Pima Environmental Services, LLC
5614 N. Lovington Hwy.
Hobbs, NM 88240
575-964-7740

December 6th, 2022

NMOCD District 2
811 S. First Street
Artesia, NM 88210

Re: Site Assessment, Remediation, and Closure Report
SV Big Bertha #001
API No. 30-025-33883
GPS: Latitude 32.9383888 Longitude -103.3277969
UL "F", Sec. 11, T16S, R36E
Lea County, NM
NMOCD Ref. No. NGRL0834056660

Pima Environmental Services, LLC (Pima) has been contracted by Armstrong Energy Corporation to perform a spill assessment, remediation activities, and submit this closure report for a produced water release that occurred at the SV Big Bertha #001. The initial C-141 was submitted on September 15th, 2022 (Appendix C). This incident was assigned Incident ID NGRL0834056660, by the New Mexico Oil Conservation Division (NMOCD).

Site Characterization

The SV Big Bertha #001 is located approximately 1.3 miles east of Lovington, NM. This spill site is in Unit F, Section 11, Township 16S, Range 36E, Latitude 32.9383888, Longitude -103.3277969, Lea County, NM. Figure 1 references a location map.

Per the New Mexico Bureau of Geology and Mineral Resources, the geology is in the Ogallala Formation (Lower Pliocene to middle Miocene). The soil in this area is made up of Kimbrough gravelly loam, 0 to 3 percent slopes according to the United States Department of Agriculture Natural Resources Conservation Service soil survey (Appendix B). The drainage courses in this area are well-drained. There is a low potential for karst geology present around the SV Big Bertha #001 (Figure 3).

According to the New Mexico Office of the State Engineer, depth to the nearest groundwater in this area is 85 feet below grade surface (BGS). According to the United States Geological Survey (USGS), the nearest groundwater is 62.7 feet BGS. The closest waterway is a manmade pond located approximately 0.82 miles to the northwest of this location. See Appendix A for referenced water surveys.

Table 1 NMAC and Closure Criteria 19.15.29					
Depth to Groundwater (Appendix A)	Constituent & Limits				
	Chlorides	Total TPH	GRO+DRO	BTEX	Benzene
<50'	600 mg/kg	100 mg/kg		50 mg/kg	10 mg/kg
51-100'	10,000 mg/kg	2,500 mg/kg	1,000 mg/kg	50 mg/kg	10 mg/kg
>100'	20,000 mg/kg	2,500 mg/kg	1,000 mg/kg	50 mg/kg	10 mg/kg

Reference Figure 2 for a Topographic map.

Release Information

NGRL0834056660: On September 11th, 2008, a nipple on the downside of the choke washed out releasing 190 barrels of produced water. A vacuum truck was called to location and used to recover the standing fluid, a total of 160 barrels of produced water was recovered.

Site Assessment and Soil Sampling Results

On November 23rd, 2022, Pima Environmental Services mobilized personnel to the site to conduct delineation activities. Pima sampled the surrounding release area. Laboratory results of this sampling event can be found in the following data table.

11-23-22 Soil Sample Results

NMOCD Table 1 Closure Criteria 19.15.29 NMAC (Depth to Groundwater is 50'-100')									
ARMSTRONG ENERGY - BIG BERTHA #001									
			NM Approved Laboratory Results						
Sample ID	Sample Date	Depth (BGS)	BTEX mg/kg	Benzene mg/kg	GRO mg/kg	DRO mg/kg	MRO mg/kg	Total TPH mg/kg	Cl mg/kg
S-1	11/23/2022	1'	ND	ND	ND	ND	ND	0	42.3
		3'	ND	ND	ND	ND	ND	0	36.3
		4'	ND	ND	ND	ND	ND	0	ND
S-2		1'	ND	ND	ND	ND	ND	0	41.2
		3'	ND	ND	ND	ND	ND	0	36.6
		4'	ND	ND	ND	ND	ND	0	ND
S-3		1'	ND	ND	ND	ND	ND	0	34.5
		3'	ND	ND	ND	ND	ND	0	39.4
		4'	ND	ND	ND	ND	ND	0	ND
S-4		1'	ND	ND	ND	ND	ND	0	33.1
		3'	ND	ND	ND	ND	ND	0	34.4
		4'	ND	ND	ND	ND	ND	0	ND
BG 1		6"	ND	ND	ND	ND	ND	0	ND
BG 2		6"	ND	ND	ND	ND	ND	0	ND
SW 1		6"	ND	ND	ND	ND	ND	0	ND
SW 2		6"	ND	ND	ND	ND	ND	0	ND
SW 3		6"	ND	ND	ND	ND	ND	0	ND
SW 4		6"	ND	ND	ND	ND	ND	0	ND

Nd: Non-Detect

Remediation Activities

Due to analytical levels falling below NMOCD closure criteria, no further immediate action is required. Pima Environmental will address any superficial staining surrounding the production equipment.

Closure Request

After careful review, Pima requests that this incident, NGRL0834056660, be closed. Armstrong Energy Corporation has complied with the applicable closure requirements set forth in rule 19.15.19.12 NMAC.

Should you have any questions or need additional information, please feel free to contact Sebastian Orozco at 619-721-4813 or Sebastian@pimaoil.com.

Respectfully,

Sebastian Orozco

Sebastian Orozco
Environmental Project Manager
Pima Environmental Services, LLC

Attachments

Figures:
1- Location Map
2- Topographic Map
3- Karst Map
4- Site Map

Appendices:
Appendix A – Referenced Water Surveys
Appendix B – Soil Survey and Geological Data
Appendix C – C-141
Appendix D – Photographic Documentation
Appendix E – Laboratory Reports

Pima Environmental Services

Figures:

