

Page 1 of 94
Received by OGD: 4/3/2023 3:17:19 PM
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District I
625 N. French Dr., Hobbs, NM 88240
District II
301 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 October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	Plains Pipeline, LP	Contact	Camille Bryant
Address	577 US Hwy. 385 N., Seminole, TX 79360	Telephone No.	(575) 441-1099
Facility Name	Darr Angell #1	Facility Type	Groundwater Remediation Site
Surface Owner	Darr Angell	Mineral Owner	

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	11	15S	37E					Lea

Latitude N 33.026° Longitude W 103.167°

NATURE OF RELEASE

Type of Release	PSH/Water	Volume of Release	420 barrels	Volume Recovered	405 barrels
Source of Release	Groundwater Remediation System Recovery Tank	Date and Hour of Occurrence	8/16/2017 @ 08:00	Date and Hour of Discovery	8/16/2017 @ 08:30
Was Immediate Notice Given?	☒ Yes ☐ No ☐ Not Required	If YES, To Whom?	Verbal notification to Olivia Yu		
By Whom?	Camille Bryant	Date and Hour	8/16/2017 @ 14:37		
Was a Watercourse Reached?	☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.			

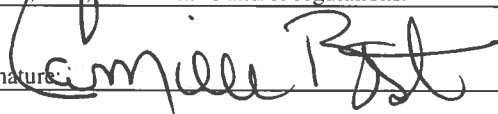
If a Watercourse was Impacted, Describe Fully.*

RECEIVED
By Olivia Yu at 8:10 am, Aug 28, 2017

Describe Cause of Problem and Remedial Action Taken.* An electrical system malfunction reset the remediation system causing the recovery pumps to run continuously. The valve on the high level shut off switch on the recovery tank was inadvertently closed and did not shut the system down causing the recovery tank and secondary containment to overfill resulting in a release of approximately 5 barrels of PSH and approximately 415 barrels of groundwater. Approximately 404 barrels of groundwater and 1 barrel of crude oil was recovered from the secondary containment. The remaining released PSH/groundwater mixture impacted approximately 4,200 square feet of pasture land.

Describe Area Affected and Cleanup Action Taken. The impacted area will be remediated as per applicable NMOCD guidelines.

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: 	OIL CONSERVATION DIVISION	
Printed Name: Camille Bryant	Approved by: 	
Title: Remediation Coordinator	Approval Date: 8/25/2017	Expiration Date:
E-mail Address: cjbryant@paalp.com	Conditions of Approval: see attached directive	Attached ☒
Date: 8/23/2017	Phone: (575) 441-1099	

Attach Additional Sheets If Necessary

1RP-4796

fOY1724028319

nOY1724028511

pOY1724028554

Operator/Responsible Party,

The OCD has received the form C-141 you provided on _8/23/2017_ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number _1RP-4796__ has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC. [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District _1_ office in __Hobbs__ on or before _9/28/2017_. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.
- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.
- Nominal detection limits for field and laboratory analyses must be provided.
- Composite sampling is not generally allowed.
- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

- Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

- If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

- Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold

OCD Environmental Bureau Chief
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505-476-3465
jim.griswold@state.nm.us

**APPROVED****By Olivia Yu at 9:56 am, Sep 15, 2017**

August 29, 2017

Reference No. 074683

NMOCD approves of the proposed delineation for 1RP-4796. Confirmation sidewall/edge samples are required to complete horizontal delineation.

Ms. Olivia Yu
Environmental Specialist
New Mexico Oil Conservation Division – District 1
1625 N. French Drive
Hobbs, New Mexico 88240

VIA EMAIL ONLY
Olivia.yu@state.nm.us

Dear Ms. Yu:

**Re: Soil Remediation Work Plan – 1RP 4796
Darr Angell #1 – Groundwater Remediation Site
Unit O, S11, T15S, R37E
Lea County, New Mexico**

On behalf of Plains Pipeline, LP (Plains), GHD Services, Inc. (GHD) is pleased to present this work plan to the New Mexico Oil Conservation Division – District 1 office (NMOCD) to remediate hydrocarbons in soil at the above referenced site (the Site). This work plan is being submitted to address soil impacts from a release of groundwater and crude oil from a remediation system above ground storage tank (AST) that is in operation at the Site.

1. Project Information and Release/Response Actions

The Site is located on privately owned land and is located in Section 11 (Unit O), Township 15 South, Range 37 East, Lea County, New Mexico. The geographical coordinates for the Site are 33.0266° North, and 103.167° West. Figure 1 (Topographic Map) and Figure 2 (Aerial Image) depict the Site's location and details. The depth to groundwater at this location is between 50 and 100 feet below the ground surface (bgs).

According to the NMOCD Form C-141 (attached) the release was discovered on August 16, 2017 at 8:30 a.m. Apparently, the valve that allows recovered fluid to enter the Site's AST head pressure switch apparatus was inadvertently left closed thus causing the switch not to recognize the level of fluid in the AST which allowed the remediation pump system to continue to operate. In addition, the digital air supply controller on the remediation system is speculated to have failed either due to a power surge or lightning strike causing the controllers logic to not close the air supply solenoid which allowed continuous pumping and discharging of fluid by the systems pumps. As a result, the AST was overfilled resulting in a release of approximately 5.0 barrels (bbls) of Phase Separated Hydrocarbons (PSH) and approximately 415 barrels (bbls) of fresh groundwater. Approximately 1 bbl of PSH and 404 bbls of fresh groundwater were contained and recovered from the secondary containment. Estimated fluid overflow out of the containment was 15 barrels of PSH (4 bbls) and fresh groundwater (11 bbls) which impacted approximately 4,200 square feet of pasture land. However, due to recent precipitation events the determined numbers for the fluid overflow and affected pasture land are most likely overestimated.



The release will be evaluated following the NMOCD 1993 document "Guidelines for Remediation of Leaks, Spills and Releases". Soil assessment action levels determined by these guidelines for the Site were assigned a ranking value of 10. This ranking translated to action levels of 10 milligrams per kilogram (mg/kg) or parts per million (ppm) for benzene; 50 ppm for volatile organic hydrocarbons (VOC), including total BTEX (benzene, toluene, ethylbenzene, xylenes), and 1,000 ppm for total petroleum hydrocarbons (TPH).

2. Proposed Work Plan Activities

The scope of work for this project will involve investigation and characterization of the release, appropriate soil remediation, and site restoration activities. On August 18, 2017, GHD and Gandy Corporation (excavation contractor) field personnel mobilized to the Site to initially excavate visually stained and impacted soil from the determined release area, stockpile excavated soil (presently estimated at 35 cubic yards) on polyvinyl, photo document, and map the excavated area. The soil profile at the Site is very shallow. Adsorbed soil impacts will be analyzed by a certified laboratory for TPH by Method 8015 Modified (GRO+DRO+MRO) and BTEX by EPA Method 8021B.

Based on field observations and activities conducted on August 18, the request of the landowner, and as allowed by the NMOCD, soils exhibiting TPH and/or BTEX concentrations above regulatory levels will be further excavated and also staged on polyvinyl. Field screening will be utilized to evaluate the completeness of the soil remediation activities. An estimated 9 TPH/BTEX confirmation samples are proposed to be collected from the bottom of the excavated area (Figure 3). Furthermore, the Site's shallow excavation is projected to not exceed 10 inches below ground surface (bgs), therefore, collection of confirmation wall samples is not proposed.

Excavated impacted soils are classified as non-exempt and will be transported for proper disposal to the NMOCD-permitted Gandy Marley Inc. facility in Roswell, New Mexico with proper NMOCD Form C-138 and manifest documentation.

Site restoration will be performed in accommodation to the landowner's requests. The landowner, Darr Angell, will provide the backfill materials. The construction affected area will be contoured and seeded in accordance to Mr. Angell's directives.

Upon completion of remediation and restoration, a letter report summarizing activities to date will be submitted. As appropriate, closure of the remediation permit will also be requested from the NMOCD in this report. Furthermore, the letter report will include a Site description, project history, description of field events, a discussion of results, and recommendations. The report will include:

- A scaled site plan showing the locations of the excavated area and other site features (including latitude and longitude coordinates);
- Tabulation of field screening and laboratory analytical test results;
- Copies of waste manifests; and
- Final site photographs.



GHD is prepared to initiate the scope of work immediately, subsequent to Plains and NMOCD approvals, the availability of resources and stakeholder concurrence. A start date and schedule of report submittals will be provided following receipt of subcontractor availability.

If you have any questions or comments with regard to this work plan, please do not hesitate to contact GHD's Midland office at (432) 686-0086. Your timely response to this correspondence is appreciated.

Sincerely,

GHD

A handwritten signature in blue ink, appearing to read "John Ferguson", written over a light blue rectangular background.

John Ferguson
Senior Project Manager

A handwritten signature in blue ink, appearing to read "Thomas C. Larson", written over a light blue rectangular background.

Thomas C. Larson
Midland Operations Manager

JMF/pd

Encl.: C-141

Figure 1 – Site Location Topographic Map

Figure 2 – Site Detail Aerial Image

Figure 3 – Release Area with Proposed Delineation Sample Locations Map

cc: Ms. Camille Bryant, Plains via email only
Mr. Thomas C. Larson via email only

Page 7 of 94
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Form C-141
Revised October 10, 2003

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District Office in accordance
with Rule 116 on back
side of form

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	Plains Pipeline, LP	Contact	Camille Bryant
Address	577 US Hwy. 385 N., Seminole, TX 79360	Telephone No.	(575) 441-1099
Facility Name	Darr Angell #1	Facility Type	Groundwater Remediation Site
Surface Owner	Darr Angell	Mineral Owner	

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
J	11	15S	37E					Lea

Latitude N 33.026° Longitude W 103.167°

NATURE OF RELEASE

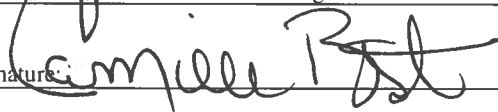
Type of Release	PSH/Water	Volume of Release	420 barrels	Volume Recovered	405 barrels
Source of Release	Groundwater Remediation System Recovery Tank	Date and Hour of Occurrence	8/16/2017 @ 08:00	Date and Hour of Discovery	8/16/2017 @ 08:30
Was Immediate Notice Given?	☒ Yes ☐ No ☐ Not Required	If YES, To Whom?	Verbal notification to Olivia Yu		
By Whom?	Camille Bryant	Date and Hour	8/16/2017 @ 14:37		
Was a Watercourse Reached?	☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.			

If a Watercourse was Impacted, Describe Fully.*

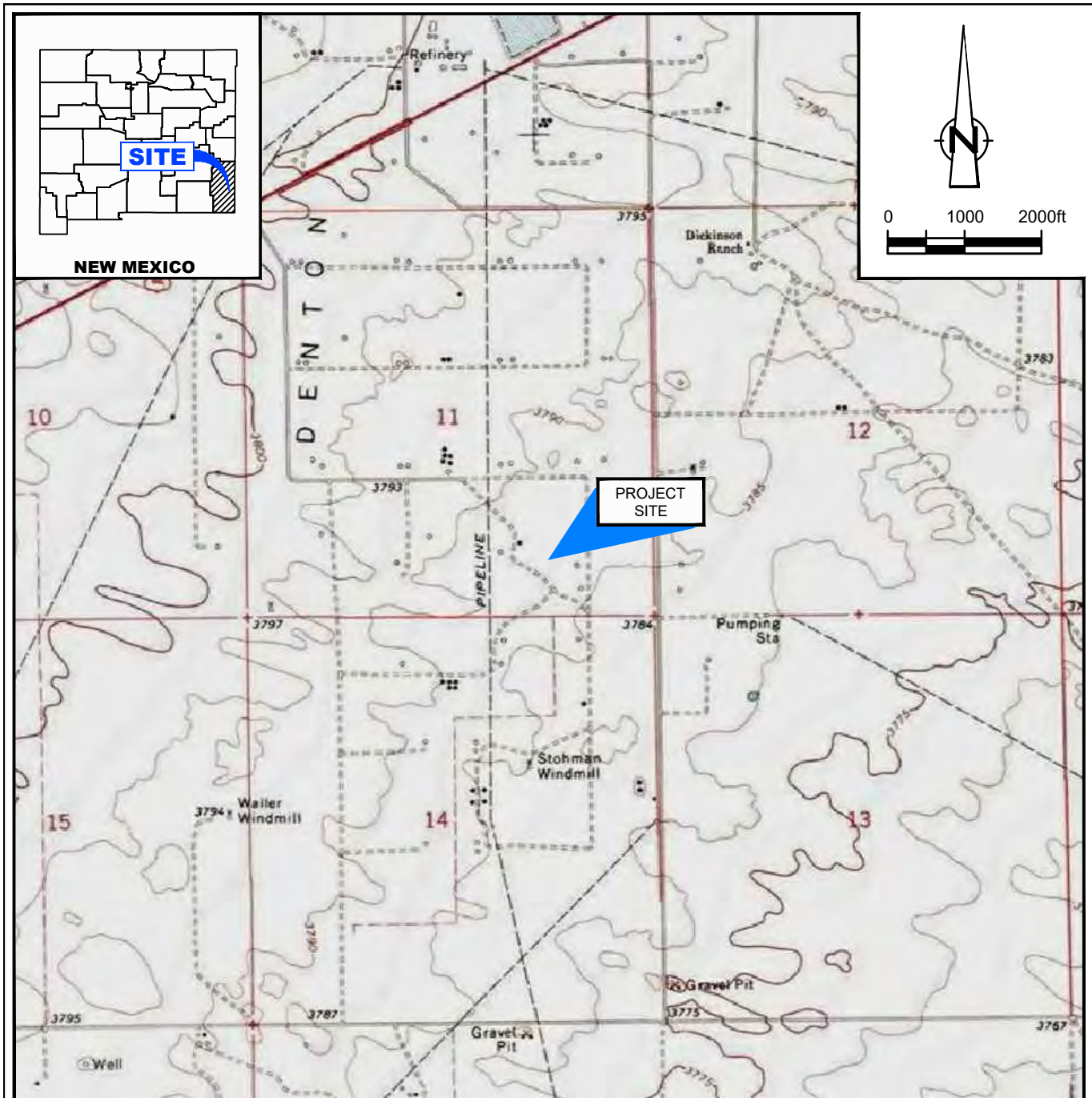
Describe Cause of Problem and Remedial Action Taken.* An electrical system malfunction reset the remediation system causing the recovery pumps to run continuously. The valve on the high level shut off switch on the recovery tank was inadvertently closed and did not shut the system down causing the recovery tank and secondary containment to overfill resulting in a release of approximately 5 barrels of PSH and approximately 415 barrels of groundwater. Approximately 404 barrels of groundwater and 1 barrel of crude oil was recovered from the secondary containment. The remaining released PSH/groundwater mixture impacted approximately 4,200 square feet of pasture land.

Describe Area Affected and Cleanup Action Taken. The impacted area will be remediated as per applicable NMOCD guidelines.

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: 	<u>OIL CONSERVATION DIVISION</u>	
Printed Name: Camille Bryant	Approved by District Supervisor:	
Title: Remediation Coordinator	Approval Date:	Expiration Date:
E-mail Address: cjbryant@paalp.com	Conditions of Approval:	Attached ☐
Date: 8/23/2017	Phone: (575) 441-1099	

Attach Additional Sheets If Necessary



SOURCE: USGS 7.5 MINUTE QUAD
"PRAIRIEVIEW, NEW MEXICO"

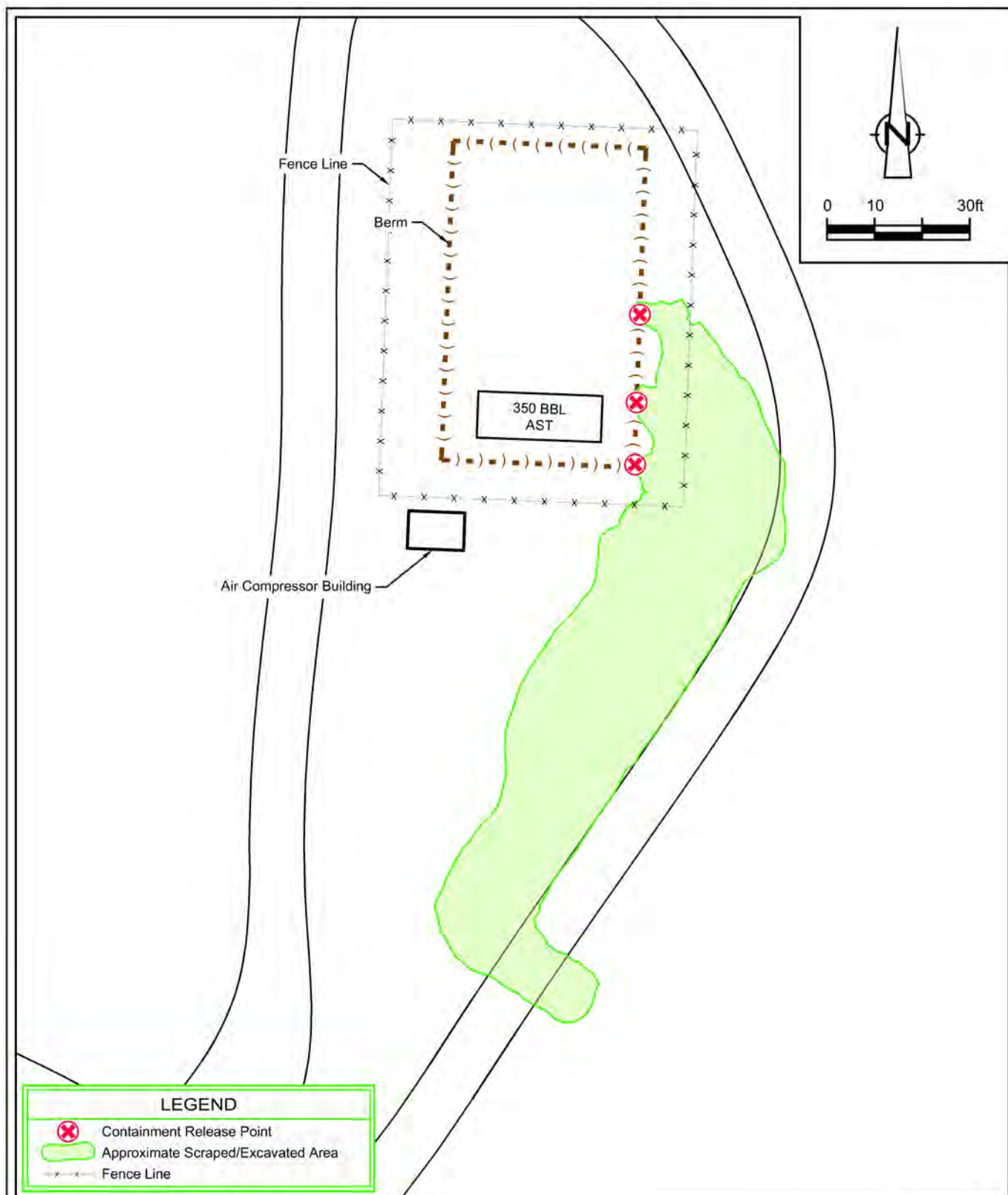
LAT/LONG: 33.0266° NORTH, 103.1666° WEST
COORDINATE: NAD83 DATUM, U.S. FOOT
STATE PLANE ZONE - NEW MEXICO EAST

Figure 1

SITE LOCATION MAP
DARR ANGELL No.1
LEA COUNTY, NEW MEXICO
Plains Pipeline L.P.



