



APPROVED

By Olivia Yu at 10:31 am, May 01, 2018

EOG Resources, Inc.
Artesia Division Office
104 S. 4th Street
Artesia, N. M. 88210

NMOCD approves of the proposed delineation for 1RP-4865. Chlorides not for documentation. Delineate to 600 mg/kg. Caliche layer is not an acceptable rationale for incompleteness of vertical delineation.

EOG Y Resources, Inc.

Characterization Plan

Tres Canal BAL State #1

30-005-21162

Section 26, T8S-R33E

Chaves County, New Mexico

April 3, 2018

1RP-4865

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I. Location

From Crossroads, NM, travel west on Carrol Road for approximately 13 miles. Turn right (North) on Tobec Road and continue for approximately 6 miles. Turn right (East) onto Ledoux Road and continue for approximately 3.5 miles, turn left (Northwest), continue 450' to the Southeast corner of the well pad.

II. Background

On November 3, 2017, EOG Y Resources, Inc. submitted to the NMOCD District II office a Form C-141 for the release of 3 B/O & 2 B/PW with 0 B/O & 0 B/PW recovered. The affected area is approximately 10' X 40' within the primary berm of the battery. The release was caused by the drain valve area/bottom of 2 phase separator rusted out causing the release. A vacuum truck was called but did not recover any oil and or water. A backhoe was dispatched to excavate impacted soils and those soils were taken to an NMOCD approved facility.

III. Surface and Ground Water

Area surface geology is Cenozoic Pleistocene. Based on information regarding this location (Section 26, T8S-R33E), the New Mexico Office of the State Engineer (NMOSE) Point of Diversion Summary indicates the depth to groundwater as follows: (NMOSE-CL00314 POD1, DTGW @ 157'), the United States Geological Survey National Water Information System, indicates the depth to groundwater as follows: (USGS #333522103302901, DTGW @ 147.40' & USGS #333503103325801, DTGW @ 155'). The depth to groundwater is >100, per USGS and NMOSE groundwater level. **Based on this information the Site Ranking is a Zero (0).**

Watercourses in the area are dry except for infrequent flows in response to major precipitation events, with the nearest body of surface water is Lane Salt Lake (8.77 miles, SW direction).

IV. NMOCD Ranking Criteria

The ranking for this site is zero (0) based on the following:

Depth to ground water	> 100'
Wellhead Protection Area	> 1000'
Distance to surface water body	> 1000'

Based on the ranking criteria, the NMOCD established RRALs for this site are:

Benzene	10 ppm
BTEX	50 ppm
TPH	5,000 ppm
Chlorides	No established RRAL

V. Sampling Procedure

Vertical delineation samples (S-1, S-2 & S-3) will be collected within the release area. Samples will be collected at 1', 2', 3', and 4' below grade surface (bgs) or when auger and or backhoe refusal is encountered. Due to the nature of the release (produced water), the vertical delineation soil samples will be analyzed for Benzene, BTEX, TPH extended (Chlorides for documentation, with no established RRAL's for chlorides). All samples will be sent to a NMOCD approved laboratory for analysis.

Horizontal delineation samples will be collected at the 4 cardinal point (CP1-CP4) at what is believed to be the outer edge of the release area. Samples will be collected at 1' below grade surface (bgs) or when auger and or backhoe refusal is encountered. If a sample point is determined to be impacted by the release, a new sample will be collected moving out further until an area without impaction is located. Once located, samples will be taken to collaborate the impaction path to the next sample point in the sequence. Due to the nature of the release (produced water), the vertical delineation soil samples will be analyzed for Benzene, BTEX, TPH extended (Chlorides for documentation). All samples will be sent to a NMOCD approved laboratory for analysis.

Latitude/Longitude Coordinates for Sample Points

S-1	33.589654°; -103.538910°
S-2	33.589719°; -103.538922°
S-3	33.589971°; -103.538910°
CP-1	33.589826°; -103.538919°
CP-2	33.589619°; -103.538921°
CP-3	33.589706°; -103.538913°
CP-4	33.589733°; -103.538929 °

Figure 1

Site Map

Tres Canal BAL State #1

Section 26, T8S-R33E
Chaves County, New Mexico

Legend

- Tres Canal BAL State #1

Tres Canal BAL State #1



Figure 2

Vertical Sample Point(s)

Tres Canal BAL State #1

Section 26, T8S-R33E
Chaves County, New Mexico

- Legend**
- Tres Canal BAL State #1
 - Vertical Sample Point
 - Vertical Sample Point
 - Vertical Sample Point

Tres Canal BAL State #1

S-2

S-3

S-1

Google Earth

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90 ft

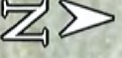


Figure 3

Horizontal Sample Point(s)

