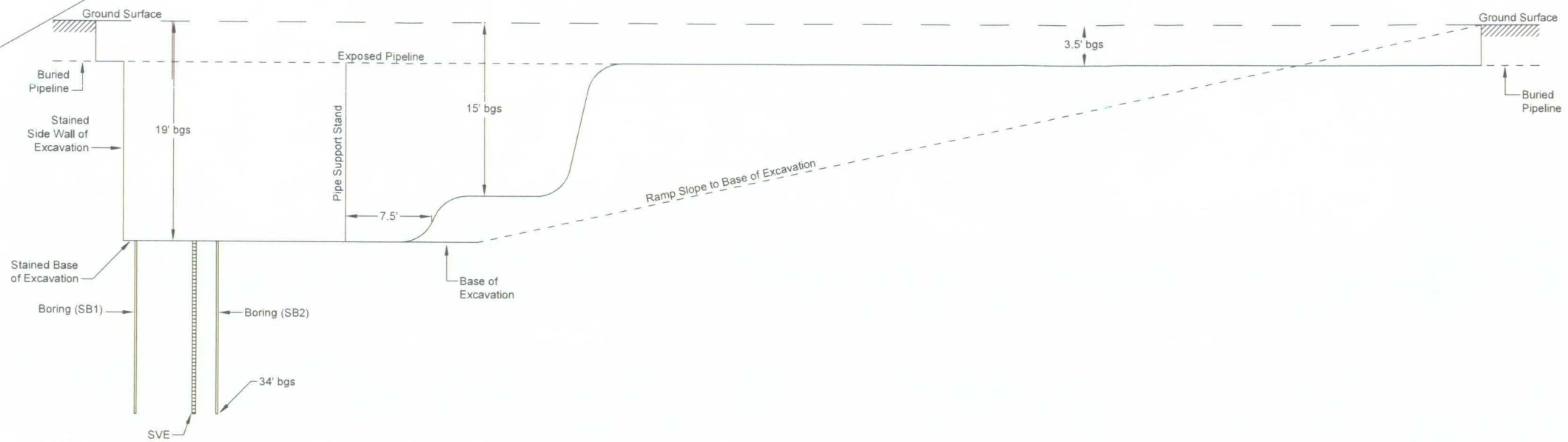

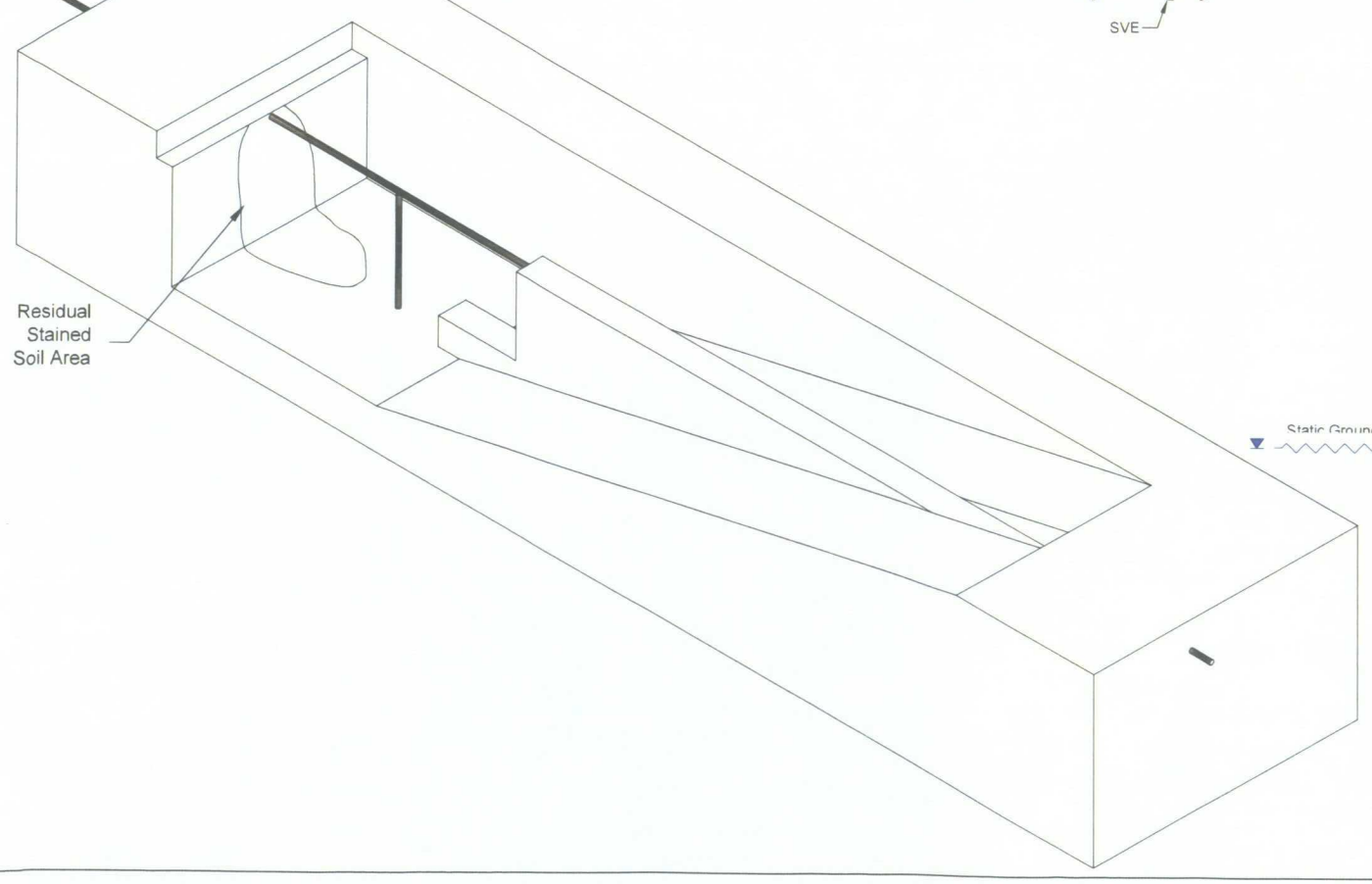

Static Groundwater, 60' bgs

0 10

FEET

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Figure 3
Excavation Cross Sections
Hugh Gathering
Plains Marketing, L.P.
SRS. #: 2002-10235
Lea County, New Mexico

PROJ. NO: 207032.00	CK:	DATE: 10/08

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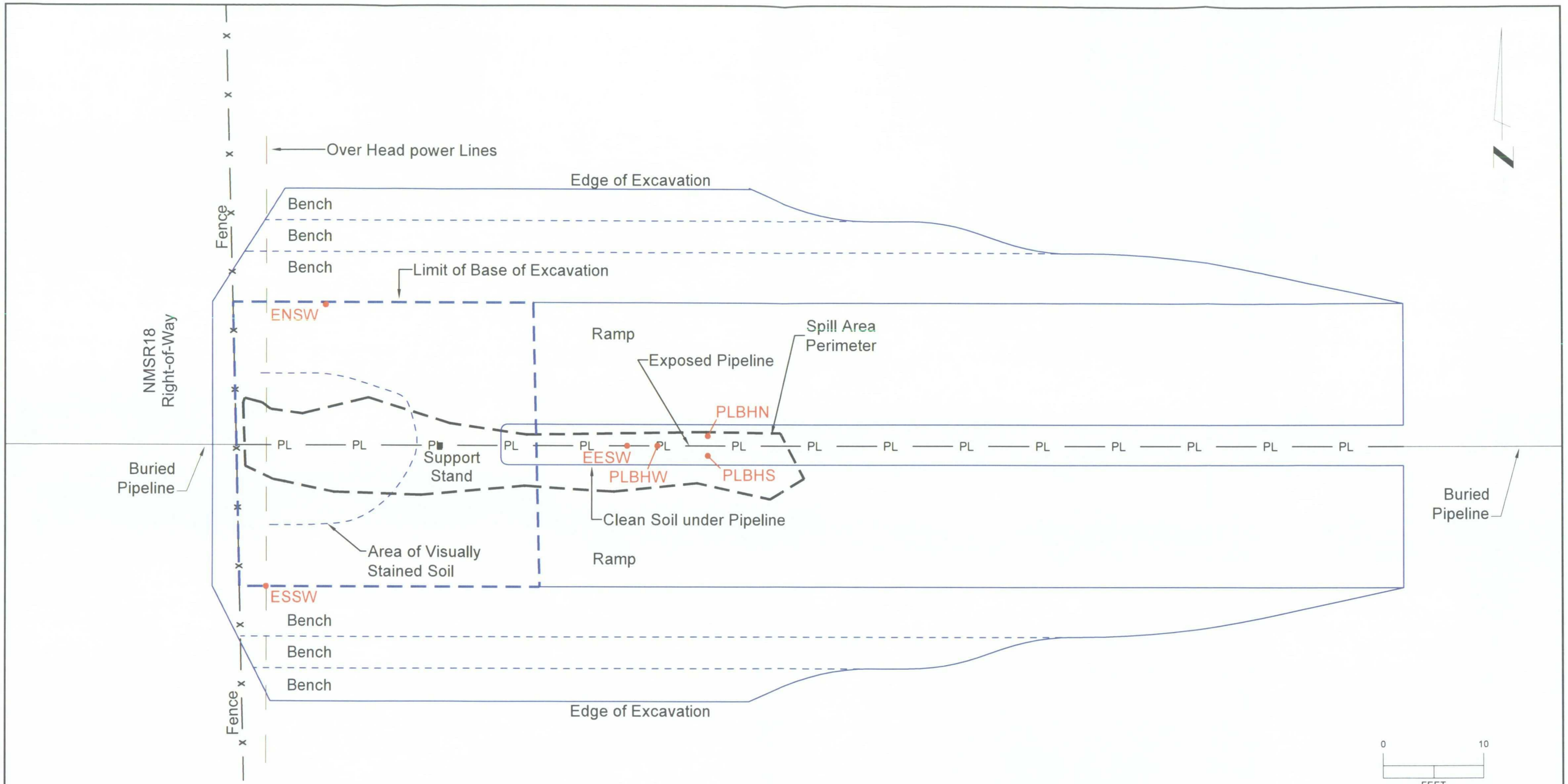

LEGEND:

- ● -Soil Confirmation Locations
- ENSW -Excavation, North Side Wall
- EESW -Excavation, East Side Wall
- ESSW -Excavation, South Side Wall
- PLBHN -Pipeline Bottom Hole, North
- PLBHW -Pipeline Bottom Hole, West
- PLBHS -Pipeline Bottom Hole, South
- ■ -Pipe Support Stand

PREMIER ENVIRONMENTAL SERVICES, INC.

Figure 4
Excavation & Confirmation Sample Map
Hugh Gathering
Plains Marketing, L.P.
SRS. #: 2002-10235
Lea County, New Mexico

PROJ. NO: 207032.00	CK:	DATE: 10/08

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Sample ID	Sample Depth (ft.)	Sample Date	TPH C_6-C_{35} (mg/Kg)	Benzene (mg/Kg)	Total BTEX (mg/Kg)
ENSW	11	7/11/2008	<16.6	<0.0011	ND

Sample ID	Sample Depth (ft.)	Sample Date	TPH C_6-C_{35} (mg/Kg)	Benzene (mg/Kg)	Total BTEX (mg/Kg)
PLBHW	3.5	7/11/2008	<20.9	<0.0014	ND

Sample ID	Sample Depth (ft.)	Sample Date	TPH C_6-C_{35} (mg/Kg)	Benzene (mg/Kg)	Total BTEX (mg/Kg)
PLBHN	3.5	7/11/2008	<16.1	<0.0011	ND

Sample ID	Sample Depth (ft.)	Sample Date	TPH C_6-C_{35} (mg/Kg)	Benzene (mg/Kg)	Total BTEX (mg/Kg)
ESSW	9	7/11/2008	<16.5	<0.0011	ND

Sample ID	Sample Depth (ft.)	Sample Date	TPH C_6-C_{35} (mg/Kg)	Benzene (mg/Kg)	Total BTEX (mg/Kg)
EESW	6	7/11/2008	<16.5	<0.0011	ND

Sample ID	Sample Depth (ft.)	Sample Date	TPH C_6-C_{35} (mg/Kg)	Benzene (mg/Kg)	Total BTEX (mg/Kg)
PLBHS	3.5	7/11/2008	<15.4	<0.0010	ND

Over Head power Lines
Edge of Excavation
Bench
Bench
Bench
Fence
Limit of Base of Excavation
ENSW
NMSR18 Right-of-Way
Ramp
Spill Area Perimeter
Exposed Pipeline
PLBHN
PL
Buried Pipeline
Support Stand
EESW
PLBHW
PLBHS
Clean Soil under Pipeline
Area of Visually Stained Soil
Ramp
ESSW
Bench
Bench
Bench
Fence
Edge of Excavation
Buried Pipeline

0 10
FEET

LEGEND:
- -Soil Confirmation Locations
- ENSW -Excavation, North Side Wall
- EESW -Excavation, East Side Wall
- ESSW -Excavation, South Side Wall
- PLBHN -Pipeline Bottom Hole, North
- PLBHW -Pipeline Bottom Hole, West
- PLBHS -Pipeline Bottom Hole, South
- -Pipe Support Stand

PREMIER ENVIRONMENTAL SERVICES, INC.

Figure 5
Excavation & Confirmation Analytical Data Map
Hugh Gathering
Plains Marketing, L.P.
SRS. #: 2002-10235
Lea County, New Mexico

PROJ. NO: 207032.00 | CK: | DATE: 10/08

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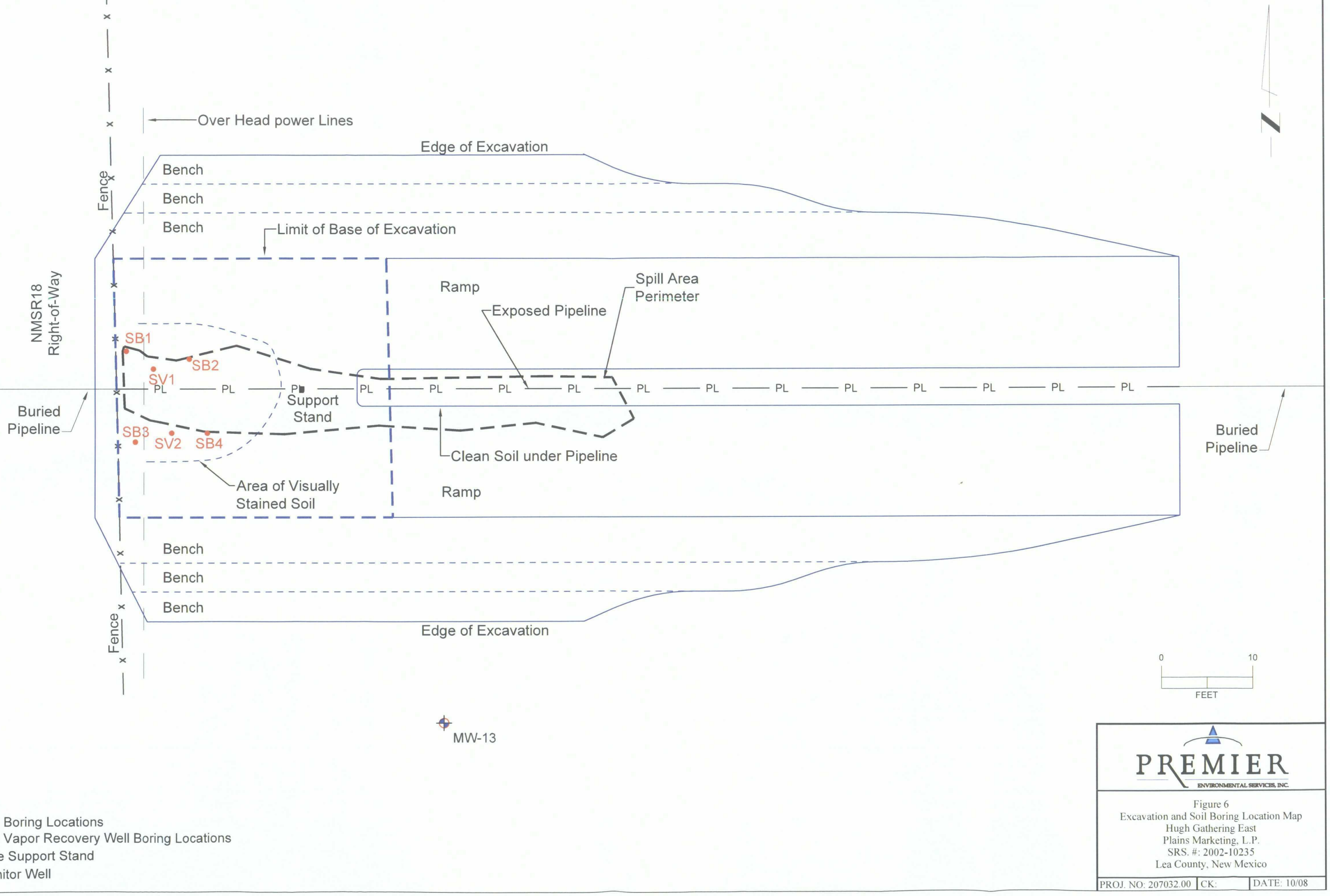

LEGEND:

- ●SB -Soil Boring Locations
- ●SV -Soil Vapor Recovery Well Boring Locations
- ■ -Pipe Support Stand
- ⌖ -Monitor Well

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Figure 6
Excavation and Soil Boring Location Map
Hugh Gathering East
Plains Marketing, L.P.
SRS. #: 2002-10235
Lea County, New Mexico

