

## SITE INFORMATION

**Report Type: Closure Report**

**2RP-5013**

### General Site Information:

Site:	Big Papi Federal Com #12H					
Company:	COG Operating LLC					
Section, Township and Range	Unit B	Sec. 04	T 26S	R 29E		
Lease Number:	API No. 30-015-43779					
County:	Eddy County					
GPS:	32.07914			-103.98751		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From the intersection of HWY 285 and Longhorn Rd, travel east on Longhorn Rd for approximately 4.2 miles, turn northeast (left) onto Pipeline Rd 1 for 1.50 miles, turn west onto leae road for 0.30 miles to the location on the north side of the lease road.					

### Release Data:

<b>Date Released:</b>	10/5/2018	
<b>Type Release:</b>	Produced Water & Oil	
<b>Source of Contamination:</b>	Illegal Dump	
<b>Fluid Released:</b>	4.8 bbl water & 2.14 bbl oil	
<b>Fluids Recovered:</b>	0 bbls	

### Official Communication:

<b>Name:</b>	Ike Tavaréz		Clair Gonzales
<b>Company:</b>	COG Operating, LLC		Tetra Tech
<b>Address:</b>	One Concho Center		901 West Wall Street
	600 W. Illinois Ave.		Suite 100
<b>City:</b>	Midland Texas, 79701		Midland, Texas
<b>Phone number:</b>	(432) 686-3023		(432) 687-8110
<b>Fax:</b>	(432) 684-7137		
<b>Email:</b>	<a href="mailto:itavarez@concho.com">itavarez@concho.com</a>		<a href="mailto:Clair.Gonzales@tetrattech.com">Clair.Gonzales@tetrattech.com</a>

### Site Characterization

<b>Depth to Groundwater:</b>	98'
<b>Karst Potential:</b>	High

### Recommended Remedial Action Levels (RRALs)

<b>Benzene</b>	<b>Total BTEX</b>	<b>TPH (GRO+DRO+MRO)</b>	<b>Chlorides</b>
10 mg/kg	50 mg/kg	100 mg/kg	600 mg/kg



**TETRA TECH**

January 2, 2019

Mr. Mike Bratcher  
District Supervisor  
Oil Conservation Division, District 2  
811 S. First Street  
Artesia, New Mexico 88210

**Re: Closure Report for the COG Operating, LLC, Big Papi Federal Com #12H, Unit B, Section 04, Township 26 South, Range 29 East, Eddy County, New Mexico. 2RP-5013**

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating, LLC (COG) to supervise the rapid response remediation of a release that occurred at the Big Papi Federal Com #12H, Unit B, Section 04, Township 26 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are 32.079137°, -103.987509°. The site location is shown on Figures 1 and 2.

## **Background**

According to the State of New Mexico C-141 Initial Report the release was discovered on October 5, 2018. The release was caused by an illegal dump and approximately 2.1 barrels of oil and 4.8 barrels of produced water was released. None of the fluids were recovered. The release impacted an area in the pasture measuring approximately 22' x 58' and 5' x 16'. A copy of the C-141 Form is included in Appendix A.

## **Site Characterization**

A site characterization was performed for the site and no watercourses, lakebeds, sinkholes, playa lakes, residences, schools, hospitals, institutions, churches, springs, private domestic water wells, springs, wetlands, incorporated municipal boundaries, subsurface mines, or floodplains are located within the specified distances. However, the site is located in a high karst potential area. No water wells were listed within Section 04 on the New Mexico Office of the State Engineer's (NMOSE) database, the Geology and Groundwater Resources of Eddy County (Report 3), or the USGS National Water Information Database. The nearest well is listed in Section 32, Township 25 South, Range 29 East, approximately 1.40 miles northwest of the site and has a reported depth to groundwater of 98 feet below surface.

**Tetra Tech**

4000 North Big Spring, Suite 401, Midland, TX 79705

Tel 432.682.4559 Fax 432.682.3946 [www.tetrattech.com](http://www.tetrattech.com)



According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in the area is between 125 and 150 feet below surface. The groundwater data is shown in Appendix B.

## **Regulatory**

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, updated August 14, 2018. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the based on the high karst potential in the area, the proposed RRAL for TPH is 100 mg/kg (GRO + DRO + MRO). Additionally, the proposed RRAL for chlorides is 600 mg/kg.

## **Remediation Activities**

On November 28, 2018 through December 4, 2018, Tetra Tech personnel were onsite to supervise the rapid response remediation activities. Composite confirmation samples were collected every 200 square feet for a total of eight bottom hole samples (Bottom Hole #1 through Bottom Hole #8) and five sidewall samples (Sidewall West 1, Sidewall West 2, Sidewall South, Sidewall East, and Sidewall North). Additionally, one auger hole (BG-1) was installed to a total depth of 2-2.5' below surface in the nearby pasture to evaluate the native soils.

Based on the confirmation sampling results, the release area was excavated to total depths ranging from 3.0' and 5.0' below surface. Soil samples were collected and submitted to the laboratory for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B, and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix D. The results of the sampling are summarized in Table 1. The excavation areas and depths are shown on Figure 3.

Referring to Table 1, the final confirmation samples collected showed benzene, total BTEX, TPH, and chloride concentrations below the RRALs. The background sample (BG-1) showed a chloride high of 14.6 mg/kg at 0-1' below surface.

Approximately 980 cubic yards of contaminated soil was transported offsite for proper disposal and the areas were backfilled with clean material to surface grade.

## **Revegetation**

Reseeding will be performed in June 2019 to coincide with the rainy season in Southeastern New Mexico and aid in revegetation. Based on the soils at the site, the BLM Shallow Sites Seed Mixture will be used and will be planted in the amount specified in the pounds pure live seed (PLS) per acre. The seed mixture will be spread by a drill equipped with a depth regulator or a handheld broadcaster and raked. If a hand-held broadcaster is used for dispersal, the pounds PLS per acre will be doubled.



**TETRA TECH**

Site inspections will be performed to assess the revegetation progress and evaluate the site for the presence of primary or secondary noxious weeds. If noxious weeds are identified, the BLM will be contacted to determine an effective method for eradication. If the site does not show revegetation after one growing season, the area will be reseeded as appropriate. The BLM seed mixture details and corresponding pounds PLS per acre are included in Appendix C.

### **Conclusion**

Based on the remediation activities performed and laboratory data, COG requests closure of this spill issue. If you have any questions or comments concerning the assessment or remediation activities for this site, please call at (432) 682-4559.

Respectfully submitted,  
TETRA TECH

Clair Gonzales,  
Project Manager

cc: Shelly Tucker – BLM  
Terry Gregston - BLM  
Ike Tavaréz – COG  
Dakota Neel - COG  
Rebecca Haskell - COG  
Sheldon Hitchcock - COG  
DeAnn Grant - COG

## Figures





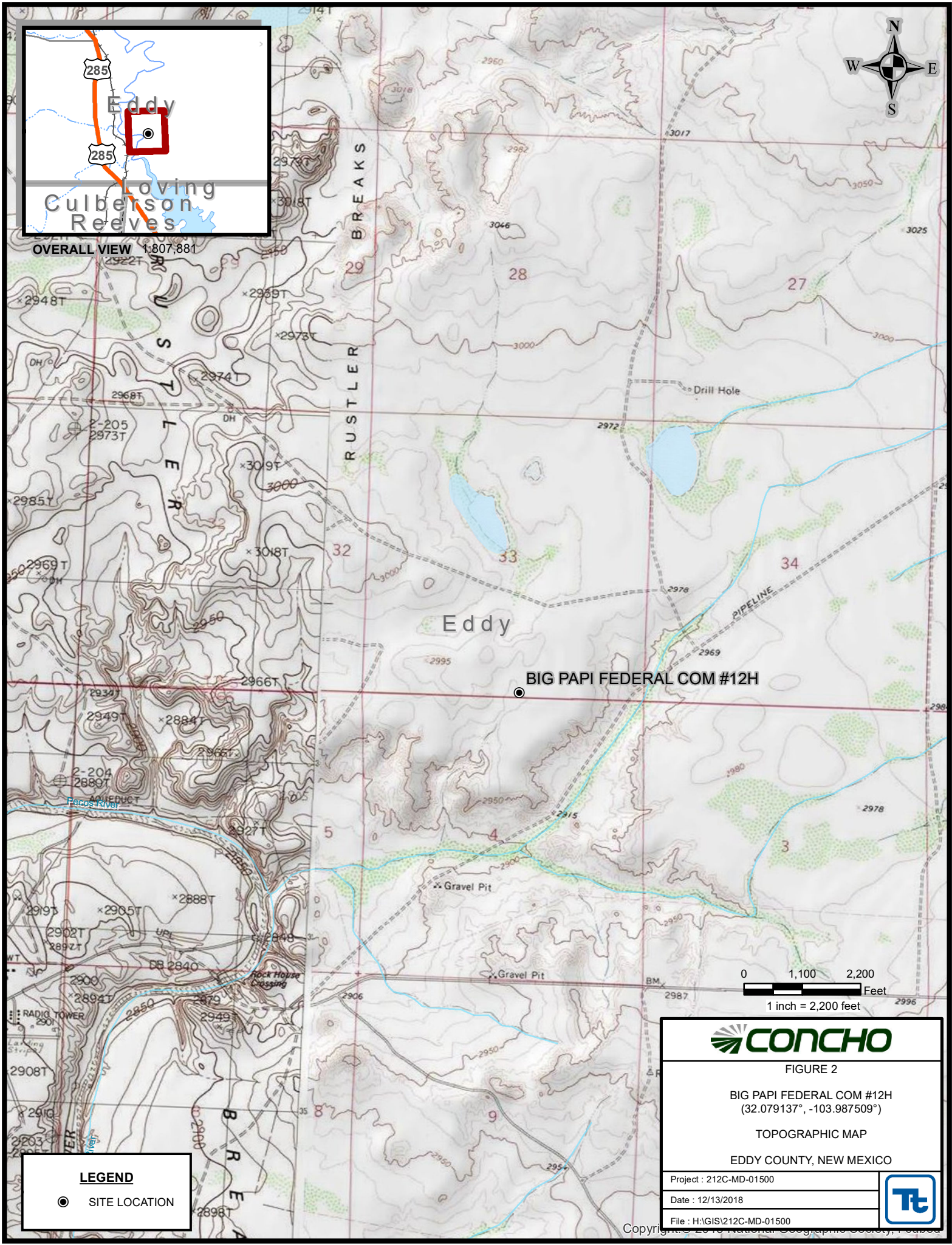
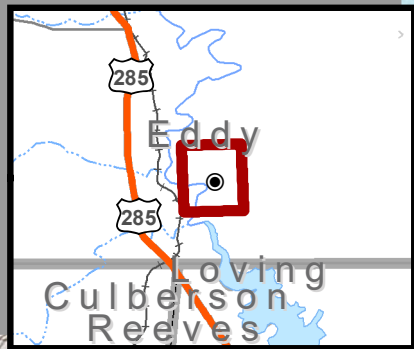