1-Location Map

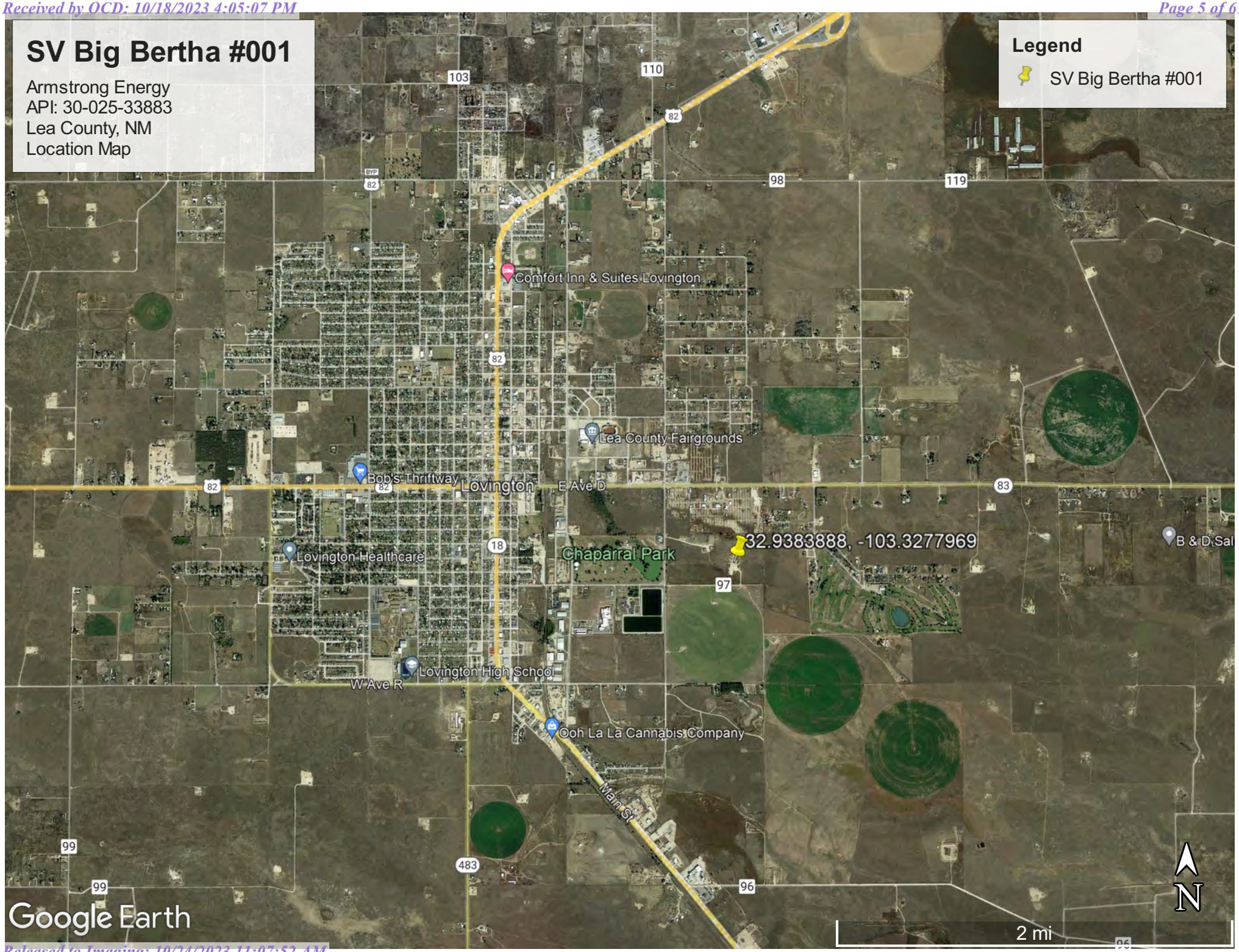
2-Topographic Map

3-Karst Map

4-Site Map

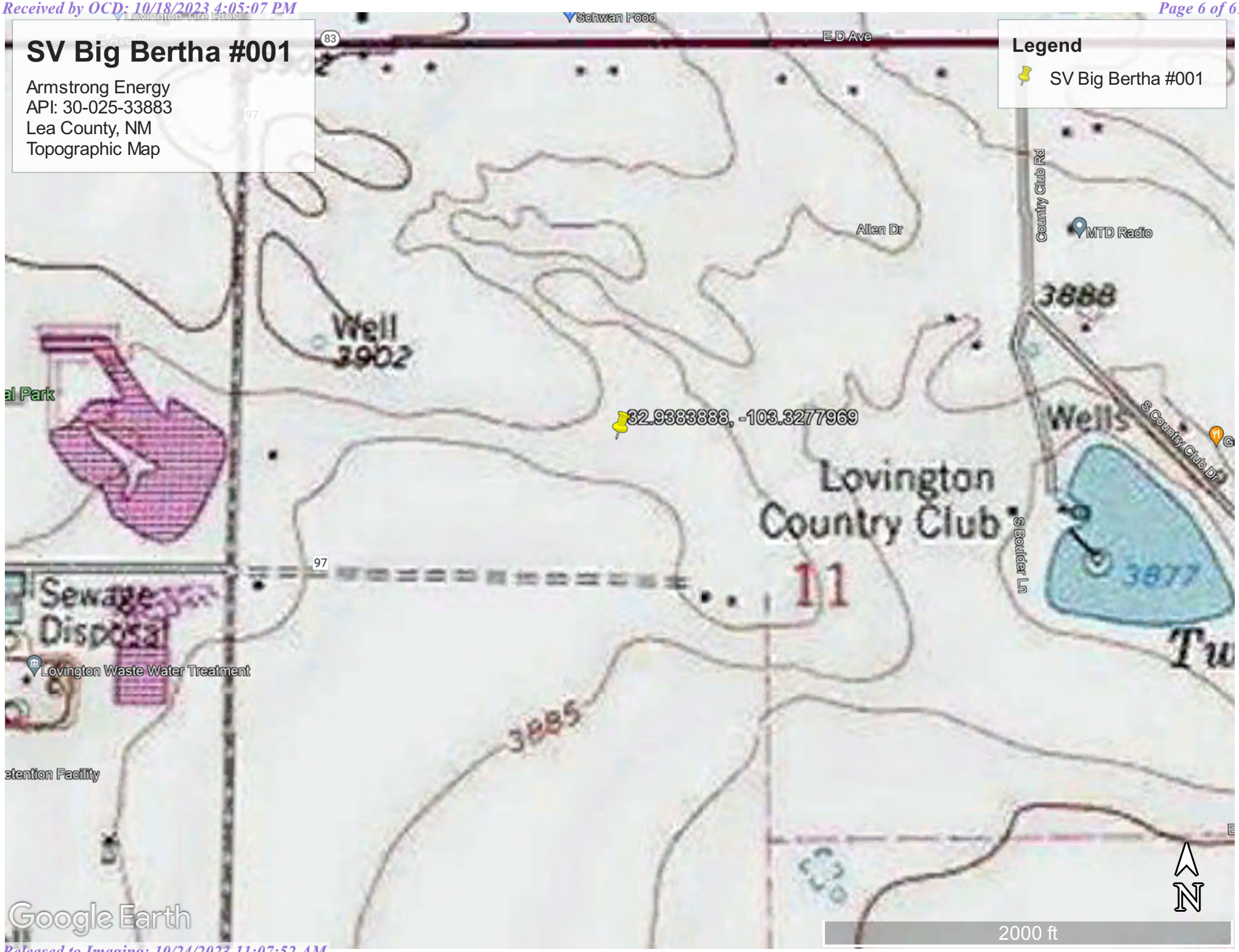
SV Big Bertha #001

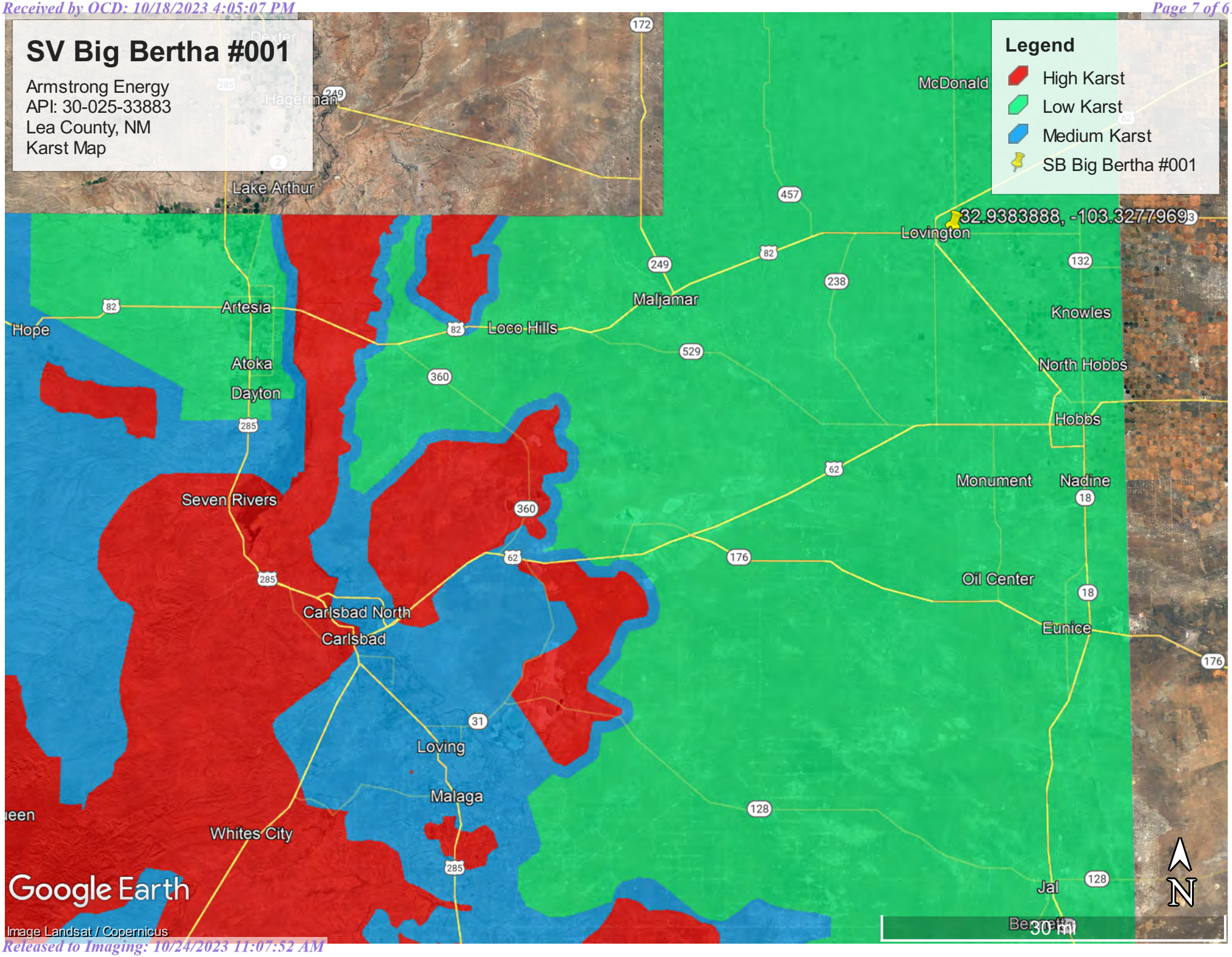
Armstrong Energy
API: 30-025-33883
Lea County, NM
Location Map



SV Big Bertha #001

Armstrong Energy
API: 30-025-33883
Lea County, NM
Topographic Map




SV Big Bertha #001
Armstrong Energy
API: 30-025-33883
Lea County, NM
Karst Map
Legend
High Karst
Low Karst
Medium Karst
SB Big Bertha #001
32.9383888, -103.3277969
Lake Arthur
McDonald
Lovington
Maljamar
Artesia
Hope
Loco Hills
Atoka
Dayton
Knowles
North Hobbs
Hobbs
Monument
Nadine
Seven Rivers
Oil Center
Carlsbad North
Carlsbad
Eunice
Loving
Malaga
Whites City
Jal
Google Earth
Image Landsat / Copernicus
30 mi
N