PROJ. NO: 207032.00	CK:	DATE: 10/08

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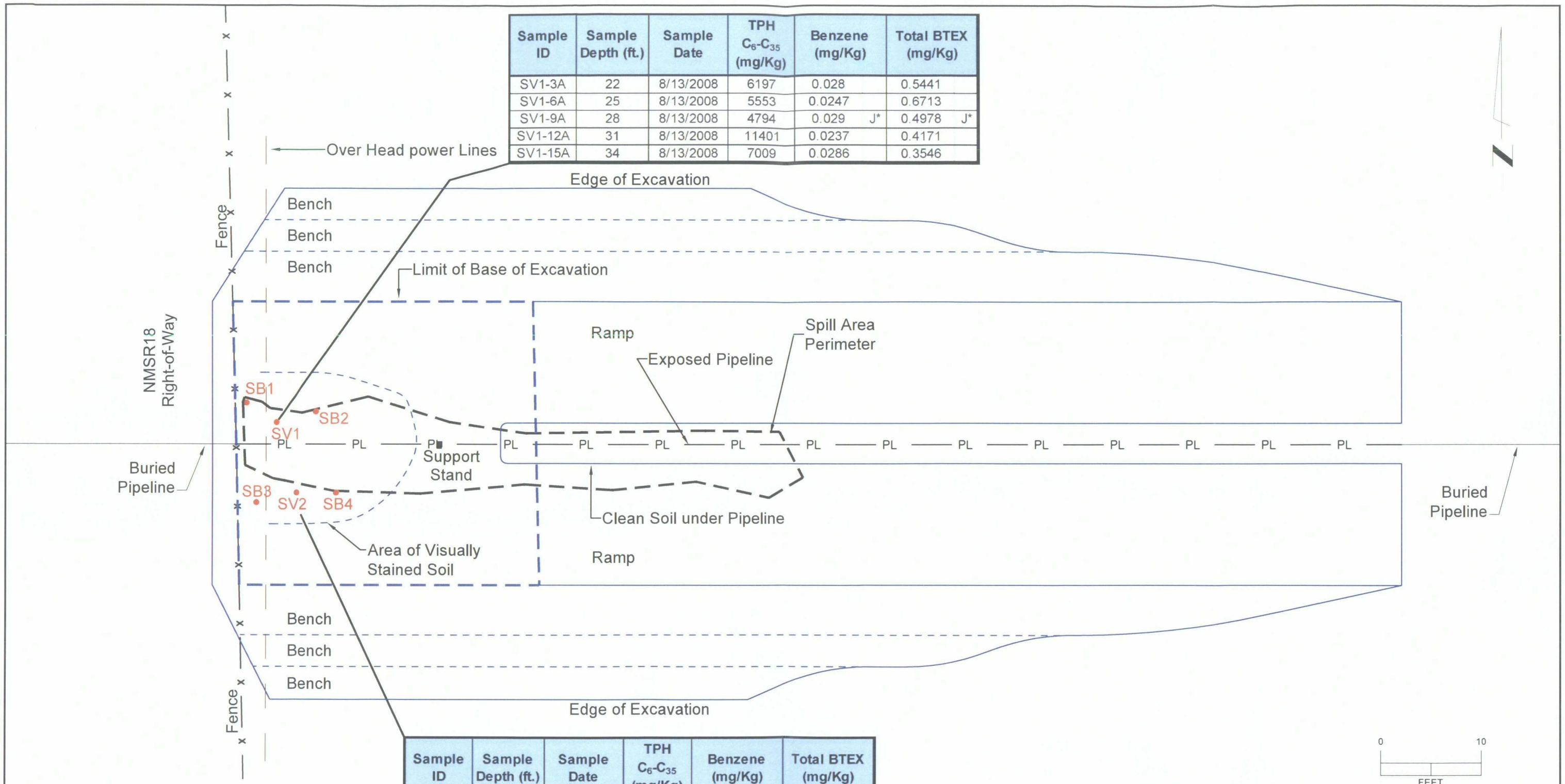
Sample ID	Sample Depth (ft.)	Sample Date	TPH C_6-C_{35} (mg/Kg)	Benzene (mg/Kg)	Total BTEX (mg/Kg)
SV1-3A	22	8/13/2008	6197	0.028	0.5441
SV1-6A	25	8/13/2008	5553	0.0247	0.6713
SV1-9A	28	8/13/2008	4794	0.029 J*	0.4978 J*
SV1-12A	31	8/13/2008	11401	0.0237	0.4171
SV1-15A	34	8/13/2008	7009	0.0286	0.3546



Sample ID	Sample Depth (ft.)	Sample Date	TPH C_6-C_{35} (mg/Kg)	Benzene (mg/Kg)	Total BTEX (mg/Kg)
SV2-3A	22	8/13/2008	179.7	0.0042 J**	0.4197 J**
SV2-6A	25	8/13/2008	633.3	0.0076 J**	1.4066 J**
SV2-9A	28	8/13/2008	1127	0.0069	0.8993
SV2-12A	31	8/13/2008	47	0.0011	0.0282
SV2-15A	34	8/13/2008	<16	<0.0011	0.0132

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FEET

LEGEND:

- SB1 -Soil Boring Locations
- SV1 -Soil Vapor Recovery Well Boring Locations
- -Pipe Support Stand

J = Estimated Value
* = Surrogate recovery values outside the laboratory control limits (Bias could not be established)
** = Surrogate recovery values above the laboratory control limits (High bias)

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Figure 7
Soil Boring Analytical Data Map
Hugh Gathering
Plains Marketing, L.P.
SRS. #: 2002-10235
Lea County, New Mexico

PROJ. NO: 207032.00	CK:	DATE: 10/08

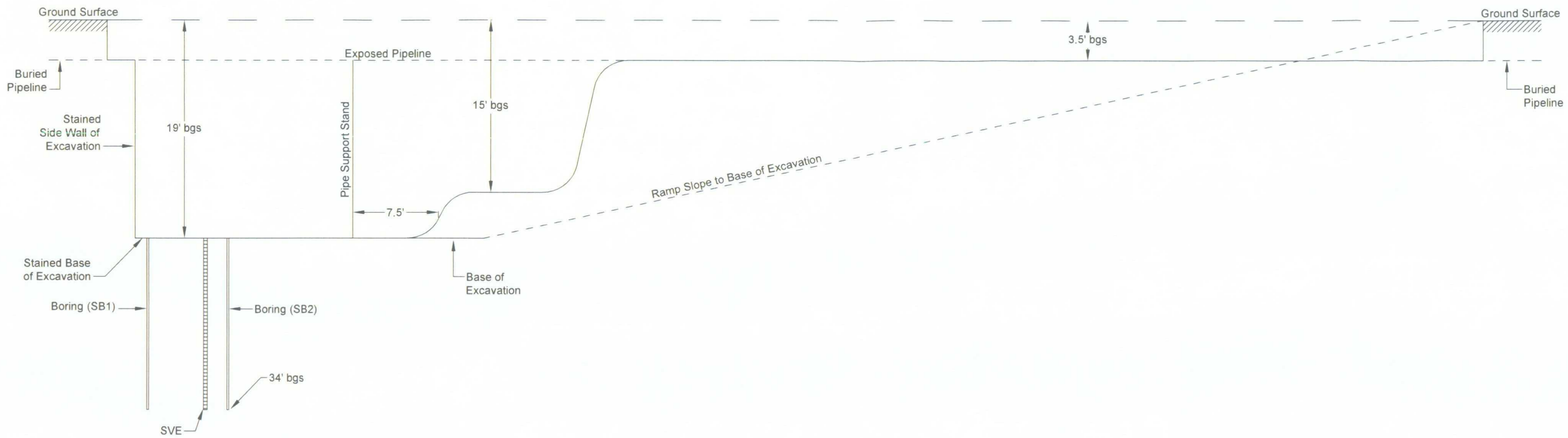

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Figure 8
Open Excavation Cross Section Along Pipeline with Borings
Hugh Gathering
Plains Marketing, L.P.
SRS. #: 2002-10235
Lea County, New Mexico

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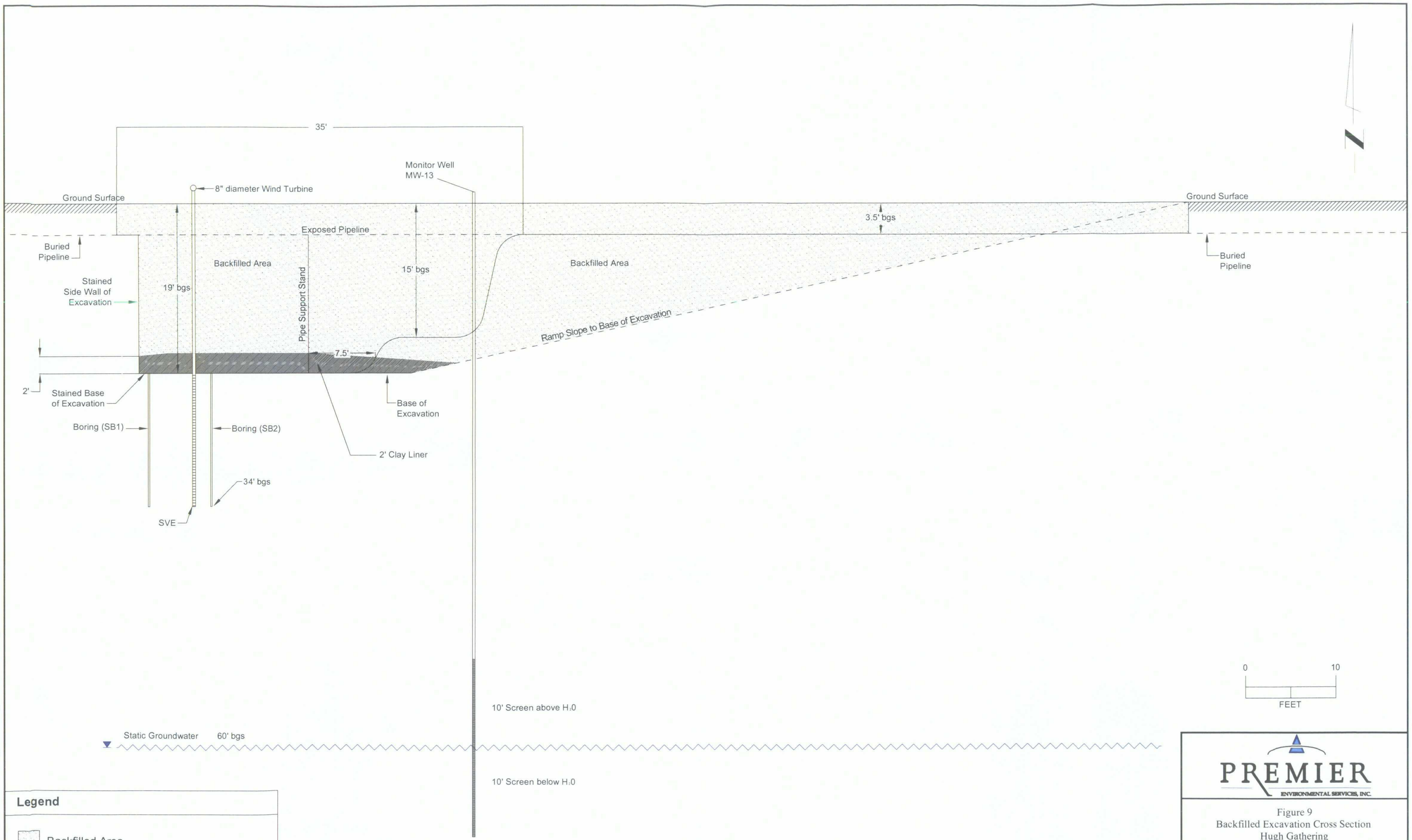

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Legend

Backfilled Area

SVE = Passive Organic Vapor Ventilation Well

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Figure 9
Backfilled Excavation Cross Section
Hugh Gathering
Plains Marketing, L.P.
SRS. #: 2002-10235
Lea County, New Mexico

PROJ. NO: 207032.00	CK:	DATE: 10/08

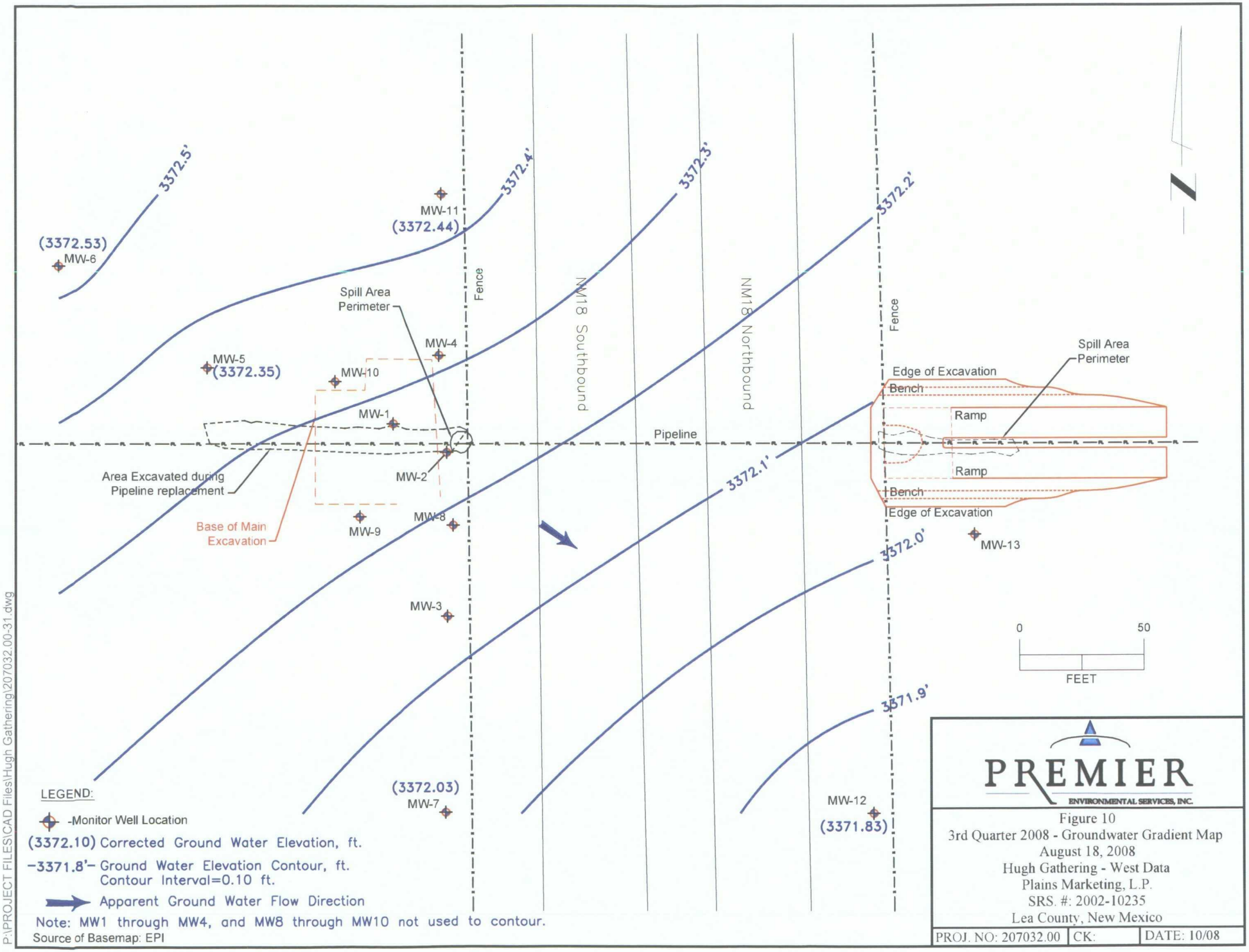

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Figure 10
3rd Quarter 2008 - Groundwater Gradient Map
August 18, 2008
Hugh Gathering - West Data
Plains Marketing, L.P.
SRS. #: 2002-10235
Lea County, New Mexico

PROJ. NO: 207032.00	CK:	DATE: 10/08

Appendix B

Tables

Table 1	EPI's Soil Boring Delineation Data East Side of NMSR 18
Table 2	Soil OVM Field Readings
Table 3	Analytical Results of Soil Confirmation Samples
Table 4	Field Location of Soil Samples
Table 5	Analytical Results of Soil Stockpile
Table 6	Analytical Results of Soil Samples from Borings
Table 7	Summary of Manifests for Soil Transported to Lea Station Land Farm
Table 8	Analytical Results of Soil Sample from Monitor Well MW-13

TABLE 1
EPIs SOIL BORING DELINEATION DATA EAST SIDE OF NMSR 18
Plains Pipeline, L.P.
SRS No. 2002-10235
Hugh Gathering
Lea County, New Mexico