FIGURE 2

BIG PAPI FEDERAL COM #12H  
(32.079137°, -103.987509°)

TOPOGRAPHIC MAP

EDDY COUNTY, NEW MEXICO

Project : 212C-MD-01500

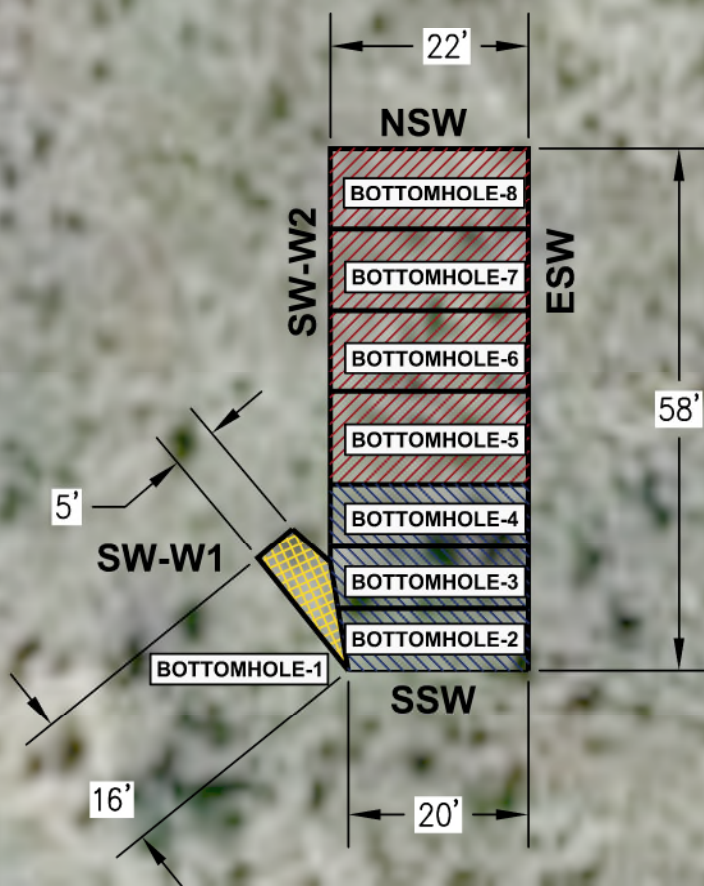
Date : 12/13/2018

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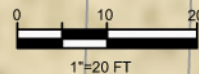


FIGURE 3

BIG PAPI FEDERAL COM #12H  
(32.079137°, -103.987509°)

EXCAVATION AREA & DEPTH MAP  
EDDY COUNTY, NEW MEXICO

Project: 212C-MD-01500

Date: 12/13/2018

File: H:\GIS\212C-MD-01500



**LEGEND**


- 5.0' EXCAVATED AREA
- 4.0' EXCAVATED AREA
- 3.0' EXCAVATED AREA
- EQUIPMENT



## Tables

**Table 1**  
**COG**  
**Big Papi Fed Com #12H**  
**Eddy County, New Mexico**

Sample ID	Sample Date	Sample Depth (ft)	BEB Sample Depth (ft)	Soil Status		TPH (mg/kg)				Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	ORO	Total						
Sidewall West 1	11/16/2018	-	-	X		<15.0	<15.0	<15.0	<15.0	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	66.1
Sidewall West 2	11/16/2018	-	-		X	<15.0	50.2	<15.0	50.2	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	2,970
	11/29/2018	-	-		X	-	-	-	-	-	-	-	-	-	672
	12/4/2018	-	-	X		-	-	-	-	-	-	-	-	-	443
Sidewall South	11/16/2018	-	-	X		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	27.4
Sidewall East	11/16/2018	-	-		X	<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	979
	11/29/2018	-	-	X		-	-	-	-	-	-	-	-	-	368
Sidewall North	11/16/2018	-	-	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	51.3
Bottom Hole #1	11/16/2018	-	3		X	<15.0	36.9	<15.0	36.9	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	1,750
	11/29/2018	-	4	X		-	-	-	-	-	-	-	-	-	160
Bottom Hole #2	11/16/2018	-	3	X		<14.9	<14.9	<14.9	<14.9	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	9.15
Bottom Hole #3	11/16/2018	-	2		X	<15.0	176	20.7	197	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	1,440
	11/29/2018	-	4	X		<10.0	<10.0	<10.0	<10.0	-	-	-	-	-	96.0
Bottom Hole #4	11/16/2018	-	2		X	<14.9	131	22.0	153	<0.00200	<0.00200	<0.00200	0.00888	0.00888	2,140
	11/29/2018	-	3	X		<10.0	<10.0	<10.0	<10.0	-	-	-	-	-	192
Bottom Hole #5	11/16/2018	-	2		X	16.8	283	21.4	321	<0.00200	0.00624	<0.00200	0.0290	0.03520	2,000
	11/29/2018	-	3		X	<10.0	<10.0	<10.0	<10.0	-	-	-	-	-	2,400
	12/4/2018	-	5	X		-	-	-	-	-	-	-	-	-	123
Bottom Hole #6	11/16/2018	-	2		X	<15.0	28.2	<15.0	28.2	<0.00199	<0.00199	<0.00199	0.00990	0.00990	4,940
	11/29/2018	-	3		X	-	-	-	-	-	-	-	-	-	1,840
	12/4/2018	-	5	X		-	-	-	-	-	-	-	-	-	565
Bottom Hole #7	11/16/2018	-	2		X	<15.0	204	29.7	234	<0.00199	<0.00199	<0.00199	0.00906	0.00906	2,030
	11/29/2018	-	3		X	<10.0	<10.0	<10.0	<10.0	-	-	-	-	-	1,180
	12/4/2018	-	5	X		-	-	-	-	-	-	-	-	-	301
Bottom Hole #8	11/16/2018	-	2		X	<15.0	41.7	<15.0	41.7	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	1,720
	11/29/2018	-	3		X	-	-	-	-	-	-	-	-	-	1,140
	12/4/2018	-	5	X		-	-	-	-	-	-	-	-	-	408
BG -1	11/16/2018	0-1	-	X		-	-	-	-	-	-	-	-	-	14.6
	"	1-1.5	-	X		-	-	-	-	-	-	-	-	-	<4.99
	"	2-2.5	-	X		-	-	-	-	-	-	-	-	-	<4.99

( - ) Not Analyzed  
 Excavation Depths

Photos



COG Operating LLC  
Big Papi Federal Com #12H  
Eddy County, New Mexico



View South – Excavated Area



View West – Excavated Area

COG Operating LLC  
Big Papi Federal Com #12H  
Eddy County, New Mexico



View West – Excavated Area



View Southeast – Excavated Area

## Appendix A



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	
District RP	
Facility ID	
Application ID	

## Release Notification

### Responsible Party

Responsible Party	OGRID
Contact Name	Contact Telephone
Contact email	Incident # (assigned by OCD)
Contact mailing address	

### Location of Release Source

Latitude \_\_\_\_\_ Longitude \_\_\_\_\_  
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Site Type
Date Release Discovered	API# (if applicable)

Unit Letter	Section	Township	Range	County

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)

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

The release was an **illegal dump** near a COG location.

The release was in the pasture. A vacuum truck was dispatched to remove all freestanding fluids. Concho will evaluate the site to determine if we may commence remediation immediately or delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC?  <input type="checkbox"/> Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release?
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*

<input type="checkbox"/> The source of the release has been stopped.	
<input type="checkbox"/> The impacted area has been secured to protect human health and the environment.	
<input type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.	
<input type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> 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: _____	Title: _____
Signature: <u>Delann Grant</u>	Date: _____
email: _____	Telephone: _____
<b><u>OCD Only</u></b>	
Received by: _____	Date: _____

Incident ID	
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?	_____ (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input type="checkbox"/> 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)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input type="checkbox"/> 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?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Did the release impact areas <b>not</b> on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input type="checkbox"/> 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.

<p><b>Characterization Report Checklist:</b> <i>Each of the following items must be included in the report.</i></p> <ul style="list-style-type: none"><li><input type="checkbox"/> Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.</li><li><input type="checkbox"/> Field data</li><li><input type="checkbox"/> Data table of soil contaminant concentration data</li><li><input type="checkbox"/> Depth to water determination</li><li><input type="checkbox"/> Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release</li><li><input type="checkbox"/> Boring or excavation logs</li><li><input type="checkbox"/> Photographs including date and GIS information</li><li><input type="checkbox"/> Topographic/Aerial maps</li><li><input type="checkbox"/> Laboratory data including chain of custody</li></ul>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

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.



Incident ID	
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: \_\_\_\_\_ Title: \_\_\_\_\_

Signature:  \_\_\_\_\_ Date: \_\_\_\_\_

email: \_\_\_\_\_ Telephone: \_\_\_\_\_

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

Incident ID	
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: \_\_\_\_\_ Title: \_\_\_\_\_

Signature:  \_\_\_\_\_ Date: \_\_\_\_\_

email: \_\_\_\_\_ Telephone: \_\_\_\_\_

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

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: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_

## Appendix B

**Water Well Data**  
**Average Depth to Groundwater (ft)**  
**COG Big Papi Federal Com #12H**  
**Eddy County, New Mexico**

**25 South 28 East**

6	5	4	35	3	32	2	1
	59						Site
7	8	9		10		11	12
18	17	16		15	48	14	13
67				49			
19	20	21		22		23	24
	96						
30	29	28		27		26	40
	15	90					
31	32	33		34		35	36
						55	40

**25 South 29 East**

6	5	4	3	2	98	1
40						
7	8	9		10		11
				40		
18	17	16		15	60	14
				165	140	
19	20	21		22		23
30	29	28		27		26
31	32	98	33	34	35	36

**25 South 30 East**

6	5	4	3	2	295	1
7	264	8		9	295	10
						390
18	17	16		15		14
19	20		21	265	22	23
			268			
30	29	28		27		26
31	32	33	34	35	36	

**26 South 28 East**

6	5	4		2	120	1
				21		
7	8	9		10		12
						100
18	17	16		15		14
				175	120	93
19	20	21		22	120	23
				22		56
30	29	28		27		26
				145		
31	32	33	34	35	36	

**26 South 29 East**

6	5	78	4	3	2	1
7	8			9		10
18	17			16		15
				125		
19	20	21		22	57	23
				69		
30	29	28		27		26
31	32	33	34	35	36	

**26 South 30 East**

6	5	179	4	3	2	1
		180				
7	8			9		10
18	17			16		15
19	20	21		22		23
						180
30	29	28		27		26
31	32	33	34	35	36	

**88** New Mexico State Engineers Well Reports

**105** USGS Well Reports

**90** Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)

**90** Geology and Groundwater Resources of Eddy County, NM (Report 3)

**34** NMOCD - Groundwater Data

**123** Tetra Tech installed temporary wells and field water level

**143** NMOCD Groundwater map well location





USGS Home  
Contact USGS  
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## National Water Information System: Web Interface

[USGS Water Resources](#)

Data Category:

Groundwater

Geographic Area:

New Mexico

GO

Click to hideNews Bulletins

- [Please see news on new formats](#)
- [Full News](#) 

Groundwater levels for New Mexico

Click to hide state-specific text

### Search Results -- 1 sites found

Agency code = usgs

site\_no list =

- 320532104001701

Minimum number of levels = 1

[Save file of selected sites](#) to local disk for future upload

### USGS 320532104001701 25S.29E.32.21111

Eddy County, New Mexico

Latitude 32°05'32", Longitude 104°00'17" NAD27

Land-surface elevation 2,988 feet above NAVD88

The depth of the well is 128 feet below land surface.