SV Big Bertha #001

Armstrong Energy
32.938888,-103.3277969
Lea County, NM
Site Map

Legend

- Release Area
- Soil Samples
- SV Big Betha #001

BG-1

SV Big Betha #001

SW1

S1

S2

SW4

SW2

S4

S3

SW3

BG-2

N

90 ft

Google Earth

Pima Environmental Services

Appendix A

Water Surveys:

OSE

USGS

Surface Water Map

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
L 04434		L	LE			1	11	16S	36E	656170	3645911*	266	100	74	26
L 06102		L	LE			1	11	16S	36E	656170	3645911*	266	100	75	25
L 04005		L	LE				11	16S	36E	656583	3645505*	318	95	75	20
L 07741		L	LE	2	1	3	11	16S	36E	656074	3645405*	387	142	78	64
L 00135 POD3		L	LE		3	2	11	16S	36E	656774	3645725*	446	125	78	47
L 00135		L	LE	3	3	1	11	16S	36E	655868	3645609*	469	98		
L 00135	R	L	LE	3	3	1	11	16S	36E	655868	3645609*	469	98		
L 00135 POD5		L	LE	3	3	1	11	16S	36E	655868	3645609*	469	146	58	88
L 09053	R	L	LE	3	1	2	11	16S	36E	656667	3646028*	473	175	95	80
L 09054	R	L	LE	3	1	2	11	16S	36E	656667	3646028*	473	135	65	70
L 09054 POD2		L	LE	3	1	2	11	16S	36E	656667	3646028*	473	135	65	70
L 09195		L	LE	3	1	2	11	16S	36E	656667	3646028*	473	135	90	45
L 09198		L	LE	3	1	2	11	16S	36E	656667	3646028*	473	135	90	45
L 09330		L	LE	3	1	2	11	16S	36E	656667	3646028*	473	140	70	70
L 09331		L	LE	3	1	2	11	16S	36E	656667	3646028*	473	140	90	50
L 09340		L	LE	3	1	2	11	16S	36E	656667	3646028*	473	150	90	60
L 09492	R	L	LE	3	1	2	11	16S	36E	656667	3646028*	473	135	65	70
L 10354		L	LE	3	1	2	11	16S	36E	656667	3646028*	473	120	63	57
L 00135 POD2		L	LE	1	3	1	11	16S	36E	655868	3645809*	474	110	75	35
L 00135 POD2	R	L	LE	1	3	1	11	16S	36E	655868	3645809*	474	110	75	35
L 00265		L	LE	1	1	3	11	16S	36E	655874	3645405*	540	120	45	75
L 04099		L	LE	2	2	1	11	16S	36E	656465	3646220*	540	95	74	21
L 05808		L	LE	2	2	1	11	16S	36E	656465	3646220*	540	116	85	31
L 05685		L	LE		1	1	11	16S	36E	655963	3646114*	554	115	80	35
L 14587 POD1		L	LE	4	1	2	11	16S	36E	656845	3645945	573	165	85	80
L 00135 POD4		L	LE		1	4	11	16S	36E	656779	3645322*	585	149	75	74

Average Depth to Water: **75 feet**
Minimum Depth: **45 feet**
Maximum Depth: **95 feet**

Record Count: 26

UTMNAD83 Radius Search (in meters):

Easting (X): 656328.73 **Northing (Y):** 3645696.77 **Radius:** 600

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
221A8	L 14587 POD1	4	1	2	11	16S	36E	656845	3645945

Driller License: 1477 **Driller Company:** M & W WATERWELL SERVICE

Driller Name: MAUCK, ROBERT

Drill Start Date:	01/23/2019	**Drill Finish Date:**	01/24/2019	**Plug Date:**	
Log File Date:	01/28/2019	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	30 GPM
Casing Size:	5.00	**Depth Well:**	165 feet	**Depth Water:**	85 feet

Water Bearing Stratifications:	Top	Bottom	Description
	45	165	Limestone/Dolomite/Chalk

Casing Perforations:	Top	Bottom
	125	165

National Water Information System: Web Interface

USGS Water Resources

Data Category: Groundwater | Geographic Area: United States | GO

Click to hideNews Bulletins

- Explore the *NEW* USGS National Water Dashboard interactive map to access real-time water data from over 13,500 stations nationwide.
- Attention current WaterAlert users: NextGen WaterAlert is replacing Legacy WaterAlert. You must take action before 9/30/2022 to retain your alerts. Read more.
- Full News

Groundwater levels for the Nation

Important: Next Generation Monitoring Location Page

Search Results -- 1 sites found

site_no list =

- 325622103191501

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

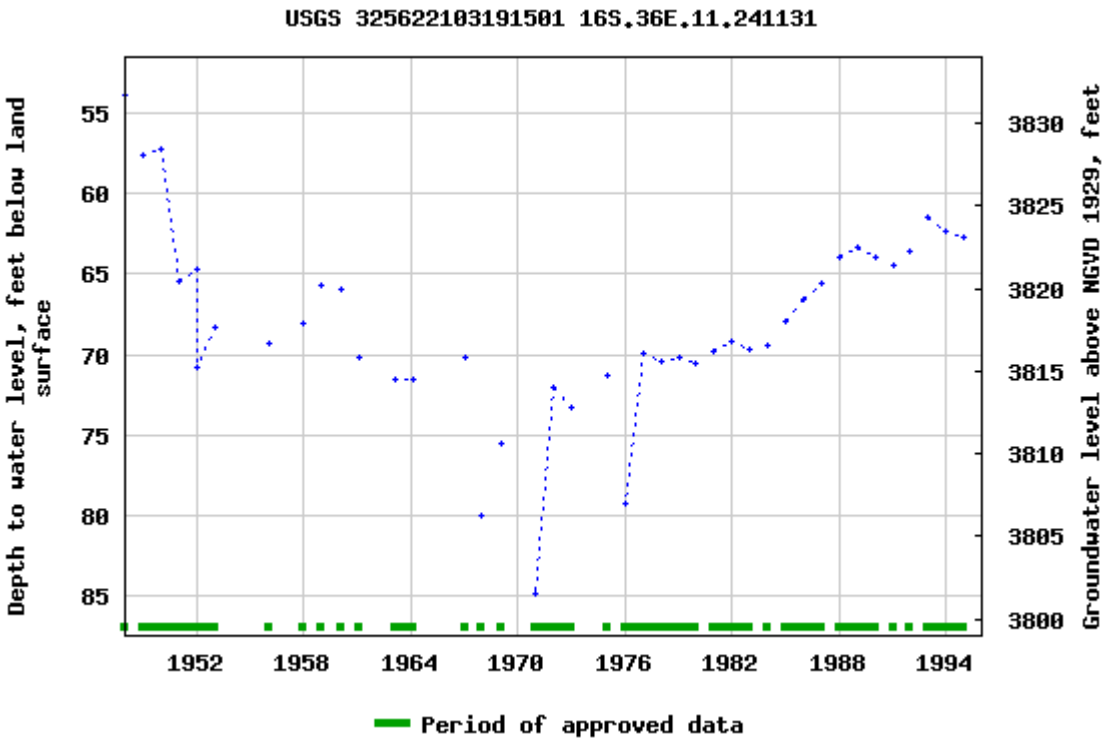
USGS 325622103191501 16S.36E.11.241131

Available data for this site | Groundwater: Field measurements | GO

Lea County, New Mexico
Hydrologic Unit Code 12080003
Latitude 32°56'23", Longitude 103°19'16" NAD27
Land-surface elevation 3,886.00 feet above NGVD29
The depth of the well is 100 feet below land surface.
This well is completed in the High Plains aquifer (N100HGHPLN) national aquifer.
This well is completed in the Ogallala Formation (121OGLL) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period