Sample Location	Sample Description	Sampling Interval (ft. bgs[1])	SAMPLE ID#	Date	Lithology	VOC Headspace (ppm)	GRO[3] (mg/Kg)	DRO[4] (mg/Kg)	TPH[5] (mg/Kg)	BTEX[9] (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	p/m Xylene (mg/Kg)	o-Xylene (mg/Kg)
BH1	Probe	10	SEL69902BH1-10	9/9/02	Brown Coarse Sand	1,161	9,580	9,910	19,490	426	39.1	96.4	102	130	58.1
	Probe	15	SEL69902BH1-15	9/9/02	Brown Coarse Sand	1,189	6,850	7,480	14,330	299	18.4	71.2	70.8	96.9	41.4
	Probe	20	SEL69902BH1-20	9/9/02	Brown Coarse Sand	1,280	5,370	6,370	11,740	214	7.83	50.1	41.5	81.2	33.1
BH2	Probe	5	SEL69902BH2-5	9/9/02	Brown Coarse Sand	2.0	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	10	SEL69902BH2-10	9/9/02	Brown Coarse Sand	1.4	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	15	SEL69902BH2-15	9/9/02	Brown Coarse Sand	0.9	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
BH3	Probe	5	SEL69902BH3-5	9/9/02	Tan Coarse Sand	1.3	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	10	SEL69902BH3-10	9/9/02	Tan Coarse Sand	1.0	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	15	SEL69902BH3-15	9/9/02	Brown Coarse Sand	0.4	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
BH4	Probe	5	SEL691002BH4-5	9/10/02	Tan Coarse Sand	2.4	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	10	SEL691002BH4-10	9/10/02	Tan Coarse Sand	1.9	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	15	SEL691002BH4-15	9/10/02	Brown Coarse Sand	1.6	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
BH5	Cutting	10	SEL691002BH5-10	9/10/02	Oil Stained Caliche	600	3,210	5,210	8,420	163	8.86	34.1	35.1	57.1	28.3
	Probe	15	SEL691002BH5-15	9/10/02	Brown Coarse Sand	542	7,730	9,010	16,740	294	16.1	67.4	71.0	96.2	43.7
	Probe	20	SEL691002BH5-20	9/10/02	Brown Coarse Sand	753	7,580	9,130	16,710	294	11.5	64.6	68.4	103	46.8
	Probe	25	SEL691002BH5-25	9/10/02	Tan Coarse Sand	750	1,340	2,400	3,740	27.0	0.192	3.57	6.21	11.9	5.12
	Probe	30	SEL691002BH5-30	9/10/02	Sandy Red Clay	10.4	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
BH6	Probe	5	SEL691102BH6-5	9/11/02	Tan Coarse Sand	3.1	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	10	SEL691102BH6-10	9/11/02	Brown Caliche Sand	3.0	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	15	SEL691102BH6-15	9/11/02	Brown Coarse Sand	1.6	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
BH7	Probe	5	SEL691102BH7-5	9/11/02	Tan Coarse Sand	1.6	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	10	SEL691102BH7-10	9/11/02	Tan Coarse Sand	0.8	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	15	SEL691102BH7-15	9/11/02	Tan Coarse Sand	0.3	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
BH8	Probe	5	SEL691102BH8-5	9/11/02	Tan Coarse Sand	1.7	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	10	SEL691102BH8-10	9/11/02	Brown Caliche Sand	1.2	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	15	SEL691102BH8-15	9/11/02	Tan Coarse Sand	0.8	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
BH9	Cutting	5	BH9-5	7/12/06	Tan Caliche Rock	0.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Cutting	10	BH9-10	7/12/06	Tan Caliche Rock	1.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Cutting	15	BH9-15	7/12/06	Tan Caliche Rock	2.5	ND	ND	ND	ND	ND	ND	ND	J[0.0226]	ND
	Probe	20	BH9-20	7/12/06	White Sandstone	0.0	ND	ND	ND	0.075	ND	ND	0.033	0.042	ND
BH10	Cutting	5	BH10-5	7/13/06	Tan Caliche Rock	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Cutting	10	BH10-10	7/13/06	Tan Caliche Rock	0.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Cutting	15	BH10-15	7/13/06	Tan Caliche Rock	0.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Probe	20	BH10-20	7/13/06	Tan Caliche Rock	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND
BH11	Cutting	5	BH11-5	7/13/06	Tan Caliche Rock	929	444	658	1,102	16.1	0.092	0.848	2.41	9.19	3.61
	Cutting	10	BH11-10	7/13/06	Tan Caliche Rock	685	1,230	2,794	4,024	24.2	0.474	2.26	2.93	14.4	4.16
	Cutting	15	BH11-15	7/13/06	Red Brown Sandstone	907	1,420	2,672	4,092	89.1	3.87	5.84	18.9	45.4	15.1
	Cutting	20	BH11-20	7/13/06	Red Brown Sandstone	752	1,560	2,836	4,396	122	3.71	14.2	21.8	60.4	22.3

TABLE 1
EPIs SOIL BORING DELINEATION DATA EAST SIDE OF NMSR 18
Plains Pipeline, L.P.
SRS No. 2002-10235
Hugh Gathering
Lea County, New Mexico

Sample Location	Sample Description	Sampling Interval (ft. bgs[1])	SAMPLE ID#	Date	Lithology	VOC Headspace (ppm)	GRO[3] (mg/Kg)	DRO[4] (mg/Kg)	TPH[5] (mg/Kg)	BTEX[9] (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	p/m Xylene (mg/Kg)	o-Xylene (mg/Kg)
	--	22	Refusal	7/13/06	Red Brown Sandstone	--	--	--	--	--	--	--	--	--	--
BH12	Probe	5	BH11-9	7/13/06	Tan Caliche Rock	1.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
	--	9	Refusal	7/13/06	Tan Caliche Rock	--	--	--	--	--	--	--	--	--	--
BH13	Cutting	5	BH13-5	7/14/06	Oil Stained Caliche Rock	352	163	589	752	2.25	ND	0.148	0.347	1.16	0.594
	Cutting	10	BH13-10	7/14/06	Oil Stained Caliche Rock	960	588	1,741	2,329	5.79	0.069	0.477	0.733	3.66	0.853
	Cutting	15	BH13-15	7/14/06	Red Brown Sandstone	1,633	1,220	2,156	3,376	53.6	2.35	4.15	11.5	28.6	7.00
	Cutting	20	BH13-20	7/14/06	Tan Sandstone	1,364	1,110	2,794	3,904	49.4	1.05	4.43	8.76	25.4	9.75
	Probe	25	BH13-25	7/14/06	Tan Sandstone	379	340	1,723	2,063	4.38	J[0.0104]	0.210	0.847	2.34	0.979
	Cutting	30	BH13-30	7/14/06	Brown Sandstone	133	54.6	255	310	0.443	J[0.0104]	0.097	0.088	0.198	0.060
	Cutting	35	BH13-35	7/14/06	Red Clay/sand/gravel	75.3	51.4	305	357	0.180	ND	0.057	0.043	0.080	J[0.0245]
	Cutting	40	BH13-40	7/14/06	Red Clay/sand/gravel	39.7	10.2	46.9	57.1	0.076	ND	J[0.0225]	J[0.0220]	0.076	J[0.0204]
	Probe	46	BH13-46	7/14/06	Red Clay/sand/gravel	2.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
BH14 (SB1)	Cutting	4	SB1-4	6/14/06	White Caliche Rock	0.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Cutting	9	SB1-9	6/14/06	White Caliche Rock	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Probe	12	SB1-12	6/14/06	Tan Sandstone	0.9	27.1	ND	27.1	ND	ND	ND	ND	ND	ND
	Probe	19	SB1-19	6/14/06	Light Gray Sandstone	0.8	J[6.87]	ND	J[6.87]	ND	ND	ND	ND	ND	ND
	--	23	Refusal	6/14/06	Light Gray Sandstone	--	--	--	--	--	--	--	--	--	--
Method Detection Limit							10	10			0.025	0.025	0.025	0.025	0.025
Remedial Goals for soil from the surface to ~8'bgs						100			1000	50.0000	10.0000				
Remedial Goals for soil from ~8'bgs to the groundwater at ~58'bgs						100			100	50.0000	10.0000				

100 ppm Isobutylene calibration gas = 101 ppm

[1]bgs – below ground surface

[2]VOC–Volatile Organic Contaminants/Constituents

[3]GRO-Gasoline Range Organics C_6-C_{12}

[4]DRO-Diesel Range Organics C_{12}-C_{35}

[5]TPH-Total Petroleum Hydrocarbon = GRO+DRO.

na - not analyzed

[9]BTEX - Mass sum of benzene, toluene, ethylbenzene, and xylenes

ND - not detected above the method detection limit.

All data collected by EPI.

TABLE 2
SOIL OVM Field Readings
Plains Pipeline, L.P.
SRS No. 2002-10235
Hugh Gathering East
Lea County, New Mexico

Field Sample ID Number	Date	Max Head Space OVM Readings	Field Screening Reading
CSP 1			N/A
CSP 2			N/A
ENSW	7/11/2008		6
EESW	7/11/2008		6.3
ESSW	7/11/2008		7.3
PLBHN	7/11/2008		5.9
PLBHW	7/11/2008		2.4
PLBHS	7/11/2008		9.5
SP 1			N/A
SB1-3	8/13/2008	598	
SB1-6	8/13/2008	845	
SB1-9	8/13/2008	999	
SB1-12	8/13/2008	986	
SB1-15	8/13/2008	1137	
SB1-20	8/13/2008	639	
SV1-3A	8/13/2008	1229	
SV1-6A	8/13/2008	1014	
SV1-9A	8/13/2008	1143	
SV1-12A	8/13/2008	1003	
SV1-15A	8/13/2008	1138	
SV2-3A	8/13/2008	1716	
SV2-6A	8/13/2008	1307	
SV2-9A	8/13/2008	1314	
SV2-12A	8/13/2008	49	
SV2-15A	8/13/2008	52	

OVM = Organic Vapor Meter (OVM) Readings
SB = Soil Borings
SV = Soil Vapor Recovery Well Boring
CSP = Clean Stock Pile
ENSW = Excavation, North Side Wall
EESW = Excavation, East Side Wall
ESSW = Excavation, South Side Wall
PLBHN = Pipeline Bottom Hole, North
PLBHW = Pipeline Bottom Hole, West
PLBHS = Pipeline Bottom Hole, South
SP = Soil Stock Pile

TABLE 3
ANALYTICAL RESULTS of SOIL CONFIRMATION SAMPLES
Plains Pipeline, L.P.
SRS No. 2002-10235
Hugh Gathering East
Lea County, New Mexico

Sample ID Number	Sample Depth (bgs)	Sample Date	Lab ID	TNRCC Method 1005 Extended				SW 846-8021B				
				TPH C_6-C_{12} (mg/Kg)	TPH $>C_{12}$-C_{28} (mg/Kg)	TPH C_{28}-C_{35} (mg/Kg)	TPH C_6-C_{35} (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/Kg)	Total BTEX (mg/Kg)
CSP 1	NA	7/11/2008	307721-001	<16	68	<16	68	<0.0011	<0.0021	0.0016	0.014	0.0156
CSP 2	NA	7/11/2008	307721-002	<16	71.8	<16	71.8	<0.0011	<0.0021	0.0019	0.0143	0.0162
ENSW	11	7/11/2008	307721-003	<16.6	<16.6	<16.6	<16.6	<0.0011	<0.0022	<0.0011	ND	ND
EESW	6	7/11/2008	307721-004	<16.5	<16.5	<16.5	<16.5	<0.0011	<0.0022	<0.0011	ND	ND
ESSW	9	7/11/2008	307721-005	<16.5	<16.5	<16.5	<16.5	<0.0011	<0.0022	<0.0011	ND	ND
PLBHN	3.5	7/11/2008	307721-006	<16.1	<16.1	<16.1	<16.1	<0.0011	<0.0021	<0.0011	ND	ND
PLBHW	3.5	7/11/2008	307721-007	<20.9	<20.9	<20.9	<20.9	<0.0014	<0.0028	<0.0014	ND	ND
PLBHS	3.5	7/11/2008	307721-008	<15.4	<15.4	<15.4	<15.4	<0.0010	<0.0021	<0.0010	ND	ND

bgs = below ground surface
CSP = Clean Stock Pile
ENSW = Excavation, North Side Wall
EESW = Excavation, East Side Wall
ESSW = Excavation, South Side Wall
PLBHN = Pipeline Bottom Hole, North
PLBHW = Pipeline Bottom Hole, West
PLBHS = Pipeline Bottom Hole, South
NA = Not Applicable

TABLE 4
FIELD LOCATION of SOIL SAMPLES
Plains Pipeline, L.P.
SRS No. 2002-10235
Hugh Gathering East
Lea County, New Mexico

Sample ID	N/S (ft)	E/W (ft)	Elevation (bgs)
ENSW	(+)14	(+)6	11
ESSW	(-)14	0	9
EESW	0	(+)36	6
PLBHN	(+)1	(+)44	3.5
PLBHW	0	(+)39	3.5
PLBHS	(-)1	(+)44	3.5
SB1	(+)4	(-)2	
SB2	(+)3	(+)5	
SB3	(-)6	(-)1	
SB4	(-)5	(+)7	
SV1	(+)2	(+)1	
SV2	(-)5	(+)3	

ft = feet
bgs = below ground surface
SB = Soil Borings
SV = Soil Vapor Recovery Well Boring
ENSW = Excavation, North Side Wall
EESW = Excavation, East Side Wall
ESSW = Excavation, South Side Wall
PLBHN = Pipeline Bottom Hole, North
PLBHW = Pipeline Bottom Hole, West
PLBHS = Pipeline Bottom Hole, South

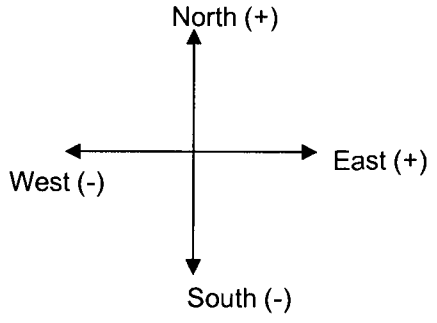


TABLE 5
ANALYTICAL RESULTS of SOIL STOCK PILE
Plains Pipeline, L.P.
SRS No. 2002-10235
Hugh Gathering East
Lea County, New Mexico

				TCLP Method SW-846 6010B							TCLP SVOCs by EPA 8270C						
Sample ID Number	Sample Date	Sample ID	TCLP Method SW-846 7470A Mercury	Barium	Arsenic	Selenium	Cadmium	Chromium	Silver	Lead	1,4-Dichlorobenzene	2,4-Dinitrotoluene	Hexachlorobenzene	Hexachlorobutadiene	Hexachloroethane	2-methylphenol	3&4-Methylphenol
			mg/L														
TCLP Hazardous Waste limits			**0.2**	**100**	**5**	**1**	**1**	**5**	**5**	**5**	**7.5**	**0.13***	**0.13***	**0.5**	**3**	**200**	**200**
SP 1	7/8/2008	307463-001	<0.0001	1.03	<0.2	<0.2	0.041	0.082	<0.04	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

SP = Soil Stock Pile
* = Quantitation limit is greater than the calculated regulatory level. The Quantitation limit therefore, becomes the regulatory level

			TCLP SVOCs by EPA 8270C														
Sample ID Number	Sample Date	Sample ID	Nitrobenzene	Pentachlorophenol	Pyridine	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	Benzene	2-Butanone	Carbon Tetrachloride	Chlorobenzene	Chloroform	1,4-Dichlorobenzene	1,2-Dichloroethane	1,1-Dichloroethene	Tetrachloroethylene	Trichloroethene	Vinyl Chloride
			mg/L															
TCLP Hazardous Waste limits			**2**	**100**	**5***	**400**	**2**	**0.5**	**200**	**0.5**	**100**	**6**	**7.5**	**0.5**	**0.7**	**0.7**	**0.5**	**0.2**
SP 1	7/8/2008	307463-001	<0.05	<0.05	<0.05	<0.05	<0.05	<0.025	<0.25	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.01

SP = Soil Stock Pile
* = Quantitation limit is greater than the calculated regulatory level. The Quantitation limit therefore, becomes the regulatory level

TABLE 6
ANALYTICAL RESULTS of SOIL SAMPLES from BORINGS
Plains Pipeline, L.P.
SRS No. 2002-10235
Hugh Gathering East
Lea County, New Mexico

Sample ID Number	Sample Depth (bgs in feet)	Sample Date	Lab ID	TNRCC Method 1005 Extended				SW 846-8021B				
				TPH C_6-C_{12} (mg/Kg)	TPH $>C_{12}$-C_{28} (mg/Kg)	TPH C_{28}-C_{35} (mg/Kg)	TPH C_6-C_{35} (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/Kg)	Total BTEX (mg/Kg)
							Work Plan Action Level					
							100	10	N/A	N/A	N/A	50
SV1-3A	22	8/13/2008	310066-001	2040	3620	537	6197	0.028	0.121	0.1079	0.2872	0.5441
SV1-6A	25	8/13/2008	310066-002	1870	3070	613	5553	0.0247	0.1469	0.1341	0.3656	0.6713
SV1-9A	28	8/13/2008	310066-003	1640	2710	444	4794	0.029 J*	0.13 J*	0.1189 J*	0.2199 J*	0.4978 J*
SV1-12A	31	8/13/2008	310066-004	4040	6420	941	11401	0.0237	0.1444	0.0164	0.2326	0.4171
SV1-15A	34	8/13/2008	310066-005	2490	3960	559	7009	0.0286	0.1247	0.013	0.1883	0.3546
SV2-3A	22	8/13/2008	310066-006	35.1	125	19.6	179.7	0.0042 J**	0.0319 J**	0.0769 J**	0.3067 J**	0.4197 J**
SV2-6A	25	8/13/2008	310066-007	137	439	57.3	633.3	0.0076 J**	0.1227 J**	0.2203 J**	1.056 J**	1.4066 J**
SV2-9A	28	8/13/2008	310066-008	252	765	110	1127	0.0069	0.0797	0.202	0.6107	0.8993
SV2-12A	31	8/13/2008	310066-009	ND	30	17	47	0.0011	0.0058	0.005	0.0163	0.0282
SV2-15A	34	8/13/2008	310066-010	<16	<16	<16	<16	<0.0011	0.0026	0.0025	0.0081	0.0132

SV = Soil Vapor Recovery Well Boring
J = Estimated Value
* = Surrogate recovery values outside the laboratory control limits (Bias could not be established)
** = Surrogate recovery values above the laboratory control limits (High bias)

TABLE 7

Summay of Manifests for Soil Transported to Lea Station Land Farm

Plains Pipeline, L.P.
SRS No. 2002-10235
Hugh Gathering East
Lea county, New Mexico

Date	Transporting Company	Volume Transported (yards)
7/18/2008	Big 10	60
7/18/2008	Enterprise Trucking	60
7/18/2008	Hungry Horse	60
7/18/2008	Bryan's	60
7/21/2008	Hungry Horse	72
7/21/2008	Bryan's	72
7/21/2008	Band I	72
7/21/2008	Enterprise Trucking	84
7/22/2008	Hungry Horse	84
7/22/2008	Enterprise Trucking	96
7/22/2008	Band I	96
7/22/2008	Bryan's	48
7/23/2008	Band I	36
7/23/2008	Hungry Horse	24
7/23/2008	Hungry Horse	36
Total		**960**

TABLE 8
ANALYTICAL RESULTS of SOIL SAMPLE from Monitor Well MW-13
Plains Pipeline, L.P.
SRS No. 2002-10235
Hugh Gathering East
Lea County, New Mexico

Sample ID Number	Sample Depth ft (bgs)	Sample Date	Lab ID	TNRCC Method 1005 Extended			SW 846-8021B				
				TPH C_6-C_{12} (mg/Kg)	TPH C_{12}-C_{28} (mg/Kg)	TPH C_{28}-C_{35} (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes	Total BTEX (mg/Kg)
MW13-60'	60	9/11/2008	311941-001	18.2 U	18.2 U	18.2 U	0.0012 U	0.0024 U	0.0012 U	ND	ND

Appendix C

NMOCD Approval Letter of Abatement Plan

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

PM

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Mark E. Fesmire, P.E.
Director
Oil Conservation Division

November 4, 2005

Ms. Camille Reynolds
Plains All American Pipeline, L.P.
3112 West Highway 82
Lovington, NM 88260

RE: Stage 1 and Stage 2 Abatement Plan (Revised)
Hugh Gathering 909402 (ref. # 2002-10235) Dated May 2005
Unit Letters M of Section 12 and P of Section 11, Township 21 South, Range 37 East
Lea County, New Mexico
NMOCD Ref. AP-0041

Dear Ms. Reynolds:

The New Mexico Oil Conservation Division (NMOCD) has received and reviewed the proposal shown above submitted on behalf of Plains All American Pipeline, L.P. (Plains) by Environmental Plus, Inc. (EPI). This abatement plan (AP) is hereby approved, pursuant to 19.15.1.19 NMAC, with the following conditions and understandings:

1. AP ref. 4.2 "Remediation Strategy": installation of a 2-foot thick clay barrier to isolate remaining contaminants is approved. This clay barrier will be compacted to 95% percent of the material's Standard Proctor Density per ASTM D-698 and extend a minimum or 5 feet beyond the contaminated soil in the floor of the excavation. Also, Plains will install a passive soil vapor ventilation system below the clay barrier to evacuate volatile organic vapors.
2. AP ref. 4.5 "Abatement and Monitoring Schedule": the portion of this paragraph that proposes cessation of abatement of the groundwater after 4 consecutive quarters of monitoring well data below regulatory limits is not approved. Eight (8) consecutive quarters shall be required pursuant to 19.15.1.19.B (4) NMAC.
3. Installation of a covering cap is required in addition to AP proposals. This cap shall be constructed using PVC (Polyvinyl chloride), or other equivalent material that meets or exceeds the various ASTM standards for PVC, shall be at least 12 mils thick, shall extend at least 3 feet beyond the areas of contamination, and shall be covered with at least 3 feet of clean soil prior to "backfilling, contouring and reseeding" activities described in parts 4.2.1.5 and 4.2.2.5 of the abatement plan.