Tres Canal BAL State #1

Section 26, T8S-R33E
Chaves County, New Mexico

Legend

- Horizontal Sample Points
- Tres Canal BAL State #1



Photos



Geog y resources (575) 748-1471

TRES CANAL Unit #1

1980' FSL & 1980' FWL

Sec. 26 - T8S - R33E

Chaves Co. New Mexico

API #30-005-21162

10/25/2017







10/25/2017

Appendix A

Water Well Data Site Map

Tres Canal BAL State #1

Section 26, T8S-R33E

Chaves County, New Mexico

Water Well Data: Site Ranking Zero (0). Depth to Groundwater: >100'
(Approximately 153.13', per NMOSE & USGS Groundwater Levels).

Legend

-  NMOSE & USGS Water Wells
-  Tres Canal BAL State #1

Tres Canal BAL State #1

USGS #333522103302901 (DTGW 147.40)

Lamesa Rd

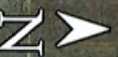
NMOSE CL00314 POD1 (DTGW 157)

USGS #333503103325801 (DTGW 155)

Google Earth

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1 mi



Appendix B

NMOSE Point of Diversion Summary



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
	CL 00314 POD1	1	2	2	34	08S	33E	634611	3716897

Driller License:	1626	Driller Company:	TAYLOR, ROY ALLEN
Driller Name:	TAYLOR, ROY A.		
Drill Start Date:	04/18/2016	Drill Finish Date:	04/20/2016
Log File Date:	04/29/2016	PCW Rcv Date:	
Pump Type:		Pipe Discharge Size:	
Casing Size:	5.00	Depth Well:	220 feet
		Plug Date:	
		Source:	Shallow
		Estimated Yield:	5 GPM
		Depth Water:	157 feet

Water Bearing Stratifications:	Top	Bottom	Description
	116	135	Sandstone/Gravel/Conglomerate
	135	185	Sandstone/Gravel/Conglomerate
	182	205	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	160	220

Appendix C

USGS Water Information System



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Data Category:

Site Information ▼

Geographic Area:

United States ▼

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USGS 333522103302901 08S.33E.25.42422

Available data for this site

SUMMARY OF ALL AVAILABLE DATA ▼

GO

Well Site

DESCRIPTION:

Latitude 33°35'23", Longitude 103°30'37" NAD27
Roosevelt County, New Mexico , Hydrologic Unit 12080001
Well depth: 151 feet
Land surface altitude: 4,315.00 feet above NGVD29.
Well completed in "Ogallala Formation" (121OGLL) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1980-02-07	1995-01-26	4

OPERATION:

Record for this site is maintained by the USGS New Mexico Water Science Center
Email questions about this site to [New Mexico Water Science Center Water-Data Inquiries](#)

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Title: NWIS Site Information for USA: Site Inventory

URL: <https://waterdata.usgs.gov/nwis/inventory?>



Page Contact Information: [USGS Water Data Support Team](#)

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Groundwater levels for the Nation

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- 333522103302901

Minimum number of levels = 1

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USGS 333522103302901 08S.33E.25.42422