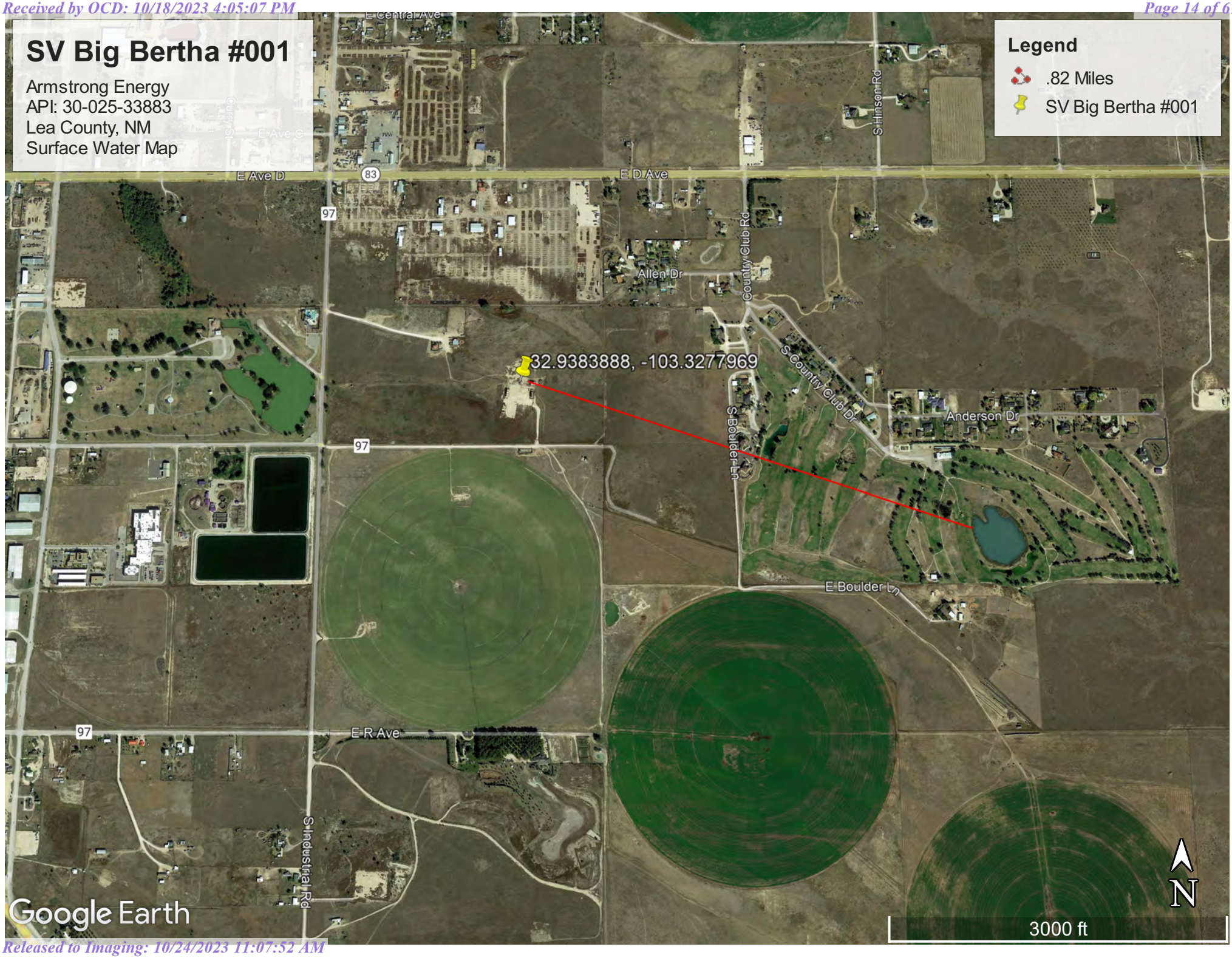


Breaks in the plot represent a gap of at least one year between field measurements.
Download a presentation-quality graph

Questions about sites/data?
Feedback on this web site
Automated retrievals
Help
Data Tips
Explanation of terms
Subscribe for system changes
News

Title: Groundwater for USA: Water Levels
URL: https://nwis.waterdata.usgs.gov/nwis/gwlevels?

Page Contact Information: USGS Water Data Support Team
Page Last Modified: 2022-09-21 15:57:45 EDT
0.63 0.48 nadww01


SV Big Bertha #001
Armstrong Energy
API: 30-025-33883
Lea County, NM
Surface Water Map
Legend
.82 Miles
SV Big Bertha #001
32.9383888, -103.3277969
E Central Ave
E Ave D
E D Ave
E R Ave
S Hinson Rd
Country Club Rd
S Country Club Dr
Allen Dr
S Boulder Ln
Anderson Dr
E Boulder Ln
S Industrial Rd
83
97
N
3000 ft
Google Earth

Pima Environmental Services

Appendix B

Soil Survey & Geological Data

FEMA Flood Map

Wetlands Map

Lea County, New Mexico

Kg—Kimbrough gravelly loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tw42
Elevation: 2,500 to 4,800 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Kimbrough and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kimbrough

Setting

Landform: Playa rims, plains
Down-slope shape: Convex, linear
Across-slope shape: Concave, linear
Parent material: Loamy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 3 inches: gravelly loam
Bw - 3 to 10 inches: loam
Bkkm1 - 10 to 16 inches: cemented material
Bkkm2 - 16 to 80 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 4 to 18 inches to petrocalcic
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 95 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D
Ecological site: R077DY049TX - Very Shallow 12-17" PZ
Hydric soil rating: No

Minor Components

Eunice
Percent of map unit: 6 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R077DY049TX - Very Shallow 12-17" PZ
Hydric soil rating: No

Spraberry
Percent of map unit: 5 percent
Landform: Playa rims, plains
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: R077DY049TX - Very Shallow 12-17" PZ
Hydric soil rating: No

Kenhill
Percent of map unit: 4 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R077DY038TX - Clay Loam 12-17" PZ
Hydric soil rating: No

Data Source Information

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 18, Sep 10, 2021

National Flood Hazard Layer FIRMette

FEMA

103°19'59"W 32°56'33"N

103°19'21"W 32°56'3"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/21/2022 at 4:02 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetlands Map

September 21, 2022

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Pima Environmental Services

Appendix C

C-141 Form

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., 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 Department

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

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	nGRL0834056660
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible: Party Armstrong Energy Corporation	OGRID 1092
Contact Name: Kyle Alpers	Contact Telephone: 575-626-2727
Contact email: kalpers@aecnm.com	Incident # *(assigned by OCD);* nGRL0834056660
Contact mailing address PO Box 1973 Roswell, NM 88202	

Location of Release Source

Latitude 32.9383888 Longitude -103.3277969
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: SV Big Bertha #001	Site Type: Produced Water
Date Release Discovered: 09/11/2008	API# *(if applicable):* 30-025-33883

Unit Letter	Section	Township	Range	County
F	11	16S	36E	Lea

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☒ Private (*Name:* _____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☐ Crude Oil	Volume Released (bbls):	Volume Recovered (bbls):
☒ Produced Water	Volume Released (bbls): 190	Volume Recovered (bbls): 160
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release:

A nipple on the downside of the choke washed out releasing produced water. Vacuum trucks were used to recover free fluid. All fluids stayed on the location.

State of New Mexico
Oil Conservation Division

Incident ID	nGRL0834056660
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? **This is considered a major release because it is over 25 BBLS.**
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☒ The source of the release has been stopped.
☒ The impacted area has been secured to protect human health and the environment.
☐ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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.

Printed Name: Jeffery Tew Title: Operations Engineer

Signature: Jeffery Tew Date: 9/15/2022

email: jtew@aecnm.com Telephone: 575-625-2222

OCD Only

Received by: Jocelyn Harimon Date: 09/16/2022

Incident ID	nGRL0834056660
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	85 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: ***Each of the following items must be included in the report.***

☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
☒ Field data
☒ Data table of soil contaminant concentration data
☒ Depth to water determination
☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
☒ Boring or excavation logs
☒ Photographs including date and GIS information
☒ Topographic/Aerial maps
☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	nGRL0834056660
District RP	
Facility ID	
Application ID	

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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.

Printed Name: Jeffery Tew Title: Operations Engineer

Signature: Jeffery Tew Date: 10/18/2023

email: jtew@aecnm.com Telephone: 575-625-2222

OCD Only

Received by: Shelly Wells Date: 10/18/2023

State of New Mexico
Oil Conservation Division

Incident ID	nGRL0834056660
District RP	
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: ***Each of the following items must be included in the closure report.***

☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Jeffery Tew Title: Operations Engineer

Signature: Jeffery Tew Date: 10/18/2023

email: jtew@aecnm.com Telephone: 575-625-2222

OCD Only

Received by: Shelly Wells Date: 10/18/2023

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: Ashley Maxwell Date: 10/24/2023

Printed Name: Ashley Maxwell Title: Environmental Specialist

Pima Environmental Services

Appendix D

Photographic Documentation

SITE PHOTOGRAPHS
PIMA ENVIORNMENTAL

SV Big Bertha #001

Pima Environmental Services

Appendix E

Laboratory Reports

Report to:

Tom Bynum

5796 U.S. Hwy 64
Farmington, NM 87401

Phone: (505) 632-1881
Envirotech-inc.com

envirotech

Practical Solutions for a Better Tomorrow

Analytical Report

Pima Environmental Services-Carlsbad

Project Name:	Big Bertha
Work Order:	E211159
Job Number:	21064-0001
Received:	11/29/2022

Revision: 1

Report Reviewed By:

Walter Hinchman
Laboratory Director
12/5/22

Envirotech Inc. certifies the test results meet all requirements of TNI unless noted otherwise.
Statement of Data Authenticity: Envirotech Inc, attests the data reported has not been altered in any way.
Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech Inc.
Envirotech Inc, holds the Utah TNI certification NM00979 for data reported.
Envirotech Inc, holds the Texas TNI certification T104704557 for data reported.
Envirotech Inc, holds the NM SDWA certification for data reported. (Lab #NM00979)

Date Reported: 12/5/22

Tom Bynum
PO Box 247
Plains, TX 79355-0247

Project Name: Big Bertha
Workorder: E211159
Date Received: 11/29/2022 11:00:00AM

Tom Bynum,

Thank you for choosing Envirotech, Inc. as your analytical testing laboratory for the sample(s) received on, 11/29/2022 11:00:00AM, under the Project Name: Big Bertha.