NMOCD approval of this abatement plan does not relieve Plains of liability should its operations at this site prove to have been harmful to public health or the environment. Nor does it relieve Plains of its responsibility to comply with the rules and regulations of any other local, state or federal governmental agency.

If you have any questions, contact Ed Martin at (505) 476-3492 or ed.martin@state.nm.us

NEW MEXICO OIL CONSERVATION DIVISION

Roger C. Anderson
Environmental Bureau Chief

Copy: NMOCD, Hobbs
Environmental Plus, Inc.

Appendix D

NMOCD Approved Work Plan dated May 2, 2008

PREMIER
ENVIRONMENTAL SERVICES, INC

4800 Sugar Grove Blvd.
Suite 420
Stafford, TX 77469

Phone 281.240.5200
Fax 281.240.5201
www.premiercorp-usa.com

May 2, 2008

Mr. Jeff Dann, P.G.
Plains Marketing, L.P.
333 Clay Street, Suite 1600
Houston, Texas 77002

RE: Hugh Gathering Site Plains SMS No.: 2002-10235
Lea County, New Mexico
Work Plan for Excavation and Treatment of Hydrocarbon Impacted Soil
Premier Project No. 207032
AP-041

Dear Jeff,

Premier Environmental Services, Inc. (Premier) is pleased to present this proposal for excavation and treatment of hydrocarbon impact to the soils at the Plains Marketing, L.P. (Plains) Hugh Gathering site in Lea County, New Mexico (Figure 1).

SITE BACKGROUND

Assessment of the crude oil release site was initiated in 2002 by completing soil borings in and around the visually impacted areas. Additional borings were completed in 2006. This assessment and data collection was conducted by Environmental Plus, Inc (EPI). Table 1 displays the soil analytical data collected by EPI.

OBJECTIVE

The objectives of the remediation approach are to remove the heavily affected soil, to isolate and control residual COCs in the soil and to prevent their impact to groundwater (Figure 2). To accomplish these goals, the proposed remediation approach will include the following:

1. Excavation of surface soil impact by excavating soil containing the highest COC concentrations, and transporting the most heavily impacted soils off-site for land farm treatment.

2. Isolation and control of residual COCs in the remaining soil by placing an impermeable plastic liner at the base of the excavation. This will prevent precipitation from migrating down through any residual hydrocarbons in the soil column, and possibly transporting COCs to groundwater.

TECHNICAL APPROACH

The NMOCD-approved remediation strategy for this site mandates excavation of impacted soils to a depth of 15-feet bgs and disposal of the most heavily affected soil at the Plains Lea Station Landfarm. At the request of the landowner, the total depth of the excavation will be increase to 20 feet. The residual affected soil below 20 feet will be isolated by placing a clay or synthetic liner (liner) at the base of the excavation to prevent migration of COC to the underlying groundwater via infiltration of precipitation. To accelerate natural attenuation of the impacted soil left in place below the liner, the residual hydrocarbon below the floor of the excavations will be treated by passive soil vapor extraction (SVE) and with Micro Blaze (or similar product) prior to installation of the liner. The passive SVE will pull vapors from the subsurface impacted soil and along with the Micro Blaze will function to provide oxygen to the bacteria to

allow them to degrade the residual petroleum hydrocarbon. Because of the site's close proximity to the four-lane highway Mexico State Road 18 (NMSR18)), the excavation will not encroach onto the right-of-way. If, after excavating, samples of the sidewalls adjacent to NMSR18 indicate petroleum hydrocarbon levels in excess of the NMOCD remedial goals, Micro Blaze will be injected into the impacted sidewalls to a horizontal depth of at least 4-feet on 10-foot horizontal and 3-foot vertical centers.

REMEDIAL ACTION LEVELS

Remedial Action levels for soils specified in the approved Abatement Plan are as follows;

Soil from the surface to 8'bgs:

Remedial Action Levels

- TPH – 1000 mg/Kg
- BTEX – 50 mg/Kg
- Benzene – 10 mg/Kg

The soil from 8-feet bgs to 20-feet bgs:

Remedial Action Levels

- TPH – 100 mg/Kg
- BTEX – 50 mg/Kg
- Benzene – 10 mg/Kg

The soil from 20-feet bgs to 58-feet bgs (groundwater):

These soils will be isolated as specified in the abatement plan. The NMOCD Guidelines allow risk-based closure as an alternative to total removal of soils impacted above the site specific NMOCD remedial goals. Risk-based closures typically rely on the installation of an oversized engineered barrier designed to isolate the subsurface crude oil-affected soil, permanently cutting off and eliminating the groundwater exposure pathway (vertical transport mechanism).

To meet the requirements of the approved abatement plan the following scope of work will be required.

SCOPE OF WORK

- The site is divided into two areas (Figure 2), the shallow affected soil in the flow path of the release (Area 1) and the deeper affected soils associated with Borings BH1, BH5, BH11 and BH13 (Area 2). The most highly impacted areas will be excavated in Area 2 down to a depth of 20 feet. The excavation will be approximately 20 feet wide by 20 feet long. Excavation of surface soil from the flow path (Area 1) is anticipated to be approximately 40 feet long by 10 feet wide and up to 3 feet deep. Figure 2 shows the estimated size of the excavation. Sidewalls of each excavation will be visually inspected for stained soil and screened using a PID. Areas that are heavily stained or have PID readings of greater than 100 parts per million (ppm) will be further excavated, until PID readings are below 100 ppm. The estimated volume of excavated soil, based on a depth of 20 feet, is approximately 300 cubic yards for Area 2 and approximately 45 cubic yards for Area 1 (Table 2).
- Soil confirmation samples will be collected to verify that COC concentrations in the excavation sidewalls meet remediation goals. A buffer zone will be created in soil to minimize potential groundwater impact by over-excavating three feet (laterally and to the vertical depth of the excavation) beyond the remediated sidewalls. This is estimated to occur along the northern and southern sides of the excavation, resulting in excavation of an additional 90 cubic yards of non-impacted soil which can be used later to backfill the site.
- Soil at the Site is considered to be classified as Class B, based on OSHA safe trenching defined in 29 OSHA 1926, Subpart P. The excavation of class B soil requires 45 percent slope, or 1.5 feet

width for every one foot of depth. Benching will be done in the lower section of the excavation. If benching cannot be completed due to unstable sidewalls, sidewall slopes will be constructed.

- Treatment of the side wall along the east side of NMSR18 will be completed by injecting Micro Blaze (or similar product) into the impacted sidewalls to a horizontal depth of at least 4-feet on 10-foot horizontal and 3-foot vertical centers.
- Treatment below the base of the excavation will be completed by installing two passive SVE wells to a depth of 10 to 15 feet below the base of the excavation into the residual hydrocarbon affected soil. There are two areas in the base of the excavation that require treatment. These areas are specified in Table 3. In addition, the floor of the excavation will be saturated with Micro Blaze (or similar product) before the installation of the liner.
- Following installation of the passive SVE wells and treatment of the base of the excavation, a 20-mil, high-density polyurethane impermeable liner or a compacted clay liner will be placed over the base of the excavation. If possible, the synthetic liner will be placed as a single continuous barrier which may require some sealing (or welding). If a clay liner is installed, the two foot clay barrier will be installed in 1-foot thick lifts and compacted to 95% of the proctor density and the compaction tested by a qualified engineering firm. The base of the excavation will be graded with a high central area to create a drainage gradient. This will allow water that infiltrates from the surface to flow off the liner, away from residual hydrocarbons.
- The excavation will be backfilled with clean imported backfill material and previously excavated clean overburden used to create a buffer zone at the base of the excavation. The surface vegetation will be restored by reseeding or as negotiated with the landowner

To determine the effectiveness of the passive SVE system and treatment, soil samples will be collected two to three years after treatment of the residual hydrocarbons commence to see if the COC concentrations have been reduced.

Premier will provide a site specific health and safety plan (H&SP) prior to commencement of field activities. During the excavation and installation of the passive SVE activities at the site, Premier will provide field supervision services, confirmation soil sampling services and logistical support. After the field operations are concluded Premier will provide a report that document field activities, and discusses laboratory results with conclusions and recommendations.

If you have any questions concerning the information presented in this summary letter please call me at (281) 240-5200 extension 2703.

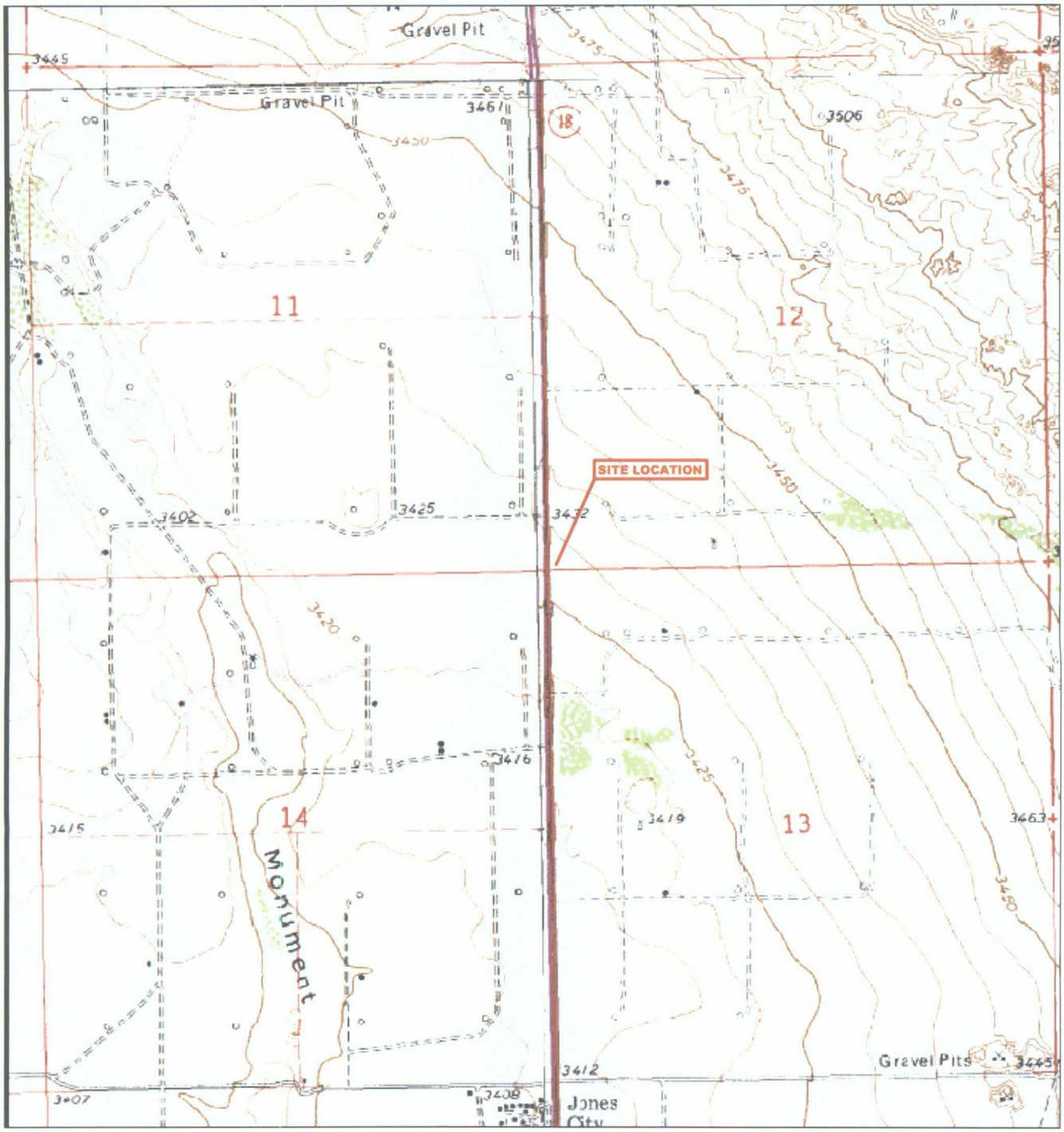
Yours very truly,

Chan Patel
Senior Project Manager

Andy Shook
Sr. Engineer (P.E.)

Attachments
Figures and Tables

PREMIER



Eunice NE Quadrangle
32°29'11"N Latitude & 103°07'31"W Longitude

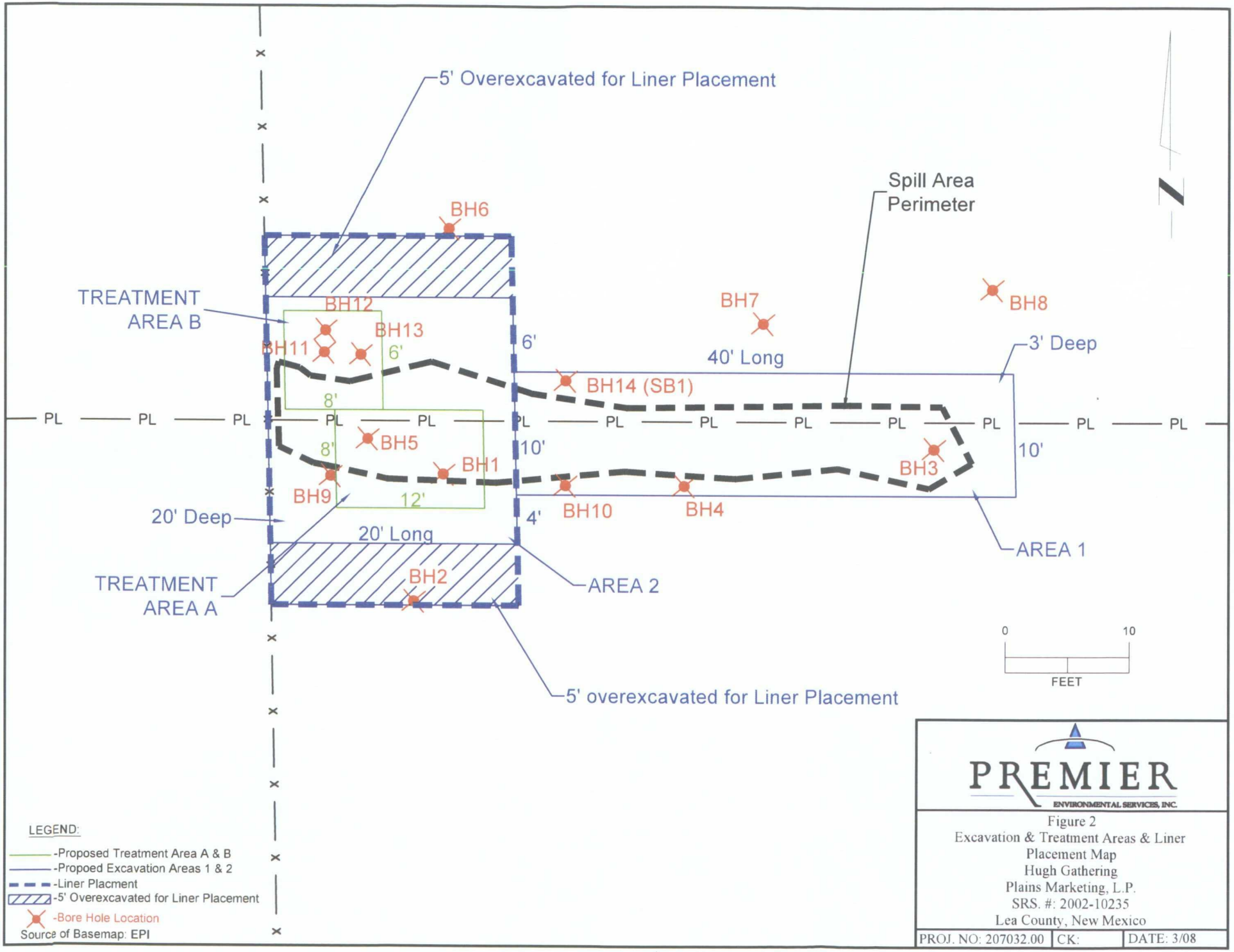
0 1/2 mile 1 mile
Distance in Miles

PREMIER
ENVIRONMENTAL SERVICES, INC.

Figure 1
Site Location Map
Hugh Gathering
Plains Marketing, L.P.
SRS. #: 2002-10235
Lea County, New Mexico

PROJ. NO: 207032.00	CK:	DATE: 3/08

P:\PROJECT FILES\CAD Files\Hugh Gathering\207032.00-9.dwg



PREMIER
ENVIRONMENTAL SERVICES, INC.