This well is completed in the Rustler Formation (312RSLR) local aquifer.

#### Output formats

<a href="#">Table of data</a>
<a href="#">Tab-separated data</a>
<a href="#">Graph of data</a>
<a href="#">Reselect period</a>

Date	Time	? Water-level date-time accuracy	Water level, feet below land surface	Water level, feet above specific vertical datum	Referenced vertical datum	? Water-level accuracy	? Status	? Method of measurement	? Measuring agency	? Source of measurement
1949-03-11		D	115.34				2		U	
1958-08-19		D	98.63				2		U	
1959-03-24		D	98.60				2		U	
1978-01-13		D	95.23				2		U	
1983-02-01		D	95.63				2		U	
1987-10-14		D	96.69				2		U	
1988-04-06		D	96.93				2		U	
1992-11-03		D	98.13				2		S	

#### Explanation

Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Water-level accuracy	2	Water level accuracy to nearest hundredth of a foot
Status		The reported water-level measurement represents a static level
Method of measurement	S	Steel-tape measurement.
Method of measurement	U	Unknown method.
Measuring agency		Not determined

Section	Code	Description
Source of measurement	U	Source is unknown.
Water-level approval status	A	Approved for publication -- Processing and review completed.

[Questions about sites/data?](#)  
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[Automated retrievals](#)  
[Help](#)  
[Data Tips](#)  
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[U.S. Department of the Interior](#) | [U.S. Geological Survey](#)

**Title: Groundwater for New Mexico: Water Levels**

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

Page Contact Information: [New Mexico Water Data Maintainer](#)

Page Last Modified: 2018-12-10 13:47:43 EST

0.49 0.42 nadww01



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	DepthWell	DepthWater	Water Column
<a href="#">C 01354 X-3</a>		CUB	ED	2	1	3	23	26S	29E	598323	3543837	<input type="text"/>	170	
<a href="#">C 02038</a>		C	ED	3	2	4	26	26S	29E	599204	3541992*	<input type="text"/>	200	
<a href="#">C 03507 POD1</a>		C	ED	1	3	3	05	26S	29E	593064	3548313	<input type="text"/>	140	78 62
<a href="#">C 03508 POD1</a>		C	ED	1	3	3	05	26S	29E	593063	3548361	<input type="text"/>	140	75 65
<a href="#">C 03605 POD1</a>		CUB	ED	4	2	3	27	26S	29E	596990	3541983	<input type="text"/>	45	0 45

Average Depth to Water:

**51 feet**

Minimum Depth:

**0 feet**

Maximum Depth:

**78 feet**

Record Count: 5

PLSS Search:

Township: 26S

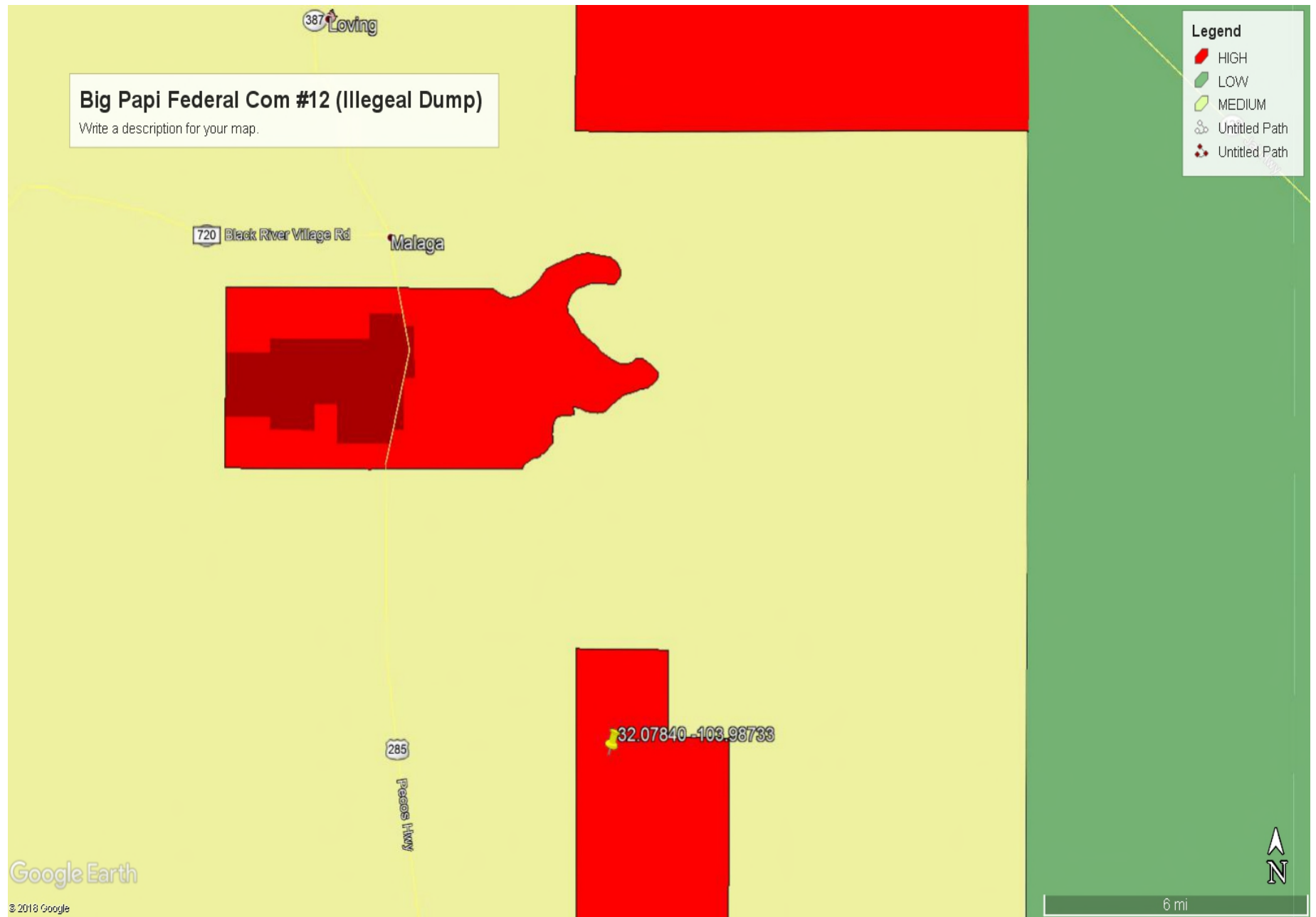
Range: 29E

\*UTM location was derived from PLSS - see Help

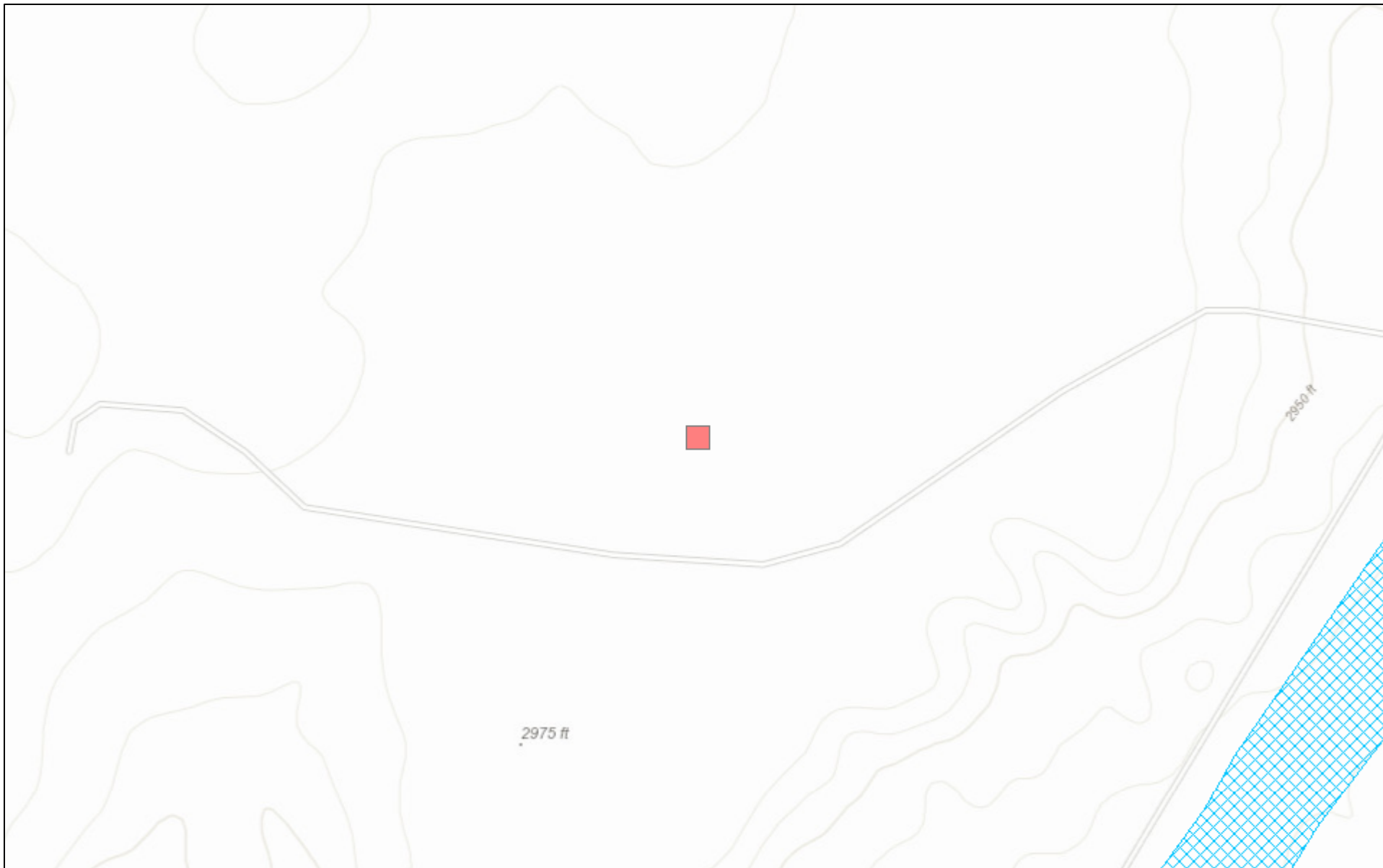
The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