Available data for this site

Groundwater: Field measurements ▼

GO

Roosevelt County, New Mexico

Hydrologic Unit Code 12080001

Latitude 33°35'23", Longitude 103°30'37" NAD27

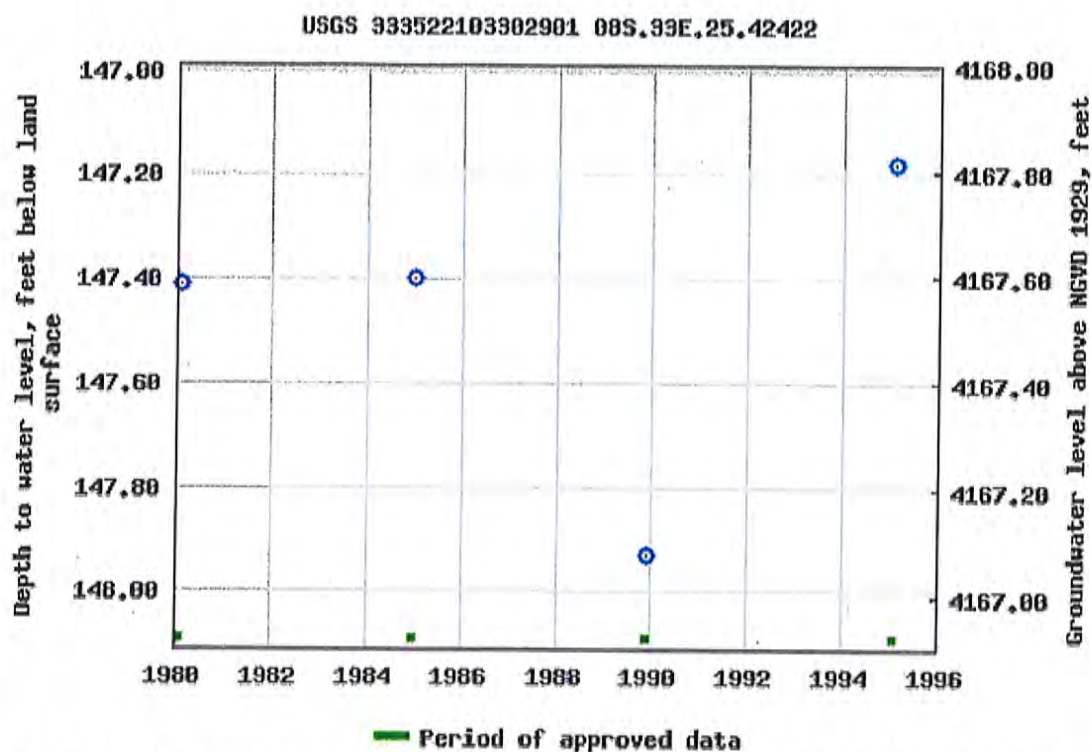
Land-surface elevation 4,315.00 feet above NGVD29

The depth of the well is 151 feet below land surface.

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.

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Title: Groundwater for USA: Water Levels

URL: <https://nwis.waterdata.usgs.gov/nwis/gwlevels?>



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[USGS Water Resources](#)

Data Category:

Site Information ▼

Geographic Area:

United States ▼

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USGS 333503103325801 08S.33E.34.212211

Available data for this site

SUMMARY OF ALL AVAILABLE DATA ▼

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Well Site

DESCRIPTION:

Latitude 33°35'03", Longitude 103°32'58" NAD27
Chaves County, New Mexico , Hydrologic Unit 12080001
Well depth: 180 feet
Land surface altitude: 4,355 feet above NGVD29.

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1995-02-21	1995-02-21	1

OPERATION:

Record for this site is maintained by the USGS New Mexico Water Science Center

Email questions about this site to [New Mexico Water Science Center Water-Data Inquiries](#)

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Title: NWIS Site Information for USA: Site Inventory

URL: <https://waterdata.usgs.gov/nwis/inventory?>



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Data Category:

Groundwater ▼

Geographic Area:

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site_no list =

- 333503103325801

Minimum number of levels = 1

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USGS 333503103325801 08S.33E.34.212211

Available data for this site

Groundwater: Field measurements ▼

GO

Chaves County, New Mexico

Hydrologic Unit Code 12080001

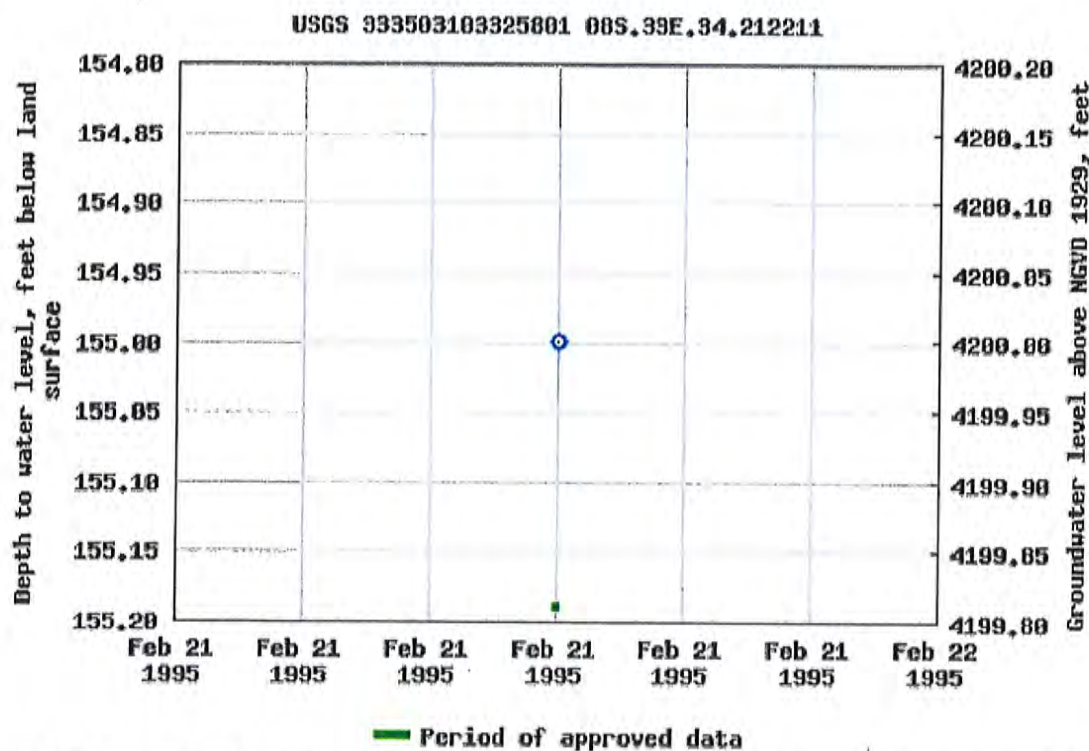
Latitude 33°35'03", Longitude 103°32'58" NAD27