The analytical test results summarized in this report with the Project Name: Big Bertha apply to the individual samples collected, identified and submitted bearing the project name on the enclosed chain-of-custody. Subcontracted sample analyses not conducted by Envirotech, Inc., are attached in full as issued by the subcontract laboratory.

Please review the Chain-of-Custody (COC) and Sample Receipt Checklist (SRC) for any issues reguarding sample receipt temperature, containers, preservation etc. To best understand your test results, review the entire report summarizing your sample data and the associated quality control batch data.

All reported data in this analytical report were analyzed according to the referenced method(s) and are in compliance with the latest NELAC/TNI standards, unless otherwise noted. Samples or analytical quality control parameters not meeting specific QC criteria are qualified with a data flag. Data flag definitions are located in the Notes and Definitions section of this analytical report.

If you have any questions concerning this report, please feel free to contact Envirotech, Inc.

Respectfully,

Walter Hinchman
Laboratory Director
Office: 505-632-1881
Cell: 775-287-1762
whinchman@envirotech-inc.com

Raina Schwanz
Laboratory Administrator
Office: 505-632-1881
rainaschwanz@envirotech-inc.com

Alexa Michaels
Sample Custody Officer
Office: 505-632-1881
labadmin@envirotech-inc.com

Field Offices:

Southern New Mexico Area
Lynn Jarboe
Technical Representative/Client Services
Office: 505-421-LABS(5227)
Cell: 505-320-4759
ljarboe@envirotech-inc.com

West Texas Midland/Odessa Area
Rayny Hagan
Technical Representative
Office: 505-421-LABS(5227)

Envirotech Web Address: www.envirotech-inc.com

Table of Contents

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Sample Summary

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	**Reported:**
PO Box 247	Project Number:	21064-0001	
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/05/22 10:46

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
S1-1'	E211159-01A	Soil	11/23/22	11/29/22	Glass Jar, 2 oz.
S1-3'	E211159-02A	Soil	11/23/22	11/29/22	Glass Jar, 2 oz.
S1-4'	E211159-03A	Soil	11/23/22	11/29/22	Glass Jar, 2 oz.
S2-1'	E211159-04A	Soil	11/23/22	11/29/22	Glass Jar, 2 oz.
S2-3'	E211159-05A	Soil	11/23/22	11/29/22	Glass Jar, 2 oz.
S2-4'	E211159-06A	Soil	11/23/22	11/29/22	Glass Jar, 2 oz.
S3-1'	E211159-07A	Soil	11/23/22	11/29/22	Glass Jar, 2 oz.
S3-3'	E211159-08A	Soil	11/23/22	11/29/22	Glass Jar, 2 oz.
S3-4'	E211159-09A	Soil	11/23/22	11/29/22	Glass Jar, 2 oz.
S4-1'	E211159-10A	Soil	11/23/22	11/29/22	Glass Jar, 2 oz.
S4-3'	E211159-11A	Soil	11/23/22	11/29/22	Glass Jar, 2 oz.
S4-4'	E211159-12A	Soil	11/23/22	11/29/22	Glass Jar, 2 oz.
SW1	E211159-13A	Soil	11/23/22	11/29/22	Glass Jar, 2 oz.
SW2	E211159-14A	Soil	11/23/22	11/29/22	Glass Jar, 2 oz.
SW3	E211159-15A	Soil	11/23/22	11/29/22	Glass Jar, 2 oz.
SW4	E211159-16A	Soil	11/23/22	11/29/22	Glass Jar, 2 oz.
BG1	E211159-17A	Soil	11/23/22	11/29/22	Glass Jar, 2 oz.
BG2	E211159-18A	Soil	11/23/22	11/29/22	Glass Jar, 2 oz.

Sample Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

S1-1'

E211159-01

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Benzene	ND	0.0250	1	11/29/22	11/30/22	
Ethylbenzene	ND	0.0250	1	11/29/22	11/30/22	
Toluene	ND	0.0250	1	11/29/22	11/30/22	
o-Xylene	ND	0.0250	1	11/29/22	11/30/22	
p,m-Xylene	ND	0.0500	1	11/29/22	11/30/22	
Total Xylenes	ND	0.0250	1	11/29/22	11/30/22	
Surrogate: 4-Bromochlorobenzene-PID		*102 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Gasoline Range Organics (C6-C10)	ND	20.0	1	11/29/22	11/30/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*96.2 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2249031
Diesel Range Organics (C10-C28)	ND	25.0	1	11/29/22	11/30/22	
Oil Range Organics (C28-C36)	ND	50.0	1	11/29/22	11/30/22	
Surrogate: n-Nonane		*90.3 %*	*50-200*	*11/29/22*	*11/30/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2249025
Chloride	**42.3**	20.0	1	11/29/22	11/30/22	

Sample Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

S1-3'

E211159-02

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Benzene	ND	0.0250	1	11/29/22	11/30/22	
Ethylbenzene	ND	0.0250	1	11/29/22	11/30/22	
Toluene	ND	0.0250	1	11/29/22	11/30/22	
o-Xylene	ND	0.0250	1	11/29/22	11/30/22	
p,m-Xylene	ND	0.0500	1	11/29/22	11/30/22	
Total Xylenes	ND	0.0250	1	11/29/22	11/30/22	
Surrogate: 4-Bromochlorobenzene-PID		*103 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Gasoline Range Organics (C6-C10)	ND	20.0	1	11/29/22	11/30/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*96.7 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2249031
Diesel Range Organics (C10-C28)	ND	25.0	1	11/29/22	11/30/22	
Oil Range Organics (C28-C36)	ND	50.0	1	11/29/22	11/30/22	
Surrogate: n-Nonane		*97.5 %*	*50-200*	*11/29/22*	*11/30/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2249025
Chloride	**36.3**	20.0	1	11/29/22	11/30/22	

Sample Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

S1-4'

E211159-03

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Benzene	ND	0.0250	1	11/29/22	11/30/22	
Ethylbenzene	ND	0.0250	1	11/29/22	11/30/22	
Toluene	ND	0.0250	1	11/29/22	11/30/22	
o-Xylene	ND	0.0250	1	11/29/22	11/30/22	
p,m-Xylene	ND	0.0500	1	11/29/22	11/30/22	
Total Xylenes	ND	0.0250	1	11/29/22	11/30/22	
Surrogate: 4-Bromochlorobenzene-PID		*102 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Gasoline Range Organics (C6-C10)	ND	20.0	1	11/29/22	11/30/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*96.9 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2249031
Diesel Range Organics (C10-C28)	ND	25.0	1	11/29/22	11/30/22	
Oil Range Organics (C28-C36)	ND	50.0	1	11/29/22	11/30/22	
Surrogate: n-Nonane		*103 %*	*50-200*	*11/29/22*	*11/30/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2249025
Chloride	ND	20.0	1	11/29/22	11/30/22	

Sample Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

S2-1'

E211159-04

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Benzene	ND	0.0250	1	11/29/22	11/30/22	
Ethylbenzene	ND	0.0250	1	11/29/22	11/30/22	
Toluene	ND	0.0250	1	11/29/22	11/30/22	
o-Xylene	ND	0.0250	1	11/29/22	11/30/22	
p,m-Xylene	ND	0.0500	1	11/29/22	11/30/22	
Total Xylenes	ND	0.0250	1	11/29/22	11/30/22	
Surrogate: 4-Bromochlorobenzene-PID		*108 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Gasoline Range Organics (C6-C10)	ND	20.0	1	11/29/22	11/30/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*98.6 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2249031
Diesel Range Organics (C10-C28)	ND	25.0	1	11/29/22	11/30/22	
Oil Range Organics (C28-C36)	ND	50.0	1	11/29/22	11/30/22	
Surrogate: n-Nonane		*99.6 %*	*50-200*	*11/29/22*	*11/30/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2249025
Chloride	**41.2**	20.0	1	11/29/22	11/30/22	

Sample Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

S2-3'

E211159-05

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Benzene	ND	0.0250	1	11/29/22	11/30/22	
Ethylbenzene	ND	0.0250	1	11/29/22	11/30/22	
Toluene	ND	0.0250	1	11/29/22	11/30/22	
o-Xylene	ND	0.0250	1	11/29/22	11/30/22	
p,m-Xylene	ND	0.0500	1	11/29/22	11/30/22	
Total Xylenes	ND	0.0250	1	11/29/22	11/30/22	
Surrogate: 4-Bromochlorobenzene-PID		*102 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Gasoline Range Organics (C6-C10)	ND	20.0	1	11/29/22	11/30/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*96.3 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2249031
Diesel Range Organics (C10-C28)	ND	25.0	1	11/29/22	11/30/22	
Oil Range Organics (C28-C36)	ND	50.0	1	11/29/22	11/30/22	
Surrogate: n-Nonane		*93.4 %*	*50-200*	*11/29/22*	*11/30/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2249025
Chloride	**36.6**	20.0	1	11/29/22	11/30/22	

Sample Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

S2-4'