11/27/18 1:56 PM

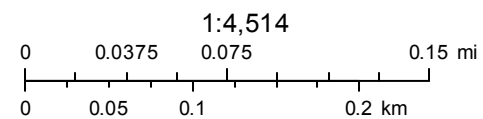
WATER COLUMN/ AVERAGE DEPTH  
TO WATER



# New Mexico NFHL Data



December 10, 2018



FEMA  
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS,

nmflood.org is made possible through a collaboration with NMDHSEM, EDAC, and FEMA  
This is a non-regulatory product for informational use only. Please consult your local floodplain administrator for further information.



## Appendix C

## Eddy Area, New Mexico

### UG—Upton gravelly loam, 0 to 9 percent slopes

#### Map Unit Setting

*National map unit symbol:* 1w64

*Elevation:* 1,100 to 4,400 feet

*Mean annual precipitation:* 7 to 15 inches

*Mean annual air temperature:* 60 to 70 degrees F

*Frost-free period:* 200 to 240 days

*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Upton and similar soils:* 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Upton

##### Setting

*Landform:* Ridges, fans

*Landform position (three-dimensional):* Side slope, rise

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Parent material:* Residuum weathered from limestone

##### Typical profile

*H1 - 0 to 9 inches:* gravelly loam

*H2 - 9 to 13 inches:* gravelly loam

*H3 - 13 to 21 inches:* cemented

*H4 - 21 to 60 inches:* very gravelly loam

##### Properties and qualities

*Slope:* 0 to 9 percent

*Depth to restrictive feature:* 7 to 20 inches to petrocalcic

*Natural drainage class:* Well drained

*Runoff class:* High

*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately high (0.01 to 0.60 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 75 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 1.0

*Available water storage in profile:* 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:* Shallow (R042XC025NM)

*Hydric soil rating:* No

#### **Minor Components**

##### **Reagan**

*Percent of map unit:*

*Ecological site:* Loamy (R042XC007NM)

*Hydric soil rating:* No

##### **Atoka**

*Percent of map unit:*

*Ecological site:* Loamy (R042XC007NM)

*Hydric soil rating:* No

##### **Upton**

*Percent of map unit:*

*Ecological site:* Shallow (R042XC025NM)

*Hydric soil rating:* No

##### **Atoka**

*Percent of map unit:*

*Ecological site:* Loamy (R042XC007NM)

*Hydric soil rating:* No

## **Data Source Information**

Soil Survey Area: Eddy Area, New Mexico

Survey Area Data: Version 14, Sep 12, 2018

BLM SERIAL #:

COMPANY REFERENCE:

### 3.4 Seed Mixture 3, for Shallow Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)\* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed\* per acre:

<u>Species</u>	<u>lb/acre</u>
Plains Bristlegrass ( <i>Setaria magrostachya</i> )	1.0
Green Spangletop ( <i>Leptochloa dubia</i> )	2.0
Side oats Grama ( <i>Bouteloua curtipendula</i> )	5.0

\*Pounds of pure live seed: Pounds of seed x percent purity x percent germination = pounds pure live seed

## Appendix D





PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

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November 30, 2018

CLAIR GONZALES

TETRA TECH

901 WEST WALL STREET , STE 100

MIDLAND, TX 79701

RE: BIG PAPI FEDERAL COM #012H

Enclosed are the results of analyses for samples received by the laboratory on 11/29/18 15:40.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/ga/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/ga/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Total Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**TETRA TECH  
901 WEST WALL STREET , STE 100  
MIDLAND TX, 79701Project: BIG PAPI FEDERAL COM #012H  
Project Number: 212C -MD - 01500  
Project Manager: CLAIR GONZALES  
Fax To: (432) 682-3946Reported:  
30-Nov-18 16:01

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH - 1 ( 4' )	H803507-01	Soil	29-Nov-18 00:00	29-Nov-18 15:40
BH - 3 ( 3' )	H803507-02	Soil	29-Nov-18 00:00	29-Nov-18 15:40
BH - 4 ( 3' )	H803507-03	Soil	29-Nov-18 00:00	29-Nov-18 15:40
BH - 5 ( 3' )	H803507-04	Soil	29-Nov-18 00:00	29-Nov-18 15:40
BH - 6 ( 3' )	H803507-05	Soil	29-Nov-18 00:00	29-Nov-18 15:40
BH - 7 ( 3' )	H803507-06	Soil	29-Nov-18 00:00	29-Nov-18 15:40
BH - 8 ( 3' )	H803507-07	Soil	29-Nov-18 00:00	29-Nov-18 15:40
SW - W2	H803507-08	Soil	29-Nov-18 00:00	29-Nov-18 15:40
SW - E	H803507-09	Soil	29-Nov-18 00:00	29-Nov-18 15:40

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**TETRA TECH  
901 WEST WALL STREET , STE 100  
MIDLAND TX, 79701Project: BIG PAPI FEDERAL COM #012H  
Project Number: 212C -MD - 01500  
Project Manager: CLAIR GONZALES  
Fax To: (432) 682-3946Reported:  
30-Nov-18 16:01**BH - 1 ( 4' )**  
**H803507-01 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>160</b>		16.0	mg/kg	4	8112913	AC	30-Nov-18	4500-Cl-B	
-----------------	------------	--	------	-------	---	---------	----	-----------	-----------	--

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

TETRA TECH  
901 WEST WALL STREET , STE 100  
MIDLAND TX, 79701

Project: BIG PAPI FEDERAL COM #012H  
Project Number: 212C -MD - 01500  
Project Manager: CLAIR GONZALES  
Fax To: (432) 682-3946

Reported:  
30-Nov-18 16:01

### BH - 3 ( 3' ) H803507-02 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	96.0		16.0	mg/kg	4	8112913	AC	30-Nov-18	4500-Cl-B	
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#### Petroleum Hydrocarbons by GC FID

GRO C6-C10*	<10.0		10.0	mg/kg	1	8113001	MS	30-Nov-18	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	8113001	MS	30-Nov-18	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	8113001	MS	30-Nov-18	8015B	

Surrogate: 1-Chlorooctane 82.0 % 41-142 8113001 MS 30-Nov-18 8015B

Surrogate: 1-Chlorooctadecane 85.2 % 37.6-147 8113001 MS 30-Nov-18 8015B

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Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

TETRA TECH  
901 WEST WALL STREET , STE 100  
MIDLAND TX, 79701

Project: BIG PAPI FEDERAL COM #012H  
Project Number: 212C -MD - 01500  
Project Manager: CLAIR GONZALES  
Fax To: (432) 682-3946

Reported:  
30-Nov-18 16:01

### BH - 4 ( 3' ) H803507-03 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

### Cardinal Laboratories

#### Inorganic Compounds

Chloride	192		16.0	mg/kg	4	8112913	AC	30-Nov-18	4500-Cl-B	
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#### Petroleum Hydrocarbons by GC FID

GRO C6-C10*	<10.0		10.0	mg/kg	1	8113001	MS	30-Nov-18	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	8113001	MS	30-Nov-18	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	8113001	MS	30-Nov-18	8015B	
Surrogate: 1-Chlorooctane			84.8 %	41-142		8113001	MS	30-Nov-18	8015B	
Surrogate: 1-Chlorooctadecane			89.7 %	37.6-147		8113001	MS	30-Nov-18	8015B	

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Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

TETRA TECH  
901 WEST WALL STREET , STE 100  
MIDLAND TX, 79701

Project: BIG PAPI FEDERAL COM #012H  
Project Number: 212C -MD - 01500  
Project Manager: CLAIR GONZALES  
Fax To: (432) 682-3946

Reported:  
30-Nov-18 16:01

### BH - 5 ( 3' ) H803507-04 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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### Cardinal Laboratories

#### Inorganic Compounds

Chloride	2400		16.0	mg/kg	4	8112913	AC	30-Nov-18	4500-Cl-B	
----------	------	--	------	-------	---	---------	----	-----------	-----------	--

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10*	<10.0		10.0	mg/kg	1	8113001	MS	30-Nov-18	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	8113001	MS	30-Nov-18	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	8113001	MS	30-Nov-18	8015B	

Surrogate: 1-Chlorooctane 95.9 % 41-142 8113001 MS 30-Nov-18 8015B

Surrogate: 1-Chlorooctadecane 101 % 37.6-147 8113001 MS 30-Nov-18 8015B

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**TETRA TECH  
901 WEST WALL STREET , STE 100  
MIDLAND TX, 79701Project: BIG PAPI FEDERAL COM #012H  
Project Number: 212C -MD - 01500  
Project Manager: CLAIR GONZALES  
Fax To: (432) 682-3946Reported:  
30-Nov-18 16:01**BH - 6 ( 3' )**  
**H803507-05 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>1840</b>		16.0	mg/kg	4	8112913	AC	30-Nov-18	4500-Cl-B	
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Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

TETRA TECH  
901 WEST WALL STREET , STE 100  
MIDLAND TX, 79701

Project: BIG PAPI FEDERAL COM #012H  
Project Number: 212C -MD - 01500  
Project Manager: CLAIR GONZALES  
Fax To: (432) 682-3946

Reported:  
30-Nov-18 16:01

### BH - 7 ( 3' ) H803507-06 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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### Cardinal Laboratories

#### Inorganic Compounds

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Chloride	1180		16.0	mg/kg	4	8112913	AC	30-Nov-18	4500-Cl-B	

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10*	<10.0		10.0	mg/kg	1	8113001	MS	30-Nov-18	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	8113001	MS	30-Nov-18	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	8113001	MS	30-Nov-18	8015B	
Surrogate: 1-Chlorooctane			90.6 %	41-142		8113001	MS	30-Nov-18	8015B	
Surrogate: 1-Chlorooctadecane			98.3 %	37.6-147		8113001	MS	30-Nov-18	8015B	