074683-02(WORKPLAN-01)GN-DL001 AUG 22, 2017



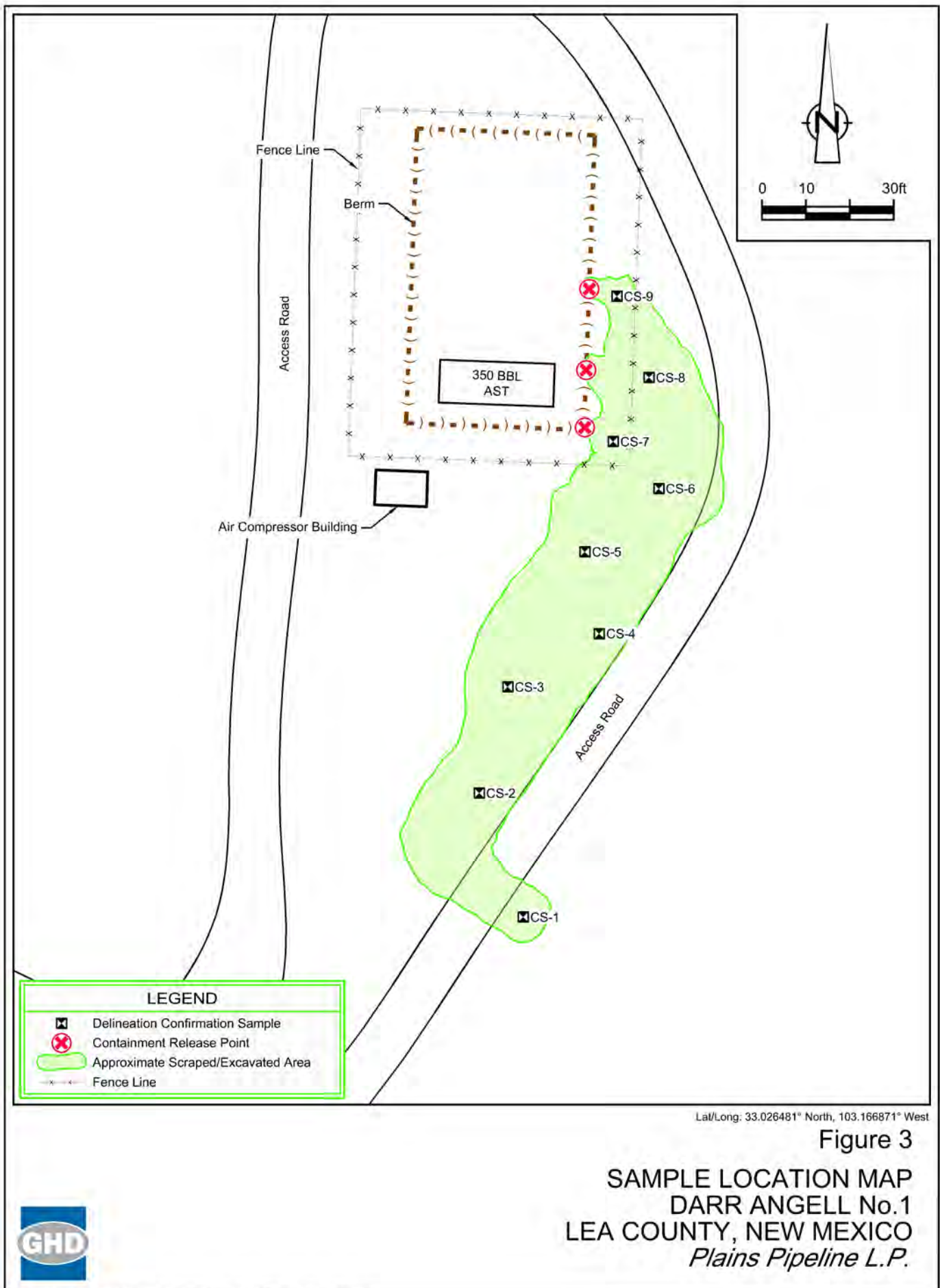
Lat/Long: 33.026481° North, 103.166871° West

Figure 2

SITE DETAILS MAP
DARR ANGELL No.1
LEA COUNTY, NEW MEXICO
Plains Pipeline L.P.



074683-02(WORKPLAN-01)GN-DL001 AUG 24, 2017



074683-02(WORKPLAN-01)GN-DL001 AUG 24, 2017

From: [Yu, Olivia, EMNRD](#)
To: John.Ferguson@ghd.com; [Billings, Bradford, EMNRD](#)
Cc: "[Camille Bryant](#)"; tom.larson@ghd.com; cctofiling@croworld.com
Subject: RE: 074683 Plains-Darr Angell #1 (1RP 4796) Work Plan for Remedial, Delineation/Confirmation Sampling, and Restoration Activity Approval Request ~COR-074683~ ~COR-074683~
Date: Monday, September 18, 2017 7:27:00 AM

Good morning Mr. Ferguson:

Thank you for the GW data and explanation. Please be advised that horizontal delineation samples- whether from 'walls' or 'edges'- will still be necessary to document that the release has been characterized sufficiently and appropriate remedial actions were taken for 1RP-4796.

RE: address. Any format that is you are comfortable with and deemed proper is fine.

Olivia

From: John.Ferguson@ghd.com [mailto:John.Ferguson@ghd.com]
Sent: Friday, September 15, 2017 1:52 PM
To: Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Cc: 'Camille Bryant' <CJBryant@paalp.com>; tom.larson@ghd.com; cctofiling@croworld.com
Subject: RE: 074683 Plains-Darr Angell #1 (1RP 4796) Work Plan for Remedial, Delineation/Confirmation Sampling, and Restoration Activity Approval Request ~COR-074683~ ~COR-074683~

Olivia,

Attached is the cumulative gauging data collected at the Site since June 2011 which shows groundwater to be approximately 60-65 feet below ground surface (bgs).

In regards to horizontal wall samples, for now I plan on collecting only the proposed vertical delineations samples (initial Site observations suggest the vertical impact is not significant). However, if scraping/excavating activities of the entire release area, which was mapped using a Trimble GPS unit, goes beyond anticipated shallow impacted soil depths wall samples will also be collected. If wall samples are not collected due to the scraped/excavated area being shallow (just a few inches below ground surface), a scaled figure depicting the vertical delineation sample locations, depths, and analytical results will be submitted for your to review, to determine if collection of horizontal wall samples is warranted, and if warranted to determine the locations you would like wall samples to be collected.

FYI, all vertical delineation samples will be collected using a hand auger, deconned between sample locations, and from the bottom of the scraped/excavated area.

Lastly and for future communications, do you prefer to be addressed as Ms. Yu or Olivia (I apologize for previous communications if not addressed properly)?

Thanks for your prompt response and I will be getting back in touch with you shortly.

John Fergerson, PG
GHD Project Manager

From: Yu, Olivia, EMNRD [<mailto:Olivia.Yu@state.nm.us>]
Sent: Friday, September 15, 2017 11:19 AM
To: John Fergerson <John.Fergerson@ghd.com>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Cc: 'Camille Bryant' <CJBryant@paalp.com>; Tom Larson <tom.larson@ghd.com>; cctofiling@croworld.com
Subject: RE: 074683 Plains-Darr Angell #1 (1RP 4796) Work Plan for Remedial, Delineation/Confirmation Sampling, and Restoration Activity Approval Request ~COR-074683~
~COR-074683~

Mr. Fergerson:

Additionally, as this release occurred at a groundwater remediation site, please provide documentation to verify depth to groundwater is 50-100 ft. bgs. NMOSE database indicates an average of < 50 ft. to groundwater.

Thanks,
Olivia

From: Yu, Olivia, EMNRD
Sent: Friday, September 15, 2017 10:05 AM
To: John.Fergerson@ghd.com; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Cc: 'Camille Bryant' <CJBryant@paalp.com>; tom.larson@ghd.com; cctofiling@croworld.com
Subject: RE: 074683 Plains-Darr Angell #1 (1RP 4796) Work Plan for Remedial, Delineation/Confirmation Sampling, and Restoration Activity Approval Request ~COR-074683~
~COR-074683~

Dear Mr. Fergerson:

Thank you for the reminder. NMOCD approves of the proposed delineation for 1RP-4796. Confirmation sidewall/edge samples will be required to complete horizontal delineation. Please marked confirmation bottom and edge sample locations on a scaled map and included in the subsequent report.

Please confirm or inform if clarification is required.

Thanks,

Olivia Yu
Environmental Specialist

NMOCD, District I
Olivia.yu@state.nm.us
575-393-6161 x113

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

From: John.Ferguson@ghd.com [<mailto:John.Ferguson@ghd.com>]
Sent: Friday, September 15, 2017 8:53 AM
To: Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>
Cc: 'Camille Bryant' <CJBryant@paalp.com>; tom.larson@ghd.com; cctofiling@croworld.com
Subject: FW: 074683 Plains-Darr Angell #1 (1RP 4796) Work Plan for Remedial, Delineation/Confirmation Sampling, and Restoration Activity Approval Request ~COR-074683~
~COR-074683~

Olivia,

At your earliest convenience, please review the work plan and send reply email with your approval to proceed.

Regards,

John F.

From: John Ferguson
Sent: Tuesday, August 29, 2017 6:16 PM
To: olivia.yu@state.nm.us
Cc: 'Camille Bryant' <CJBryant@paalp.com>; 'Larson, Thomas' <TLarson@croworld.com>; 'cctofiling@croworld.com' <cctofiling@croworld.com>
Subject: 074683 Plains-Darr Angell #1 (1RP 4796) Work Plan for Remedial, Delineation/Confirmation Sampling, and Restoration Activity Approval Request ~COR-074683~

Ms. Olivia Yu,

Attached is the work plan for remedial, delineation/confirmation sampling, and restoration activity at the Plains-Darr Angell #1 project site (1RP 4796) in Lea County, NM.

Subsequent to your review, please send reply email with your approval to proceed with the work plan activities.

Your timely response is appreciated and please contact me if you have questions or comments.

Thanks,

John M. Fergerson, PG

GHD

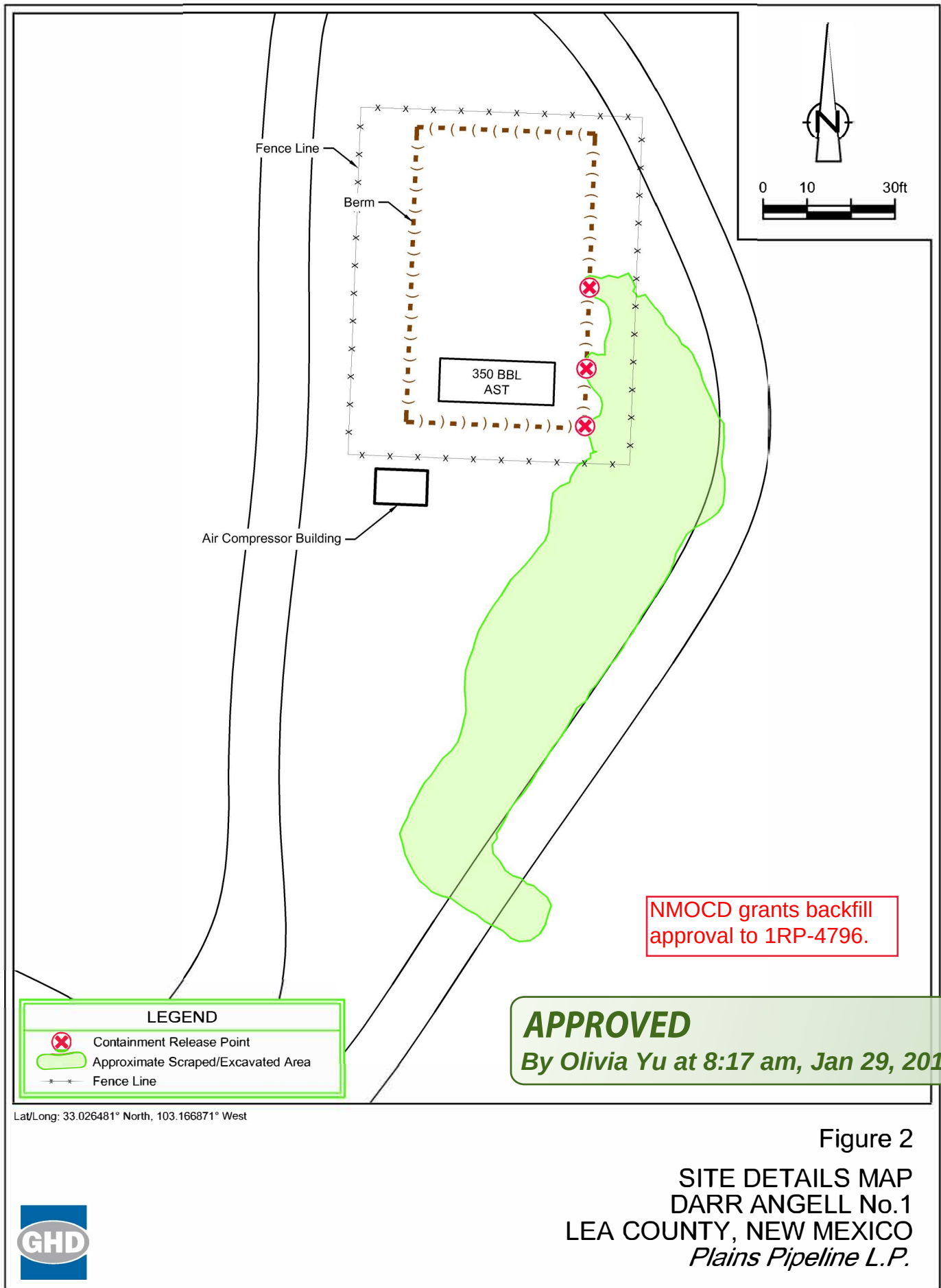
T: +1 432 686-0086 | D: +1 432 203-8667 | M: +1 432 488-7907 | E: john.fergerson@ghd.com
2135 S. Loop 250 West, Midland, Texas 79703 USA | www.ghd.com
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074683-03(WORKPLAN-01)GN-DL001 JAN 25, 2018