Figure 2
Excavation & Treatment Areas & Liner Placement Map
Hugh Gathering
Plains Marketing, L.P.
SRS. #: 2002-10235
Lea County, New Mexico

PROJ. NO: 207032.00	CK:	DATE: 3/08

TABLE 1
SOIL BORING DELINEATION DATA EASTSIDE OF NMSR 18
Plains Pipeline, L.P.
SRS No. 2002-10235
Hugh Gathering
Lea County, New Mexico

Sample Location	Sample Description	Sampling Interval (ft. bgs[1])	SAMPLE ID#	Date	Lithology	VOC Headspace (ppm)	GRO[3] (mg/Kg)	DRO[4] (mg/Kg)	TPH[5] (mg/Kg)	BTEX[9] (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	p/m Xylene (mg/Kg)	o-Xylene (mg/Kg)
BH1	Probe	10	SEL69902BH1-10	9/9/02	Brown Coarse Sand	1,161	9,580	9,910	19,490	426	39.1	96.4	102	130	58.1
	Probe	15	SEL69902BH1-15	9/9/02	Brown Coarse Sand	1,189	6,850	7,480	14,330	299	18.4	71.2	70.8	96.9	41.4
	Probe	20	SEL69902BH1-20	9/9/02	Brown Coarse Sand	1,280	5,370	6,370	11,740	214	7.83	50.1	41.5	81.2	33.1
BH2	Probe	5	SEL69902BH2-5	9/9/02	Brown Coarse Sand	2.0	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	10	SEL69902BH2-10	9/9/02	Brown Coarse Sand	1.4	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	15	SEL69902BH2-15	9/9/02	Brown Coarse Sand	0.9	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
BH3	Probe	5	SEL69902BH3-5	9/9/02	Tan Coarse Sand	1.3	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	10	SEL69902BH3-10	9/9/02	Tan Coarse Sand	1.0	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	15	SEL69902BH3-15	9/9/02	Brown Coarse Sand	0.4	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
BH4	Probe	5	SEL691002BH4-5	9/10/02	Tan Coarse Sand	2.4	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	10	SEL691002BH4-10	9/10/02	Tan Coarse Sand	1.9	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	15	SEL691002BH4-15	9/10/02	Brown Coarse Sand	1.6	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
BH5	Cutting	10	SEL691002BH5-10	9/10/02	Oil Stained Caliche	600	3,210	5,210	8,420	163	8.86	34.1	35.1	57.1	28.3
	Probe	15	SEL691002BH5-15	9/10/02	Brown Coarse Sand	542	7,730	9,010	16,740	294	16.1	67.4	71.0	96.2	43.7
	Probe	20	SEL691002BH5-20	9/10/02	Brown Coarse Sand	753	7,580	9,130	16,710	294	11.5	64.6	68.4	103	46.8
	Probe	25	SEL691002BH5-25	9/10/02	Tan Coarse Sand	750	1,340	2,400	3,740	27.0	0.192	3.57	6.21	11.9	5.12
	Probe	30	SEL691002BH5-30	9/10/02	Sandy Red Clay	10.4	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
BH6	Probe	5	SEL691102BH6-5	9/11/02	Tan Coarse Sand	3.1	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	10	SEL691102BH6-10	9/11/02	Brown Caliche Sand	3.0	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	15	SEL691102BH6-15	9/11/02	Brown Coarse Sand	1.6	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
BH7	Probe	5	SEL691102BH7-5	9/11/02	Tan Coarse Sand	1.6	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	10	SEL691102BH7-10	9/11/02	Tan Coarse Sand	0.8	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	15	SEL691102BH7-15	9/11/02	Tan Coarse Sand	0.3	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
BH8	Probe	5	SEL691102BH8-5	9/11/02	Tan Coarse Sand	1.7	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	10	SEL691102BH8-10	9/11/02	Brown Caliche Sand	1.2	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
	Probe	15	SEL691102BH8-15	9/11/02	Tan Coarse Sand	0.8	<10	<10	ND	ND	<0.025	<0.025	<0.025	<0.025	<0.025
BH9	Cutting	5	BH9-5	7/12/06	Tan Caliche Rock	0.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Cutting	10	BH9-10	7/12/06	Tan Caliche Rock	1.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Cutting	15	BH9-15	7/12/06	Tan Caliche Rock	2.5	ND	ND	ND	ND	ND	ND	ND	J[0.0226]	ND
	Probe	20	BH9-20	7/12/06	White Sandstone	0.0	ND	ND	ND	0.075	ND	ND	0.033	0.042	ND
BH10	Cutting	5	BH10-5	7/13/06	Tan Caliche Rock	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Cutting	10	BH10-10	7/13/06	Tan Caliche Rock	0.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Cutting	15	BH10-15	7/13/06	Tan Caliche Rock	0.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Probe	20	BH10-20	7/13/06	Tan Caliche Rock	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND
BH11	Cutting	5	BH11-5	7/13/06	Tan Caliche Rock	929	444	658	1,102	16.1	0.092	0.848	2.41	9.19	3.61
	Cutting	10	BH11-10	7/13/06	Tan Caliche Rock	685	1,230	2,794	4,024	24.2	0.474	2.26	2.93	14.4	4.16
	Cutting	15	BH11-15	7/13/06	Red Brown Sandstone	907	1,420	2,672	4,092	89.1	3.87	5.84	18.9	45.4	15.1
	Cutting	20	BH11-20	7/13/06	Red Brown Sandstone	752	1,560	2,836	4,396	122	3.71	14.2	21.8	60.4	22.3
	--	22	Refusal	7/13/06	Red Brown Sandstone	--	--	--	--	--	--	--	--	--	--

TABLE 1
SOIL BORING DELINEATION DATA EASTSIDE OF NMSR 18
Plains Pipeline, L.P.
SRS No. 2002-10235
Hugh Gathering
Lea County, New Mexico

Sample Location	Sample Description	Sampling Interval (ft. bgs[1])	SAMPLE ID#	Date	Lithology	VOC Headspace (ppm)	GRO[3] (mg/Kg)	DRO[4] (mg/Kg)	TPH[5] (mg/Kg)	BTEX[9] (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	p/m Xylene (mg/Kg)	o-Xylene (mg/Kg)
BH12	Probe	5	BH11-9	7/13/06	Tan Caliche Rock	1.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
	--	9	Refusal	7/13/06	Tan Caliche Rock	--	--	--	--	--	--	--	--	--	--
BH13	Cutting	5	BH13-5	7/14/06	Oil Stained Caliche Rock	352	163	589	752	2.25	ND	0.148	0.347	1.16	0.594
	Cutting	10	BH13-10	7/14/06	Oil Stained Caliche Rock	960	588	1,741	2,329	5.79	0.069	0.477	0.733	3.66	0.853
	Cutting	15	BH13-15	7/14/06	Red Brown Sandstone	1,633	1,220	2,156	3,376	53.6	2.35	4.15	11.5	28.6	7.00
	Cutting	20	BH13-20	7/14/06	Tan Sandstone	1,364	1,110	2,794	3,904	49.4	1.05	4.43	8.76	25.4	9.75
	Probe	25	BH13-25	7/14/06	Tan Sandstone	379	340	1,723	2,063	4.38	J[0.0104]	0.210	0.847	2.34	0.979
	Cutting	30	BH13-30	7/14/06	Brown Sandstone	133	54.6	255	310	0.443	J[0.0104]	0.097	0.088	0.198	0.060
	Cutting	35	BH13-35	7/14/06	Red Clay/sand/gravel	75.3	51.4	305	357	0.180	ND	0.057	0.043	0.080	J[0.0245]
	Cutting	40	BH13-40	7/14/06	Red Clay/sand/gravel	39.7	10.2	46.9	57.1	0.076	ND	J[0.0225]	J[0.0220]	0.076	J[0.0204]
	Probe	46	BH13-46	7/14/06	Red Clay/sand/gravel	2.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
BH14 (SB1)	Cutting	4	SB1-4	6/14/06	White Caliche Rock	0.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Cutting	9	SB1-9	6/14/06	White Caliche Rock	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Probe	12	SB1-12	6/14/06	Tan Sandstone	0.9	27.1	ND	27.1	ND	ND	ND	ND	ND	ND
	Probe	19	SB1-19	6/14/06	Light Gray Sandstone	0.8	J[6.87]	ND	J[6.87]	ND	ND	ND	ND	ND	ND
	--	23	Refusal	6/14/06	Light Gray Sandstone	--	--	--	--	--	--	--	--	--	--
Method Detection Limit							10	10			0.025	0.025	0.025	0.025	0.025
Remedial Goals for soil from the surface to ~8'bgs						100			1000	50.0000	10.0000				
Remedial Goals for soil from ~8'bgs to the groundwater at ~58'bgs						100			100	50.0000	10.0000				

100 ppm Isobutylene calibration gas = 101 ppm

[1]bgs – below ground surface

[2]VOC–Volatile Organic Contaminants/Constituents

[3]GRO-Gasoline Range Organics C_6-C_{12}

[4]DRO-Diesel Range Organics C_{12}-C_{35}

[5]TPH-Total Petroleum Hydrocarbon = GRO+DRO.

na - not analyzed

[9]BTEX - Mass sum of benzene, toluene, ethylbenzene, and xylenes

ND - not detected above the method detection limit.

All data collected by EPI.

TABLE 2
EXCAVATION VOLUME ESTIMATES
Hugh Gathering Site
Lea County, New Mexico
Plains SRS No.: 2002-10235

Areas Requiring Excavation	Length (feet)	Width (feet)	Depth (feet)	Surface Area (square feet)	Volume (y3)
Area 1 flow path	40	10	3	400	44.44
Area 2 -	20	20	20	400	296.30
Additional Area to be excavated for liner placement	20	6	20	120	88.89
Sub Totals				920	429.63

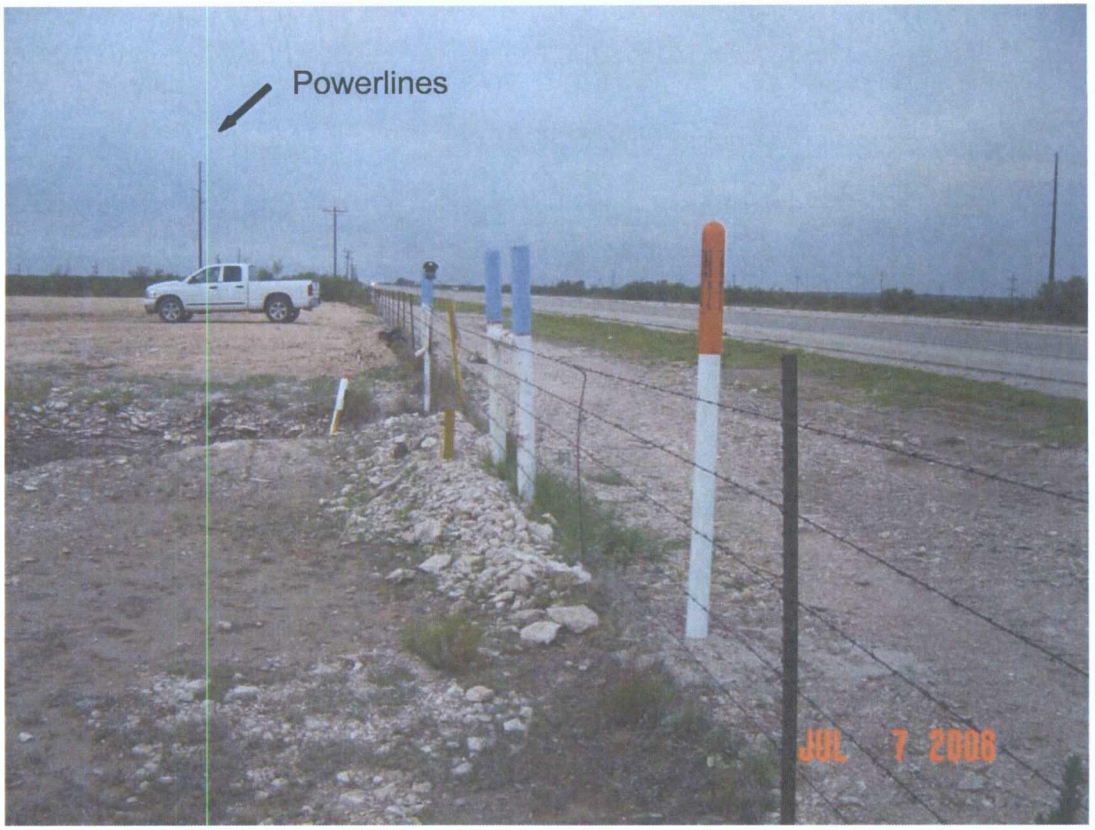
TABLE 3
TREATMENT VOLUME ESTIMATES
Hugh Gathering Site
Lea County, New Mexico
Plains SRS No.: 2002-10235

Areas Requiring Treatment	Length (feet)	Width (feet)	Depth (feet)	Surface Area (square feet)	Volume (y3)
Area A by BH1 and BH9	12	8	10	96	35.56
Area B by BH11 and BH13	8	6	10	48	17.78
Sub Totals				144	53.33

Fluff factor have not been considered for the excavated soil.

Appendix E

Site Photographs



Photograph 1: Under the power lines, a backhoe was used to excavate soil around the pipeline in the vicinity of NMSR18 right-of-way.

Photograph 2: A view of the north side of the excavated area where clean soil was removed and stockpiled to create ramps into the excavation.

Photograph 3: A view of the west wall of the excavation, which is being treated by injecting Micro-Blaze solution.

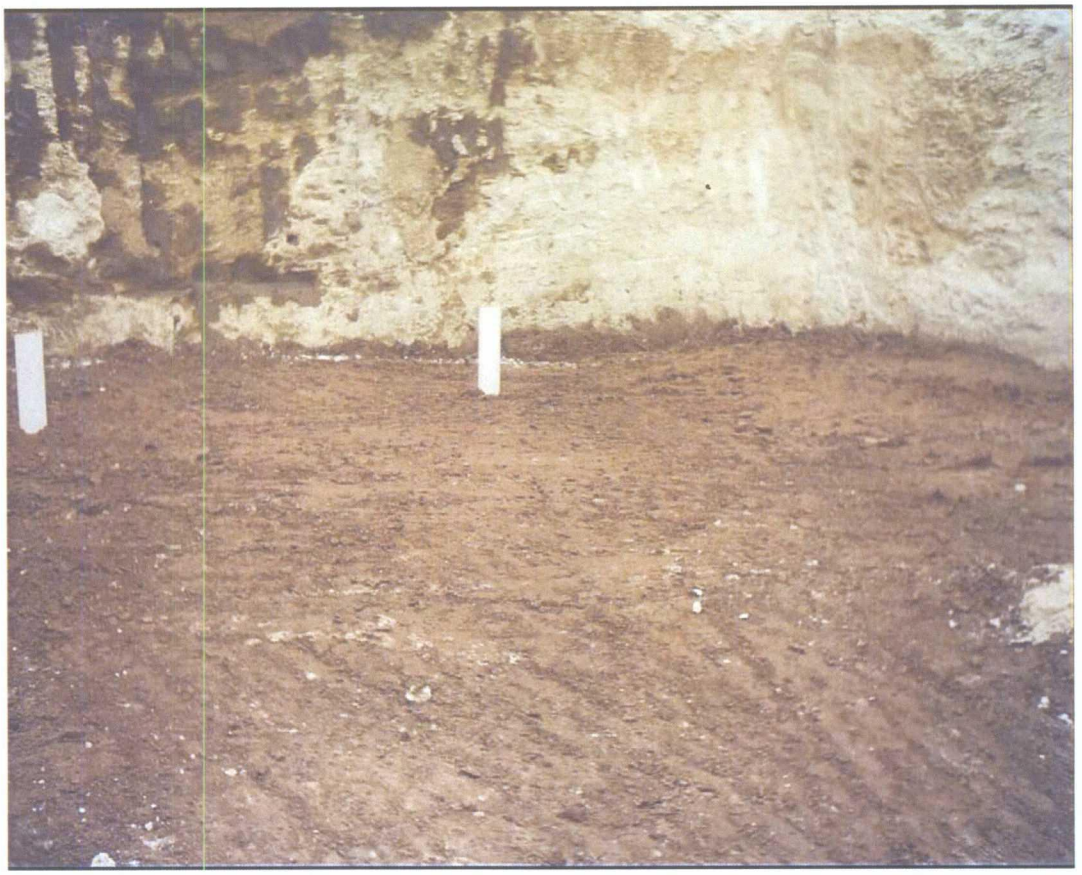
Photograph 4: A view of the west wall of the (five foot depth) excavation, treated by injecting Micro-Blaze solution.

Photograph 5: Affected soils were removed until the excavation extended 22 feet from the west wall, 28 feet wide (north to south) and 19 feet deep.

Photograph 6: The pit was over-excavated an additional 5 feet beyond the depth of residual affected soil at the base of excavation, as required prior to placement of the impermeable clay liner.

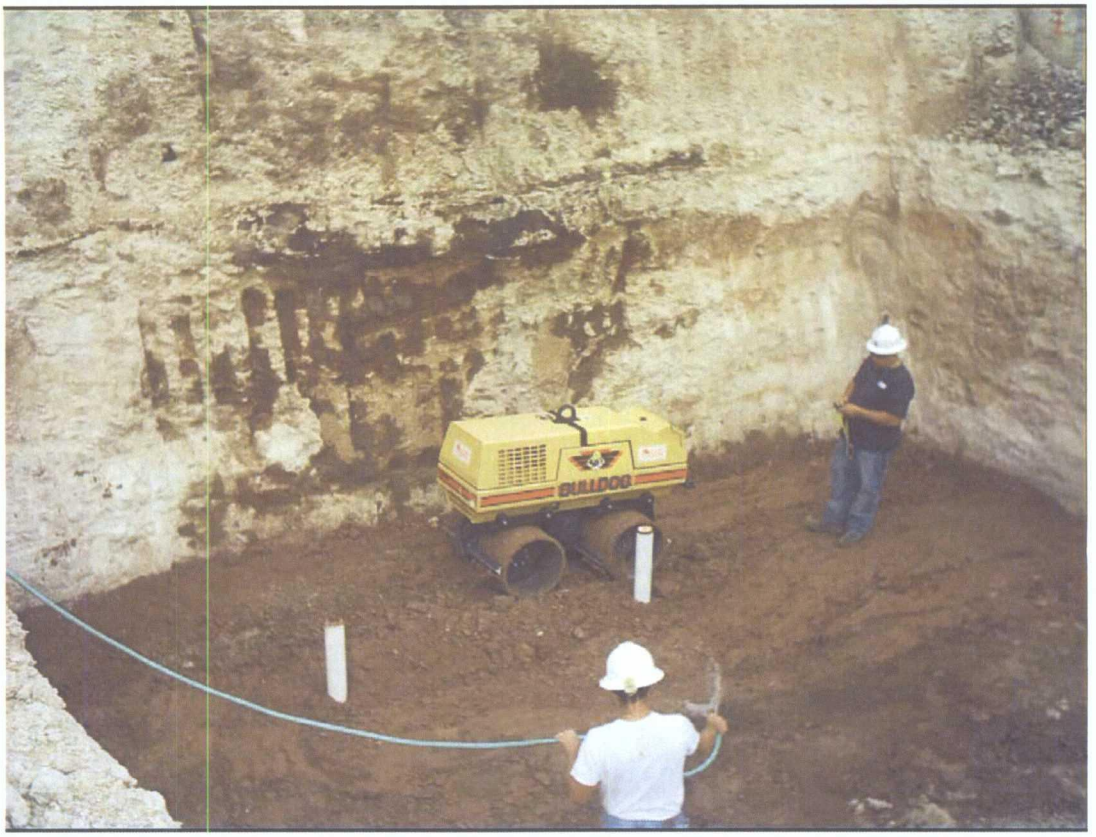
Photograph 7: The ramp into the excavation was graded with a slope of 4:1 to allow a truck mounted drilling rig access into the base of the excavation to install the passive soil vapor ventilation wells and 4 soil borings.