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**TETRA TECH  
901 WEST WALL STREET , STE 100  
MIDLAND TX, 79701Project: BIG PAPI FEDERAL COM #012H  
Project Number: 212C -MD - 01500  
Project Manager: CLAIR GONZALES  
Fax To: (432) 682-3946Reported:  
30-Nov-18 16:01**BH - 8 ( 3' )**  
**H803507-07 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	--------------------	-------	----------	-------	---------	----------	--------	-------

**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>1140</b>		16.0	mg/kg	4	8112913	AC	30-Nov-18	4500-Cl-B	
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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**TETRA TECH  
901 WEST WALL STREET , STE 100  
MIDLAND TX, 79701Project: BIG PAPI FEDERAL COM #012H  
Project Number: 212C -MD - 01500  
Project Manager: CLAIR GONZALES  
Fax To: (432) 682-3946Reported:  
30-Nov-18 16:01**SW - W2**  
**H803507-08 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

Chloride	672		16.0	mg/kg	4	8112913	AC	30-Nov-18	4500-Cl-B	
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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**TETRA TECH  
901 WEST WALL STREET , STE 100  
MIDLAND TX, 79701Project: BIG PAPI FEDERAL COM #012H  
Project Number: 212C -MD - 01500  
Project Manager: CLAIR GONZALES  
Fax To: (432) 682-3946Reported:  
30-Nov-18 16:01**SW - E**  
**H803507-09 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

Chloride	368		16.0	mg/kg	4	8112913	AC	30-Nov-18	4500-Cl-B	
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Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 TETRA TECH  
 901 WEST WALL STREET , STE 100  
 MIDLAND TX, 79701

 Project: BIG PAPI FEDERAL COM #012H  
 Project Number: 212C -MD - 01500  
 Project Manager: CLAIR GONZALES  
 Fax To: (432) 682-3946

 Reported:  
 30-Nov-18 16:01

**Inorganic Compounds - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 8112913 - General Prep - Wet Chem</b>									
<b>Blank (8112913-BLK1)</b>				Prepared & Analyzed: 29-Nov-18					
Chloride	ND	16.0	mg/kg						
<b>LCS (8112913-BS1)</b>				Prepared & Analyzed: 29-Nov-18					
Chloride	400	16.0	mg/kg	400	100	80-120			
<b>LCS Dup (8112913-BSD1)</b>				Prepared & Analyzed: 29-Nov-18					
Chloride	400	16.0	mg/kg	400	100	80-120	0.00	20	

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Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

TETRA TECH  
901 WEST WALL STREET , STE 100  
MIDLAND TX, 79701

Project: BIG PAPI FEDERAL COM #012H  
Project Number: 212C -MD - 01500  
Project Manager: CLAIR GONZALES  
Fax To: (432) 682-3946

Reported:  
30-Nov-18 16:01

### Petroleum Hydrocarbons by GC FID - Quality Control

#### Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
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#### Batch 8113001 - General Prep - Organics

##### Blank (8113001-BLK1)

Prepared & Analyzed: 30-Nov-18

GRO C6-C10	ND	10.0	mg/kg						
DRO >C10-C28	ND	10.0	mg/kg						
EXT DRO >C28-C36	ND	10.0	mg/kg						
Total TPH C6-C28	ND	10.0	mg/kg						
Surrogate: 1-Chlorooctane	49.9		mg/kg	50.0		99.8	41-142		
Surrogate: 1-Chlorooctadecane	50.2		mg/kg	50.0		100	37.6-147		

##### LCS (8113001-BS1)

Prepared & Analyzed: 30-Nov-18

GRO C6-C10	228	10.0	mg/kg	200		114	76.5-133		
DRO >C10-C28	246	10.0	mg/kg	200		123	72.9-138		
Total TPH C6-C28	474	10.0	mg/kg	400		119	78-132		
Surrogate: 1-Chlorooctane	52.7		mg/kg	50.0		105	41-142		
Surrogate: 1-Chlorooctadecane	55.5		mg/kg	50.0		111	37.6-147		

##### LCS Dup (8113001-BSD1)

Prepared & Analyzed: 30-Nov-18

GRO C6-C10	211	10.0	mg/kg	200		105	76.5-133	8.01	20.6
DRO >C10-C28	232	10.0	mg/kg	200		116	72.9-138	5.69	20.6
Total TPH C6-C28	443	10.0	mg/kg	400		111	78-132	6.80	18
Surrogate: 1-Chlorooctane	52.4		mg/kg	50.0		105	41-142		
Surrogate: 1-Chlorooctadecane	54.3		mg/kg	50.0		109	37.6-147		

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager

101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

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**Indemnified by:** Cardnet **Indemnified by:** Cardnet  
**Date:** 12/1/2014

Delivered By: (Circle One)	Time:	Sample Condition Cool <input type="checkbox"/> Intact <input type="checkbox"/> Type <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	CHECKED BY: (Initials)

10:15

KUSIT

Stephena. Reyes @ textatech.com

# **Analytical Report 605899**

## **for Tetra Tech- Midland**

**Project Manager: Clair Gonzales**

**COG-Big Papi Fed Com #12H**

**212C-MD-01500**

**20-NOV-18**

Collected By: Client



**1211 W. Florida Ave, Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-18-28), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-18)

Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)

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

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

Xenco-Atlanta (LELAP Lab ID #04176)

Xenco-Tampa: Florida (E87429)

Xenco-Lakeland: Florida (E84098)



20-NOV-18

Project Manager: **Clair Gonzales**  
**Tetra Tech- Midland**  
901 West Wall ST  
Midland, TX 79701

Reference: XENCO Report No(s): **605899**  
**COG-Big Papi Fed Com #12H**  
Project Address: Eddy Co, NM

**Clair Gonzales:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 605899. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

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

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 605899 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

**Kelsey Brooks**

Project Manager

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## Tetra Tech- Midland, Midland, TX

COG-Big Papi Fed Com #12H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
BG #1 (0-1')	S	11-16-18 00:00		605899-001
BG #1 (1-1.5')	S	11-16-18 00:00		605899-002
BG #1 (2-2.5')	S	11-16-18 00:00		605899-003
Sidewall West 1	S	11-16-18 00:00		605899-004
Sidewall West 2	S	11-16-18 00:00		605899-005
Sidewall South	S	11-16-18 00:00		605899-006
Sidewall East	S	11-16-18 00:00		605899-007
Sidewall North	S	11-16-18 00:00		605899-008
Bottom Hole #1 (3'BEB)	S	11-16-18 00:00		605899-009
Bottom Hole #2 (3' BEB	S	11-16-18 00:00		605899-010
Bottom Hole #3 (BEB 2')	S	11-16-18 00:00		605899-011
Bottom Hole #4 (BEB 2')	S	11-16-18 00:00		605899-012
Bottom Hole #5 (BEB 2')	S	11-16-18 00:00		605899-013
Bottom Hole #6 (BEB 2')	S	11-16-18 00:00		605899-014
Bottom Hole #7 (BEB 2')	S	11-16-18 00:00		605899-015
Bottom Hole #8 (BEB 2')	S	11-16-18 09:03		605899-016



## CASE NARRATIVE

*Client Name: Tetra Tech- Midland*

*Project Name: COG-Big Papi Fed Com #12H*

Project ID: 212C-MD-01500  
Work Order Number(s): 605899

Report Date: 20-NOV-18  
Date Received: 11/19/2018

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**Sample receipt non conformances and comments:**

None

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

None

**Analytical non conformances and comments:**

Batch: LBA-3070282 BTEX by EPA 8021B

Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 605899-007,605899-006.

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



# Certificate of Analysis Summary 605899

Tetra Tech- Midland, Midland, TX

Project Name: COG-Big Papi Fed Com #12H



Project Id: 212C-MD-01500

Contact: Clair Gonzales

Project Location: Eddy Co, NM

Date Received in Lab: Mon Nov-19-18 08:50 am

Report Date: 20-NOV-18

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	605899-001	605899-002	605899-003	605899-004	605899-005	605899-006
	<i>Field Id:</i>	BG #1 (0-1')	BG #1 (1-1.5')	BG #1 (2-2.5')	Sidewall West 1	Sidewall West 2	Sidewall South
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Nov-16-18 00:00	Nov-16-18 00:00	Nov-16-18 00:00	Nov-16-18 00:00	Nov-16-18 00:00	Nov-16-18 00:00
<b>BTEX by EPA 8021B</b>	<i>Extracted:</i>				Nov-19-18 10:00	Nov-19-18 10:00	Nov-19-18 10:00
	<i>Analyzed:</i>				Nov-19-18 13:11	Nov-19-18 13:30	Nov-19-18 13:50
	<i>Units/RL:</i>				mg/kg RL	mg/kg RL	mg/kg RL
Benzene					<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199
Toluene					<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199
Ethylbenzene					<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199
m,p-Xylenes					<0.00403 0.00403	<0.00402 0.00402	<0.00398 0.00398
o-Xylene					<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199
Total Xylenes					<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199
Total BTEX					<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199
<b>Chloride by EPA 300</b>	<i>Extracted:</i>	Nov-19-18 12:00	Nov-19-18 12:00	Nov-19-18 12:00	Nov-19-18 12:00	Nov-19-18 12:00	Nov-19-18 12:00
	<i>Analyzed:</i>	Nov-19-18 18:34	Nov-19-18 18:40	Nov-19-18 18:47	Nov-19-18 18:53	Nov-19-18 18:59	Nov-19-18 19:05
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		14.6 4.98	<4.99 4.99	<4.99 4.99	66.1 4.95	2970 25.0	27.4 4.99
<b>TPH by SW8015 Mod</b>	<i>Extracted:</i>				Nov-19-18 10:00	Nov-19-18 10:00	Nov-19-18 10:00
	<i>Analyzed:</i>				Nov-19-18 12:49	Nov-19-18 13:44	Nov-20-18 07:18
	<i>Units/RL:</i>				mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)					<15.0 15.0	<15.0 15.0	<15.0 15.0
Diesel Range Organics (DRO)					<15.0 15.0	50.2 15.0	<15.0 15.0
Motor Oil Range Hydrocarbons (MRO)					<15.0 15.0	<15.0 15.0	<15.0 15.0
Total TPH					<15.0 15.0	50.2 15.0	<15.0 15.0