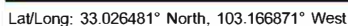
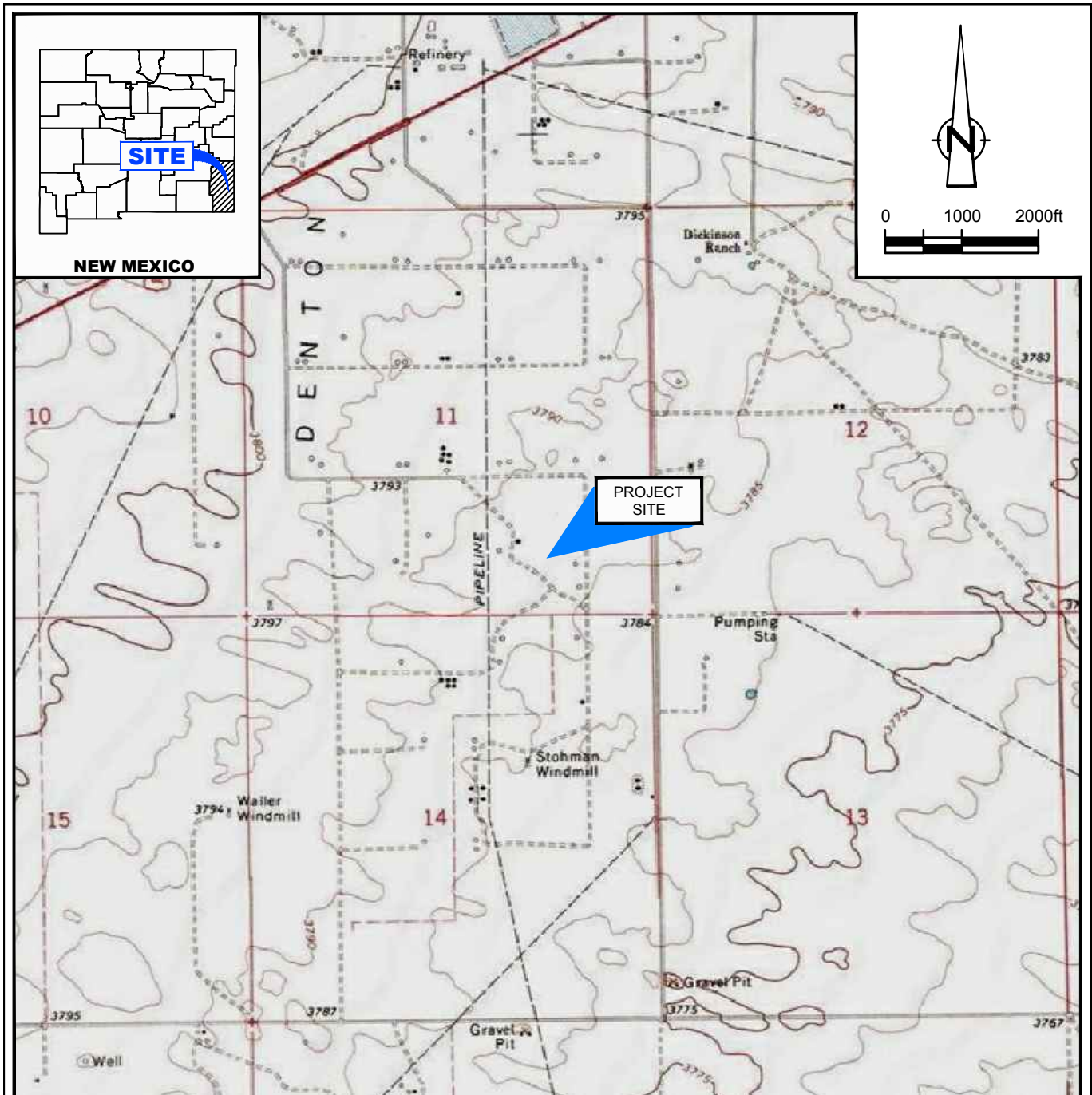


Figure 3
SAMPLE LOCATION MAP
DARR ANGELL No.1
LEA COUNTY, NEW MEXICO
Plains Pipeline L.P.



SOURCE: USGS 7.5 MINUTE QUAD
"PRAIRIEVIEW, NEW MEXICO"

LAT/LONG: 33.0266° NORTH, 103.1666° WEST
COORDINATE: NAD83 DATUM, U.S. FOOT
STATE PLANE ZONE - NEW MEXICO EAST

Figure 1

SITE LOCATION MAP
DARR ANGELL No.1
LEA COUNTY, NEW MEXICO
Plains Pipeline L.P.



074683-03(WORKPLAN-01)GN-DL001 JAN 25, 2018

TABLE I
PLAINS ALL AMERICAN PIPELINE, LP
DARR ANGELL #1 AST RELEASE
SOIL ANALYTICAL SUMMARY
LEA COUNTY, NEW MEXICO

Page 1 of 1

Sample ID	Sample Date	Depth (inches bgs)	Benzene	Toluene	Ethyl- Benzene	Xylenes	BTEX	TPH			
			(mg/Kg)	(mg/Kg)	(ug/Kg)	(mg/Kg)	(mg/Kg)	GRO(C6-C10)	DRO(C10-C28)	ORO (C28-C35)	Total (GRO/DRO/ORO)
			(mg/Kg)	(mg/Kg)	(ug/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
			1993 NMOCD Soil Delineation & Recommended Remediation Action Levels (RRAL) Ranking Score = 10								
			10 mg/Kg	---	---	---	50 mg/Kg	---	---	---	1000 mg/Kg
EXCAVATION BOTTOM CONFIRMATION SAMPLE RESULTS											
CS-1	8/25/17	1 - 5	<0.000383	<0.000994	<0.000561	0.0025	0.0025	<8.00	<8.13	<8.13	<8.00
CS-2	8/25/17	1 - 5	<0.000386	<0.00100	<0.000567	<0.000346	<0.000346	<7.98	<8.10	<8.10	<7.98
CS-3	8/25/17	1 - 6	<0.000388	<0.00101	<0.000569	<0.000347	<0.000347	<7.98	<8.10	<8.10	<7.98
CS-4	8/25/17	8 - 13	<0.000385	0.00136	<0.000565	<0.000344	0.00136	<7.98	<8.10	<8.10	<7.98
CS-5	8/25/17	5 - 9	<0.000387	<0.00101	<0.000568	<0.000346	<0.000346	<7.99	<8.12	<8.12	<7.99
CS-6	8/25/17	4 - 10	<0.000386	<0.00100	<0.000566	<0.000345	<0.000345	<7.97	455.0	65	520.0
CS-6	12/5/17	6 -12	---	---	---	---	---	<7.99	8.45 J	<8.12	8.45 J
CS-7	8/25/17	2 - 8	<0.000383	<0.000994	<0.000561	<0.000342	<0.000342	<7.97	<8.10	<8.10	<7.97
CS-8	8/25/17	4 - 10	<0.000384	<0.000998	<0.000564	<0.000344	<0.000344	<7.99	<8.11	<8.11	<7.99
CS-9	8/25/17	4 - 10	<0.000386	<0.00100	<0.000567	<0.000346	<0.000346	<7.99	<8.12	<8.12	<7.99
EXCAVATION SIDEWALL CONFIRMATION SAMPLE RESULTS											
WS-1	12/4/17	0 - 8	<0.000386	<0.000457	<0.000566	<0.000345	<0.000345	<7.98	11.6 J	9.85 J	21.5
WS-2	12/4/17	0 - 6	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<7.98	<8.10	<8.10	<7.98
WS-3	12/4/17	0 - 6	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	<7.99	9.68 J	<8.12	9.68 J
WS-4	12/4/17	0 - 6	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<7.99	10.7 J	<8.12	10.7 J
WS-5	12/4/17	0 - 6	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<8.00	8.88 J	<8.13	8.88 J
WS-6	12/4/17	0 - 6	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<7.98	<8.10	<8.10	<7.98
WS-7	12/4/17	0 - 6	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<7.99	60.7	11.8 J	72.5
WS-8	12/4/17	0 - 6	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<7.98	58.0	9.67 J	67.7
1. Values reported in mg/Kg. 2. < = Value Less than Reporting Limit (RL) 3. Bold Indicates Analyte Detected 4. Bold & Highlighted Exceeds the 1993 NMOCD Guidance Document Recommended Remediation Action Level (RRAL) 5. BTEX analyses by EPA Method SW 8021B. 6. TPH analyses by EPA Method SW 8015B Mod. 7. GRO/DRO/ORO = Gasoline/Diesel/Oil 8. J = Target Analyte was Positively Identified Below the Quantitation Limit and Above the Detection Limit											

From: [Yu, Olivia, EMNRD](#)
To: ["John.Ferguson@ghd.com"](mailto:John.Ferguson@ghd.com)
Cc: ["Camille Bryant"](#); tom.larson@ghd.com; cctofiling@croworld.com
Subject: RE: 074683-03 Plains-Darr Angell #1 AST Release Site (1RP-4796) Request to Backfill Excavated Release Area ~COR-074683-03~
Date: Monday, January 29, 2018 8:20:00 AM
Attachments: approved_1RP4796_BackfillRequest.pdf

Good morning Mr. Ferguson:

NMOCD approves of the backfill request for 1RP-4796. In the subsequent closure/remediation report, please include an appropriately scaled map with the areas with differing excavated depths outlined and annotated. Provide photo documentation as well.

Thanks,

Olivia Yu
Environmental Specialist
NMOCD, District I
Olivia.yu@state.nm.us
575-393-6161 x113

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

From: John.Ferguson@ghd.com [mailto:John.Ferguson@ghd.com]
Sent: Friday, January 26, 2018 10:25 AM
To: Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>
Cc: 'Camille Bryant' <CJBryant@paalp.com>; tom.larson@ghd.com; cctofiling@croworld.com
Subject: 074683-03 Plains-Darr Angell #1 AST Release Site (1RP-4796) Request to Backfill Excavated Release Area ~COR-074683-03~

Ms. Olivia Yu,

Via this email, I am requesting permission to backfill the release area excavation (1RP-4796) located at the Plains-Darr Angell #1 Groundwater Remediation project site (Site) located in Lea County, NM). The Site is located on rural private land, owned by Mr. Darr Angell, in Section 11 (Unit O) , Township 15 South, Range 37 East and the geographical coordinates are 33.026481° N, -103.166871° W. The depth to groundwater at the Site is approximately 65 feet below ground surface (bgs) which gives the Site a Total Ranking of 10 - 19. In addition, I am also requesting that no further action is required in regards to the release area for the closure report and project file.

On August 25, 2017, confirmation soil sampling within the excavated release area was conducted

subsequent to removal of impacted soil. Analytical results indicated the BTEX & TPH from confirmation samples (CS-1 thru CS-9) were below the New Mexico Oil Conservation Division's (NMOCD) Recommended Remediation Action Levels (RRALs) determined for the Site. A total of approximately 55 yards of crude oil impacted soil were removed and stockpiled on plastic at the Site.

Subsequent to your email dated September 18, 2017, which requested horizontal delineation by collection of excavation wall or edge samples, on December 4, 2017, confirmation wall samples (WS-1 thru WS-8) were collected along the perimeter of the excavated area. Analytical results indicated the BTEX & TPH from WS-1 thru WS-8 were below the RRALs determined for the Site.

Furthermore and at the request of Mr. Darr Angell that all TPH results be below 100 mg/Kg, on December 5, 2017, an additional vertical confirmation sample was collected at CS-6 to determine the TPH concentration at an increased depth. As of this email, it is estimated that another 2-3 yards of soil will be removed in the area of CS-6 to accommodate Mr. Angell's request.

Attached is a Topographic Map depicting the Site's location, a Detailed Site Map, a Sample Location Map depicting sample locations/depths/soil analytical results, and an analytical data table.

Upon your approval, Darr Angell will be contacted so he can view the Site prior to backfilling, to determine the location of backfill material provided by him, and his restoration requirements.

Your timely response is appreciated and please contact me if you have questions or comments.

Best Regards,

John M. Fergerson, PG

GHD

T: +1 432 686-0086 | D: +1 432 203-8667 | M: +1 432 488-7907 | E: john.fergerson@ghd.com
2135 S. Loop 250 West, Midland, Texas 79703 USA | www.ghd.com
[WATER](#) | [ENERGY & RESOURCES](#) | [ENVIRONMENT](#) | [PROPERTY & BUILDINGS](#) | [TRANSPORTATION](#)

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Soil Remediation Closure Report

Darr Angell No. 1
Lea County, New Mexico
NMOCD 1RP-4796

Plains All American
Pipeline, L.P.





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4.	Soil Assessment and Remediation Activities	2
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Figure 2	Site Details Map
Figure 3	Analytical Results Map

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Table 1	Soil Analytical Summary
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Appendix A	Initial C-141 Form
Appendix B	Photograph Log
Appendix C	Certified Laboratory Reports
Appendix D	Waste Manifest Documentation



1. Introduction

This Soil Remediation Closure Report provides documentation associated with corrective actions at the Darr Angell No. 1 Groundwater Remediation Site in response to an Above Ground Storage (AST) Release. Corrective actions were managed and documented via written field notes and photographs by GHD Services, Inc. (GHD) under the direction of Plains All American Pipeline, L.P. (Plains). A remediation permit number (1RP-4796) was assigned to this project by the New Mexico Oil Conservation Division (NMOCD) District 1, Hobbs, New Mexico office. Correspondence of soil assessment and remediation activities, along with a backfilling request were approved by the NMOCD District 1 office in association with this project. This report is an attachment to the Final C-141 Form submittal for 1RP-4796.

2. Project Information and Background

The Darr Angell No. 1 Groundwater Remediation Site (hereafter referred to as the "Site"), is located in Section 11 (Unit J), Township 15 South, Range 37 East, Lea County, New Mexico (Figure 1). The Site's topography is rural pastureland that is flat to gently rolling, covered with native grass, and sparse vegetation.

On August 16, 2017, a release of recovered fluid from the Site's AST was discovered by field personnel, Plains was notified of the release, and Plains verbally communicated the release to the NMOCD. On August 23, 2017, Plains submitted an initial Release Notification and Corrective Action C-141 Form to the NMOCD stating *"An electrical system malfunction reset the remediation system causing the recovery pumps to run continuously. The valve on the high level shut off switch on the recovery tank was inadvertently closed and did not shut the system down causing the recovery tank and secondary containment to overfill resulting in a release of approximately 5 barrels of PSH and approximately 415 barrels of groundwater. Approximately 404 barrels of groundwater and 1 barrel of crude oil was recovered from the secondary containment. The remaining released PSH/groundwater mixture impacted approximately 4,200 square feet of pasture land."* The initial C-141 Form is attached as Appendix A.

On August 18, 2017, GHD and Gandy Corporation (GHD contractor) field personnel mobilized to the Site to initially excavate visually stained and impacted soil from the determined release area, stockpile excavated soil on poly-vinyl, photo document, and map the excavated area.

On August 29, 2017, GHD submitted a Soil Remediation Work Plan to the NMOCD District 1, Hobbs, New Mexico office for review and approval. The Soil Remediation Work Plan was approved by Ms. Olivia Yu of the NMOCD, District 1 office on September 15, 2017 and the results of the executed work plan are provided herein.

3. Recommended Remediation Action Limits

According to 2017 gauging data from quarterly groundwater monitoring events at the Site, the average depth to groundwater is approximately 65 feet (ft.) below ground surface (bgs).



Furthermore, the Petroleum Recovery Research Center (PRRC) database and the New Mexico Office of the State Engineer (NMOSE), indicate the average depth to groundwater in the immediate area of the Site is less than 100 ft. bgs. There do not appear to be any wellhead protection areas and no surface water bodies within 200 to 1000 ft. of the Site. Therefore, the preliminary total ranking score for the Site is ten (10).

New Mexico Oil Conservation Division Site Assessment	
Ranking Criteria ¹	Score
Depth to Ground Water (< 100 ft. bgs)	10
Wellhead Protection Area (> 1000 ft. from water source, > 200 ft. from domestic source)	0
Distance to Surface Body Water (200 - 1000 ft.)	0
Ranking Criteria Total Score	10*
*Because the ranking criteria total score is 10, NMOCD established Recommended Remediation Action Levels (RRALs) are 10 mg/kg for benzene, 50 mg/kg for total benzene, toluene, ethylbenzene, xylenes (BTEX), and 1,000 mg/kg for total petroleum hydrocarbons (TPH).	

¹NMOCD Guidelines for Remediation of Leaks, Spills and Releases, August 13, 1993

4. Soil Assessment and Remediation Activities

Soil assessment and remediation activities at the Site consisted of multiple excavating events, accompanied by soil sample collection and analysis. GHD was responsible for the overall coordination of field operations, project management tasks, soil sample collection, waste management, and assisted in managing safe work operations of all field personnel working on-Site. Gandy Corporation (Gandy), GHD's contractor, provided labor, heavy equipment and haul trucks required for field operations.

4.1 Excavation Activities

Excavation activities resumed on August 25, 2017 and continued through February 20, 2018. Approximately 58 cubic yards (cy) of impacted soils were excavated from the release area and loaded into Gandy haul trucks for transportation to NMOCD-permitted Gandy Marley Inc. facility (Permit NM-1-019) in Chaves County, New Mexico. A photograph log is included as Appendix B.

4.2 Soil Sampling Activities

Soil sampling activities began on August 25, 2017, subsequent to remedial excavation activities. GHD collected nine (9) vertical confirmation soil samples (CS-1 through CS-9) from within the excavated spill path area at varying depths.

On December 4, 2017, GHD collected eight (8) horizontal delineation (sidewall) samples (WS-1 through WS-8) and one (1) additional vertical confirmation soil sample (CS-6) on December 5, 2017, from the remedial excavation at varying depths.

All collected soil samples were placed in laboratory provided containers, labeled, placed on ice inside an insulated cooler and submitted under chain of custody control to Xenco Laboratories, Midland, Texas for analysis of BTEX by EPA Method 8021B; total TPH (C6-C35) by Method



SW8015B Modified. All soil samples collected from the Site for laboratory analysis were below the NMOCD established RRALs for BTEX (50 mg/kg) and total TPH (1,000 mg/kg). Soil laboratory analytical results are summarized in Table 1 and are presented on Figure 3. Certified laboratory reports and chain of custody documentation are provided in Appendix C.

4.3 Waste Management

GHD was responsible for managing waste associated with the project activities (58-cy). The NMOCD-permitted (Permit NM-1-019) Gandy Marley Inc. facility in Chaves County, New Mexico was utilized as a disposal facility for the excavated soils. Excavated soils were loaded into haul trucks provided by Gandy. Each truck leaving the Site was provided with a uniquely numbered non-hazardous waste manifest to accompany each load. Waste manifest copies are attached to this report as Appendix D.