E211159-06

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Benzene	ND	0.0250	1	11/29/22	11/30/22	
Ethylbenzene	ND	0.0250	1	11/29/22	11/30/22	
Toluene	ND	0.0250	1	11/29/22	11/30/22	
o-Xylene	ND	0.0250	1	11/29/22	11/30/22	
p,m-Xylene	ND	0.0500	1	11/29/22	11/30/22	
Total Xylenes	ND	0.0250	1	11/29/22	11/30/22	
Surrogate: 4-Bromochlorobenzene-PID		*103 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Gasoline Range Organics (C6-C10)	ND	20.0	1	11/29/22	11/30/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*96.1 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2249031
Diesel Range Organics (C10-C28)	ND	25.0	1	11/29/22	11/30/22	
Oil Range Organics (C28-C36)	ND	50.0	1	11/29/22	11/30/22	
Surrogate: n-Nonane		*99.2 %*	*50-200*	*11/29/22*	*11/30/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2249025
Chloride	ND	20.0	1	11/29/22	11/30/22	

Sample Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

S3-1'

E211159-07

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Benzene	ND	0.0250	1	11/29/22	11/30/22	
Ethylbenzene	ND	0.0250	1	11/29/22	11/30/22	
Toluene	ND	0.0250	1	11/29/22	11/30/22	
o-Xylene	ND	0.0250	1	11/29/22	11/30/22	
p,m-Xylene	ND	0.0500	1	11/29/22	11/30/22	
Total Xylenes	ND	0.0250	1	11/29/22	11/30/22	
Surrogate: 4-Bromochlorobenzene-PID		*103 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Gasoline Range Organics (C6-C10)	ND	20.0	1	11/29/22	11/30/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*96.2 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2249031
Diesel Range Organics (C10-C28)	ND	25.0	1	11/29/22	11/30/22	
Oil Range Organics (C28-C36)	ND	50.0	1	11/29/22	11/30/22	
Surrogate: n-Nonane		*99.2 %*	*50-200*	*11/29/22*	*11/30/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2249025
Chloride	**34.5**	20.0	1	11/29/22	11/30/22	

Sample Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

S3-3'

E211159-08

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Benzene	ND	0.0250	1	11/29/22	11/30/22	
Ethylbenzene	ND	0.0250	1	11/29/22	11/30/22	
Toluene	ND	0.0250	1	11/29/22	11/30/22	
o-Xylene	ND	0.0250	1	11/29/22	11/30/22	
p,m-Xylene	ND	0.0500	1	11/29/22	11/30/22	
Total Xylenes	ND	0.0250	1	11/29/22	11/30/22	
Surrogate: 4-Bromochlorobenzene-PID		*103 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Gasoline Range Organics (C6-C10)	ND	20.0	1	11/29/22	11/30/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*96.1 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2249031
Diesel Range Organics (C10-C28)	ND	25.0	1	11/29/22	12/01/22	
Oil Range Organics (C28-C36)	ND	50.0	1	11/29/22	12/01/22	
Surrogate: n-Nonane		*101 %*	*50-200*	*11/29/22*	*12/01/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2249025
Chloride	**39.4**	20.0	1	11/29/22	11/30/22	

Sample Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

S3-4'

E211159-09

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Benzene	ND	0.0250	1	11/29/22	11/30/22	
Ethylbenzene	ND	0.0250	1	11/29/22	11/30/22	
Toluene	ND	0.0250	1	11/29/22	11/30/22	
o-Xylene	ND	0.0250	1	11/29/22	11/30/22	
p,m-Xylene	ND	0.0500	1	11/29/22	11/30/22	
Total Xylenes	ND	0.0250	1	11/29/22	11/30/22	
Surrogate: 4-Bromochlorobenzene-PID		*103 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Gasoline Range Organics (C6-C10)	ND	20.0	1	11/29/22	11/30/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*93.9 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2249031
Diesel Range Organics (C10-C28)	ND	25.0	1	11/29/22	12/01/22	
Oil Range Organics (C28-C36)	ND	50.0	1	11/29/22	12/01/22	
Surrogate: n-Nonane		*101 %*	*50-200*	*11/29/22*	*12/01/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2249025
Chloride	ND	20.0	1	11/29/22	11/30/22	

Sample Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

S4-1'

E211159-10

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Benzene	ND	0.0250	1	11/29/22	11/30/22	
Ethylbenzene	ND	0.0250	1	11/29/22	11/30/22	
Toluene	ND	0.0250	1	11/29/22	11/30/22	
o-Xylene	ND	0.0250	1	11/29/22	11/30/22	
p,m-Xylene	ND	0.0500	1	11/29/22	11/30/22	
Total Xylenes	ND	0.0250	1	11/29/22	11/30/22	
Surrogate: 4-Bromochlorobenzene-PID		*103 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Gasoline Range Organics (C6-C10)	ND	20.0	1	11/29/22	11/30/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*96.6 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2249031
Diesel Range Organics (C10-C28)	ND	25.0	1	11/29/22	12/01/22	
Oil Range Organics (C28-C36)	ND	50.0	1	11/29/22	12/01/22	
Surrogate: n-Nonane		*89.1 %*	*50-200*	*11/29/22*	*12/01/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2249025
Chloride	**33.1**	20.0	1	11/29/22	11/30/22	

Sample Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

S4-3'

E211159-11

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Benzene	ND	0.0250	1	11/29/22	11/30/22	
Ethylbenzene	ND	0.0250	1	11/29/22	11/30/22	
Toluene	ND	0.0250	1	11/29/22	11/30/22	
o-Xylene	ND	0.0250	1	11/29/22	11/30/22	
p,m-Xylene	ND	0.0500	1	11/29/22	11/30/22	
Total Xylenes	ND	0.0250	1	11/29/22	11/30/22	
Surrogate: 4-Bromochlorobenzene-PID		*103 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Gasoline Range Organics (C6-C10)	ND	20.0	1	11/29/22	11/30/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*94.0 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2249031
Diesel Range Organics (C10-C28)	ND	25.0	1	11/29/22	12/01/22	
Oil Range Organics (C28-C36)	ND	50.0	1	11/29/22	12/01/22	
Surrogate: n-Nonane		*95.4 %*	*50-200*	*11/29/22*	*12/01/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2249025
Chloride	**34.4**	20.0	1	11/29/22	11/30/22	

Sample Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

S4-4'

E211159-12

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Benzene	ND	0.0250	1	11/29/22	11/30/22	
Ethylbenzene	ND	0.0250	1	11/29/22	11/30/22	
Toluene	ND	0.0250	1	11/29/22	11/30/22	
o-Xylene	ND	0.0250	1	11/29/22	11/30/22	
p,m-Xylene	ND	0.0500	1	11/29/22	11/30/22	
Total Xylenes	ND	0.0250	1	11/29/22	11/30/22	
Surrogate: 4-Bromochlorobenzene-PID		*102 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Gasoline Range Organics (C6-C10)	ND	20.0	1	11/29/22	11/30/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*97.5 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2249031
Diesel Range Organics (C10-C28)	ND	25.0	1	11/29/22	12/01/22	
Oil Range Organics (C28-C36)	ND	50.0	1	11/29/22	12/01/22	
Surrogate: n-Nonane		*98.7 %*	*50-200*	*11/29/22*	*12/01/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2249025
Chloride	ND	20.0	1	11/29/22	11/30/22	

Sample Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

SW1

E211159-13

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Benzene	ND	0.0250	1	11/29/22	11/30/22	
Ethylbenzene	ND	0.0250	1	11/29/22	11/30/22	
Toluene	ND	0.0250	1	11/29/22	11/30/22	
o-Xylene	ND	0.0250	1	11/29/22	11/30/22	
p,m-Xylene	ND	0.0500	1	11/29/22	11/30/22	
Total Xylenes	ND	0.0250	1	11/29/22	11/30/22	
Surrogate: 4-Bromochlorobenzene-PID		*102 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Gasoline Range Organics (C6-C10)	ND	20.0	1	11/29/22	11/30/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*97.6 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2249031
Diesel Range Organics (C10-C28)	ND	25.0	1	11/29/22	12/01/22	
Oil Range Organics (C28-C36)	ND	50.0	1	11/29/22	12/01/22	
Surrogate: n-Nonane		*97.7 %*	*50-200*	*11/29/22*	*12/01/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2249025
Chloride	ND	20.0	1	11/29/22	11/30/22	

Sample Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

SW2

E211159-14

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Benzene	ND	0.0250	1	11/29/22	11/30/22	
Ethylbenzene	ND	0.0250	1	11/29/22	11/30/22	
Toluene	ND	0.0250	1	11/29/22	11/30/22	
o-Xylene	ND	0.0250	1	11/29/22	11/30/22	
p,m-Xylene	ND	0.0500	1	11/29/22	11/30/22	
Total Xylenes	ND	0.0250	1	11/29/22	11/30/22	
Surrogate: 4-Bromochlorobenzene-PID		*103 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Gasoline Range Organics (C6-C10)	ND	20.0	1	11/29/22	11/30/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*96.4 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2249031
Diesel Range Organics (C10-C28)	ND	25.0	1	11/29/22	12/01/22	
Oil Range Organics (C28-C36)	ND	50.0	1	11/29/22	12/01/22	
Surrogate: n-Nonane		*101 %*	*50-200*	*11/29/22*	*12/01/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2249025
Chloride	ND	20.0	1	11/29/22	11/30/22	