Land-surface elevation 4,355 feet above NGVD29

The depth of the well is 180 feet below land surface.

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.

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URL: [https://nwis.waterdata.usgs.gov/nwis/gwlevels?](https://nwis.waterdata.usgs.gov/nwis/gwlevels?site_no=333503103325801)



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Appendix D

Form C-141 Initial

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

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in
accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company EOG Y Resources, Inc.	OGRID Number 25575	Contact Robert Asher
Address 104 S. 4 th Street	Telephone No. 575-748-1471	
Facility Name Tres Canal BAL State #1	Facility Type Battery	
Surface Owner State	Mineral Owner State	API No. 30-005-21162

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
K	26	8S	33E	1980	South	1980	West	Chaves

Latitude 33.58979 Longitude 103.53817

NATURE OF RELEASE

Type of Release Oil & Produced Water	Volume of Release 3 B/O & 2 B/PW	Volume Recovered 0 B/O & 0 B/PW
Source of Release 2 Phase Separator	Date and Hour of Occurrence 10/22/2017; PM	Date and Hour of Discovery 10/22/2017; PM
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	If YES, To Whom? N/A	
By Whom? N/A	Date and Hour N/A	
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.*

Drain valve area/bottom of 2 phase separator rusted out causing the release. Vacuum truck(s) and roustabout/backhoe crews were called.

Describe Area Affected and Cleanup Action Taken.*

An approximate area of 10'X 40' within the bermed battery. Vacuum truck responded but did not recover any oil or produced water. Roustabout crews removed separator and the backhoe crews excavated impacted soils, those soils were disposed at an NMOCD approved facility. Characterization Plan to follow. **Depth to Ground Water: >100' (approximately 157', Section 34, T8S-R33E, per NMOSE), Wellhead Protection Area: No, Distance to Surface Water Body: >1000', SITE RANKING IS 0.**

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: Robert Asher	Approved by Environmental Specialist:		
Title: Environmental Supervisor	Approval Date:	Expiration Date:	
E-mail Address: Robert_Asher@eogresources.com	Conditions of Approval:		Attached ☐
Date: November 3, 2017	Phone: 575-748-4217	1RP-	

* Attach Additional Sheets If Necessary

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
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State of New Mexico
Energy Minerals and Natural Resources

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Revised August 8, 2011

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Address 104 S. 4 th Street	Telephone No. 575-748-1471	
Facility Name Tres Canal BAL State #1	Facility Type Battery	
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Source of Release 2 Phase Separator	Date and Hour of Occurrence 10/22/2017; PM	Date and Hour of Discovery 10/22/2017; PM
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	If YES, To Whom? N/A	
By Whom? N/A	Date and Hour N/A	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

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Drain valve area/bottom of 2 phase separator rusted out causing the release. Vacuum truck(s) and roustabout/backhoe crews were called.

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An approximate area of 10'X 40' within the bermed battery. Vacuum truck responded but did not recover any oil or produced water. Roustabout crews removed separator and the backhoe crews excavated impacted soils, those soils were disposed at an NMOCD approved facility. Characterization Plan to follow. Depth to Ground Water: >100' (approximately 157', Section 34, T8S-R33E, per NMOSE), Wellhead Protection Area: No, Distance to Surface Water Body: >1000', SITE RANKING IS 0.

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Signature: 	OIL CONSERVATION DIVISION	
Printed Name: Robert Asher	Approved by Environmental Specialist: 	
Title: Environmental Supervisor	Approval Date: 11/15/2017	Expiration Date:
E-mail Address: Robert_Asher@eogresources.com	Conditions of Approval: see attached directive	Attached ☒
Date: November 3, 2017	Phone: 575-748-4217	

* Attach Additional Sheets If Necessary

1RP-4865

nOY1731934969

pOY1731935419

Operator/Responsible Party,

The OCD has received the form C-141 you provided on _11/3/2017_ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number _1RP-4865_ 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 _12/15/2017_. 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