4.4 Backfilling Activities

Once laboratory analysis of soil samples indicated that impacted soil had been removed in order to comply with NMOCD RRALs for the Site, a request for approval to backfill and reclaim the excavated spill path was submitted to the NMOCD. Approval to backfill and reclaim the excavated area was granted by the NMOCD in a reply email dated January 29, 2018. Approval was also granted by the landowner, Mr. Darr Angell.

Backfilling activities at the Site began on February 20, 2018 with the transportation of clean soil materials from an off-Site source; which was provided by the land owner (Mr. Angell). Approximately 60-cy of clean top soil material was emplaced into the remedial excavation.

Grandy utilized heavy equipment to contour, grade, and seed construction affected areas as requested and approved by Mr. Angell. Remedial activities were concluded on February 20, 2018. Site photographs documenting work activities are presented in Appendix B.

5. Site Closure Request

This Site Closure Report provides documentation of the Darr Angell No. 1 Groundwater Remediation Site AST Release assessment, remedial corrective actions, and restoration activities performed in accordance to 1RP-4796. Correspondence of soil assessment and remediation activities, along with a backfilling request were approved by the NMOCD District 1 office in association with this project. This report is an attachment to the Final C-141 Form submittal for 1RP-4796. Based on NMOCD and Plains communications and corrective actions performed, GHD respectfully requests the NMOCD to rule that no further action of the remediated and restored area be granted. Please feel free to contact the GHD Midland office if there are any questions or additional information is required.



All of Which is Respectfully Submitted,

GHD

A handwritten signature in black ink, appearing to read "Jacob Ferenz".

Jacob Ferenz

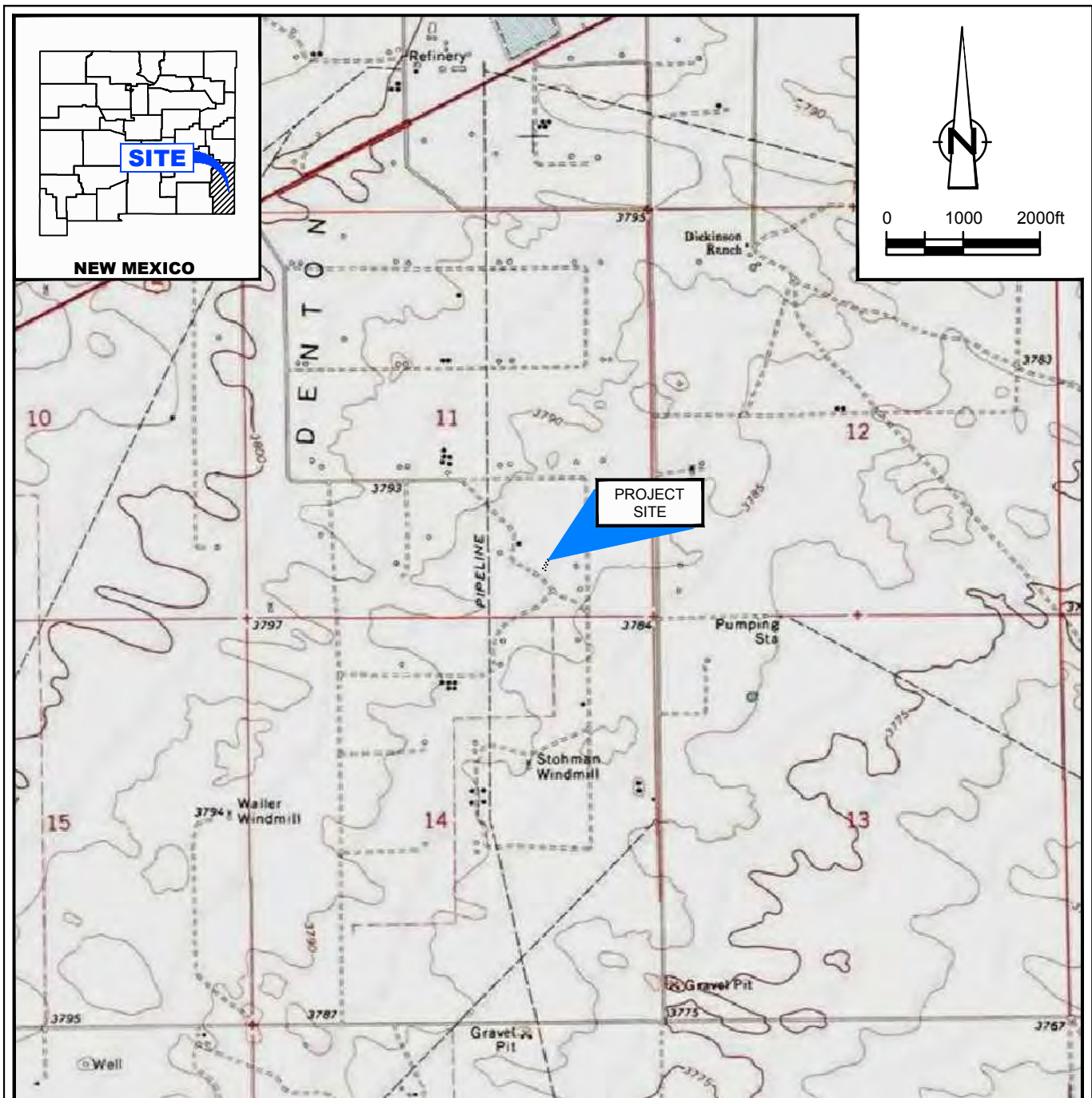
A handwritten signature in blue ink, appearing to read "Thomas C. Larson".

Thomas C. Larson

GHD Midland Operations Manager

This report is submitted as an attachment to the C-141 Final Report to 1RP-4796

Figures



SOURCE: USGS 7.5 MINUTE QUAD
"PRAIRIEVIEW, NEW MEXICO"

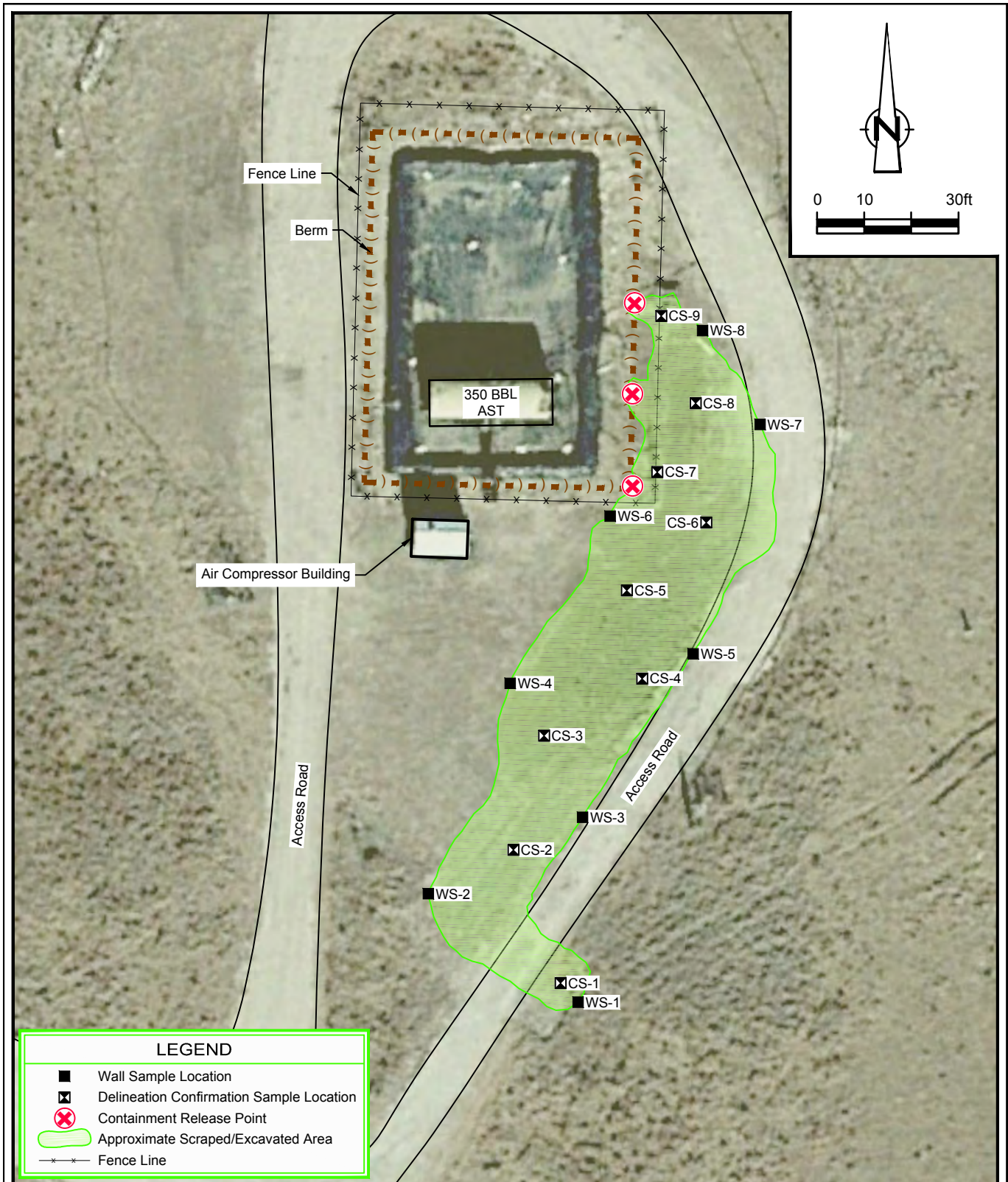
LAT/LONG: 33.0266° NORTH, 103.1666° WEST
COORDINATE: NAD83 DATUM, U.S. FOOT
STATE PLANE ZONE - NEW MEXICO EAST

Figure 1

SITE LOCATION MAP
DARR ANGELL No.1
LEA COUNTY, NEW MEXICO
Plains Pipeline L.P.



074683-02(010)GN-DL001 SEP 6, 2018



Source: Image © 2018 Google - Imagery Date: January 19, 2018

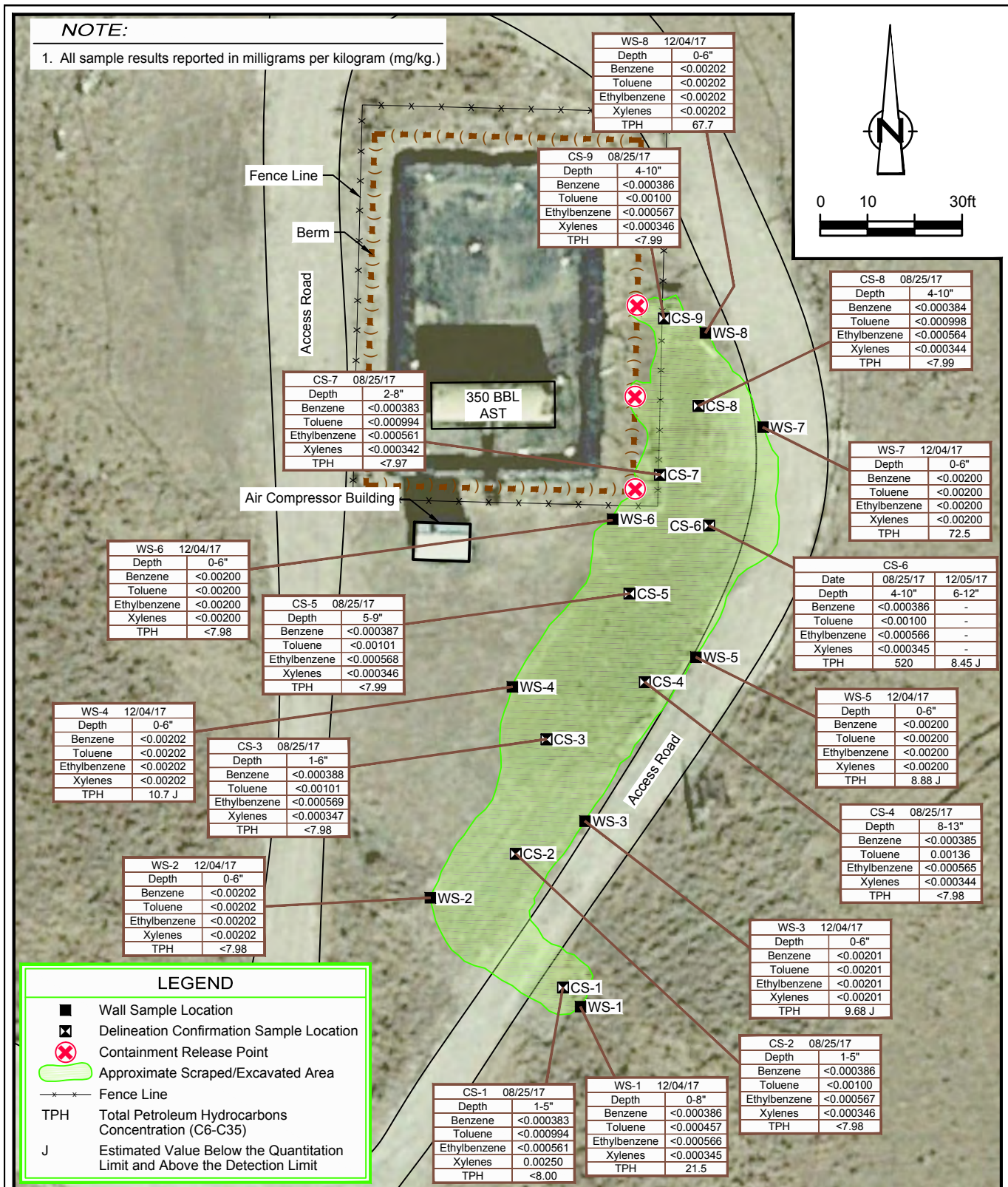
Lat/Long: 33.026481° North, 103.166871° West

Figure 2

SITE DETAILS MAP
DARR ANGELL No.1
LEA COUNTY, NEW MEXICO
Plains Pipeline L.P.



074683-02(010)GN-DL001 SEP 6, 2018



Source: Image © 2018 Google - Imagery Date: January 19, 2018

Lat/Long: 33.026481° North, 103.166871° West

Figure 3

ANALYTICAL RESULTS MAP
DARR ANGELL No.1
LEA COUNTY, NEW MEXICO
Plains Pipeline L.P.



074683-02(010)GN-DL001 SEP 6, 2018

Table

Table 1

Page 1 of 1

Soil Analytical Summary
Plains All American Pipeline, LP
Darr Angell No. 1 AST Release
Lea County, New Mexico

Sample ID	Sample Date	Depth (inches bgs)	Benzene	Toluene	Ethyl- Benzene	Xylenes	BTEX	TPH				
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	Total (GRO/DRO/ORO)
			1993 NMOCD Soil Delineation & Recommended Remediation Action Levels (RRAL) Ranking Score = 10									
			10 mg/kg	---	---	---	50 mg/kg	---	---	---	1000 mg/kg	
EXCAVATION BOTTOM CONFIRMATION SAMPLE RESULTS												
CS-1	8/25/17	1 - 5	<0.000383	<0.000994	<0.000561	0.00250	0.00250	<8.00	<8.13	<8.13	<8.00	
CS-2	8/25/17	1 - 5	<0.000386	<0.00100	<0.000567	<0.000346	<0.000346	<7.98	<8.10	<8.10	<7.98	
CS-3	8/25/17	1 - 6	<0.000388	<0.00101	<0.000569	<0.000347	<0.000347	<7.98	<8.10	<8.10	<7.98	
CS-4	8/25/17	8 - 13	<0.000385	0.00136	<0.000565	<0.000344	0.00136	<7.98	<8.10	<8.10	<7.98	
CS-5	8/25/17	5 - 9	<0.000387	<0.00101	<0.000568	<0.000346	<0.000346	<7.99	<8.12	<8.12	<7.99	
CS-6	8/25/17	4 - 10	<0.000386	<0.00100	<0.000566	<0.000345	<0.000345	<7.97	455	64.5	520	
CS-6	12/5/17	6 -12	---	---	---	---	---	<7.99	8.45 J	<8.12	8.45 J	
CS-7	8/25/17	2 - 8	<0.000383	<0.000994	<0.000561	<0.000342	<0.000342	<7.97	<8.10	<8.10	<7.97	
CS-8	8/25/17	4 - 10	<0.000384	<0.000998	<0.000564	<0.000344	<0.000344	<7.99	<8.11	<8.11	<7.99	
CS-9	8/25/17	4 - 10	<0.000386	<0.00100	<0.000567	<0.000346	<0.000346	<7.99	<8.12	<8.12	<7.99	
EXCAVATION SIDEWALL CONFIRMATION SAMPLE RESULTS												
WS-1	12/4/17	0 - 8	<0.000386	<0.000457	<0.000566	<0.000345	<0.000345	<7.98	11.6 J	9.85 J	21.5	
WS-2	12/4/17	0 - 6	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<7.98	<8.10	<8.10	<7.98	
WS-3	12/4/17	0 - 6	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	<7.99	9.68 J	<8.12	9.68 J	
WS-4	12/4/17	0 - 6	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<7.99	10.7 J	<8.12	10.7 J	
WS-5	12/4/17	0 - 6	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<8.00	8.88 J	<8.13	8.88 J	
WS-6	12/4/17	0 - 6	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<7.98	<8.10	<8.10	<7.98	
WS-7	12/4/17	0 - 6	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<7.99	60.7	11.8 J	72.5	
WS-8	12/4/17	0 - 6	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<7.98	58.0	9.67 J	67.7	
1. Values reported in milligrams per kilogram (mg/kg)												
2. < = Value less than Reporting Limit (RL)												
3. Bold Indicates analyte detected												
4. bgs Indicates below ground surface												
5. BTEX analyses by EPA Method SW 8021B												
6. TPH analyses by EPA Method SW 8015B Mod												
7. GRO/DRO/ORO = Gasoline/Diesel/Oil Range Organics												
8. CS Indicates Confirmation Sample												
9. WS Indicates Wall Sample												
10. J = Target analyte was positively identified below the Quantitation Limit and above the Detection Limit												

Appendices

Appendix A Initial C-141 Form

Page 35 of 94
Received by OGD: 4/3/2023 3:17:19 PM
Released by Imaging: 4/5/2023 2:04:58 PM

District I
625 N. French Dr., Hobbs, NM 88240
District II
301 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 October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	Plains Pipeline, LP	Contact	Camille Bryant
Address	577 US Hwy. 385 N., Seminole, TX 79360	Telephone No.	(575) 441-1099
Facility Name	Darr Angell #1	Facility Type	Groundwater Remediation Site
Surface Owner	Darr Angell	Mineral Owner	

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
J	11	15S	37E					Lea

Latitude N 33.026° Longitude W 103.167°

NATURE OF RELEASE

Type of Release	PSH/Water	Volume of Release	420 barrels	Volume Recovered	405 barrels
Source of Release	Groundwater Remediation System Recovery Tank	Date and Hour of Occurrence	8/16/2017 @ 08:00	Date and Hour of Discovery	8/16/2017 @ 08:30
Was Immediate Notice Given?	☒ Yes ☐ No ☐ Not Required	If YES, To Whom?	Verbal notification to Olivia Yu		
By Whom?	Camille Bryant	Date and Hour	8/16/2017 @ 14:37		
Was a Watercourse Reached?	☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.			