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

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Version: 1.9%

Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 605899

Tetra Tech- Midland, Midland, TX

Project Name: COG-Big Papi Fed Com #12H



Project Id: 212C-MD-01500

Contact: Clair Gonzales

Project Location: Eddy Co, NM

Date Received in Lab: Mon Nov-19-18 08:50 am

Report Date: 20-NOV-18

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	605899-007	605899-008	605899-009	605899-010	605899-011	605899-012
	<i>Field Id:</i>	Sidewall East	Sidewall North	Bottom Hole #1 (3'BEB)	Bottom Hole #2 (3' BEB)	Bottom Hole #3 (BEB 2')	Bottom Hole #4 (BEB 2')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Nov-16-18 00:00	Nov-16-18 00:00	Nov-16-18 00:00	Nov-16-18 00:00	Nov-16-18 00:00	Nov-16-18 00:00
<b>BTEX by EPA 8021B</b>	<i>Extracted:</i>	Nov-19-18 10:00	Nov-19-18 10:00	Nov-19-18 10:00	Nov-19-18 10:00	Nov-19-18 10:00	Nov-19-18 10:00
	<i>Analyzed:</i>	Nov-19-18 14:09	Nov-19-18 14:29	Nov-19-18 14:49	Nov-19-18 15:08	Nov-19-18 15:28	Nov-19-18 15:47
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00200 0.00200	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199	<0.00200 0.00200
Toluene		<0.00200 0.00200	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199	<0.00200 0.00200
Ethylbenzene		<0.00200 0.00200	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199	<0.00200 0.00200
m,p-Xylenes		<0.00399 0.00399	<0.00401 0.00401	<0.00403 0.00403	<0.00402 0.00402	<0.00398 0.00398	0.00566 0.00399
o-Xylene		<0.00200 0.00200	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199	0.00322 0.00200
Total Xylenes		<0.00200 0.00200	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199	0.00888 0.00200
Total BTEX		<0.00200 0.00200	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199	0.00888 0.00200
<b>Chloride by EPA 300</b>	<i>Extracted:</i>	Nov-19-18 12:00	Nov-19-18 12:00	Nov-19-18 12:00	Nov-19-18 16:30	Nov-19-18 16:30	Nov-19-18 16:30
	<i>Analyzed:</i>	Nov-19-18 19:11	Nov-19-18 19:17	Nov-19-18 19:24	Nov-19-18 23:40	Nov-19-18 23:58	Nov-20-18 00:05
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		979 5.00	51.3 4.96	1750 24.9	9.15 4.96	1440 24.8	2140 24.9
<b>TPH by SW8015 Mod</b>	<i>Extracted:</i>	Nov-19-18 10:00	Nov-19-18 10:00	Nov-19-18 10:00	Nov-19-18 10:00	Nov-19-18 10:00	Nov-19-18 10:00
	<i>Analyzed:</i>	Nov-19-18 14:21	Nov-19-18 14:40	Nov-19-18 14:58	Nov-19-18 15:17	Nov-19-18 15:35	Nov-19-18 15:54
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9	<15.0 15.0	<14.9 14.9
Diesel Range Organics (DRO)		<15.0 15.0	<15.0 15.0	36.9 15.0	<14.9 14.9	176 15.0	131 14.9
Motor Oil Range Hydrocarbons (MRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9	20.7 15.0	22.0 14.9
Total TPH		<15.0 15.0	<15.0 15.0	36.9 15.0	<14.9 14.9	197 15.0	153 14.9

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

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Version: 1.9%

Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 605899

Tetra Tech- Midland, Midland, TX

Project Name: COG-Big Papi Fed Com #12H



**Project Id:** 212C-MD-01500  
**Contact:** Clair Gonzales  
**Project Location:** Eddy Co, NM

**Date Received in Lab:** Mon Nov-19-18 08:50 am  
**Report Date:** 20-NOV-18  
**Project Manager:** Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	605899-013	605899-014	605899-015	605899-016		
	<i>Field Id:</i>	Bottom Hole #5 (BEB 2')	Bottom Hole #6 (BEB 2')	Bottom Hole #7 (BEB 2')	Bottom Hole #8 (BEB 2')		
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL		
	<i>Sampled:</i>	Nov-16-18 00:00	Nov-16-18 00:00	Nov-16-18 00:00	Nov-16-18 09:03		
<b>BTEX by EPA 8021B</b>	<i>Extracted:</i>	Nov-19-18 10:00	Nov-19-18 10:00	Nov-19-18 10:00	Nov-19-18 10:00		
	<i>Analyzed:</i>	Nov-19-18 17:07	Nov-19-18 17:26	Nov-19-18 17:46	Nov-19-18 18:05		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Benzene		<0.00200 0.00200	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199		
Toluene		0.00624 0.00200	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199		
Ethylbenzene		<0.00200 0.00200	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199		
m,p-Xylenes		0.0200 0.00401	0.00641 0.00398	0.00568 0.00398	<0.00398 0.00398		
o-Xylene		0.00897 0.00200	0.00349 0.00199	0.00338 0.00199	<0.00199 0.00199		
Total Xylenes		0.0290 0.00200	0.00990 0.00199	0.00906 0.00199	<0.00199 0.00199		
Total BTEX		0.0352 0.00200	0.00990 0.00199	0.00906 0.00199	<0.00199 0.00199		
<b>Chloride by EPA 300</b>	<i>Extracted:</i>	Nov-19-18 16:30	Nov-19-18 16:30	Nov-19-18 16:30	Nov-19-18 16:30		
	<i>Analyzed:</i>	Nov-20-18 00:11	Nov-20-18 00:17	Nov-20-18 00:36	Nov-20-18 00:42		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Chloride		2000 24.8	4940 50.0	2030 24.9	1720 24.9		
<b>TPH by SW8015 Mod</b>	<i>Extracted:</i>	Nov-19-18 10:00	Nov-19-18 10:00	Nov-19-18 10:00	Nov-19-18 10:00		
	<i>Analyzed:</i>	Nov-19-18 16:12	Nov-19-18 17:07	Nov-19-18 17:25	Nov-19-18 17:44		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Gasoline Range Hydrocarbons (GRO)		16.8 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0		
Diesel Range Organics (DRO)		283 15.0	28.2 15.0	204 15.0	41.7 15.0		
Motor Oil Range Hydrocarbons (MRO)		21.4 15.0	<15.0 15.0	29.7 15.0	<15.0 15.0		
Total TPH		321 15.0	28.2 15.0	234 15.0	41.7 15.0		

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Version: 1.9%

Kelsey Brooks  
Project Manager

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

\*\* Surrogate recovered outside laboratory control limit.

**BRL** Below Reporting Limit.

**RL** Reporting Limit

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

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

**DL** Method Detection Limit

**NC** Non-Calculable

**SMP** Client Sample      **BLK** Method Blank

**BKS/LCS** Blank Spike/Laboratory Control Sample      **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

**MD/SD** Method Duplicate/Sample Duplicate      **MS** Matrix Spike      **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

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



# Form 2 - Surrogate Recoveries

Project Name: COG-Big Papi Fed Com #12H

Work Orders : 605899,

Lab Batch #: 3070265

Sample: 605899-004 / SMP

Project ID: 212C-MD-01500

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 12:49

## SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	92.7	99.9	93	70-135	
o-Terphenyl	48.8	50.0	98	70-135	

Lab Batch #: 3070282

Sample: 605899-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 13:11

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0328	0.0300	109	70-130	
4-Bromofluorobenzene	0.0383	0.0300	128	70-130	

Lab Batch #: 3070282

Sample: 605899-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 13:30

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0331	0.0300	110	70-130	
4-Bromofluorobenzene	0.0384	0.0300	128	70-130	

Lab Batch #: 3070265

Sample: 605899-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 13:44

## SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	92.2	99.7	92	70-135	
o-Terphenyl	49.9	49.9	100	70-135	

Lab Batch #: 3070282

Sample: 605899-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 13:50

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0323	0.0300	108	70-130	
4-Bromofluorobenzene	0.0394	0.0300	131	70-130	**

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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





# Form 2 - Surrogate Recoveries

Project Name: COG-Big Papi Fed Com #12H

Work Orders : 605899,

Lab Batch #: 3070282

Sample: 605899-007 / SMP

Project ID: 212C-MD-01500

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 14:09

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0299	0.0300	100	70-130	
4-Bromofluorobenzene	0.0392	0.0300	131	70-130	**

Lab Batch #: 3070265

Sample: 605899-007 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 14:21

## SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	91.3	99.9	91	70-135	
o-Terphenyl	49.0	50.0	98	70-135	

Lab Batch #: 3070282

Sample: 605899-008 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 14:29

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0327	0.0300	109	70-130	
4-Bromofluorobenzene	0.0375	0.0300	125	70-130	

Lab Batch #: 3070265

Sample: 605899-008 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 14:40

## SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	92.7	99.8	93	70-135	
o-Terphenyl	49.3	49.9	99	70-135	

Lab Batch #: 3070282

Sample: 605899-009 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 14:49

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0330	0.0300	110	70-130	
4-Bromofluorobenzene	0.0389	0.0300	130	70-130	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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



# Form 2 - Surrogate Recoveries

Project Name: COG-Big Papi Fed Com #12H

Work Orders : 605899,

Lab Batch #: 3070265

Sample: 605899-009 / SMP

Project ID: 212C-MD-01500

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 14:58

## SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	91.0	99.9	91	70-135	
o-Terphenyl	48.0	50.0	96	70-135	

Lab Batch #: 3070282

Sample: 605899-010 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 15:08

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0329	0.0300	110	70-130	
4-Bromofluorobenzene	0.0368	0.0300	123	70-130	

Lab Batch #: 3070265

Sample: 605899-010 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 15:17

## SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	88.7	99.6	89	70-135	
o-Terphenyl	45.9	49.8	92	70-135	

Lab Batch #: 3070282

Sample: 605899-011 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 15:28

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0331	0.0300	110	70-130	
4-Bromofluorobenzene	0.0360	0.0300	120	70-130	

Lab Batch #: 3070265

Sample: 605899-011 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 15:35

## SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	93.4	99.8	94	70-135	
o-Terphenyl	54.3	49.9	109	70-135	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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



# Form 2 - Surrogate Recoveries

Project Name: COG-Big Papi Fed Com #12H

Work Orders : 605899,

Lab Batch #: 3070282

Sample: 605899-012 / SMP

Project ID: 212C-MD-01500

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 15:47

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0321	0.0300	107	70-130	
4-Bromofluorobenzene	0.0354	0.0300	118	70-130	