Sample Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

SW3

E211159-15

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Benzene	ND	0.0250	1	11/29/22	11/30/22	
Ethylbenzene	ND	0.0250	1	11/29/22	11/30/22	
Toluene	ND	0.0250	1	11/29/22	11/30/22	
o-Xylene	ND	0.0250	1	11/29/22	11/30/22	
p,m-Xylene	ND	0.0500	1	11/29/22	11/30/22	
Total Xylenes	ND	0.0250	1	11/29/22	11/30/22	
Surrogate: 4-Bromochlorobenzene-PID		*102 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Gasoline Range Organics (C6-C10)	ND	20.0	1	11/29/22	11/30/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*94.0 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2249031
Diesel Range Organics (C10-C28)	ND	25.0	1	11/29/22	12/01/22	
Oil Range Organics (C28-C36)	ND	50.0	1	11/29/22	12/01/22	
Surrogate: n-Nonane		*94.3 %*	*50-200*	*11/29/22*	*12/01/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2249025
Chloride	ND	20.0	1	11/29/22	11/30/22	

Sample Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

SW4

E211159-16

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Benzene	ND	0.0250	1	11/29/22	11/30/22	
Ethylbenzene	ND	0.0250	1	11/29/22	11/30/22	
Toluene	ND	0.0250	1	11/29/22	11/30/22	
o-Xylene	ND	0.0250	1	11/29/22	11/30/22	
p,m-Xylene	ND	0.0500	1	11/29/22	11/30/22	
Total Xylenes	ND	0.0250	1	11/29/22	11/30/22	
Surrogate: 4-Bromochlorobenzene-PID		*102 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Gasoline Range Organics (C6-C10)	ND	20.0	1	11/29/22	11/30/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*96.5 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2249031
Diesel Range Organics (C10-C28)	ND	25.0	1	11/29/22	12/01/22	
Oil Range Organics (C28-C36)	ND	50.0	1	11/29/22	12/01/22	
Surrogate: n-Nonane		*98.3 %*	*50-200*	*11/29/22*	*12/01/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2249025
Chloride	ND	20.0	1	11/29/22	11/30/22	

Sample Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

BG1

E211159-17

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Benzene	ND	0.0250	1	11/29/22	11/30/22	
Ethylbenzene	ND	0.0250	1	11/29/22	11/30/22	
Toluene	ND	0.0250	1	11/29/22	11/30/22	
o-Xylene	ND	0.0250	1	11/29/22	11/30/22	
p,m-Xylene	ND	0.0500	1	11/29/22	11/30/22	
Total Xylenes	ND	0.0250	1	11/29/22	11/30/22	
Surrogate: 4-Bromochlorobenzene-PID		*102 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Gasoline Range Organics (C6-C10)	ND	20.0	1	11/29/22	11/30/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*96.4 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2249031
Diesel Range Organics (C10-C28)	ND	25.0	1	11/29/22	12/01/22	
Oil Range Organics (C28-C36)	ND	50.0	1	11/29/22	12/01/22	
Surrogate: n-Nonane		*97.6 %*	*50-200*	*11/29/22*	*12/01/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2249025
Chloride	ND	20.0	1	11/29/22	11/30/22	

Sample Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

BG2

E211159-18

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Benzene	ND	0.0250	1	11/29/22	11/30/22	
Ethylbenzene	ND	0.0250	1	11/29/22	11/30/22	
Toluene	ND	0.0250	1	11/29/22	11/30/22	
o-Xylene	ND	0.0250	1	11/29/22	11/30/22	
p,m-Xylene	ND	0.0500	1	11/29/22	11/30/22	
Total Xylenes	ND	0.0250	1	11/29/22	11/30/22	
Surrogate: 4-Bromochlorobenzene-PID		*102 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/kg	mg/kg	Analyst: IY			Batch: 2249033
Gasoline Range Organics (C6-C10)	ND	20.0	1	11/29/22	11/30/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*96.3 %*	*70-130*	*11/29/22*	*11/30/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/kg	mg/kg	Analyst: JL			Batch: 2249031
Diesel Range Organics (C10-C28)	ND	25.0	1	11/29/22	12/01/22	
Oil Range Organics (C28-C36)	ND	50.0	1	11/29/22	12/01/22	
Surrogate: n-Nonane		*102 %*	*50-200*	*11/29/22*	*12/01/22*	
Anions by EPA 300.0/9056A	mg/kg	mg/kg	Analyst: KL			Batch: 2249025
Chloride	ND	20.0	1	11/29/22	11/30/22	

QC Summary Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	**Reported:**
PO Box 247	Project Number:	21064-0001	
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

Volatile Organics by EPA 8021B

Analyst: IY

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2249033-BLK1)									Prepared: 11/29/22 Analyzed: 11/30/22
Benzene	ND	0.0250							
Ethylbenzene	ND	0.0250							
Toluene	ND	0.0250							
o-Xylene	ND	0.0250							
p,m-Xylene	ND	0.0500							
Total Xylenes	ND	0.0250							
Surrogate: 4-Bromochlorobenzene-PID	*7.81*		*8.00*		*97.6*	*70-130*			
LCS (2249033-BS1)									Prepared: 11/29/22 Analyzed: 11/30/22
Benzene	5.32	0.0250	5.00		106	70-130			
Ethylbenzene	5.63	0.0250	5.00		113	70-130			
Toluene	5.67	0.0250	5.00		113	70-130			
o-Xylene	5.78	0.0250	5.00		116	70-130			
p,m-Xylene	11.4	0.0500	10.0		114	70-130			
Total Xylenes	17.2	0.0250	15.0		115	70-130			
Surrogate: 4-Bromochlorobenzene-PID	*8.06*		*8.00*		*101*	*70-130*			
Matrix Spike (2249033-MS1)				**Source: E211159-03**					Prepared: 11/29/22 Analyzed: 11/30/22
Benzene	4.98	0.0250	5.00	ND	99.7	54-133			
Ethylbenzene	5.28	0.0250	5.00	ND	106	61-133			
Toluene	5.31	0.0250	5.00	ND	106	61-130			
o-Xylene	5.43	0.0250	5.00	ND	109	63-131			
p,m-Xylene	10.7	0.0500	10.0	ND	107	63-131			
Total Xylenes	16.1	0.0250	15.0	ND	108	63-131			
Surrogate: 4-Bromochlorobenzene-PID	*8.27*		*8.00*		*103*	*70-130*			
Matrix Spike Dup (2249033-MSD1)				**Source: E211159-03**					Prepared: 11/29/22 Analyzed: 11/30/22
Benzene	4.59	0.0250	5.00	ND	91.8	54-133	8.21	20	
Ethylbenzene	4.88	0.0250	5.00	ND	97.5	61-133	7.91	20	
Toluene	4.90	0.0250	5.00	ND	98.1	61-130	7.96	20	
o-Xylene	5.01	0.0250	5.00	ND	100	63-131	7.96	20	
p,m-Xylene	9.90	0.0500	10.0	ND	99.0	63-131	7.85	20	
Total Xylenes	14.9	0.0250	15.0	ND	99.4	63-131	7.89	20	
Surrogate: 4-Bromochlorobenzene-PID	*8.28*		*8.00*		*103*	*70-130*			

QC Summary Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	**Reported:**
PO Box 247	Project Number:	21064-0001	
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

Nonhalogenated Organics by EPA 8015D - GRO

Analyst: IY

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2249033-BLK1)									Prepared: 11/29/22 Analyzed: 11/30/22
Gasoline Range Organics (C6-C10)	ND	20.0							
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.79*		*8.00*		*97.3*	*70-130*			
LCS (2249033-BS2)									Prepared: 11/29/22 Analyzed: 11/30/22
Gasoline Range Organics (C6-C10)	53.9	20.0	50.0		108	70-130			
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.68*		*8.00*		*96.0*	*70-130*			
Matrix Spike (2249033-MS2)				**Source: E211159-03**					Prepared: 11/29/22 Analyzed: 11/30/22
Gasoline Range Organics (C6-C10)	50.0	20.0	50.0	ND	100	70-130			
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.59*		*8.00*		*94.9*	*70-130*			
Matrix Spike Dup (2249033-MSD2)				**Source: E211159-03**					Prepared: 11/29/22 Analyzed: 11/30/22
Gasoline Range Organics (C6-C10)	46.1	20.0	50.0	ND	92.2	70-130	8.18	20	
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.65*		*8.00*		*95.6*	*70-130*			

QC Summary Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	**Reported:**
PO Box 247	Project Number:	21064-0001	
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