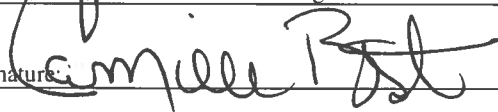
If a Watercourse was Impacted, Describe Fully.*

RECEIVED
By Olivia Yu at 8:10 am, Aug 28, 2017

Describe Cause of Problem and Remedial Action Taken.* An electrical system malfunction reset the remediation system causing the recovery pumps to run continuously. The valve on the high level shut off switch on the recovery tank was inadvertently closed and did not shut the system down causing the recovery tank and secondary containment to overfill resulting in a release of approximately 5 barrels of PSH and approximately 415 barrels of groundwater. Approximately 404 barrels of groundwater and 1 barrel of crude oil was recovered from the secondary containment. The remaining released PSH/groundwater mixture impacted approximately 4,200 square feet of pasture land.

Describe Area Affected and Cleanup Action Taken. The impacted area will be remediated as per applicable NMOCD guidelines.

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: 	OIL CONSERVATION DIVISION	
Printed Name: Camille Bryant	Approved by: 	
Title: Remediation Coordinator	Approval Date: 8/25/2017	Expiration Date:
E-mail Address: cjbryant@paalp.com	Conditions of Approval: see attached directive	Attached ☒
Date: 8/23/2017	Phone: (575) 441-1099	

Attach Additional Sheets If Necessary

1RP-4796

fOY1724028319

nOY1724028511

pOY1724028554

Operator/Responsible Party,

The OCD has received the form C-141 you provided on _8/23/2017_ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number _1RP-4796_ has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC. [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District _1_ office in __Hobbs__ on or before _9/28/2017_. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.
- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.
- Nominal detection limits for field and laboratory analyses must be provided.
- Composite sampling is not generally allowed.
- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

- Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

- If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

- Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold

OCD Environmental Bureau Chief
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505-476-3465
jim.griswold@state.nm.us

Appendix B Photograph Log



Photo 1 – View of stained and impacted soil east of containment facing northwest



Photo 2 – View of stained and impacted soil south of containment facing northwest



Site Photographs



Photo 3 – View of stained and impacted soil south of compressor building facing south



Photo 4 – View of impacted soil remediation activity facing north-northeast



Site Photographs



Photo 5 – View of impacted soil being excavated facing east



Photo 6 – View of backfilled hand dug area east of AST facing south



Site Photographs



Photo 7 – View of backfilled excavated area southeast of AST fencing facing south



Photo 8 – View of backfilled excavated area south of AST facing south



Site Photographs

Appendix C

Certified Laboratory Reports

Analytical Report 561433

for

GHD Services, INC- Midland

Project Manager: John Fergerson

Darr Angell #1

074683

05-SEP-17

Collected By: Client



1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400)
Xenco-San Antonio: Texas (T104704534)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)



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05-SEP-17

Project Manager: **John Fergerson**
GHD Services, INC- Midland
2135 S Loop 250 W
Midland, TX 79703

Reference: XENCO Report No(s): **561433**
Darr Angell #1
Project Address: Darr Angell #1 Lea County, New Mexico

John Fergerson:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 561433. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 561433 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

A handwritten signature in black ink, appearing to read 'Kelsey Brooks', written over a horizontal line.

Kelsey Brooks

Project Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America

**Sample Cross Reference 561433****GHD Services, INC- Midland, Midland, TX**

Darr Angell #1

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SS-082517-JF-(CS-9)	S	08-25-17 15:00	4 - 10 In	561433-001
SS-082517-JF-(CS-8)	S	08-25-17 15:05	4 - 10 In	561433-002
SS-082517-JF-(CS-7)	S	08-25-17 15:10	2 - 8 In	561433-003
SS-082517-JF-(CS-6)	S	08-25-17 15:15	4 - 10 In	561433-004
SS-082517-JF-(CS-5)	S	08-25-17 15:20	5 - 9 In	561433-005
SS-082517-JF-(CS-4)	S	08-25-17 15:25	8 - 13 In	561433-006
SS-082517-JF-(CS-3)	S	08-25-17 15:30	1 - 6 In	561433-007
SS-082517-JF-(CS-2)	S	08-25-17 15:35	1 - 5 In	561433-008
SS-082517-JF-(CS-1)	S	08-25-17 15:40	1 - 5 In	561433-009

**CASE NARRATIVE****Client Name: GHD Services, INC- Midland****Project Name: Darr Angell #1**Project ID: 074683
Work Order Number(s): 561433Report Date: 05-SEP-17
Date Received: 08/28/2017

This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory.

Sample receipt non conformances and comments:**Sample receipt non conformances and comments per sample:**

None

Analytical non conformances and comments:

Batch: LBA-3026474 BTEX by EPA 8021

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.



Certificate of Analytical Results

561433

GHD Services, INC- Midland, Midland, TX

Darr Angell #1

Sample Id: SS-082517-JF-(CS-9)

Matrix: Soil

Sample Depth: 4 - 10 In

Lab Sample Id: 561433-001

Date Collected: 08.25.17 15.00

Date Received: 08.28.17 11.21

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3026606

Date Prep: 08.30.17 10.00

Prep seq: 730144

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons	PHC610	<7.99	15.0	7.99	mg/kg	09.05.17 09:35	U	1
Diesel Range Organics	C10C28DRO	<8.12	15.0	8.12	mg/kg	09.05.17 09:35	U	1
Oil Range Hydrocarbons	PHCG2835	<8.12	15.0	8.12	mg/kg	09.05.17 09:35	U	1
Total TPH	PHC635	<7.99		7.99	mg/kg	09.05.17 09:35	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	106	70 - 135	%		
o-Terphenyl	108	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: JUM

% Moist:

Tech: JUM

Seq Number: 3026474

Date Prep: 09.01.17 08.00

Prep seq: 730240

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000386	0.00201	0.000386	mg/kg	09.05.17 10:18	U	1
Toluene	108-88-3	<0.00100	0.00201	0.00100	mg/kg	09.05.17 10:18	U	1
Ethylbenzene	100-41-4	<0.000567	0.00201	0.000567	mg/kg	09.05.17 10:18	U	1
m_p-Xylenes	179601-23-1	<0.00102	0.00402	0.00102	mg/kg	09.05.17 10:18	U	1
o-Xylene	95-47-6	<0.000346	0.00201	0.000346	mg/kg	09.05.17 10:18	U	1
Xylenes, Total	1330-20-7	<0.000346		0.000346	mg/kg	09.05.17 10:18	U	
Total BTEX		<0.000346		0.000346	mg/kg	09.05.17 10:18	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	94	80 - 120	%		
4-Bromofluorobenzene	107	80 - 120	%		



Certificate of Analytical Results

561433

GHD Services, INC- Midland, Midland, TX

Darr Angell #1

Sample Id: SS-082517-JF-(CS-8)

Matrix: Soil

Sample Depth: 4 - 10 In

Lab Sample Id: 561433-002

Date Collected: 08.25.17 15.05

Date Received: 08.28.17 11.21

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3026606

Date Prep: 08.30.17 10.00

Prep seq: 730144

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons	PHC610	<7.99	15.0	7.99	mg/kg	09.05.17 09:35	U	1
Diesel Range Organics	C10C28DRO	<8.11	15.0	8.11	mg/kg	09.05.17 09:35	U	1
Oil Range Hydrocarbons	PHCG2835	<8.11	15.0	8.11	mg/kg	09.05.17 09:35	U	1
Total TPH	PHC635	<7.99		7.99	mg/kg	09.05.17 09:35	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	107	70 - 135	%		
o-Terphenyl	107	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: JUM

% Moist:

Tech: JUM

Seq Number: 3026474

Date Prep: 09.01.17 08.00

Prep seq: 730240

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000384	0.00200	0.000384	mg/kg	09.05.17 10:18	U	1
Toluene	108-88-3	<0.000998	0.00200	0.000998	mg/kg	09.05.17 10:18	U	1
Ethylbenzene	100-41-4	<0.000564	0.00200	0.000564	mg/kg	09.05.17 10:18	U	1
m_p-Xylenes	179601-23-1	<0.00101	0.00399	0.00101	mg/kg	09.05.17 10:18	U	1
o-Xylene	95-47-6	<0.000344	0.00200	0.000344	mg/kg	09.05.17 10:18	U	1
Xylenes, Total	1330-20-7	<0.000344		0.000344	mg/kg	09.05.17 10:18	U	
Total BTEX		<0.000344		0.000344	mg/kg	09.05.17 10:18	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	90	80 - 120	%		
4-Bromofluorobenzene	102	80 - 120	%		



Certificate of Analytical Results

561433

GHD Services, INC- Midland, Midland, TX

Darr Angell #1

Sample Id: SS-082517-JF-(CS-7)

Matrix: Soil

Sample Depth: 2 - 8 In

Lab Sample Id: 561433-003

Date Collected: 08.25.17 15.10

Date Received: 08.28.17 11.21

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3026606

Date Prep: 08.30.17 10.00

Prep seq: 730144

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons	PHC610	<7.97	14.9	7.97	mg/kg	09.05.17 09:35	U	1
Diesel Range Organics	C10C28DRO	<8.10	14.9	8.10	mg/kg	09.05.17 09:35	U	1
Oil Range Hydrocarbons	PHCG2835	<8.10	14.9	8.10	mg/kg	09.05.17 09:35	U	1
Total TPH	PHC635	<7.97		7.97	mg/kg	09.05.17 09:35	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	103	70 - 135	%		
o-Terphenyl	105	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: JUM

% Moist:

Tech: JUM

Seq Number: 3026474

Date Prep: 09.01.17 08.00

Prep seq: 730240

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000383	0.00199	0.000383	mg/kg	09.02.17 10:03	U	1
Toluene	108-88-3	<0.000994	0.00199	0.000994	mg/kg	09.02.17 10:03	U	1
Ethylbenzene	100-41-4	<0.000561	0.00199	0.000561	mg/kg	09.02.17 10:03	U	1
m_p-Xylenes	179601-23-1	<0.00101	0.00398	0.00101	mg/kg	09.02.17 10:03	U	1
o-Xylene	95-47-6	<0.000342	0.00199	0.000342	mg/kg	09.02.17 10:03	U	1
Xylenes, Total	1330-20-7	<0.000342		0.000342	mg/kg	09.02.17 10:03	U	
Total BTEX		<0.000342		0.000342	mg/kg	09.02.17 10:03	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	93	80 - 120	%		
4-Bromofluorobenzene	102	80 - 120	%		



Certificate of Analytical Results

561433

GHD Services, INC- Midland, Midland, TX

Darr Angell #1

Sample Id: SS-082517-JF-(CS-6)

Matrix: Soil

Sample Depth: 4 - 10 In

Lab Sample Id: 561433-004

Date Collected: 08.25.17 15.15

Date Received: 08.28.17 11.21

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3026606

Date Prep: 08.30.17 10.00

Prep seq: 730144

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons	PHC610	<7.97	14.9	7.97	mg/kg	09.05.17 09:35	U	1
Diesel Range Organics	C10C28DRO	455	14.9	8.10	mg/kg	09.05.17 09:35		1
Oil Range Hydrocarbons	PHCG2835	64.5	14.9	8.10	mg/kg	09.05.17 09:35		1
Total TPH	PHC635	520		7.97	mg/kg	09.05.17 09:35		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	105	70 - 135	%		
o-Terphenyl	101	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: JUM

% Moist:

Tech: JUM

Seq Number: 3026474

Date Prep: 09.01.17 08.00

Prep seq: 730240

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000386	0.00200	0.000386	mg/kg	09.05.17 10:18	U	1
Toluene	108-88-3	<0.00100	0.00200	0.00100	mg/kg	09.05.17 10:18	U	1
Ethylbenzene	100-41-4	<0.000566	0.00200	0.000566	mg/kg	09.05.17 10:18	U	1
m_p-Xylenes	179601-23-1	<0.00102	0.00401	0.00102	mg/kg	09.05.17 10:18	U	1
o-Xylene	95-47-6	<0.000345	0.00200	0.000345	mg/kg	09.05.17 10:18	U	1
Xylenes, Total	1330-20-7	<0.000345		0.000345	mg/kg	09.05.17 10:18	U	
Total BTEX		<0.000345		0.000345	mg/kg	09.05.17 10:18	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	91	80 - 120	%		
4-Bromofluorobenzene	99	80 - 120	%		



Certificate of Analytical Results

561433

GHD Services, INC- Midland, Midland, TX

Darr Angell #1

Sample Id: SS-082517-JF-(CS-5)

Matrix: Soil

Sample Depth: 5 - 9 In

Lab Sample Id: 561433-005

Date Collected: 08.25.17 15.20

Date Received: 08.28.17 11.21

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3026606

Date Prep: 08.30.17 10.00

Prep seq: 730144

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons	PHC610	<7.99	15.0	7.99	mg/kg	09.05.17 09:35	U	1
Diesel Range Organics	C10C28DRO	<8.12	15.0	8.12	mg/kg	09.05.17 09:35	U	1
Oil Range Hydrocarbons	PHCG2835	<8.12	15.0	8.12	mg/kg	09.05.17 09:35	U	1
Total TPH	PHC635	<7.99		7.99	mg/kg	09.05.17 09:35	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	97	70 - 135	%		
o-Terphenyl	99	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: JUM

% Moist:

Tech: JUM

Seq Number: 3026474

Date Prep: 09.01.17 08.00

Prep seq: 730240

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000387	0.00201	0.000387	mg/kg	09.05.17 10:18	U	1
Toluene	108-88-3	<0.00101	0.00201	0.00101	mg/kg	09.05.17 10:18	U	1
Ethylbenzene	100-41-4	<0.000568	0.00201	0.000568	mg/kg	09.05.17 10:18	U	1
m_p-Xylenes	179601-23-1	<0.00102	0.00402	0.00102	mg/kg	09.05.17 10:18	U	1
o-Xylene	95-47-6	<0.000346	0.00201	0.000346	mg/kg	09.05.17 10:18	U	1
Xylenes, Total	1330-20-7	<0.000346		0.000346	mg/kg	09.05.17 10:18	U	
Total BTEX		<0.000346		0.000346	mg/kg	09.05.17 10:18	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	91	80 - 120	%		
4-Bromofluorobenzene	103	80 - 120	%		



Certificate of Analytical Results

561433

GHD Services, INC- Midland, Midland, TX

Darr Angell #1

Sample Id: SS-082517-JF-(CS-4)

Matrix: Soil

Sample Depth: 8 - 13 In

Lab Sample Id: 561433-006

Date Collected: 08.25.17 15.25

Date Received: 08.28.17 11.21

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3026606

Date Prep: 08.30.17 10.00

Prep seq: 730144

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons	PHC610	<7.98	15.0	7.98	mg/kg	09.05.17 09:35	U	1
Diesel Range Organics	C10C28DRO	<8.10	15.0	8.10	mg/kg	09.05.17 09:35	U	1
Oil Range Hydrocarbons	PHCG2835	<8.10	15.0	8.10	mg/kg	09.05.17 09:35	U	1
Total TPH	PHC635	<7.98		7.98	mg/kg	09.05.17 09:35	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	104	70 - 135	%		
o-Terphenyl	107	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: JUM

% Moist:

Tech: JUM

Seq Number: 3026474

Date Prep: 09.01.17 08.00

Prep seq: 730240

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000385	0.00200	0.000385	mg/kg	09.05.17 10:18	U	1
Toluene	108-88-3	0.00136	0.00200	0.00100	mg/kg	09.05.17 10:18	J	1
Ethylbenzene	100-41-4	<0.000565	0.00200	0.000565	mg/kg	09.05.17 10:18	U	1
m_p-Xylenes	179601-23-1	<0.00101	0.00400	0.00101	mg/kg	09.05.17 10:18	U	1
o-Xylene	95-47-6	<0.000344	0.00200	0.000344	mg/kg	09.05.17 10:18	U	1
Xylenes, Total	1330-20-7	<0.000344		0.000344	mg/kg	09.05.17 10:18	U	
Total BTEX		0.00136		0.000344	mg/kg	09.05.17 10:18	J	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	93	80 - 120	%		
4-Bromofluorobenzene	106	80 - 120	%		



Certificate of Analytical Results

561433

GHD Services, INC- Midland, Midland, TX

Darr Angell #1

Sample Id: SS-082517-JF-(CS-3)

Matrix: Soil

Sample Depth: 1 - 6 In

Lab Sample Id: 561433-007

Date Collected: 08.25.17 15.30

Date Received: 08.28.17 11.21

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3026606

Date Prep: 08.30.17 10.00

Prep seq: 730144

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons	PHC610	<7.98	15.0	7.98	mg/kg	09.05.17 09:35	U	1
Diesel Range Organics	C10C28DRO	<8.10	15.0	8.10	mg/kg	09.05.17 09:35	U	1
Oil Range Hydrocarbons	PHCG2835	<8.10	15.0	8.10	mg/kg	09.05.17 09:35	U	1
Total TPH	PHC635	<7.98		7.98	mg/kg	09.05.17 09:35	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	107	70 - 135	%		
o-Terphenyl	110	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: JUM

% Moist:

Tech: JUM

Seq Number: 3026474

Date Prep: 09.01.17 08.00

Prep seq: 730240

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000388	0.00202	0.000388	mg/kg	09.05.17 10:18	U	1
Toluene	108-88-3	<0.00101	0.00202	0.00101	mg/kg	09.05.17 10:18	U	1
Ethylbenzene	100-41-4	<0.000569	0.00202	0.000569	mg/kg	09.05.17 10:18	U	1
m_p-Xylenes	179601-23-1	<0.00102	0.00403	0.00102	mg/kg	09.05.17 10:18	U	1
o-Xylene	95-47-6	<0.000347	0.00202	0.000347	mg/kg	09.05.17 10:18	U	1
Xylenes, Total	1330-20-7	<0.000347		0.000347	mg/kg	09.05.17 10:18	U	
Total BTEX		<0.000347		0.000347	mg/kg	09.05.17 10:18	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	93	80 - 120	%		
4-Bromofluorobenzene	102	80 - 120	%		



Certificate of Analytical Results

561433

GHD Services, INC- Midland, Midland, TX

Darr Angell #1

Sample Id: SS-082517-JF-(CS-2)

Matrix: Soil

Sample Depth: 1 - 5 In

Lab Sample Id: 561433-008

Date Collected: 08.25.17 15.35

Date Received: 08.28.17 11.21

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3026606

Date Prep: 08.30.17 10.00

Prep seq: 730144

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons	PHC610	<7.98	15.0	7.98	mg/kg	09.05.17 09:35	U	1
Diesel Range Organics	C10C28DRO	<8.10	15.0	8.10	mg/kg	09.05.17 09:35	U	1
Oil Range Hydrocarbons	PHCG2835	<8.10	15.0	8.10	mg/kg	09.05.17 09:35	U	1
Total TPH	PHC635	<7.98		7.98	mg/kg	09.05.17 09:35	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	98	70 - 135	%		
o-Terphenyl	99	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: JUM

% Moist:

Tech: JUM

Seq Number: 3026474

Date Prep: 09.01.17 08.00

Prep seq: 730240

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000386	0.00201	0.000386	mg/kg	09.05.17 10:18	U	1
Toluene	108-88-3	<0.00100	0.00201	0.00100	mg/kg	09.05.17 10:18	U	1
Ethylbenzene	100-41-4	<0.000567	0.00201	0.000567	mg/kg	09.05.17 10:18	U	1
m_p-Xylenes	179601-23-1	<0.00102	0.00402	0.00102	mg/kg	09.05.17 10:18	U	1
o-Xylene	95-47-6	<0.000346	0.00201	0.000346	mg/kg	09.05.17 10:18	U	1
Xylenes, Total	1330-20-7	<0.000346		0.000346	mg/kg	09.05.17 10:18	U	
Total BTEX		<0.000346		0.000346	mg/kg	09.05.17 10:18	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	93	80 - 120	%		
4-Bromofluorobenzene	101	80 - 120	%		



Certificate of Analytical Results

561433

GHD Services, INC- Midland, Midland, TX

Darr Angell #1

Sample Id: SS-082517-JF-(CS-1)

Matrix: Soil

Sample Depth: 1 - 5 In

Lab Sample Id: 561433-009

Date Collected: 08.25.17 15.40

Date Received: 08.28.17 11.21

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3026606

Date Prep: 08.30.17 10.00

Prep seq: 730144

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons	PHC610	<8.00	15.0	8.00	mg/kg	09.05.17 09:35	U	1
Diesel Range Organics	C10C28DRO	<8.13	15.0	8.13	mg/kg	09.05.17 09:35	U	1
Oil Range Hydrocarbons	PHCG2835	<8.13	15.0	8.13	mg/kg	09.05.17 09:35	U	1
Total TPH	PHC635	<8.00		8.00	mg/kg	09.05.17 09:35	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	107	70 - 135	%		
o-Terphenyl	108	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: JUM

% Moist:

Tech: JUM

Seq Number: 3026474

Date Prep: 09.01.17 08.00

Prep seq: 730240

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000383	0.00199	0.000383	mg/kg	09.05.17 10:18	U	1
Toluene	108-88-3	<0.000994	0.00199	0.000994	mg/kg	09.05.17 10:18	U	1
Ethylbenzene	100-41-4	<0.000561	0.00199	0.000561	mg/kg	09.05.17 10:18	U	1
m_p-Xylenes	179601-23-1	<0.00101	0.00398	0.00101	mg/kg	09.05.17 10:18	U	1
o-Xylene	95-47-6	0.00250	0.00199	0.000342	mg/kg	09.05.17 10:18		1
Xylenes, Total	1330-20-7	0.00250		0.000342	mg/kg	09.05.17 10:18		
Total BTEX		0.00250		0.000342	mg/kg	09.05.17 10:18		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	113	80 - 120	%		
4-Bromofluorobenzene	87	80 - 120	%		



Certificate of Analytical Results

561433

GHD Services, INC- Midland, Midland, TX

Darr Angell #1

Sample Id: 730144-1-BLK

Matrix: Solid

Sample Depth:

Lab Sample Id: 730144-1-BLK

Date Collected:

Date Received:

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3026606

Date Prep: 08.30.17 10.00

Prep seq: 730144

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons	PHC610	<8.00	15.0	8.00	mg/kg	08.30.17 12:39	U	1
Diesel Range Organics	C10C28DRO	<8.13	15.0	8.13	mg/kg	08.30.17 12:39	U	1
Oil Range Hydrocarbons	PHCG2835	<8.13	15.0	8.13	mg/kg	08.30.17 12:39	U	1
Total TPH	PHC635	<8.00		8.00	mg/kg	08.30.17 12:39	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	111	70 - 135	%		
o-Terphenyl	115	70 - 135	%		

Sample Id: 730240-1-BLK

Matrix: Solid

Sample Depth:

Lab Sample Id: 730240-1-BLK

Date Collected:

Date Received:

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: JUM

% Moist:

Tech: JUM

Seq Number: 3026474

Date Prep: 09.01.17 11.00

Prep seq: 730240

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000385	0.00200	0.000385	mg/kg	09.01.17 16:40	U	1
Toluene	108-88-3	<0.00100	0.00200	0.00100	mg/kg	09.01.17 16:40	U	1
Ethylbenzene	100-41-4	<0.000565	0.00200	0.000565	mg/kg	09.01.17 16:40	U	1
m_p-Xylenes	179601-23-1	<0.00101	0.00400	0.00101	mg/kg	09.01.17 16:40	U	1
o-Xylene	95-47-6	<0.000344	0.00200	0.000344	mg/kg	09.01.17 16:40	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	89	80 - 120	%		
4-Bromofluorobenzene	93	80 - 120	%		



Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **SQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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Form 2 - Surrogate Recoveries

Project Name: Darr Angell #1

Work Orders : 561433,

Project ID: 074683

Lab Batch #: 3026474

Sample: 730240-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg	Date Analyzed: 09/01/17 11:55	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					Flags
1,4-Difluorobenzene		0.0281	0.0300	94	80-120
4-Bromofluorobenzene		0.0304	0.0300	101	80-120

Lab Batch #: 3026474

Sample: 730240-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg	Date Analyzed: 09/01/17 12:12	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					Flags
1,4-Difluorobenzene		0.0284	0.0300	95	80-120
4-Bromofluorobenzene		0.0308	0.0300	103	80-120

Lab Batch #: 3026474

Sample: 561776-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg	Date Analyzed: 09/01/17 12:31	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					Flags
1,4-Difluorobenzene		0.0336	0.0300	112	80-120
4-Bromofluorobenzene		0.0326	0.0300	109	80-120

Lab Batch #: 3026474

Sample: 561776-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg	Date Analyzed: 09/01/17 12:50	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					Flags
1,4-Difluorobenzene		0.0291	0.0300	97	80-120
4-Bromofluorobenzene		0.0329	0.0300	110	80-120

Lab Batch #: 3026474

Sample: 730240-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg	Date Analyzed: 09/01/17 16:40	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					Flags
1,4-Difluorobenzene		0.0267	0.0300	89	80-120
4-Bromofluorobenzene		0.0280	0.0300	93	80-120

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Darr Angell #1

Work Orders : 561433,

Project ID: 074683

Lab Batch #: 3026606

Sample: 730144-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg	Date Analyzed: 08/30/17 12:39	SURROGATE RECOVERY STUDY			
TPH by SW8015 Mod		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		111	100	111	70-135
o-Terphenyl		57.5	50.0	115	70-135

Lab Batch #: 3026606

Sample: 730144-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg	Date Analyzed: 08/30/17 12:39	SURROGATE RECOVERY STUDY			
TPH by SW8015 Mod		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		116	100	116	70-135
o-Terphenyl		53.1	50.0	106	70-135

Lab Batch #: 3026606

Sample: 561433-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg	Date Analyzed: 09/05/17 09:35	SURROGATE RECOVERY STUDY			
TPH by SW8015 Mod		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		125	99.9	125	70-135
o-Terphenyl		51.9	50.0	104	70-135

Lab Batch #: 3026606

Sample: 561433-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg	Date Analyzed: 09/05/17 09:35	SURROGATE RECOVERY STUDY			
TPH by SW8015 Mod		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		124	100	124	70-135
o-Terphenyl		52.0	50.0	104	70-135

Lab Batch #: 3026606

Sample: 730144-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg	Date Analyzed: 09/05/17 09:35	SURROGATE RECOVERY STUDY			
TPH by SW8015 Mod		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1-Chlorooctane		121	100	121	70-135
o-Terphenyl		56.5	50.0	113	70-135

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.



BS / BSD Recoveries



Project Name: Darr Angell #1

Work Order #: 561433

Project ID: 074683

Analyst: JUM

Date Prepared: 09/01/2017

Date Analyzed: 09/01/2017

Lab Batch ID: 3026474

Sample: 730240-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Benzene	<0.000385	0.100	0.101	101	0.100	0.106	106	5	70-130	35	
Toluene	<0.00100	0.100	0.100	100	0.100	0.105	105	5	70-130	35	
Ethylbenzene	<0.000565	0.100	0.102	102	0.100	0.106	106	4	71-129	35	
m_p-Xylenes	<0.00101	0.200	0.198	99	0.200	0.207	104	4	70-135	35	
o-Xylene	<0.000344	0.100	0.0972	97	0.100	0.102	102	5	71-133	35	

Analyst: ARM

Date Prepared: 08/30/2017

Date Analyzed: 08/30/2017

Lab Batch ID: 3026606

Sample: 730144-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Gasoline Range Hydrocarbons	<8.00	1000	878	88	1000	915	92	4	70-135	35	
Diesel Range Organics	<8.13	1000	1060	106	1000	1070	107	1	70-135	35	

Relative Percent Difference RPD = $200 * |(C-F)/(C+F)|$ Blank Spike Recovery [D] = $100 * (C)/[B]$ Blank Spike Duplicate Recovery [G] = $100 * (F)/[E]$

All results are based on MDL and Validated for QC Purposes



Form 3 - MS / MSD Recoveries



Project Name: Darr Angell #1

Work Order #: 561433

Project ID: 074683

Lab Batch ID: 3026474

QC- Sample ID: 561776-001 S

Batch #: 1 Matrix: Soil

Date Analyzed: 09/01/2017

Date Prepared: 09/01/2017

Analyst: JUM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.000385	0.100	0.0909	91	0.100	0.0922	92	1	70-130	35	
Toluene	<0.00100	0.100	0.0857	86	0.100	0.0894	89	4	70-130	35	
Ethylbenzene	<0.000565	0.100	0.0842	84	0.100	0.0865	87	3	71-129	35	
m_p-Xylenes	<0.00101	0.200	0.164	82	0.200	0.167	84	2	70-135	35	
o-Xylene	<0.000344	0.100	0.0836	84	0.100	0.0831	83	1	71-133	35	

Lab Batch ID: 3026606

QC- Sample ID: 561433-001 S

Batch #: 1 Matrix: Soil

Date Analyzed: 09/05/2017

Date Prepared: 08/30/2017

Analyst: ARM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons	<7.99	999	876	88	1000	877	88	0	70-135	35	
Diesel Range Organics	<8.12	999	1050	105	1000	1080	108	3	70-135	35	

Matrix Spike Percent Recovery $[D] = 100 \times (C-A)/B$
 Relative Percent Difference $RPD = 200 \times |(C-F)/(C+F)|$

Matrix Spike Duplicate Percent Recovery $[G] = 100 \times (F-A)/E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.



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Service Center - San Antonio, Texas (210-509-3334)

www.xenica.com

Odessa, Texas (432-563-1800)

Lakeland, Florida (863-646-8526)

Norcross, Georgia (770-449-8800)

Tampa, Florida (813-620-2000)

Lakeland, Florida (863-646-8526)

Client / Reporting Information						Project Information							Analytical Information								Matrix Codes				
Company Name / Branch:						GHD Services, Inc. - Midland 2135 S Loop 250 West Midland, TX 79703 432-686-0086							Project Name/Number: Plains/074683 Project Location: Darr Angell #1 Lea County, New Mexico												
Email:						Christopher.Knight@ghd.com John.Ferguson@ghd.com							Invoice To: Plains All American Pipeline, LP Attn: Camille Bryant												
Project Contact:						John Ferguson							PO Number:												
Samplers Name						John Ferguson/Health Boyd																			
No.	Field ID / Point of Collection					Collection		Number of preserved bottles																	
	Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TPH 8015M (GRO/DRO)		BTEX 8021B									
1	SS-082517-JF-(CS-9)	4-10"	8/25/17	1500	S	2								X	X	X									
2	SS-082517-JF-(CS-8)	4-10"	8/25/17	1505	S	2								X	X	X									
3	SS-082517-JF-(CS-7)	2-8"	8/25/17	1510	S	2								X	X	X									
4	SS-082517-JF-(CS-6)	4-10"	8/25/17	1515	S	2								X	X	X									
5	SS-082517-JF-(CS-5)	5-9"	8/25/17	1520	S	2								X	X	X									
6	SS-082517-JF-(CS-4)	8-13"	8/25/17	1525	S	2								X	X	X									
7	SS-082517-JF-(CS-3)	1-6"	8/25/17	1530	S	2								X	X	X									
8	SS-082517-JF-(CS-2)	1-5"	8/25/17	1535	S	2								X	X	X									
9	SS-082517-JF-(CS-1)	1-5"	8/25/17	1540	S	2								X	X	X									
10																									
Turnaround Time (Business days)						Data Deliverable Information										Notes:									
Same Day TAT						☐ 5 Day TAT						☐ Level II Std QC						☐ Level IV (Full Data Pkg raw data)							
Next Day EMERGENCY						☐ 7 Day TAT						☐ Level III Std QC + Forms						☐ TRRP Level IV							
2 Day EMERGENCY						☒ Contract TAT						☐ Level 3 (CLP Forms)						☐ UST / RG 411							
3 Day EMERGENCY												☐ TRRP Checklist													
TAT Starts Day received by Lab, if received by 3:00 pm																		Hand delivered to lab							
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																		FED-EX / UPS, Tracking #							
Relinquished by Sampler:																		Date Time:		Received By:		Date Time:		Received By:	
Relinquished by:																		Date Time:		Received By:		Date Time:		Received By:	
Relinquished by:																		Date Time:		Received By:		Date Time:		Received By:	
Custody Seal #																		Preserved where applicable		On Ice					
Temp: 2.2																		IR ID: R							
CF: (0-6: -0.2°C)																									
(6-23: +0.2°C)																									
Corrected Temp: 2.0																									



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: GHD Services, INC- Midland

Date/ Time Received: 08/28/2017 11:21:00 AM

Work Order #: 561433

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist**Comments**

#1 *Temperature of cooler(s)?	2
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seal present on shipping container/ cooler?	N/A
#5 *Custody Seals intact on shipping container/ cooler?	N/A
#6 Custody Seals intact on sample bottles?	N/A
#7 *Custody Seals Signed and dated?	N/A
#8 *Chain of Custody present?	Yes
#9 Sample instructions complete on Chain of Custody?	Yes
#10 Any missing/extra samples?	No
#11 Chain of Custody signed when relinquished/ received?	Yes
#12 Chain of Custody agrees with sample label(s)?	Yes
#13 Container label(s) legible and intact?	Yes
#14 Sample matrix/ properties agree with Chain of Custody?	Yes
#15 Samples in proper container/ bottle?	Yes
#16 Samples properly preserved?	Yes
#17 Sample container(s) intact?	Yes
#18 Sufficient sample amount for indicated test(s)?	Yes
#19 All samples received within hold time?	Yes
#20 Subcontract of sample(s)?	No
#21 VOC samples have zero headspace?	N/A

* Must be completed for after-hours delivery of samples prior to placing in the refrigerator

Analyst: ss

PH Device/Lot#: 213315

Checklist completed by:

Shawnee Smith

Date: 08/29/2017

Checklist reviewed by:

Kelsey Brooks

Date: 08/29/2017

Analytical Report 570416

for
GHD Services, INC- Midland

Project Manager: John Fergerson

Plains

074683-03

15-DEC-17

Collected By: Client



1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):

Texas (T104704295-17-15), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)

Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-17-13)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)



15-DEC-17

Project Manager: **John Fergerson**

GHD Services, INC- Midland

2135 S Loop 250 W

Midland, TX 79703

Reference: XENCO Report No(s): **570416**

Plains

Project Address: Darr Angell #1 AST Release Lea County, New Mexico

John Fergerson:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 570416. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 570416 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

A handwritten signature in black ink, appearing to read 'Mike Kimmel', written over a horizontal line.