Photograph 8: The excavation was benched, prior to the installation of soil borings in the base of the excavation.



Photograph 9: Additional bentonite was placed around the base of wells prior to placement of the clay liner, forming a seal between the liner and well.

Photograph 10: The Micro-Blaze mixture was injected using 3,300 pounds per square inch of pressure into the affected sidewalls to a horizontal depth of at least 5-feet on 5-foot horizontal and 3-foot vertical centers.



Photograph 11: The 2-feet thick clay barrier was installed in 6-8 inch lifts and compacted down to 4 to 5 inches using a 36 inch wide, ride on roller compactor.

Photograph 12: Pettigrew & Associates P.A. (Pettigrew), a qualified engineering firm, tested each one foot thick layer of compacted clay.

Photograph 13: The clay barrier extended at least 5-feet horizontally beyond the impacted soil in the floor of the excavation and was contoured to shed water

Photograph 14: Three feet of riser was left above the ground surface and 8-inch diameter wind turbines were permanently affixed to the 4" PVC riser.

Photograph 15: Using the loader, the backfill material was placed.

Photograph 16: The backfill material was then bucket compacted using the track-hoe where possible, except adjacent to the pipeline, fence and around the SVE wells.

Photograph 17: The borehole for monitor well MW-13 was located approximately 37 feet to the south of the gathering line and 35 feet east of fence associated with the right-of-way for NMSR18.

Photograph 18: A metal shroud was mounted in a two feet by two feet concrete pad adjacent to the well.

Appendix F

Analytical Laboratory Reports – Available Electronically on CD only

- Analytical Report: 307463 – Xenco Laboratories (July 8, 2008)
  Sampe ID No. 001

- Analytical Report: 307721 – Xenco Laboratories (July 11, 2008)
  Sampe ID Nos. 001
  002
  003
  004
  005
  006
  007
  008

- Analytical Report: 310066 – Xenco Laboratories (August 13, 2008) and Quality Assurance Review Memorandum (August 20, 2008)
  Sampe ID Nos. 001
  002
  003
  004
  005
  006
  007
  008
  009
  010

- Analytical Report: 311941 – Xenco Laboratories (September 5, 2008)
  Sampe ID No. 001

Appendix G

NMOCD Form C-138

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

Form C-138
Revised March 12, 2007

*Surface Waste Management Facility Operator and Generator shall maintain and make this documentation available for Division inspection.

REQUEST FOR APPROVAL TO ACCEPT SOLID WASTE

1. **Generator Name and Address:**
Plains Pipeline, L.P.
3112 West US Hwy. 82
Lovington, New Mexico 88260

2. **Originating Site:**
Hugh Gathering

3. **Location of Material (Street Address, City, State or ULSTR):**
Unit Letter M of Section 12, Township 21 South, Range 37 East

4. **Source and Description of Waste:**
Hugh Gathering 6-Inch pipeline

Estimated Volume 500 yds yd^3 / bbls Known Volume (to be entered by the operator at the end of the haul) _____ yd^3 / bbls

5. **GENERATOR CERTIFICATION STATEMENT OF WASTE STATUS**

I, Camille Bryant, representative or authorized agent for Plains Pipeline, L.P. do hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste is: (Check the appropriate classification)

☐ RCRA Exempt: Oil field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste. *Operator Use Only: Waste Acceptance Frequency* ☐ *Monthly* ☐ *Weekly* ☐ *Per Load*

☒ RCRA Non-Exempt: Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR 261.21-261.24, or listed hazardous waste as defined in 40 CFR, part 261, subpart D, as amended. The following documentation is attached to demonstrate the above-described waste is non-hazardous. (Check the appropriate items)

☐ MSDS Information ☒ RCRA Hazardous Waste Analysis ☐ Process Knowledge ☐ Other (Provide description in Box 4)

GENERATOR 19.15.36.15 WASTE TESTING CERTIFICATION STATEMENT FOR LANDFARMS

I, Camille Bryant, representative for Plains Pipeline, L.P. do hereby certify that representative samples of the oil field waste have been subjected to the paint filter test and tested for chloride content and that the samples have been found to conform to the specific requirements applicable to landfarms pursuant to Section 15 of 19.15.36 NMAC. The results of the representative samples are attached to demonstrate the above-described waste conform to the requirements of Section 15 of 19.15.36 NMAC.

5. **Transporter:**

OCD Permitted Surface Waste Management Facility

Name and Facility Permit #: Plains All American Lea Station Land Farm #GW-351

Address of Facility: NW ¼ of Section 28, Township 20 South, Range 37 East

Method of Treatment and/or Disposal:

☐ Evaporation ☐ Injection ☐ Treating Plant ☒ Landfarm ☐ Landfill ☐ Other

Waste Acceptance Status:

☒ **APPROVED** ☐ **DENIED** (Must Be Maintained As Permanent Record)

PRINT NAME: Camille Bryant TITLE: Remediation Coordinator DATE: 7/18/08

SIGNATURE: Camille Bryant TELEPHONE NO.: 505-441-0965

Appendix H

Pettigrew & Associates P.A. Reports

LABORATORY TEST REPORT

PETTIGREW & ASSOCIATES, P.A.

1110 N. GRIMES
HOBBS, NM 88240
(505) 393-9827

DEBRA PICKENS PETTIGREW
WILLIAM M. PICKENS III, P.E.

To:	Hungry Horse PO Box 1058 Hobbs, NM 88241	**Material:**	Red Clay
		Test Method:	ASTM: D 2922
Project:	Hue Gathering Project No. 2008.1233		
Date of Test:	September 5, 2008	**Depth:**	See Below
		Depth of Probe:	6"

Test No.	Location	Dry Density % Max	% Moisture	Depth
5632	Contamination Area	102.3	16.2	2nd Lift

Control Density: 100.8
ASTM: D 698

Optimum Moisture: 19.1%

Required Compaction: 95%

Densometer ID: 5357

Lab No.: 08 7437-7438

Copies To: Hungry Horse

PETTIGREW & ASSOCIATES

BY: _____

BY: _____ P.E.

LABORATORY TEST REPORT

PETTIGREW & ASSOCIATES, P.A.
1110 N. GRIMES
HOBBS, NM 88240
(505) 393-9827

AASHTO R18
DEBRA P. HICKS, P.E./L.S.I.
WILLIAM M. HICKS. III, P.E./P.S.

To: Hungry Horse
PO Box 1058
Hobbs, NM 88241

Material: Red Clay

Test Method: ASTM: D 2922

Project: Hue Gathering
Project No. 2008.1233

Date of Test: September 5, 2008

Depth: See Below

Depth of Probe: 6"

Test No.	Location	Dry Density % Max	% Moisture	Depth
SG 1	Contamination Area	101.7	14.6	1st Lift

Control Density: 100.8
ASTM: D 698

Optimum Moisture: 19.1%

Required Compaction: 95%

Densometer ID: 5357

Lab No.: 08 6973

Copies To: Hungry Horse

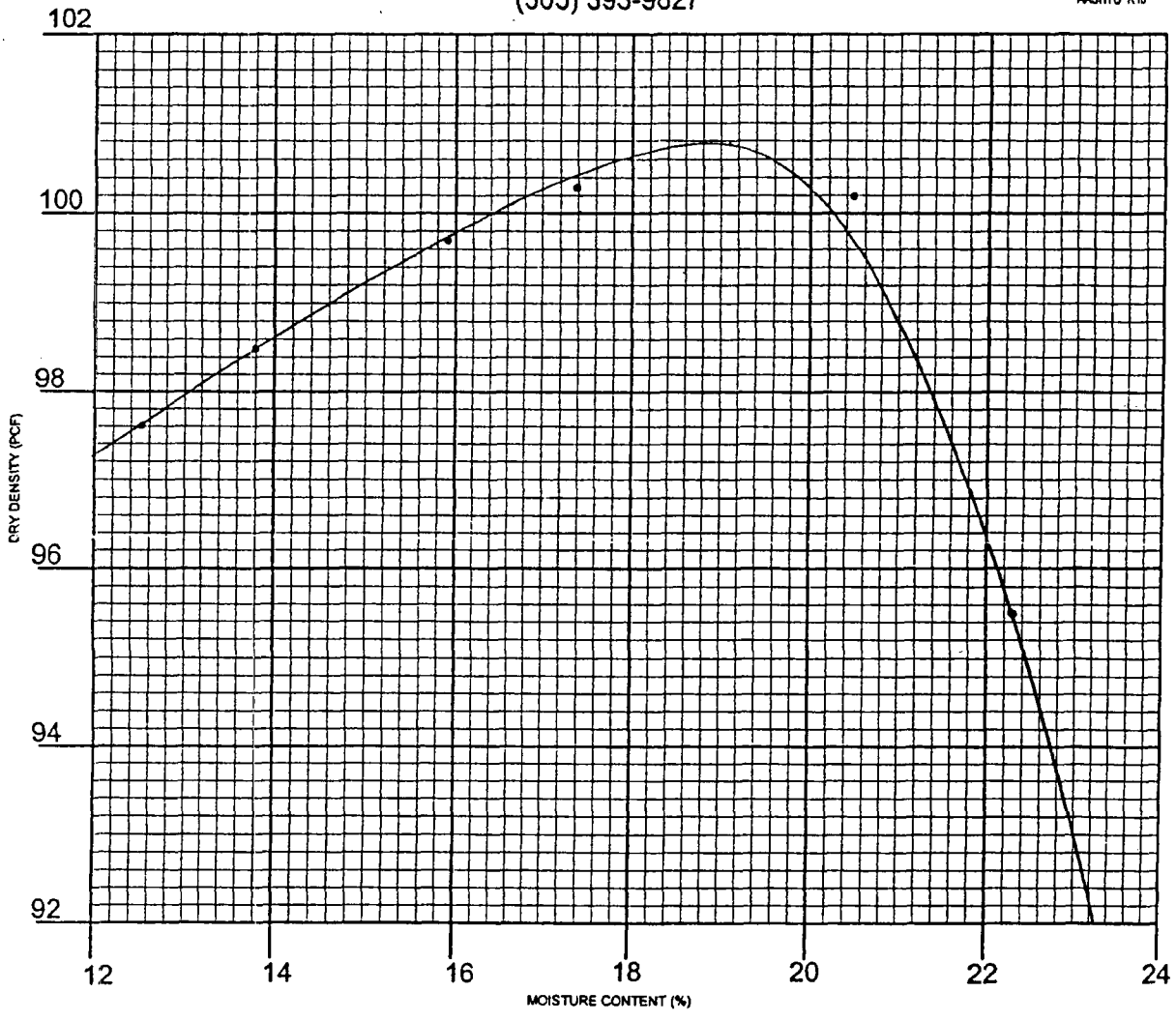
PETTIGREW & ASSOCIATES

BY: Erica M Hunt

BY: Debra P. Hicks P.E.

PETTIGREW & ASSOCIATES, P.A.
1110 N. GRIMES ST.
HOBBS, NM 88240
(505) 393-9827

AASHTO R18



CLIENT: Hungry Horse PROJECT: Hue Gathering Project No. 2008.1233

SAMPLE LOCATION: Byrd Pid

SOIL DESCRIPTION: Red Clay

SOIL CLASSIFICATION: _____ TEST METHOD: ASTM: D 698

ATTERBERG: LL ____ PI ____ Sampled & Delivered 9/04/08

DATE: 9/05/08 LAB NO. 08 6949-6950

DRY WEIGHT LB/CU. FT. 100.8 MOISTURE CONTENT % 19.1

SIEVE ANALYSIS - % PASSING									

PETTIGREW & ASSOCIATES

COPIES: Hungry Horse

BY: Erica M Hunt

BY: Allen P. Patt. P.E

LABORATORY TEST REPORT
PETTIGREW & ASSOCIATES, P.A.
1110 N. GRIMES
HOBBS, NM 88240
(505) 393-9827

To	Hungry Horse P.O. Box 1058 Hobbs, NM 88241	Material:	Red Clay
		Test Method	ASTM: D 2922
Project	Hue Gathering Project No. 2008.1235		
Date of Test	September 5, 2008	Depth:	See Below
		Depth of Probe	6"

Test No.	Location	Dry Density % Max	% Moisture	Depth
[illegible]	Contamination Area	102.[illegible]	10.2	[illegible]

Control Density	100.0 ASTM: D 698	Optimum Moisture:	19.1%
Required Compaction:	95%	Densometer ID:	5357
Lab No.:	08 7437-7436		
Copies To	Hungry Horse		

PETTIGREW & ASSOCIATES

BY: [signature]

BY: [signature] P.E.

Oct 08 08 02:43p PETTIGREW 505 393 1543 p.2

Appendix I

Manifests

PLAINS ALL AMERICAN

Lea Station Land Farm
PERMIT #GW-351

CERTIFICATE OF "NON-EXEMPT" WASTE STATUS
AND
TRANSPORTER MANIFEST AND CHAIN-OF-CUSTODY

COMPANY PLAINS MARKETING

ORIGIN UL OR ¼¼: UL-M SECTION: 12 TOWNSHIP: T21S RANGE:R37E

SOURCE DESCRIPTION HUGH GATHERING REF#2002-10235

AS A CONDITION OF ACCEPTANCE FOR DISPOSAL, I HEREBY CERTIFY THAT THIS WASTE IS A NON-EXEMPT WASTE AS DEFINED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA) JULY 1988 REGULATORY DETERMINATION AND TO MY KNOWLEDGE, THIS WASTE BEEN CHARACTERIZED AS "NON-HAZARDOUS" PURSUANT TO THE PROVISIONS OF EPA 40 CFR PART 261 SUBPART C AND HAS NOT BEEN COMINGLED WITH AN EPA 40 CFR PART 261 SUBPART D "LISTED WASTE." LIKEWISE, THIS WASTE DOES NOT CONTAIN NATURALLY OCCURRING RADIOACTIVE MATERIAL (NORM) PURUSANT TO 20 NMAC 3.1 SUBPART 1403 AND CONTAINS NO FREE LIQUID PURSUANT TO THE "PAINT FILTER TEST" EPA METHOD 9095A.

NORM EXPOSURE RATE: _____ PCI/GM

I, CAMILLE BRYANT, THE UNDERSIGNED AGENT FOR, PLAINS ALL AMERICAN, HEREBY CERTIFY THAT, BASED ON PERSONAL KNOWLEDGE, THE ABOVE STATEMENT IS TRUE AND CORRECT.

NAME CAMILLE REYNOLDS
TITLE ENVIRONMENTAL COORDINATOR
ADDRESS 3112 WEST US HWY 82
LOVINGTON, NEW MEXICO 88260
SIGNATURE Camille Bryant
DATE 7/18/2008

TRANSPORTATION MANIFEST AND CHAIN-OF-CUSTODY

Transporting Co.: Bia 10 Driver Signature: Maria Galindo
Volume: 60 yd³ Signature Date: 7-18-08

Plains All American Lea Station Landfarm Attendant Signature _____
Signature Date:

FILE COPY

PLAINS ALL AMERICAN

Lea Station Land Farm
PERMIT #GW-351

CERTIFICATE OF "NON-EXEMPT" WASTE STATUS
AND
TRANSPORTER MANIFEST AND CHAIN-OF-CUSTODY

COMPANY PLAINS MARKETING

ORIGIN UL OR ¼¼: UL-M SECTION: 12 TOWNSHIP: T21S RANGE:R37E

SOURCE DESCRIPTION HUGH GATHERING REF#2002-10235

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NAME CAMILLE REYNOLDS
TITLE ENVIRONMENTAL COORDINATOR
ADDRESS 3112 WEST US HWY 82
LOVINGTON, NEW MEXICO 88260
SIGNATURE Camille Bryant
DATE 7/18/2008

TRANSPORTATION MANIFEST AND CHAIN-OF-CUSTODY

Transporting Co.: Enterprise Trucking Driver Signature: Rudy Garcia
Volume: 60 yd³ Signature Date: 07/08/08

Plains All American Lea Station Landfarm Attendant Signature _____
Signature Date:

PLAINS ALL AMERICAN

Lea Station Land Farm
PERMIT #GW-351

CERTIFICATE OF "NON-EXEMPT" WASTE STATUS
AND
TRANSPORTER MANIFEST AND CHAIN-OF-CUSTODY

COMPANY Plains Marketing

ORIGIN UL OR ¼¼: UL-M SECTION: 12 TOWNSHIP: T21S RANGE:R37E

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NORM EXPOSURE RATE: _____ PCI/GM

I, Camille Bryant, THE UNDERSIGNED AGENT FOR, Plains All American, HEREBY CERTIFY THAT, BASED ON PERSONAL KNOWLEDGE, THE ABOVE STATEMENT IS TRUE AND CORRECT.