Lab Batch #: 3070265

Sample: 605899-012 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 15:54

## SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	89.7	99.6	90	70-135	
o-Terphenyl	51.1	49.8	103	70-135	

Lab Batch #: 3070265

Sample: 605899-013 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 16:12

## SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	92.1	99.7	92	70-135	
o-Terphenyl	50.5	49.9	101	70-135	

Lab Batch #: 3070282

Sample: 605899-013 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 17:07

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0311	0.0300	104	70-130	
4-Bromofluorobenzene	0.0350	0.0300	117	70-130	

Lab Batch #: 3070265

Sample: 605899-014 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 17:07

## SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	90.9	99.9	91	70-135	
o-Terphenyl	47.9	50.0	96	70-135	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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



# Form 2 - Surrogate Recoveries

Project Name: COG-Big Papi Fed Com #12H

Work Orders : 605899,

Project ID: 212C-MD-01500

Lab Batch #: 3070265

Sample: 605899-015 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 17:25

## SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	90.7	100	91	70-135	
o-Terphenyl	49.9	50.0	100	70-135	

Lab Batch #: 3070282

Sample: 605899-014 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 17:26

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0328	0.0300	109	70-130	
4-Bromofluorobenzene	0.0344	0.0300	115	70-130	

Lab Batch #: 3070265

Sample: 605899-016 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 17:44

## SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	91.9	99.8	92	70-135	
o-Terphenyl	48.2	49.9	97	70-135	

Lab Batch #: 3070282

Sample: 605899-015 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 17:46

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0320	0.0300	107	70-130	
4-Bromofluorobenzene	0.0362	0.0300	121	70-130	

Lab Batch #: 3070282

Sample: 605899-016 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 18:05

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0331	0.0300	110	70-130	
4-Bromofluorobenzene	0.0332	0.0300	111	70-130	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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



# Form 2 - Surrogate Recoveries

Project Name: COG-Big Papi Fed Com #12H

Work Orders : 605899,

Lab Batch #: 3070265

Sample: 605899-006 / SMP

Project ID: 212C-MD-01500

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/20/18 07:18

## SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	92.3	99.7	93	70-135	
o-Terphenyl	48.2	49.9	97	70-135	

Lab Batch #: 3070265

Sample: 7666533-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/19/18 11:54

## SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	91.4	100	91	70-135	
o-Terphenyl	48.2	50.0	96	70-135	

Lab Batch #: 3070282

Sample: 7666551-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/19/18 12:31

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0311	0.0300	104	70-130	
4-Bromofluorobenzene	0.0323	0.0300	108	70-130	

Lab Batch #: 3070282

Sample: 7666551-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/19/18 10:53

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0297	0.0300	99	70-130	
4-Bromofluorobenzene	0.0328	0.0300	109	70-130	

Lab Batch #: 3070265

Sample: 7666533-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/19/18 12:12

## SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	120	100	120	70-135	
o-Terphenyl	52.1	50.0	104	70-135	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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



# Form 2 - Surrogate Recoveries

Project Name: COG-Big Papi Fed Com #12H

Work Orders : 605899,

Lab Batch #: 3070282

Sample: 7666551-1-BSD / BSD

Project ID: 212C-MD-01500

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/19/18 11:13

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0299	0.0300	100	70-130	
4-Bromofluorobenzene	0.0340	0.0300	113	70-130	

Lab Batch #: 3070265

Sample: 7666533-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/20/18 07:00

## SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	124	100	124	70-135	
o-Terphenyl	53.6	50.0	107	70-135	

Lab Batch #: 3070282

Sample: 605899-004 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 11:32

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0304	0.0300	101	70-130	
4-Bromofluorobenzene	0.0365	0.0300	122	70-130	

Lab Batch #: 3070265

Sample: 605899-004 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 13:07

## SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	123	99.9	123	70-135	
o-Terphenyl	53.5	50.0	107	70-135	

Lab Batch #: 3070282

Sample: 605899-004 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 11:52

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0304	0.0300	101	70-130	
4-Bromofluorobenzene	0.0373	0.0300	124	70-130	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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



## Form 2 - Surrogate Recoveries

Project Name: COG-Big Papi Fed Com #12H

Work Orders : 605899,

Lab Batch #: 3070265

Sample: 605899-004 SD / MSD

Project ID: 212C-MD-01500

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/18 13:26

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	114	100	114	70-135	
o-Terphenyl	50.8	50.0	102	70-135	

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

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



## BS / BSD Recoveries



**Project Name: COG-Big Papi Fed Com #12H**

**Work Order #: 605899**

**Project ID: 212C-MD-01500**

**Analyst: ALJ**

**Date Prepared: 11/19/2018**

**Date Analyzed: 11/19/2018**

**Lab Batch ID: 3070282**

**Sample: 7666551-1-BKS**

**Batch #: 1**

**Matrix: Solid**

**Units: mg/kg**

### BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

<b>BTEX by EPA 8021B</b>	<b>Blank Sample Result [A]</b>	<b>Spike Added [B]</b>	<b>Blank Spike Result [C]</b>	<b>Blank Spike %R [D]</b>	<b>Spike Added [E]</b>	<b>Blank Spike Duplicate Result [F]</b>	<b>Blk. Spk Dup. %R [G]</b>	<b>RPD %</b>	<b>Control Limits %R</b>	<b>Control Limits %RPD</b>	<b>Flag</b>
<b>Analytes</b>											
Benzene	<0.00199	0.0996	0.121	121	0.100	0.120	120	1	70-130	35	
Toluene	<0.00199	0.0996	0.105	105	0.100	0.105	105	0	70-130	35	
Ethylbenzene	<0.00199	0.0996	0.112	112	0.100	0.112	112	0	70-130	35	
m,p-Xylenes	<0.00398	0.199	0.219	110	0.200	0.219	110	0	70-130	35	
o-Xylene	<0.00199	0.0996	0.106	106	0.100	0.106	106	0	70-130	35	

**Analyst: CHE**

**Date Prepared: 11/19/2018**

**Date Analyzed: 11/19/2018**

**Lab Batch ID: 3070189**

**Sample: 7666465-1-BKS**

**Batch #: 1**

**Matrix: Solid**

**Units: mg/kg**

### BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

<b>Chloride by EPA 300</b>	<b>Blank Sample Result [A]</b>	<b>Spike Added [B]</b>	<b>Blank Spike Result [C]</b>	<b>Blank Spike %R [D]</b>	<b>Spike Added [E]</b>	<b>Blank Spike Duplicate Result [F]</b>	<b>Blk. Spk Dup. %R [G]</b>	<b>RPD %</b>	<b>Control Limits %R</b>	<b>Control Limits %RPD</b>	<b>Flag</b>
<b>Analytes</b>											
Chloride	<5.00	250	262	105	250	272	109	4	90-110	20	

Relative Percent Difference RPD =  $200 * |(C-F)/(C+F)|$

Blank Spike Recovery [D] =  $100 * (C)/[B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F)/[E]$

All results are based on MDL and Validated for QC Purposes





## BS / BSD Recoveries



Project Name: COG-Big Papi Fed Com #12H

Work Order #: 605899

Project ID: 212C-MD-01500

Analyst: CHE

Date Prepared: 11/19/2018

Date Analyzed: 11/19/2018

Lab Batch ID: 3070271

Sample: 7666504-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

### BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<5.00	250	263	105	250	264	106	0	90-110	20	

Analyst: ARM

Date Prepared: 11/19/2018

Date Analyzed: 11/19/2018

Lab Batch ID: 3070265

Sample: 7666533-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

### BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	1010	101	1000	1010	101	0	70-135	20	
Diesel Range Organics (DRO)	<8.13	1000	1040	104	1000	1080	108	4	70-135	20	

Relative Percent Difference RPD =  $200 * |(C-F)/(C+F)|$

Blank Spike Recovery [D] =  $100 * (C)/[B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F)/[E]$

All results are based on MDL and Validated for QC Purposes



# Form 3 - MS / MSD Recoveries



Project Name: COG-Big Papi Fed Com #12H

Work Order #: 605899

Project ID: 212C-MD-01500

Lab Batch ID: 3070282

QC- Sample ID: 605899-004 S

Batch #: 1 Matrix: Soil

Date Analyzed: 11/19/2018

Date Prepared: 11/19/2018

Analyst: ALJ

Reporting Units: mg/kg

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00339	0.169	0.146	86	0.172	0.182	106	22	70-130	35	
Toluene	<0.000772	0.169	0.128	76	0.172	0.164	95	25	70-130	35	
Ethylbenzene	<0.000957	0.169	0.135	80	0.172	0.178	103	27	70-130	35	
m,p-Xylenes	<0.00172	0.339	0.267	79	0.345	0.350	101	27	70-130	35	
o-Xylene	<0.00339	0.169	0.129	76	0.172	0.171	99	28	70-130	35	

Lab Batch ID: 3070189

QC- Sample ID: 605743-001 S

Batch #: 1 Matrix: Soil

Date Analyzed: 11/19/2018

Date Prepared: 11/19/2018

Analyst: CHE

Reporting Units: mg/kg

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	45.0	251	302	102	251	303	103	0	90-110	20	

Lab Batch ID: 3070189

QC- Sample ID: 605914-003 S

Batch #: 1 Matrix: Soil

Date Analyzed: 11/19/2018

Date Prepared: 11/19/2018

Analyst: CHE

Reporting Units: mg/kg

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	327	248	571	98	248	568	97	1	90-110	20	

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

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

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

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



# Form 3 - MS / MSD Recoveries



Project Name: COG-Big Papi Fed Com #12H

Work Order #: 605899

Project ID: 212C-MD-01500

Lab Batch ID: 3070271

QC- Sample ID: 605800-004 S

Batch #: 1 Matrix: Soil

Date Analyzed: 11/20/2018

Date Prepared: 11/19/2018

Analyst: CHE

Reporting Units: mg/kg

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	21.0	248	277	103	248	273	102	1	90-110	20	

Lab Batch ID: 3070271

QC- Sample ID: 605899-010 S

Batch #: 1 Matrix: Soil

Date Analyzed: 11/19/2018

Date Prepared: 11/19/2018

Analyst: CHE

Reporting Units: mg/kg

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	9.15	248	265	103	248	263	102	1	90-110	20	

Lab Batch ID: 3070265

QC- Sample ID: 605899-004 S

Batch #: 1 Matrix: Soil

Date Analyzed: 11/19/2018

Date Prepared: 11/19/2018

Analyst: ARM

Reporting Units: mg/kg

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<7.99	999	1010	101	1000	968	97	4	70-135	20	
Diesel Range Organics (DRO)	<8.12	999	1040	104	1000	1010	101	3	70-135	20	