Nonhalogenated Organics by EPA 8015D - DRO/ORO

Analyst: JL

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2249031-BLK1)									Prepared: 11/29/22 Analyzed: 11/30/22
Diesel Range Organics (C10-C28)	ND	25.0							
Oil Range Organics (C28-C36)	ND	50.0							
Surrogate: n-Nonane	*51.1*		*50.0*		*102*	*50-200*			
LCS (2249031-BS1)									Prepared: 11/29/22 Analyzed: 11/30/22
Diesel Range Organics (C10-C28)	252	25.0	250		101	38-132			
Surrogate: n-Nonane	*47.4*		*50.0*		*94.7*	*50-200*			
Matrix Spike (2249031-MS1)				**Source: E211159-11**					Prepared: 11/29/22 Analyzed: 11/30/22
Diesel Range Organics (C10-C28)	253	25.0	250	ND	101	38-132			
Surrogate: n-Nonane	*46.9*		*50.0*		*93.7*	*50-200*			
Matrix Spike Dup (2249031-MSD1)				**Source: E211159-11**					Prepared: 11/29/22 Analyzed: 11/30/22
Diesel Range Organics (C10-C28)	260	25.0	250	ND	104	38-132	2.85	20	
Surrogate: n-Nonane	*48.1*		*50.0*		*96.3*	*50-200*			

QC Summary Data

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	**Reported:**
PO Box 247	Project Number:	21064-0001	
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/5/2022 10:46:01AM

Anions by EPA 300.0/9056A

Analyst: KL

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	
Blank (2249025-BLK1)									Prepared: 11/29/22 Analyzed: 11/30/22
Chloride	ND	20.0							
LCS (2249025-BS1)									Prepared: 11/29/22 Analyzed: 11/30/22
Chloride	257	20.0	250		103	90-110			
Matrix Spike (2249025-MS1)				**Source: E211159-01**					Prepared: 11/29/22 Analyzed: 11/30/22
Chloride	291	20.0	250	42.3	99.6	80-120			
Matrix Spike Dup (2249025-MSD1)				**Source: E211159-01**					Prepared: 11/29/22 Analyzed: 11/30/22
Chloride	287	20.0	250	42.3	98.0	80-120	1.41	20	

QC Summary Report Comment:
Calculations are based off of the raw (non-rounded) data. However, for reporting purposes all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Definitions and Notes

Pima Environmental Services-Carlsbad	Project Name:	Big Bertha	
PO Box 247	Project Number:	21064-0001	**Reported:**
Plains TX, 79355-0247	Project Manager:	Tom Bynum	12/05/22 10:46

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference
DNI	Did Not Ignite

Note (1): Methods marked with ** are non-accredited methods.

Note (2): Soil data is reported on an "as received" weight basis, unless reported otherwise.

Project Information | Chain of Custody | Page 1 of 2

Client:	Pima Environmental
Project:	Big Bertha
Project Manager:	Tom Bynum
Address:	
City, State, Zip	Hobbs NM, 88240
Phone:	
Email:	Tom@pimaoil.com
Report due by:	

Bill To

Attention:	PIMA
Address:	
City, State, Zip	
Phone:	
Email:	

19-16

Lab Use Only

Lab WO#	Job Number
E211159	21064000

TAT

1D	2D	3D	Standard
			X

EPA Program

CWA	SDWA	RCRA

State

NM	CO	UT	AZ	TX	
X					

Analysis and Method

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0	BG DOC-NM	Remarks
8:00	11/23/22	S	1	S1-1'	1								
8:05				S1-3'	2								
8:10				S1-4'	3								
8:15				S2-1'	4								
8:20				S2-3'	5								
8:25				S2-4'	6								
8:30				S3-1'	7								
8:35				S3-3'	8								
8:40				S3-4'	9								
8:45				S4-1'	10								

Additional Instructions: Bill to Pima

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by: Audriana Benavidez

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Audriana B.	11-28-22	1310	Michelle R. Gp	11-28-22	1310
Michelle R. Gp	11-28-22	1600		11/29/22	11:00

Lab Use Only

Received on ice: (Y) N

T1 _____ T2 _____ T3 _____

AVG Temp °C 4

Sample Matrix: **S** - Soil, **Sd** - Solid, **Sg** - Sludge, **A** - Aqueous, **O** - Other _____

Container Type: **g** - glass, **p** - poly/plastic, **ag** - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

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Project Information | Chain of Custody | Page 2 of 2

Client: Pima Environmental	Bill To	Lab Use Only	TAT / EPA Program
Project: Big Bertha	Attention: PIMA	Lab WO# E211159	Job Number 21064-0001
Project Manager: Tom Bynum	Address:	1D:	2D: 3D: Standard: X
Address:	City, State, Zip	CWA:	SDWA:
City, State, Zip Hobbs NM, 88240	Phone:	RCRA:	
Phone:	Email:	State: NM X CO UT AZ TX	
Email: Tom@pimaoil.com	# 19-6		
Report due by:			

Analysis and Method: DRO/ORO by 8015; GRO/DRO by 8015; BTEX by 8021; VOC by 8260; Metals 6010; Chloride 300.0; BGDOC-NM

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	Remarks
8:50	11/23/22	S	1	S4-3'	11	
9:00				S4-4'	12	
9:05				SW1	13	
9:10				SW2	14	
9:15				SW3	15	
9:20				SW4	16	
9:25				BG1	17	
9:30				BG2	18	

Additional Instructions: Bill to Pima

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by: Audriana Benavidez

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Audriana B.	11-28-22	1310	[illegible]	11-28-22	1310
[illegible]	11-28-22	1600	[illegible]	11/29/22	11:00
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Lab Use Only — Received on ice: (Y) / N; T1 ____ T2 ____ T3 ____; AVG Temp °C 4

Sample Matrix: **S** - Soil, **Sd** - Solid, **Sg** - Sludge, **A** - Aqueous, **O** - Other ____

Container Type: **g** - glass, **p** - poly/plastic, **ag** - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

envirotech

Envirotech Analytical Laboratory

Printed: 11/30/2022 10:58:40AM

Sample Receipt Checklist (SRC)

Instructions: Please take note of any NO checkmarks.
If we receive no response concerning these items within 24 hours of the date of this notice, all the samples will be analyzed as requested.

Client:	Pima Environmental Services-Carlsbad	Date Received:	11/29/22 11:00	Work Order ID:	E211159
Phone:	(575) 631-6977	Date Logged In:	11/29/22 11:13	Logged In By:	Alexa Michaels
Email:	tom@pimaoil.com	Due Date:	12/05/22 17:00 (4 day TAT)		

Chain of Custody (COC)

1. Does the sample ID match the COC?	Yes	
2. Does the number of samples per sampling site location match the COC	Yes	
3. Were samples dropped off by client or carrier?	Yes	Carrier: UPS
4. Was the COC complete, i.e., signatures, dates/times, requested analyses?	Yes	
5. Were all samples received within holding time? Note: Analysis, such as pH which should be conducted in the field, i.e, 15 minute hold time, are not included in this disucssion.	Yes	

Comments/Resolution

Sample Turn Around Time (TAT)

6. Did the COC indicate standard TAT, or Expedited TAT?	Yes	

Sample Cooler

7. Was a sample cooler received?	Yes	
8. If yes, was cooler received in good condition?	Yes	
9. Was the sample(s) received intact, i.e., not broken?	Yes	
10. Were custody/security seals present?	No	
11. If yes, were custody/security seals intact?	NA	
12. Was the sample received on ice? If yes, the recorded temp is 4°C, i.e., 6°±2°C Note: Thermal preservation is not required, if samples are received w/i 15 minutes of sampling	Yes	
13. If no visible ice, record the temperature. Actual sample temperature: 4°C		

Sample Container

14. Are aqueous VOC samples present?	No	
15. Are VOC samples collected in VOA Vials?	NA	
16. Is the head space less than 6-8 mm (pea sized or less)?	NA	
17. Was a trip blank (TB) included for VOC analyses?	NA	
18. Are non-VOC samples collected in the correct containers?	Yes	
19. Is the appropriate volume/weight or number of sample containers collected?	Yes	

Field Label

20. Were field sample labels filled out with the minimum information:		
Sample ID?	Yes	
Date/Time Collected?	Yes	
Collectors name?	Yes	

Sample Preservation

21. Does the COC or field labels indicate the samples were preserved?	No	
22. Are sample(s) correctly preserved?	NA	
24. Is lab filteration required and/or requested for dissolved metals?	No	

Multiphase Sample Matrix

26. Does the sample have more than one phase, i.e., multiphase?	No	
27. If yes, does the COC specify which phase(s) is to be analyzed?	NA	

Subcontract Laboratory

28. Are samples required to get sent to a subcontract laboratory?	No	
29. Was a subcontract laboratory specified by the client and if so who?	NA	Subcontract Lab: NA

Client Instruction

Signature of client authorizing changes to the COC or sample disposition.

Date

envirotech Inc.

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 277186

CONDITIONS

Operator: ARMSTRONG ENERGY CORP P.O. Box 1973 Roswell, NM 88202	OGRID: 1092
	Action Number: 277186
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
amaxwell	None	10/24/2023