NAME Camille Reynolds
TITLE Environmental Coordinator
ADDRESS 3112 West US Hwy 82
Lovington, New Mexico 88260
SIGNATURE Camille Bryant
DATE 7/18/2008

TRANSPORTATION MANIFEST AND CHAIN-OF-CUSTODY

Transporting Co.: Hungry Horse	Driver Signature: Clam Mc
Volume: 60 yd³	Signature Date: 7-18-08
Plains All American Lea Station Landfarm Attendant Signature	
Signature Date:	

PLAINS ALL AMERICAN

Lea Station Land Farm
PERMIT #GW-351

CERTIFICATE OF "NON-EXEMPT" WASTE STATUS
AND
TRANSPORTER MANIFEST AND CHAIN-OF-CUSTODY

COMPANY Plains Marketing

ORIGIN UL OR ¼¼: UL-M SECTION: 12 TOWNSHIP: T21S RANGE:R37E

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NAME Camille Reynolds
TITLE Environmental Coordinator
ADDRESS 3112 West US Hwy 82
Lovington, New Mexico 88260
SIGNATURE Camille Bryant
DATE 7/18/2008

TRANSPORTATION MANIFEST AND CHAIN-OF-CUSTODY

Transporting Co.: Bryans	Driver Signature: Temple D Bishop
Volume: 60 yd³	Signature Date: 7-18-08
Plains All American Lea Station Landfarm Attendant Signature	
Signature Date:	

PLAINS ALL AMERICAN

Lea Station Land Farm
PERMIT #GW-351

CERTIFICATE OF "NON-EXEMPT" WASTE STATUS
AND
TRANSPORTER MANIFEST AND CHAIN-OF-CUSTODY

COMPANY Plains Marketing

ORIGIN UL OR ¼¼: UL-M SECTION: 12 TOWNSHIP: T21S RANGE:R37E

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NORM EXPOSURE RATE: _____ PCI/GM

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NAME Camille Reynolds
TITLE Environmental Coordinator
ADDRESS 3112 West US Hwy 82
Lovington, New Mexico 88260
SIGNATURE Camille Bryant
DATE 7/18/2008

TRANSPORTATION MANIFEST AND CHAIN-OF-CUSTODY

Transporting Co.: Hungry Horse Driver Signature: Benny Hanna
Volume: 72 yd³ Signature Date: 7-21-08

Plains All American Lea Station Landfarm Attendant Signature _____
Signature Date:

PLAINS ALL AMERICAN

Lea Station Land Farm
PERMIT #GW-351

CERTIFICATE OF "NON-EXEMPT" WASTE STATUS
AND
TRANSPORTER MANIFEST AND CHAIN-OF-CUSTODY

COMPANY PLAINS MARKETING

ORIGIN UL OR ¼¼: UL-M SECTION: 12 TOWNSHIP: T21S RANGE:R37E

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NAME CAMILLE REYNOLDS
TITLE ENVIRONMENTAL COORDINATOR
ADDRESS 3112 WEST US HWY 82
LOVINGTON, NEW MEXICO 88260
SIGNATURE Camille Bryant
DATE 7/18/2008

TRANSPORTATION MANIFEST AND CHAIN-OF-CUSTODY

Transporting Co.: Bryans	Driver Signature: Temple G Bishop
Volume: 20 yd³	Signature Date: 7-21-08
Plains All American Lea Station Landfarm Attendant Signature	
	Signature Date:

PLAINS ALL AMERICAN

Lea Station Land Farm
PERMIT #GW-351

CERTIFICATE OF "NON-EXEMPT" WASTE STATUS
AND
TRANSPORTER MANIFEST AND CHAIN-OF-CUSTODY

COMPANY PLAINS MARKETING

ORIGIN UL OR ¼¼: UL-M SECTION: 12 TOWNSHIP: T21S RANGE: R37E

SOURCE DESCRIPTION HUGH GATHERING REF#2002-10235

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NAME CAMILLE REYNOLDS
TITLE ENVIRONMENTAL COORDINATOR
ADDRESS 3112 WEST US HWY 82
LOVINGTON, NEW MEXICO 88260
SIGNATURE Camille Bryant
DATE 7/18/2008

TRANSPORTATION MANIFEST AND CHAIN-OF-CUSTODY

Transporting Co.: B and I Driver Signature: [signature]
Volume: 72 yd³ Signature Date: 7-21-08

Plains All American Lea Station Landfarm Attendant Signature ____________
Signature Date: ____________

PLAINS ALL AMERICAN

Lea Station Land Farm
PERMIT #GW-351

CERTIFICATE OF "NON-EXEMPT" WASTE STATUS
AND
TRANSPORTER MANIFEST AND CHAIN-OF-CUSTODY

COMPANY Plains Marketing

ORIGIN UL OR ¼¼: UL-M SECTION: 12 TOWNSHIP: T21S RANGE:R37E

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NORM EXPOSURE RATE: _____ PCI/GM

I, Camille Bryant, THE UNDERSIGNED AGENT FOR, Plains All American, HEREBY CERTIFY THAT, BASED ON PERSONAL KNOWLEDGE, THE ABOVE STATEMENT IS TRUE AND CORRECT.

NAME Camille Reynolds
TITLE Environmental Coordinator
ADDRESS 3112 West US Hwy 82
Lovington, New Mexico 88260
SIGNATURE Camille Bryant
DATE 7/18/2008

TRANSPORTATION MANIFEST AND CHAIN-OF-CUSTODY

Transporting Co.: Enterprise Trucking Driver Signature: Rudy Garcia
Volume: 84 yd³ Signature Date: 07/21/08

Plains All American Lea Station Landfarm Attendant Signature _____
Signature Date:

PLAINS ALL AMERICAN

Lea Station Land Farm
PERMIT #GW-351

CERTIFICATE OF "NON-EXEMPT" WASTE STATUS
AND
TRANSPORTER MANIFEST AND CHAIN-OF-CUSTODY

COMPANY PLAINS MARKETING

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NAME CAMILLE REYNOLDS
TITLE ENVIRONMENTAL COORDINATOR
ADDRESS 3112 WEST US HWY 82
LOVINGTON, NEW MEXICO 88260
SIGNATURE Camille Bryant
DATE 7/18/2008

TRANSPORTATION MANIFEST AND CHAIN-OF-CUSTODY

Transporting Co.: Hungry Horse Driver Signature: Benny Harms
Volume: 84 Yd³ Signature Date: 7-22-08

Plains All American Lea Station Landfarm Attendant Signature _____
Signature Date:

PLAINS
ALL AMERICAN

Lea Station Land Farm
PERMIT #GW-351

CERTIFICATE OF "NON-EXEMPT" WASTE STATUS
AND
TRANSPORTER MANIFEST AND CHAIN-OF-CUSTODY

COMPANY Plains Marketing

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NAME CAMILLE REYNOLDS
TITLE ENVIRONMENTAL COORDINATOR
ADDRESS 3112 WEST US HWY 82
LOVINGTON, NEW MEXICO 88260
SIGNATURE Camille Bryant
DATE 7/18/2008

TRANSPORTATION MANIFEST AND CHAIN-OF-CUSTODY

Transporting Co.: East Pize Trucking	Driver Signature: Rudy Jensen
Volume: 96 yd³	Signature Date: 07/22/08
Plains All American Lea Station Landfarm Attendant Signature	
Signature Date:	

PLAINS ALL AMERICAN

Lea Station Land Farm
PERMIT #GW-351

CERTIFICATE OF "NON-EXEMPT" WASTE STATUS
AND
TRANSPORTER MANIFEST AND CHAIN-OF-CUSTODY

COMPANY PLAINS MARKETING

ORIGIN UL OR ¼¼: UL-M SECTION: 12 TOWNSHIP: T21S RANGE:R37E

SOURCE DESCRIPTION HUGH GATHERING REF#2002-10235

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NAME CAMILLE REYNOLDS
TITLE ENVIRONMENTAL COORDINATOR
ADDRESS 3112 WEST US HWY 82
LOVINGTON, NEW MEXICO 88260
SIGNATURE Camille Bryant
DATE 7/18/2008

TRANSPORTATION MANIFEST AND CHAIN-OF-CUSTODY

Transporting Co.: Basd I — Driver Signature: [signature]
Volume: 96 yd³ — Signature Date: 7-22-08

Plains All American Lea Station Landfarm Attendant Signature _____
Signature Date:

PLAINS
ALL AMERICAN

Lea Station Land Farm
PERMIT #GW-351

CERTIFICATE OF "NON-EXEMPT" WASTE STATUS
AND
TRANSPORTER MANIFEST AND CHAIN-OF-CUSTODY

COMPANY Plains Marketing

ORIGIN UL OR ¼¼: UL-M SECTION: 12 TOWNSHIP: T21S RANGE:R37E

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ADDRESS 3112 WEST US HWY 82
LOVINGTON, NEW MEXICO 88260
SIGNATURE Camille Bryant
DATE 7/18/2008

TRANSPORTATION MANIFEST AND CHAIN-OF-CUSTODY

Transporting Co.: BRYANS	Driver Signature: Jample B
Volume: 48 yd³	Signature Date: 7/22/08
Plains All American Lea Station Landfarm Attendant Signature	
Signature Date:	

PLAINS ALL AMERICAN

Lea Station Land Farm
PERMIT #GW-351

CERTIFICATE OF "NON-EXEMPT" WASTE STATUS
AND
TRANSPORTER MANIFEST AND CHAIN-OF-CUSTODY

COMPANY Plains Marketing

ORIGIN UL OR ¼¼: UL-M SECTION: 12 TOWNSHIP: T21S RANGE:R37E

SOURCE DESCRIPTION HUGH GATHERING REF#2002-10235

AS A CONDITION OF ACCEPTANCE FOR DISPOSAL, I HEREBY CERTIFY THAT THIS WASTE IS A NON-EXEMPT WASTE AS DEFINED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA) JULY 1988 REGULATORY DETERMINATION AND TO MY KNOWLEDGE, THIS WASTE BEEN CHARACTERIZED AS "NON-HAZARDOUS" PURSUANT TO THE PROVISIONS OF EPA 40 CFR PART 261 SUBPART C AND HAS NOT BEEN COMINGLED WITH AN EPA 40 CFR PART 261 SUBPART D "LISTED WASTE." LIKEWISE, THIS WASTE DOES NOT CONTAIN NATURALLY OCCURRING RADIOACTIVE MATERIAL (NORM) PURUSANT TO 20 NMAC 3.1 SUBPART 1403 AND CONTAINS NO FREE LIQUID PURSUANT TO THE "PAINT FILTER TEST" EPA METHOD 9095A.

NORM EXPOSURE RATE: _____ PCI/GM

I, Camille Bryant, THE UNDERSIGNED AGENT FOR, Plains All American, HEREBY CERTIFY THAT, BASED ON PERSONAL KNOWLEDGE, THE ABOVE STATEMENT IS TRUE AND CORRECT.

NAME Camille Reynolds
TITLE Environmental Coordinator
ADDRESS 3112 West US Hwy 82
Lovington, New Mexico 88260
SIGNATURE Camille Bryant
DATE 7/18/2008

TRANSPORTATION MANIFEST AND CHAIN-OF-CUSTODY

Transporting Co.: Basd T
Volume: 36 yd³
Driver Signature: Benito Longal
Signature Date: 7-23-08

Plains All American Lea Station Landfarm Attendant Signature _____
Signature Date:

PLAINS ALL AMERICAN

Lea Station Land Farm
PERMIT #GW-351

CERTIFICATE OF "NON-EXEMPT" WASTE STATUS
AND
TRANSPORTER MANIFEST AND CHAIN-OF-CUSTODY

COMPANY Plains Marketing

ORIGIN UL OR ¼¼: UL-M SECTION: 12 TOWNSHIP: T21S RANGE:R37E

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NORM EXPOSURE RATE: _____ PCI/GM

I, CAMILLE BRYANT, THE UNDERSIGNED AGENT FOR, PLAINS ALL AMERICAN, HEREBY CERTIFY THAT, BASED ON PERSONAL KNOWLEDGE, THE ABOVE STATEMENT IS TRUE AND CORRECT.

NAME CAMILLE REYNOLDS
TITLE ENVIRONMENTAL COORDINATOR
ADDRESS 3112 WEST US HWY 82
LOVINGTON, NEW MEXICO 88260
SIGNATURE Camille Bryant
DATE 7/18/2008

TRANSPORTATION MANIFEST AND CHAIN-OF-CUSTODY

Transporting Co.: Hernandez Hauling Driver Signature:
Volume: 24 yd³ Signature Date: 7-23-08

Plains All American Lea Station Landfarm Attendant Signature
Signature Date:

PLAINS ALL AMERICAN

Lea Station Land Farm
PERMIT #GW-351

CERTIFICATE OF "NON-EXEMPT" WASTE STATUS
AND
TRANSPORTER MANIFEST AND CHAIN-OF-CUSTODY

COMPANY Plains Marketing

ORIGIN UL OR ¼¼: UL-M SECTION: 12 TOWNSHIP: T21S RANGE:R37E

SOURCE DESCRIPTION HUGH GATHERING REF#2002-10235

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NORM EXPOSURE RATE: _____ PCI/GM

I, Camille Bryant, THE UNDERSIGNED AGENT FOR, Plains All American, HEREBY CERTIFY THAT, BASED ON PERSONAL KNOWLEDGE, THE ABOVE STATEMENT IS TRUE AND CORRECT.

NAME Camille Reynolds
TITLE Environmental Coordinator
ADDRESS 3112 West US Hwy 82
Lovington, New Mexico 88260
SIGNATURE Camille Bryant
DATE 7/18/2008

TRANSPORTATION MANIFEST AND CHAIN-OF-CUSTODY

Transporting Co.: Hungry Horse
Driver Signature: Bessy Harms
Volume: 36 yd^3
Signature Date: 7-22-08

Plains All American Lea Station Landfarm Attendant Signature _____
Signature Date: _____

Appendix J

Boring Logs and Well Record and Log

PREMIER
ENVIRONMENTAL SERVICES, INC.

WELL NUMBER MW-13

PROJECT Hugh Gathering East LOCATION Lea County, New Mexico

TOTAL WELL DEPTH 70 BOREHOLE DIA (in) 5 STICKUP (ft) 3

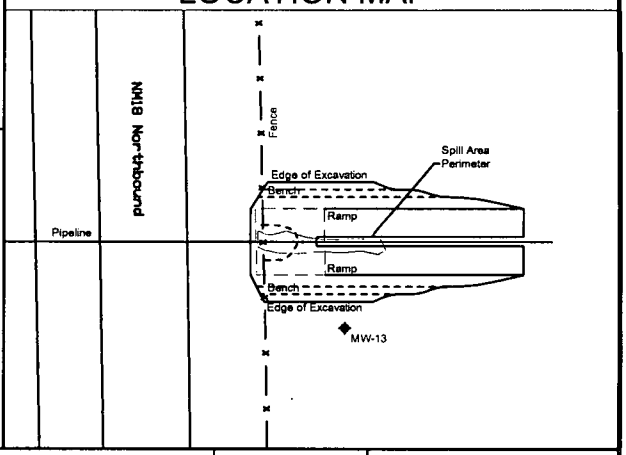
CASING DIA (in) 2 TYPE PVC SCREEN LENGTH 20' SLOT SIZE (in) 0.010

DRILLING CO. Straub Drilling DRILLING METHOD Air Rotary

GEOLOGIST Ben Latham DATE DRILLED 9/5/08

TOP OF CASING ELEV. (ft) _____ GROUND SURFACE ELV. (ft) _____

LOCATION MAP



DEPTH	GRAPHIC LOG	PID (ppm)	LITHOLOGIC DESCRIPTION/COMMENTS	WELL CONSTRUCTION	REMARKS
0			Tan Well Graded Sand, Fine.		Well Stickup
2					Grout
4					
6					
8			Tan Fine Sand –Sandstone – Caliche		
10					
12					
14			Tan Well Graded Sand.		
16					
18			Tan Fine Sand –Sandstone – Caliche		Bentonite Chips
20					
22					
24			Redish Sand, 2% Clay, fine.		
26					
28					2" PVC Blank Casing
30					
32					
34					
36					
38					
40			Tan Well Graded Sand		

PREMIER
ENVIRONMENTAL SERVICES, INC.

WELL NUMBER MW-13

PROJECT Hugh Gathering East LOCATION Lea County, New Mexico

TOTAL WELL DEPTH 70 BOREHOLE DIA (in) 5 STICKUP (ft) 3'

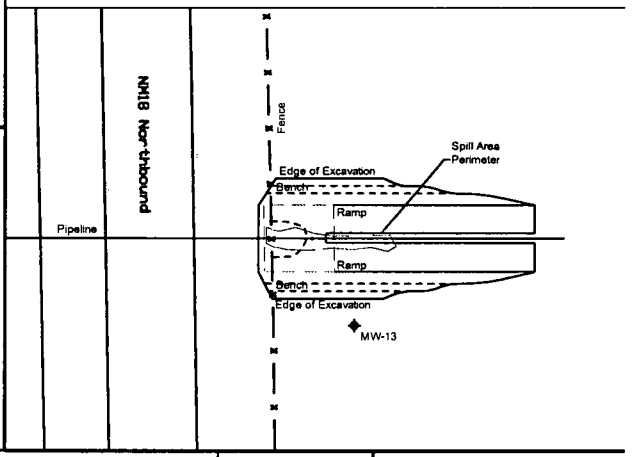
CASING DIA (in) 2 TYPE PVC SCREEN LENGTH 20' SLOT SIZE (in) 0.010

DRILLING CO. Straub Drilling DRILLING METHOD Air Rotary

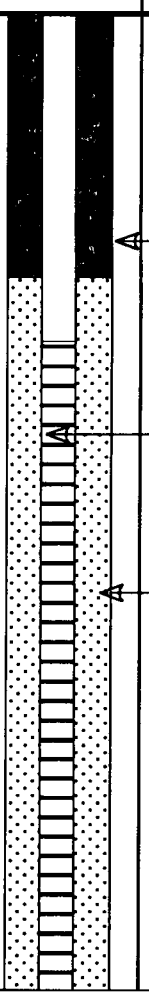
GEOLOGIST Ben Latham DATE DRILLED 9/5/08

TOP OF CASING ELEV. (ft) _____ GROUND SURFACE ELV. (ft) _____

LOCATION MAP



DEPTH	GRAPHIC LOG	PID (ppm)	LITHOLOGIC DESCRIPTION/COMMENTS	REMARKS
40		0.0	Redish Clayey Sand.	
42				
44				
46		0.0	Redish Clayey Sand with rock inclusions.	
48				
50				
52				
54				
56				
58				
60				
62				
64				
66		0.0	Redish Clayey Sand, more Clay content.	
68				
70				
72				
74				
76				
78				
80				



PREMIER
ENVIRONMENTAL SERVICES, INC.