Mike Kimmel

Client Services Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

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Sample Cross Reference 570416

GHD Services, INC- Midland, Midland, TX

Plains

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SS-120417-JF-(WS-1)	S	12-04-17 16:00	0 - 8 In	570416-001
SS-120417-JF-(WS-2)	S	12-04-17 16:10	0 - 6 In	570416-002
SS-120417-JF-(WS-3)	S	12-04-17 16:20	0 - 6 In	570416-003
SS-120417-JF-(WS-4)	S	12-04-17 16:30	0 - 6 In	570416-004
SS-120417-JF-(WS-5)	S	12-04-17 16:40	0 - 6 In	570416-005
SS-120417-JF-(WS-6)	S	12-04-17 16:50	0 - 6 In	570416-006
SS-120417-JF-(WS-7)	S	12-04-17 17:00	0 - 6 In	570416-007
SS-120417-JF-(WS-8)	S	12-04-17 17:10	0 - 6 In	570416-008
SS-120417-JF-(CS-6)	S	12-05-17 17:30	6 - 12 In	570416-009

**CASE NARRATIVE****Client Name: GHD Services, INC- Midland****Project Name: Plains**

Project ID: 074683-03
Work Order Number(s): 570416

Report Date: 15-DEC-17
Date Received: 12/07/2017

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3035474 BTEX by EPA 8021

Lab Sample ID 570416-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). m_p-Xylenes , o-Xylene recovered below QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 570416-001.

The Laboratory Control Sample for m_p-Xylenes , o-Xylene is within laboratory Control Limits, therefore the data was accepted.

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3035491 BTEX by EPA 8021

Lab Sample ID 570416-007 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Ethylbenzene, m_p-Xylenes , o-Xylene recovered below QC limits in the Matrix Spike Duplicate.

Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 570416-002, -003, -004, -005, -006, -007, -008.

The Laboratory Control Sample for Ethylbenzene, m_p-Xylenes , o-Xylene is within laboratory Control Limits, therefore the data was accepted.

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.



Certificate of Analysis Summary 570416

GHD Services, INC- Midland, Midland, TX



Project Name: Plains

Project Id: 074683-03

Date Received in Lab: Thu Dec-07-17 09:05 am

Contact: John Fergerson

Report Date: 15-DEC-17

Project Location: Darr Angell #1 AST Release Lea County,N

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	570416-001	570416-002	570416-003	570416-004	570416-005	570416-006
	Field Id:	SS-120417-JF-(WS-1)	SS-120417-JF(WS-2)	SS-120417-JF-(WS-3)	SS-120417-JF-(WS-4)	SS-120417-JF-(WS-5)	SS-120417-JF-(WS-6)
	Depth:	0-8 In	0-6 In	0-6 In	0-6 In	0-6 In	0-6 In
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Dec-04-17 16:00	Dec-04-17 16:10	Dec-04-17 16:20	Dec-04-17 16:30	Dec-04-17 16:40	Dec-04-17 16:50
BTEX by EPA 8021	Extracted:	Dec-09-17 08:45	Dec-10-17 09:15	Dec-10-17 09:15	Dec-10-17 09:15	Dec-10-17 09:15	Dec-10-17 09:15
	Analyzed:	Dec-09-17 08:47	Dec-10-17 22:23	Dec-10-17 22:42	Dec-11-17 15:28	Dec-11-17 15:47	Dec-11-17 16:34
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.000386 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200
Toluene		<0.000457 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200
Ethylbenzene		<0.000566 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200
m_p-Xylenes		<0.00102 0.00401	<0.00404 0.00404	<0.00402 0.00402	<0.00404 0.00404	<0.00401 0.00401	<0.00399 0.00399
o-Xylene		<0.000345 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200
Xylenes, Total		<0.000345 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200
Total BTEX		<0.000345 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200
TPH by SW8015 Mod	Extracted:	Dec-07-17 12:00	Dec-07-17 12:00	Dec-07-17 12:00	Dec-07-17 12:00	Dec-07-17 12:00	Dec-07-17 12:00
	Analyzed:	Dec-07-17 16:13	Dec-07-17 16:33	Dec-07-17 16:53	Dec-07-17 17:12	Dec-07-17 17:32	Dec-07-17 17:53
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<7.98 15.0	<7.98 15.0	<7.99 15.0	<7.99 15.0	<8.00 15.0	<7.98 15.0
Diesel Range Organics (DRO)		11.6 J 15.0	<8.10 15.0	9.68 J 15.0	10.7 J 15.0	8.88 J 15.0	<8.10 15.0
Oil Range Hydrocarbons (ORO)		9.85 J 15.0	<8.10 15.0	<8.12 15.0	<8.12 15.0	<8.13 15.0	<8.10 15.0
Total TPH		21.5 15.0	<7.98 15.0	9.68 J 15.0	10.7 J 15.0	8.88 J 15.0	<7.98 15.0

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Mike Kimmel
Client Services Manager



Certificate of Analysis Summary 570416

GHD Services, INC- Midland, Midland, TX



Project Name: Plains

Project Id: 074683-03

Contact: John Fergerson

Project Location: Darr Angell #1 AST Release Lea County,N

Date Received in Lab: Thu Dec-07-17 09:05 am

Report Date: 15-DEC-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	570416-007	570416-008	570416-009			
	Field Id:	SS-120417-JF-(WS-7)	SS-120417-JF-(WS-8)	SS-120417-JF-(CS-6)			
	Depth:	0-6 In	0-6 In	6-12 In			
	Matrix:	SOIL	SOIL	SOIL			
	Sampled:	Dec-04-17 17:00	Dec-04-17 17:10	Dec-05-17 17:30			
BTEX by EPA 8021	Extracted:	Dec-10-17 09:15	Dec-10-17 09:15				
	Analyzed:	Dec-10-17 20:11	Dec-11-17 16:53				
	Units/RL:	mg/kg RL	mg/kg RL				
	Benzene	<0.00200 0.00200	<0.00202 0.00202				
	Toluene	<0.00200 0.00200	<0.00202 0.00202				
Ethylbenzene		<0.00200 0.00200	<0.00202 0.00202				
m_p-Xylenes		<0.00399 0.00399	<0.00403 0.00403				
o-Xylene		<0.00200 0.00200	<0.00202 0.00202				
Xylenes, Total		<0.00200 0.00200	<0.00202 0.00202				
Total BTEX		<0.00200 0.00200	<0.00202 0.00202				
TPH by SW8015 Mod	Extracted:	Dec-07-17 12:00	Dec-07-17 12:00	Dec-07-17 12:00			
	Analyzed:	Dec-07-17 18:14	Dec-07-17 19:15	Dec-07-17 19:34			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			
	Gasoline Range Hydrocarbons (GRO)	<7.99 15.0	<7.98 15.0	<7.99 15.0			
	Diesel Range Organics (DRO)	60.7 15.0	58.0 15.0	8.45 J 15.0			
Oil Range Hydrocarbons (ORO)		11.8 J 15.0	9.67 J 15.0	<8.12 15.0			
Total TPH		72.5 15.0	67.7 15.0	8.45 J 15.0			

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Version: 1.0%

Mike Kimmel
Client Services Manager



Certificate of Analytical Results 570416

GHD Services, INC- Midland, Midland, TX

Plains

Sample Id: **SS-120417-JF-(WS-1)**

Matrix: Soil

Date Received: 12.07.17 09.05

Lab Sample Id: 570416-001

Date Collected: 12.04.17 16.00

Sample Depth: 0 - 8 In

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 12.07.17 12.00

Basis: Wet Weight

Seq Number: 3035310

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.98	15.0	mg/kg	12.07.17 16.13	U	1
Diesel Range Organics (DRO)	C10C28DRO	11.6	15.0	mg/kg	12.07.17 16.13	J	1
Oil Range Hydrocarbons (ORO)	PHCG2835	9.85	15.0	mg/kg	12.07.17 16.13	J	1
Total TPH	PHC635	21.5	15.0	mg/kg	12.07.17 16.13		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	91	%	70-135	12.07.17 16.13	
o-Terphenyl	84-15-1	91	%	70-135	12.07.17 16.13	

Analytical Method: BTEX by EPA 8021

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 12.09.17 08.45

Basis: Wet Weight

Seq Number: 3035474

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000386	0.00200	mg/kg	12.09.17 08.47	U	1
Toluene	108-88-3	<0.000457	0.00200	mg/kg	12.09.17 08.47	U	1
Ethylbenzene	100-41-4	<0.000566	0.00200	mg/kg	12.09.17 08.47	U	1
m_p-Xylenes	179601-23-1	<0.00102	0.00401	mg/kg	12.09.17 08.47	U	1
o-Xylene	95-47-6	<0.000345	0.00200	mg/kg	12.09.17 08.47	U	1
Xylenes, Total	1330-20-7	<0.000345	0.00200	mg/kg	12.09.17 08.47	U	1
Total BTEX		<0.000345	0.00200	mg/kg	12.09.17 08.47	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	94	%	80-120	12.09.17 08.47	
1,4-Difluorobenzene	540-36-3	94	%	80-120	12.09.17 08.47	



Certificate of Analytical Results 570416

GHD Services, INC- Midland, Midland, TX

Plains

Sample Id: **SS-120417-JF(WS-2)**

Matrix: Soil

Date Received: 12.07.17 09.05

Lab Sample Id: 570416-002

Date Collected: 12.04.17 16.10

Sample Depth: 0 - 6 In

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 12.07.17 12.00

Basis: Wet Weight

Seq Number: 3035310

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.98	15.0	mg/kg	12.07.17 16.33	U	1
Diesel Range Organics (DRO)	C10C28DRO	<8.10	15.0	mg/kg	12.07.17 16.33	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.10	15.0	mg/kg	12.07.17 16.33	U	1
Total TPH	PHC635	<7.98	15.0	mg/kg	12.07.17 16.33	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	93	%	70-135	12.07.17 16.33	
o-Terphenyl	84-15-1	96	%	70-135	12.07.17 16.33	

Analytical Method: BTEX by EPA 8021

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 12.10.17 09.15

Basis: Wet Weight

Seq Number: 3035491

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	12.10.17 22.23	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	12.10.17 22.23	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	12.10.17 22.23	U	1
m_p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	12.10.17 22.23	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	12.10.17 22.23	U	1
Xylenes, Total	1330-20-7	<0.00202	0.00202	mg/kg	12.10.17 22.23	U	1
Total BTEX		<0.00202	0.00202	mg/kg	12.10.17 22.23	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	91	%	80-120	12.10.17 22.23	
4-Bromofluorobenzene	460-00-4	89	%	80-120	12.10.17 22.23	



Certificate of Analytical Results 570416

GHD Services, INC- Midland, Midland, TX

Plains

Sample Id: **SS-120417-JF-(WS-3)**

Matrix: Soil

Date Received: 12.07.17 09.05

Lab Sample Id: 570416-003

Date Collected: 12.04.17 16.20

Sample Depth: 0 - 6 In

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 12.07.17 12.00

Basis: Wet Weight

Seq Number: 3035310

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.99	15.0	mg/kg	12.07.17 16.53	U	1
Diesel Range Organics (DRO)	C10C28DRO	9.68	15.0	mg/kg	12.07.17 16.53	J	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.12	15.0	mg/kg	12.07.17 16.53	U	1
Total TPH	PHC635	9.68	15.0	mg/kg	12.07.17 16.53	J	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	86	%	70-135	12.07.17 16.53	
o-Terphenyl	84-15-1	89	%	70-135	12.07.17 16.53	

Analytical Method: BTEX by EPA 8021

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 12.10.17 09.15

Basis: Wet Weight

Seq Number: 3035491

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	12.10.17 22.42	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	12.10.17 22.42	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	12.10.17 22.42	U	1
m_p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	12.10.17 22.42	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	12.10.17 22.42	U	1
Xylenes, Total	1330-20-7	<0.00201	0.00201	mg/kg	12.10.17 22.42	U	1
Total BTEX		<0.00201	0.00201	mg/kg	12.10.17 22.42	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	88	%	80-120	12.10.17 22.42	
1,4-Difluorobenzene	540-36-3	90	%	80-120	12.10.17 22.42	



Certificate of Analytical Results 570416

GHD Services, INC- Midland, Midland, TX

Plains

Sample Id: **SS-120417-JF-(WS-4)**

Matrix: Soil

Date Received: 12.07.17 09.05

Lab Sample Id: 570416-004

Date Collected: 12.04.17 16.30

Sample Depth: 0 - 6 In

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 12.07.17 12.00

Basis: Wet Weight

Seq Number: 3035310

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.99	15.0	mg/kg	12.07.17 17.12	U	1
Diesel Range Organics (DRO)	C10C28DRO	10.7	15.0	mg/kg	12.07.17 17.12	J	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.12	15.0	mg/kg	12.07.17 17.12	U	1
Total TPH	PHC635	10.7	15.0	mg/kg	12.07.17 17.12	J	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	90	%	70-135	12.07.17 17.12	
o-Terphenyl	84-15-1	91	%	70-135	12.07.17 17.12	

Analytical Method: BTEX by EPA 8021

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 12.10.17 09.15

Basis: Wet Weight

Seq Number: 3035491

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	12.11.17 15.28	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	12.11.17 15.28	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	12.11.17 15.28	U	1
m_p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	12.11.17 15.28	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	12.11.17 15.28	U	1
Xylenes, Total	1330-20-7	<0.00202	0.00202	mg/kg	12.11.17 15.28	U	1
Total BTEX		<0.00202	0.00202	mg/kg	12.11.17 15.28	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	96	%	80-120	12.11.17 15.28	
1,4-Difluorobenzene	540-36-3	96	%	80-120	12.11.17 15.28	



Certificate of Analytical Results 570416

GHD Services, INC- Midland, Midland, TX

Plains

Sample Id: **SS-120417-JF-(WS-5)**

Matrix: Soil

Date Received: 12.07.17 09.05

Lab Sample Id: 570416-005

Date Collected: 12.04.17 16.40

Sample Depth: 0 - 6 In

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 12.07.17 12.00

Basis: Wet Weight

Seq Number: 3035310

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<8.00	15.0	mg/kg	12.07.17 17.32	U	1
Diesel Range Organics (DRO)	C10C28DRO	8.88	15.0	mg/kg	12.07.17 17.32	J	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.13	15.0	mg/kg	12.07.17 17.32	U	1
Total TPH	PHC635	8.88	15.0	mg/kg	12.07.17 17.32	J	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	91	%	70-135	12.07.17 17.32	
o-Terphenyl	84-15-1	96	%	70-135	12.07.17 17.32	

Analytical Method: BTEX by EPA 8021

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 12.10.17 09.15

Basis: Wet Weight

Seq Number: 3035491

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	12.11.17 15.47	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	12.11.17 15.47	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	12.11.17 15.47	U	1
m_p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	12.11.17 15.47	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	12.11.17 15.47	U	1
Xylenes, Total	1330-20-7	<0.00200	0.00200	mg/kg	12.11.17 15.47	U	1
Total BTEX		<0.00200	0.00200	mg/kg	12.11.17 15.47	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	103	%	80-120	12.11.17 15.47	
4-Bromofluorobenzene	460-00-4	89	%	80-120	12.11.17 15.47	