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

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

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

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

# Analysis Request of Custody Record



## Tetra Tech, Inc.

4000 N. Big Spring Street, Ste  
401 Midland, Texas 79705  
Tel (432) 682-4559  
Fax (432) 682-3946

Client Name: COG		Site Manager: Clair Gonzales	
Project Name: Big Papi Fed Com #12H			
Project Location: Eddy Co, NM		Project #: 212C-MD-01500	
Invoice to: COG - Ike Taveres			
Receiving Laboratory: Xenco		Sampler Signature: Conner Moehring	
Comments:			

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING		MATRIX	PRESERVATIVE METHOD					# CONTAINERS	FILTERED (Y/N)	LAB USE ONLY	REMARKS:	
		DATE	TIME		WATER	SOIL	HCL	HNO <sub>3</sub>	ICE					None
BG #1 (0-1')		11/16/2018		X				X			1 N			
BG #1 (1-1.5')		11/16/2018		X				X			1 N			
BG #1 (2-2.5')		11/16/2018		X				X			1 N			
Sidewall West 1		11/16/2018		X				X			1 N			
Sidewall West 2		11/16/2018		X				X			1 N			
Sidewall South		11/16/2018		X				X			1 N			
Sidewall East		11/16/2018		X				X			1 N			
Sidewall North		11/16/2018		X				X			1 N			
Bottom Hole #1 (3' BEB)		11/16/2018		X				X			1 N			
Bottom Hole #2 (3' BEB)		11/16/2018		X				X			1 N			

Relinquished by: <i>[Signature]</i> Date: 11-19-18 Time: 0850	Received by: <i>[Signature]</i> Date: 11/19/18 Time: 0850
Relinquished by: <i>[Signature]</i> Date: 11-19-18 Time: 0850	Received by: <i>[Signature]</i> Date: 11/19/18 Time: 0850

ANALYSIS REQUEST (Circle or Specify Method No.) BTEX 8021B BTEX 8260B TPH TX1005 (Ext to C35) TPH 8015M (GRO - DRO - ORO - MRO) PAH 8270C Total Metals Ag As Ba Cd Cr Pb Se Hg TCLP Metals Ag As Ba Cd Cr Pb Se Hg TCLP Volatiles TCLP Semi Volatiles RCI GC/MS Vol. 8260B / 624 GC/MS Semi. Vol. 8270C/625 PCB's 8082 / 608 NORM PLM (Asbestos) Chloride Chloride Sulfate TDS General Water Chemistry (see attached list) Anion/Cation Balance	LAB USE ONLY REMARKS: <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> RUSH: Same Day 24 hr 48 hr 72 hr <input type="checkbox"/> Push Charges Authorized <input type="checkbox"/> Special Report Limits or TRRP Report
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Tel (432) 682-4559  
Fax (432) 682-3946

LAB USE ONLY

Sample Temperature

REMARKS:

☐ STANDARD

☒ RUSH: Same Day (24 hr) 48 hr 72 hr

☐ Rush Charges Authorized

☐ Special Report Limits or TRAP Report

0-3/02

1/8

1058099



# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland

Date/ Time Received: 11/19/2018 08:50:00 AM

Work Order #: 605899

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

### Sample Receipt Checklist

### Comments

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

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

Analyst:

PH Device/Lot#:

Checklist completed by:

*Brianna Teel*

Brianna Teel

Date: 11/19/2018

Checklist reviewed by:

*Kelsey Brooks*

Kelsey Brooks

Date: 11/19/2018

# **Analytical Report 607472**

## **for Tetra Tech- Midland**

**Project Manager: Clair Gonzales**

**Big Papi Federal COM #012H**

**212C-MD-01500**

**06-DEC-18**

Collected By: Client



**1211 W. Florida Ave, Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-18-28), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-18)

Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)

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

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

Xenco-Atlanta (LELAP Lab ID #04176)

Xenco-Tampa: Florida (E87429)

Xenco-Lakeland: Florida (E84098)



06-DEC-18

Project Manager: **Clair Gonzales**

**Tetra Tech- Midland**

901 West Wall ST

Midland, TX 79701

Reference: XENCO Report No(s): **607472**

**Big Papi Federal COM #012H**

Project Address: Eddy County, New Mexico

**Clair Gonzales:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 607472. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

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

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 607472 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

**Kelsey Brooks**

Project Manager

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

*Certified and approved by numerous States and Agencies.*

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

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





## Sample Cross Reference 607472



### Tetra Tech- Midland, Midland, TX

Big Papi Federal COM #012H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Bottomhole #5 (5'BEB)	S	12-04-18 00:00		607472-001
Bottomhole #6 (5'BEB)	S	12-04-18 00:00		607472-002
Bottomhole #7 (5'BEB)	S	12-04-18 00:00		607472-003
Bottomhole #8 (5'BEB)	S	12-04-18 00:00		607472-004
SW-W2	S	12-04-18 00:00		607472-005



## CASE NARRATIVE

*Client Name: Tetra Tech- Midland*

*Project Name: Big Papi Federal COM #012H*

Project ID: 212C-MD-01500  
Work Order Number(s): 607472

Report Date: 06-DEC-18  
Date Received: 12/05/2018

---

**Sample receipt non conformances and comments:**

None

---

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

None



# Certificate of Analysis Summary 607472

Tetra Tech- Midland, Midland, TX

Project Name: Big Papi Federal COM #012H



**Project Id:** 212C-MD-01500  
**Contact:** Clair Gonzales  
**Project Location:** Eddy County, New Mexico

**Date Received in Lab:** Wed Dec-05-18 09:41 am  
**Report Date:** 06-DEC-18  
**Project Manager:** Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	607472-001	607472-002	607472-003	607472-004	607472-005	
	<i>Field Id:</i>	Bottomhole #5 (5'BEB)	Bottomhole #6 (5'BEB)	Bottomhole #7 (5'BEB)	Bottomhole #8 (5'BEB)	SW-W2	
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	
	<i>Sampled:</i>	Dec-04-18 00:00	Dec-04-18 00:00	Dec-04-18 00:00	Dec-04-18 00:00	Dec-04-18 00:00	
Chloride by EPA 300	<i>Extracted:</i>	Dec-05-18 14:00	Dec-05-18 14:00	Dec-05-18 14:00	Dec-05-18 14:00	Dec-05-18 17:05	
	<i>Analyzed:</i>	Dec-06-18 09:12	Dec-06-18 09:19	Dec-06-18 09:25	Dec-06-18 09:31	Dec-06-18 09:37	
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Chloride		123 5.03	565 4.99	301 5.00	408 5.00	443 5.00	

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

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Kelsey Brooks  
Project Manager

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

\*\* Surrogate recovered outside laboratory control limit.

**BRL** Below Reporting Limit.

**RL** Reporting Limit

**MDL** Method Detection Limit

**SDL** Sample Detection Limit

**LOD** Limit of Detection

**PQL** Practical Quantitation Limit

**SQL** Method Quantitation Limit

**LOQ** Limit of Quantitation

**DL** Method Detection Limit

**NC** Non-Calculable

**SMP** Client Sample

**BLK**

Method Blank

**BKS/LCS** Blank Spike/Laboratory Control Sample

**BKSD/LCSD**

Blank Spike Duplicate/Laboratory Control Sample Duplicate

**MD/SD** Method Duplicate/Sample Duplicate

**MS**

Matrix Spike

**MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

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



## BS / BSD Recoveries



**Project Name: Big Papi Federal COM #012H**

**Work Order #:** 607472

**Project ID:** 212C-MD-01500

**Analyst:** CHE

**Date Prepared:** 12/05/2018

**Date Analyzed:** 12/06/2018

**Lab Batch ID:** 3071846

**Sample:** 7667435-1-BKS

**Batch #:** 1

**Matrix:** Solid

**Units:** mg/kg

### BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<5.00	250	274	110	250	275	110	0	90-110	20	

**Analyst:** CHE

**Date Prepared:** 12/05/2018

**Date Analyzed:** 12/06/2018

**Lab Batch ID:** 3071847

**Sample:** 7667436-1-BKS

**Batch #:** 1

**Matrix:** Solid

**Units:** mg/kg

### BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<5.00	250	271	108	250	266	106	2	90-110	20	

Relative Percent Difference RPD =  $200 * |(C-F)/(C+F)|$

Blank Spike Recovery [D] =  $100 * (C)/[B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F)/[E]$

All results are based on MDL and Validated for QC Purposes



# Form 3 - MS / MSD Recoveries



Project Name: Big Papi Federal COM #012H

Work Order #: 607472

Project ID: 212C-MD-01500

Lab Batch ID: 3071846

QC- Sample ID: 607536-003 S

Batch #: 1 Matrix: Soil

Date Analyzed: 12/06/2018

Date Prepared: 12/05/2018

Analyst: CHE

Reporting Units: mg/kg

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	280	248	539	104	248	558	112	3	90-110	20	X

Lab Batch ID: 3071846

QC- Sample ID: 607537-010 S

Batch #: 1 Matrix: Soil

Date Analyzed: 12/06/2018

Date Prepared: 12/05/2018

Analyst: CHE

Reporting Units: mg/kg

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	37.8	249	328	117	249	289	101	13	90-110	20	X

Lab Batch ID: 3071847

QC- Sample ID: 607336-026 S

Batch #: 1 Matrix: Soil

Date Analyzed: 12/06/2018

Date Prepared: 12/05/2018

Analyst: CHE

Reporting Units: mg/kg

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	25.4	248	279	102	248	293	108	5	90-110	20	

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

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

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

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



# Form 3 - MS / MSD Recoveries



Project Name: Big Papi Federal COM #012H

Work Order # : 607472

Project ID: 212C-MD-01500

Lab Batch ID: 3071847

QC- Sample ID: 607336-036 S

Batch #: 1 Matrix: Soil

Date Analyzed: 12/06/2018

Date Prepared: 12/05/2018

Analyst: CHE

Reporting Units: mg/kg

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	57.6	250	327	108	250	335	111	2	90-110	20	X

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

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

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.



1007472

ORIGINAL COPY





# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



**Client:** Tetra Tech- Midland

**Date/ Time Received:** 12/05/2018 09:41:00 AM

**Work Order #:** 607472

**Acceptable Temperature Range:** 0 - 6 degC

**Air and Metal samples Acceptable Range:** Ambient

**Temperature Measuring device used :** R8

### Sample Receipt Checklist

### Comments

#1 *Temperature of cooler(s)?	3.4
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 Custody Seals intact on sample bottles?	N/A
#6 *Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	N/A
#18 Water VOC samples have zero headspace?	N/A

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

Analyst:

PH Device/Lot#:

**Checklist completed by:**

*Brianna Teel*

Brianna Teel

Date: 12/05/2018

**Checklist reviewed by:**

*Kelsey Brooks*

Kelsey Brooks

Date: 12/05/2018