WELL NUMBER SB-1

PROJECT 207032.00 LOCATION HWY 18, 4 mi n/o Eunice

TOTAL BORING DEPTH 44 BOREHOLE DIA (in) 7 7/8 STICKUP (ft) n/a

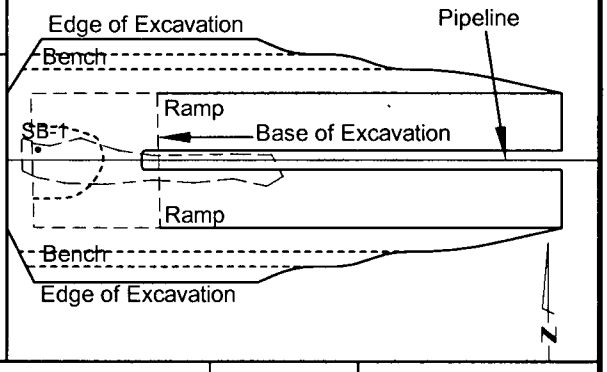
CASING DIA (in) n/a TYPE n/a SCREEN LENGTH n/a SLOT SIZE (in) n/a

DRILLING CO. Talon DRILLING METHOD Hollow Stem

GEOLOGIST Ben Latham DATE DRILLED 8/12/08

TOP OF CASING ELEV. (ft) n/a GROUND SURFACE ELV. (ft) 3410

LOCATION MAP



DEPTH	GRAPHIC LOG	PID (ppm)	LITHOLOGIC DESCRIPTION/COMMENTS		REMARKS
0–18			0–19 feet Boring completed in open excavation. Excavation has been backfilled		
20–30		598 845 999 986	Tan Well Gravel Sand – Coarse		
32–40		1137 639	Red Clayey Sand w/ Gravel Inclusions		

Continued on page 2

PREMIER
ENVIRONMENTAL SERVICES, INC.

WELL NUMBER SB-1

PROJECT 207032.00 LOCATION HWY 18, 4 mi n/o Eunice

TOTAL BORING DEPTH 44 BOREHOLE DIA (in) 7 7/8 STICKUP (ft) n/a

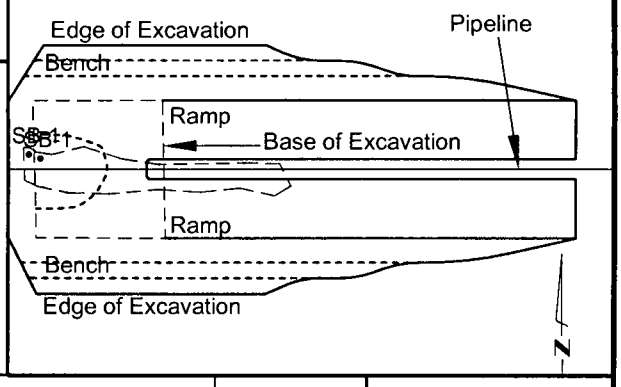
CASING DIA (in) n/a TYPE n/a SCREEN LENGTH n/a SLOT SIZE (in) n/a

DRILLING CO. Talon DRILLING METHOD Hollow Stem

GEOLOGIST Ben Latham DATE DRILLED 8/13/08

TOP OF CASING ELEV. (ft) n/a GROUND SURFACE ELV. (ft) 3410

LOCATION MAP



DEPTH	GRAPHIC LOG	PID (ppm)	LITHOLOGIC DESCRIPTION/COMMENTS		REMARKS
40					
42			Caliche – Rock – Auger Refusal – took 65 minutes to drill 5' into caliche		
44					

Termination of boring – 44 FT

PREMIER
ENVIRONMENTAL SERVICES, INC.

WELL NUMBER SB-2

PROJECT 207032.00 LOCATION HWY 18, 4 mi n/o Eunice

TOTAL BORING DEPTH 39 BOREHOLE DIA (in) 7 7/8 STICKUP (ft) n/a

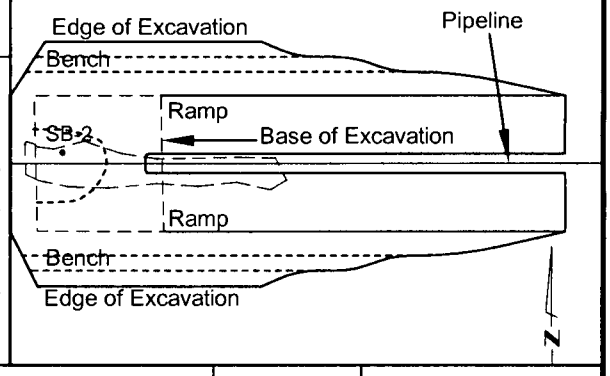
CASING DIA (in) n/a TYPE n/a SCREEN LENGTH n/a SLOT SIZE (in) n/a

DRILLING CO. Talon DRILLING METHOD Hollow Stem

GEOLOGIST Ben Latham DATE DRILLED 8/13/08

TOP OF CASING ELEV. (ft) n/a GROUND SURFACE ELV. (ft) 3410

LOCATION MAP



DEPTH	GRAPHIC LOG	PID (ppm)	LITHOLOGIC DESCRIPTION/COMMENTS		REMARKS
0			0–19 feet Boring completed in open excavation. Excavation has been backfilled		
20		820	Tan Well Graded Sand – Coarse		
24		948			
28		911			
30		1092	Red Well Graded Sand – Coarse		
32		1075	Tan Well Graded Sand – Coarse		
34					
36		1009	Red Clayey Sand – med/fine		
38		1026			

Termination of Boring – 39 ft

PREMIER
ENVIRONMENTAL SERVICES, INC.

WELL NUMBER SB-3

PROJECT 207032.00 LOCATION HWY 18, 4 mi n/o Eunice

TOTAL BORING DEPTH 39 BOREHOLE DIA (in) 7 7/8 STICKUP (ft) n/a

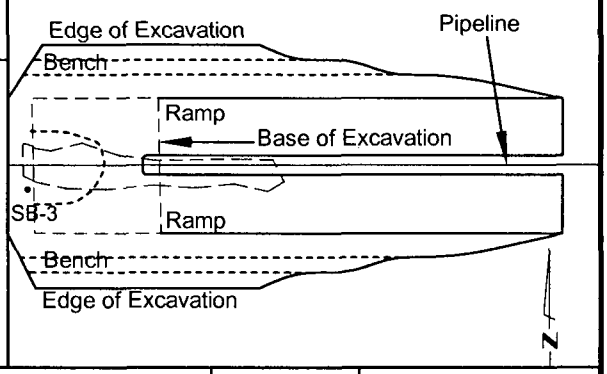
CASING DIA (in) n/a TYPE n/a SCREEN LENGTH n/a SLOT SIZE (in) n/a

DRILLING CO. Talon DRILLING METHOD Hollow Stem

GEOLOGIST Ben Latham DATE DRILLED 8/13/08

TOP OF CASING ELEV. (ft) n/a GROUND SURFACE ELV. (ft) 3410

LOCATION MAP



DEPTH	GRAPHIC LOG	PID (ppm)	LITHOLOGIC DESCRIPTION/COMMENTS		REMARKS
0			0–19 feet Boring completed in open excavation. Excavation has been backfilled		
20		939	Tan Well Graded Sand – Coarse		
22		915			
24					
26		1076			
28					
30		1085			
32		1149	Red Clayey Sand with Rock Inclusions –many fines		
34					
36		1107			
38		1109			

Termination of Boring – 39 ft

PREMIER
ENVIRONMENTAL SERVICES, INC.

WELL NUMBER SB-4

PROJECT 207032.00 LOCATION HWY 18, 4 mi n/o Eunice

TOTAL BORING DEPTH 35 BOREHOLE DIA (in) 7 7/8 STICKUP (ft) n/a

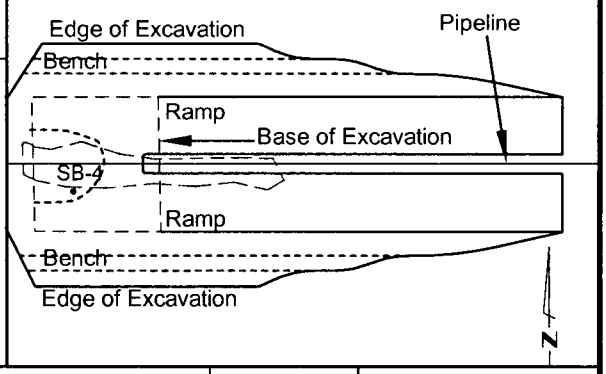
CASING DIA (in) n/a TYPE n/a SCREEN LENGTH n/a SLOT SIZE (in) n/a

DRILLING CO. Talon DRILLING METHOD Hollow Stem

STAFF SHANE DILLER DATE DRILLED 8/14/08

TOP OF CASING ELEV. (ft) n/a GROUND SURFACE ELV. (ft) 3410

LOCATION MAP



DEPTH	GRAPHIC LOG	PID (ppm)	LITHOLOGIC DESCRIPTION/COMMENTS		REMARKS
0			0–19 feet Boring completed in open excavation. Excavation has been backfilled		
20			Boring was not logged by a Geologist		

Termination of Boring – 35 ft

PREMIER
ENVIRONMENTAL SERVICES, INC.

WELL NUMBER SV-1

PROJECT 207032.00 LOCATION HWY 18, 4 mi n/o Eunice

TOTAL WELL DEPTH 39 BOREHOLE DIA (in) 7 7/8 STICKUP (ft) 0'

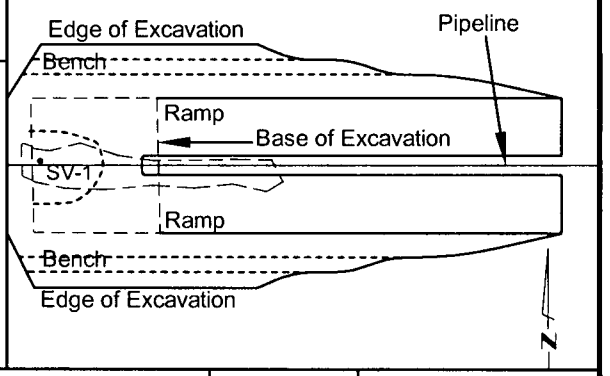
CASING DIA (in) 4' TYPE PVC SCREEN LENGTH 15' SLOT SIZE (in) .02

DRILLING CO. Talon DRILLING METHOD Hollow Stem

GEOLOGIST Ben Latham DATE DRILLED 8/13/08

TOP OF CASING ELEV. (ft) 3414 GROUND SURFACE ELV. (ft) 3410

LOCATION MAP



DEPTH	GRAPHIC LOG	PID (ppm)	LITHOLOGIC DESCRIPTION/COMMENTS	WELL CONSTRUCTION	REMARKS
0			0–19 feet Boring completed in open excavation. Excavation has been backfilled		Concrete
20		1229 1014 1143	Tan Coarse Well Graded Sand		Bentonite Well Screen
30		1003	Red Clayey Sand		
32		1138 1280	Tan Coarse Well Graded Sand		
38			Termination of Boring at 39 FT		

PREMIER
ENVIRONMENTAL SERVICES, INC.

WELL NUMBER SV-2

PROJECT 207032.00 LOCATION HWY 18, 4 mi n/o Eunice

TOTAL WELL DEPTH 39 BOREHOLE DIA (in) 7 7/8 STICKUP (ft) 0'

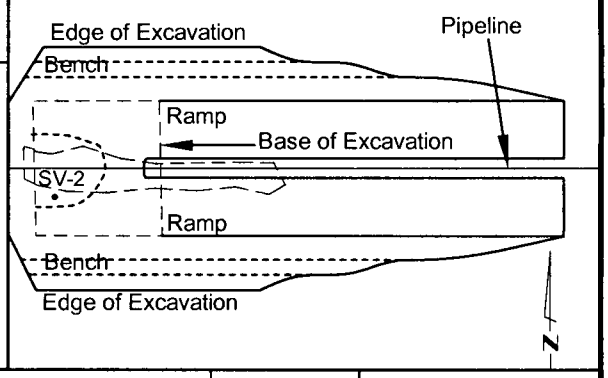
CASING DIA (in) 4' TYPE PVC SCREEN LENGTH 15' SLOT SIZE (in) .02

DRILLING CO. Talon DRILLING METHOD Hollow Stem

GEOLOGIST Ben Latham DATE DRILLED 8/13/08

TOP OF CASING ELEV. (ft) 3414 GROUND SURFACE ELV. (ft) 3410

LOCATION MAP



DEPTH	GRAPHIC LOG	PID (ppm)	LITHOLOGIC DESCRIPTION/COMMENTS	WELL CONSTRUCTION	REMARKS
0–19			0–19 feet Boring completed in open excavation. Excavation has been backfilled	Concrete	
20–22		1716	Tan Coarse Sand	Bentonite	
22–28		1307	Tan Coarse Sand		
28–30		1314	Tan Coarse Sand	Well Screen	
30–32		49	Tan Coarse Sand		
32		1000+	Tan Coarse Sand – Some Red Clayey Fractures		
32–34		52	Red Clayey Sand		
34–36		0	Red Clayey Sand		
36–38		0	Red Clayey Sand		

Termination of Boring at 39 FT

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER): HUGH GATHERING EAST SIDE MW-13			OSE FILE NUMBER(S):
WELL OWNER NAME(S): PLAINS MARKETING LP			PHONE (OPTIONAL):
WELL OWNER MAILING ADDRESS: 333 CLAY STREET, SUITE 1600		CITY: HOUSTON	STATE: TX ZIP: 77078

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	29	11.00	N
	LONGITUDE	103	7	29.00	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS: FROM INTERSECTION HWY 176 AND 18 GO N TURN R AT CATTLE GUARD FOLLOW RD TO LOCATION.

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
¼	¼	¼	¼		☐ NORTH ☐ SOUTH	☐ EAST ☐ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD1478	EDWARD BRYAN	STRAUB CORPORATION

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
9-5-08	9-5-08	70	70	60

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED) — STATIC WATER LEVEL IN COMPLETED WELL (FT): /

DRILLING FLUID: ☑ AIR ☐ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☑ ROTARY ☐ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
70'	50'	5	SCH 40 .010 SCREEN	FJ	2	0.154	.010
50'	+43"	5	SCH 40 PVC RISER	FJ	2	0.154	RISER

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA	TOTAL ESTIMATED WELL YIELD (GPM)

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☐ NO PUMP – WELL NOT EQUIPPED
☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
	70'	47.9'	5	6 BAGS OF 20/40 SAND		TOPLOAD
	47.9'	2'	5	8 BAGS OF 3/8 HOLEPLUG		TOPLOAD
	2'	0	5	1 BAG OF CEMENT		TOPLOAD

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
0	7	7	TAN FINE SAND - CALICHE	☐ YES ☑ NO
7	11	4	TAN FINE SAND - SANDSTONE - CALICHE	☐ YES ☑ NO
11	17	6	TAN FINE SAND - SANDSTONE	☐ YES ☑ NO
17	21	4	TAN FINE SAND - SANDSTONE - CALICHE	☐ YES ☑ NO
21	23	2	TAN FINE SAND	☐ YES ☑ NO
23	54	31	RED FINE SAND - WITH CLAY LESS 5%	☐ YES ☑ NO
54	64	10	RED FINE SAND - CALICHE NODULES - WITH CLAY	☐ YES ☑ NO
64	70	6	RED VERY FINE SAND - CLAY	☐ YES ☑ NO
TD	70			☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST — METHOD: ☐ BAILER ☐ PUMP ☐ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

2X2 PAD - 4X4 HIGH RISER - 2X5 BOLARDS

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

SIGNATURE OF DRILLER _____ DATE _____

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2

Appendix K

C-141 Release Notification Form

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

Form C-141
Revised March 17, 1999

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action

OPERATOR "INFORMATION ONLY NON-REPORTABLE" ☒ Initial Report ☐ Final Report

Name of Company	Contact
EOTT Energy Pipeline	Frank Hernandez
Address	**Telephone No.**
5805 East Highway 80 / P.O. Box 1660, Midland, TX 79703	915.638.3799
Facility Name	**Facility Type**
Linman Line #2002-10235	6" Crude Oil Pipeline

Surface Owner	Mineral Owner	Lease No.
Sec 12: W. McNeill Sec 11: J.A. Bryant		

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County: Lea
M	12							Lat.: 32°29'11"N
P	11	21S	37E					Lon:103°07'31"W

NATURE OF RELEASE

Type of Release	Volume of Release	Volume Recovered
Crude Oil	50 bbls	0 bbls
Source of Release	**Date and Hour of Occurrence**	**Date and Hour of Discovery**
6" Steel Pipeline	Sometime before 9-4-02	9-4-02 1:00 PM
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	**If YES, To Whom?** Paul Sheeley, Hobbs NMOCD (9-12-02)	
By Whom? Pat McCasland (Environmental Plus, Inc.)	**Date and Hour:** Initially considered to be <1 bbl. Revised to 50 bbl on 9-12-02. NMOCD notified on 9-12-02 4:00 PM	
Was a Watercourse Reached? ☐ Yes ☒ No	**If YES, Volume Impacting the Watercourse.**	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
The cause of the release was internal/external corrosion. The line has been replaced. Contaminated soil is stockpiled on a plastic barrier on site awaiting remediation.

Describe Area Affected and Cleanup Action Taken.*
Oily spots less than 3' in diameter were initially observed around the vents of the pipeline conduit that passes under NMSR18. During replacement activities, the soil in the ditch line and around the conduit ends were observed to impacted. The east side Sec 12 Spill Area = ~326 ft^2 55' X 10'. The west side Sec 11 Spill Area = ~936 ft^2 98'X 12'. Near surface soil will be characterized in accordance with 40 CFR 261 and with NMOCD approval, disposed of in a NMOCD approved facility. The site will be delineated and remediated. Soil within the NMSR18 may also be contaminated in the subsurface.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: Frank Hernandez	**OIL CONSERVATION DIVISION**	
Printed Name: Frank Hernandez	Approved by District Supervisor:	
Title: District Environmental Supervisor	Approval Date:	Expiration Date:
Date: September 12, 2002 Phone: 915.638.3799	Conditions of Approval:	Attached ☐

* Attach Additional Sheets If Necessary