Certificate of Analytical Results 570416

GHD Services, INC- Midland, Midland, TX

Plains

Sample Id: **SS-120417-JF-(WS-6)**

Matrix: Soil

Date Received: 12.07.17 09.05

Lab Sample Id: 570416-006

Date Collected: 12.04.17 16.50

Sample Depth: 0 - 6 In

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 12.07.17 12.00

Basis: Wet Weight

Seq Number: 3035310

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.98	15.0	mg/kg	12.07.17 17.53	U	1
Diesel Range Organics (DRO)	C10C28DRO	<8.10	15.0	mg/kg	12.07.17 17.53	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.10	15.0	mg/kg	12.07.17 17.53	U	1
Total TPH	PHC635	<7.98	15.0	mg/kg	12.07.17 17.53	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	91	%	70-135	12.07.17 17.53	
o-Terphenyl	84-15-1	93	%	70-135	12.07.17 17.53	

Analytical Method: BTEX by EPA 8021

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 12.10.17 09.15

Basis: Wet Weight

Seq Number: 3035491

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	12.11.17 16.34	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	12.11.17 16.34	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	12.11.17 16.34	U	1
m_p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	12.11.17 16.34	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	12.11.17 16.34	U	1
Xylenes, Total	1330-20-7	<0.00200	0.00200	mg/kg	12.11.17 16.34	U	1
Total BTEX		<0.00200	0.00200	mg/kg	12.11.17 16.34	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	82	%	80-120	12.11.17 16.34	
1,4-Difluorobenzene	540-36-3	91	%	80-120	12.11.17 16.34	



Certificate of Analytical Results 570416

GHD Services, INC- Midland, Midland, TX

Plains

Sample Id: **SS-120417-JF-(WS-7)**

Matrix: Soil

Date Received: 12.07.17 09.05

Lab Sample Id: 570416-007

Date Collected: 12.04.17 17.00

Sample Depth: 0 - 6 In

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 12.07.17 12.00

Basis: Wet Weight

Seq Number: 3035310

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.99	15.0	mg/kg	12.07.17 18.14	U	1
Diesel Range Organics (DRO)	C10C28DRO	60.7	15.0	mg/kg	12.07.17 18.14		1
Oil Range Hydrocarbons (ORO)	PHCG2835	11.8	15.0	mg/kg	12.07.17 18.14	J	1
Total TPH	PHC635	72.5	15.0	mg/kg	12.07.17 18.14		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	92	%	70-135	12.07.17 18.14		
o-Terphenyl	84-15-1	95	%	70-135	12.07.17 18.14		

Analytical Method: BTEX by EPA 8021

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 12.10.17 09.15

Basis: Wet Weight

Seq Number: 3035491

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	12.10.17 20.11	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	12.10.17 20.11	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	12.10.17 20.11	U	1
m_p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	12.10.17 20.11	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	12.10.17 20.11	U	1
Xylenes, Total	1330-20-7	<0.00200	0.00200	mg/kg	12.10.17 20.11	U	1
Total BTEX		<0.00200	0.00200	mg/kg	12.10.17 20.11	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	93	%	80-120	12.10.17 20.11		
1,4-Difluorobenzene	540-36-3	94	%	80-120	12.10.17 20.11		



Certificate of Analytical Results 570416

GHD Services, INC- Midland, Midland, TX

Plains

Sample Id: **SS-120417-JF-(WS-8)**

Matrix: Soil

Date Received: 12.07.17 09.05

Lab Sample Id: 570416-008

Date Collected: 12.04.17 17.10

Sample Depth: 0 - 6 In

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 12.07.17 12.00

Basis: Wet Weight

Seq Number: 3035310

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.98	15.0	mg/kg	12.07.17 19.15	U	1
Diesel Range Organics (DRO)	C10C28DRO	58.0	15.0	mg/kg	12.07.17 19.15		1
Oil Range Hydrocarbons (ORO)	PHCG2835	9.67	15.0	mg/kg	12.07.17 19.15	J	1
Total TPH	PHC635	67.7	15.0	mg/kg	12.07.17 19.15		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	88	%	70-135	12.07.17 19.15	
o-Terphenyl	84-15-1	87	%	70-135	12.07.17 19.15	

Analytical Method: BTEX by EPA 8021

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 12.10.17 09.15

Basis: Wet Weight

Seq Number: 3035491

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	12.11.17 16.53	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	12.11.17 16.53	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	12.11.17 16.53	U	1
m_p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	12.11.17 16.53	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	12.11.17 16.53	U	1
Xylenes, Total	1330-20-7	<0.00202	0.00202	mg/kg	12.11.17 16.53	U	1
Total BTEX		<0.00202	0.00202	mg/kg	12.11.17 16.53	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	95	%	80-120	12.11.17 16.53	
4-Bromofluorobenzene	460-00-4	94	%	80-120	12.11.17 16.53	



Certificate of Analytical Results 570416

GHD Services, INC- Midland, Midland, TX

Plains

Sample Id: **SS-120417-JF-(CS-6)**

Matrix: Soil

Date Received: 12.07.17 09.05

Lab Sample Id: 570416-009

Date Collected: 12.05.17 17.30

Sample Depth: 6 - 12 In

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 12.07.17 12.00

Basis: Wet Weight

Seq Number: 3035310

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.99	15.0	mg/kg	12.07.17 19.34	U	1
Diesel Range Organics (DRO)	C10C28DRO	8.45	15.0	mg/kg	12.07.17 19.34	J	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.12	15.0	mg/kg	12.07.17 19.34	U	1
Total TPH	PHC635	8.45	15.0	mg/kg	12.07.17 19.34	J	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	92	%	70-135	12.07.17 19.34		
o-Terphenyl	84-15-1	95	%	70-135	12.07.17 19.34		



Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **SQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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GHD Services, INC- Midland Plains

Analytical Method: TPH by SW8015 Mod

Seq Number: 3035310

MB Sample Id: 7635628-1-BLK

Matrix: Solid

LCS Sample Id: 7635628-1-BKS

Prep Method: TX1005P

Date Prep: 12.07.17

LCSD Sample Id: 7635628-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	980	98	986	99	70-135	1	35	mg/kg	12.07.17 13:53	
Diesel Range Organics (DRO)	<8.13	1000	1010	101	1040	104	70-135	3	35	mg/kg	12.07.17 13:53	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
1-Chlorooctane	92		92		92		70-135	%	12.07.17 13:53			
o-Terphenyl	98		99		97		70-135	%	12.07.17 13:53			

Analytical Method: TPH by SW8015 Mod

Seq Number: 3035310

Parent Sample Id: 570208-016

Matrix: Soil

MS Sample Id: 570208-016 S

Prep Method: TX1005P

Date Prep: 12.07.17

MSD Sample Id: 570208-016 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<7.99	999	956	96	1030	103	70-135	7	35	mg/kg	12.07.17 14:54	
Diesel Range Organics (DRO)	<8.12	999	1000	100	1080	108	70-135	8	35	mg/kg	12.07.17 14:54	
Surrogate			MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date			
1-Chlorooctane			88		92		70-135	%	12.07.17 14:54			
o-Terphenyl			87		96		70-135	%	12.07.17 14:54			

Analytical Method: BTEX by EPA 8021

Seq Number: 3035474

MB Sample Id: 7635697-1-BLK

Matrix: Solid

LCS Sample Id: 7635697-1-BKS

Prep Method: SW5030B

Date Prep: 12.09.17

LCSD Sample Id: 7635697-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000383	0.0996	0.104	104	0.0988	99	70-130	5	35	mg/kg	12.09.17 03:21	
Toluene	<0.000454	0.0996	0.0999	100	0.0944	94	70-130	6	35	mg/kg	12.09.17 03:21	
Ethylbenzene	<0.000563	0.0996	0.0996	100	0.0942	94	71-129	6	35	mg/kg	12.09.17 03:21	
m_p-Xylenes	<0.00101	0.199	0.191	96	0.181	90	70-135	5	35	mg/kg	12.09.17 03:21	
o-Xylene	<0.000343	0.0996	0.0945	95	0.0890	89	71-133	6	35	mg/kg	12.09.17 03:21	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
1,4-Difluorobenzene	91		92		94		80-120	%	12.09.17 03:21			
4-Bromofluorobenzene	89		95		90		80-120	%	12.09.17 03:21			

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery

[D] = 100*(C-A) / B
RPD = 200* | (C-E) / (C+E) |
[D] = 100 * (C) / [B]

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



GHD Services, INC- Midland Plains

Analytical Method: BTEX by EPA 8021

Seq Number: 3035491

MB Sample Id: 7635714-1-BLK

Matrix: Solid

LCS Sample Id: 7635714-1-BKS

Prep Method: SW5030B

Date Prep: 12.10.17

LCSD Sample Id: 7635714-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.0998	0.105	105	0.109	109	70-130	4	35	mg/kg	12.10.17 17:05	
Toluene	<0.00200	0.0998	0.0993	99	0.103	103	70-130	4	35	mg/kg	12.10.17 17:05	
Ethylbenzene	<0.00200	0.0998	0.0991	99	0.104	104	71-129	5	35	mg/kg	12.10.17 17:05	
m_p-Xylenes	<0.00399	0.200	0.190	95	0.200	100	70-135	5	35	mg/kg	12.10.17 17:05	
o-Xylene	<0.00200	0.0998	0.0943	94	0.0992	99	71-133	5	35	mg/kg	12.10.17 17:05	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	91		94		95		80-120	%	12.10.17 17:05
4-Bromofluorobenzene	81		93		98		80-120	%	12.10.17 17:05

Analytical Method: BTEX by EPA 8021

Seq Number: 3035474

Parent Sample Id: 570416-001

Matrix: Soil

MS Sample Id: 570416-001 S

Prep Method: SW5030B

Date Prep: 12.09.17

MSD Sample Id: 570416-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000383	0.0994	0.102	103	0.102	102	70-130	0	35	mg/kg	12.09.17 03:59	
Toluene	<0.000453	0.0994	0.0891	90	0.0832	84	70-130	7	35	mg/kg	12.09.17 03:59	
Ethylbenzene	<0.000561	0.0994	0.0819	82	0.0732	73	71-129	11	35	mg/kg	12.09.17 03:59	
m_p-Xylenes	<0.00101	0.199	0.153	77	0.135	68	70-135	13	35	mg/kg	12.09.17 03:59	X
o-Xylene	<0.000342	0.0994	0.0770	77	0.0697	70	71-133	10	35	mg/kg	12.09.17 03:59	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	105		113		80-120	%	12.09.17 03:59
4-Bromofluorobenzene	108		114		80-120	%	12.09.17 03:59

Analytical Method: BTEX by EPA 8021

Seq Number: 3035491

Parent Sample Id: 570416-007

Matrix: Soil

MS Sample Id: 570416-007 S

Prep Method: SW5030B

Date Prep: 12.10.17

MSD Sample Id: 570416-007 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0923	92	0.0934	92	70-130	1	35	mg/kg	12.10.17 18:17	
Toluene	<0.00200	0.100	0.0803	80	0.0787	78	70-130	2	35	mg/kg	12.10.17 18:17	
Ethylbenzene	<0.00200	0.100	0.0801	80	0.0711	70	71-129	12	35	mg/kg	12.10.17 18:17	X
m_p-Xylenes	<0.00401	0.200	0.147	74	0.139	69	70-135	6	35	mg/kg	12.10.17 18:17	X
o-Xylene	<0.00200	0.100	0.0737	74	0.0639	63	71-133	14	35	mg/kg	12.10.17 18:17	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	99		102		80-120	%	12.10.17 18:17
4-Bromofluorobenzene	100		106		80-120	%	12.10.17 18:17

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery

[D] = 100*(C-A) / B
RPD = 200* | (C-E) / (C+E) |
[D] = 100 * (C) / [B]

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

Setting the Standard since 1990
Stafford, Texas (281-240-4200)
Dallas Texas (214-902-0300)
Service Center - San Antonio, Texas (210-509-3334)

www.xenco.com

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Lakeland, Florida (863-646-8526)

Norcross, Georgia (770-449-8800)
Tampa, Florida (813-620-2000)

Lakeland, Florida (863-646-8526)
Tampa, Florida (813-620-2000)

[illegible]



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: GHD Services, INC- Midland

Date/ Time Received: 12/07/2017 09:05:00 AM

Work Order #: 570416

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist**Comments**

#1 *Temperature of cooler(s)?	1.2
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	No
#5 Custody Seals intact on sample bottles?	N/A
#6 *Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	No
#18 Water VOC samples have zero headspace?	N/A

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst:

PH Device/Lot#:

Checklist completed by:

Shawnee Smith

Date: 12/07/2017

Checklist reviewed by:

Mike Kimmel

Date: 12/13/2017

Appendix D

Waste Manifest Documentation

Date 12/14/19

(SCAC)

24 hr. Emergency Contact Tel. No. _____

Vehicle Number 215

PLACARDS TENDERED: YES ☐ NO ☐

Amt: \$

FREIGHT PREPAID Check box if charges
except when box at are to be
right is checked ☐ collect

(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(e) of Item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

(Signature of Consignor)

Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

DATE 12/2/1991

STYLE CF375-4 © 2012 LABELMASTER® (800) 621-5808 www.labelmaster.com

This Memorandum

is an acknowledgment that a Bill of Lading has been issued and is not Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Shipper No. 41234

Carrier No. N/A

Date 2/22/18

Page _____ of _____

Gandy Corporation

(Name of carrier)

(SCAC)

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec.1.

TO:

Consignee Gandy Marley, Inc.

Street _____

City POSWELL State NH Zip Code _____

FROM: Plains Pipeline, L.P- Darr Angel #1
Shipper

Street SW 1/4, Section 11, Township 1.5 S, Range 1

City Lea County State NM Zip Code _____

24 hr. Emergency Contact Tel. No. _____

Route	Vehicle Number
	415

[illegible]PLACARDS TENDERED: YES ☐ NO ☐REMIT
C.O.D. TO:
ADDRESS

COD

Amt: \$

C.O.D. FEE:
PREPAID ☐
COLLECT ☐ \$

TOTAL CHARGES	\$
----------------------	-----------

FREIGHT CHARGES
FREIGHT PREPAID ☐ Check box if

FREIGHT PREPAID
except when box at
right is checked ☐

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____."

(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.

(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(e) of Item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Signature _____

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:

The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to des-

tion and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER <i>Garrett Pyle</i>	CARRIER <i>Grady Corp</i>
PER <i>Phyllis A. Pyle</i>	PER <i>Ch. L.</i>
	DATE <i>2/12/18</i>

Re permanent post-office address of shipper.



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DANGER

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4

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about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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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 October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company	Plains Pipeline, LP	Contact	Camille Bryant
Address	577 US Hwy. 385 N., Seminole, TX 79360	Telephone No.	(575) 441-1099
Facility Name	Darr Angell #1	Facility Type	Groundwater Remediation Site
Surface Owner	Darr Angell	Mineral Owner	

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
J	11	15S	37E					Lea

Latitude N 33.026° Longitude W 103.167°

NATURE OF RELEASE

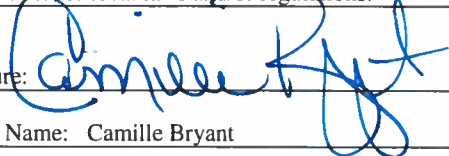
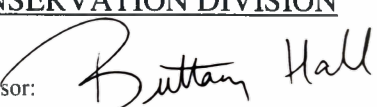
Type of Release	PSH/Water	Volume of Release	420 barrels	Volume Recovered	405 barrels
Source of Release	Groundwater Remediation System Recovery Tank	Date and Hour of Occurrence	8/16/2017 @ 08:00	Date and Hour of Discovery	8/16/2017 @ 08:30
Was Immediate Notice Given?	☒ Yes ☐ No ☐ Not Required	If YES, To Whom?	Verbal notification to Olivia Yu		
By Whom?	Camille Bryant	Date and Hour	8/16/2017 @ 14:37		
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.* An electrical system malfunction reset the remediation system causing the recovery pumps to run continuously. The valve on the high level shut off switch on the recovery tank was inadvertently closed and did not shut the system down causing the recovery tank and secondary containment to overflow resulting in a release of approximately 5 barrels of PSH and approximately 415 barrels of groundwater. Approximately 404 barrels of groundwater and 1 barrel of crude oil was recovered from the secondary containment. The remaining released PSH/groundwater mixture impacted approximately 4,200 square feet of pasture land.

Describe Area Affected and Cleanup Action Taken. The impacted area was excavated; soil samples were collected from the excavated area and submitted to the laboratory for BTEX and TPH analysis. On receipt of analytical data indicating concentrations less than the NMOCD regulatory guidelines and with NMOCD approval, the excavated area was backfilled with imported, non-impacted material. The excavated material was transported under manifest to an NMOCD permitted facility. The area was contoured to fit the surrounding topography and revegetated with landowner approved seed mixture. Please reference the GHD Soil Remediation Closure Report for further details.

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: 	OIL CONSERVATION DIVISION		
Printed Name: Camille Bryant	Approved by District Supervisor: 		
Title: Remediation Supervisor	Approval Date: 4/5/2023	Expiration Date: N/A	
E-mail Address: cjbryant@paalp.com	Conditions of Approval:	Attached ☐	
Date: 10/22/18	Phone: (575) 441-1099	1RP-4796	

Attach Additional Sheets If Necessary

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 203570

CONDITIONS

Operator: PLAINS MARKETING L.P. 333 Clay Street Suite 1900 Houston, TX 77002	OGRID: 34053
	Action Number: 203570
	Action Type: [IM-SD] Incident File Support Doc (ENV) (IM-BNF)

CONDITIONS

Created By	Condition	Condition Date
bhall	None	4/5/2023