



SPORT ENVIRONMENTAL SERVICES, LLC
502 N. Big Spring Street, Midland, Texas 79701
Business: 432.683.1100 Fax: 888.500.0622

January 5, 2018

INFORMATION ONLY

Ms. Olivia Yu
Environmental Specialist
New Mexico Oil Conservation Division
olivia.yu@state.nm.us
sent via email

Re: **1RP-4870: Vanguard Operating - NOWATA "AGR" State 1 Release
Proposed Remediation Work Plan and Associated Documents
Location: 32.75737° N, -103.45714° W
Lea County, New Mexico**

Dear Ms. Yu:

Sport Environmental is submitting, on behalf of Vanguard Operating, LLC, the proposed remediation work plan, revised C-141, completed NMOCD Site Ranking Criteria Form, and other associated documents for your review. We request your review and a determination of your approval for the plan detailed herein.

Revised C-141 and Associated Data Submittal

On November 9, 2017, John Terry, Foreman, submitted a C-141 on behalf of Vanguard Operating, LLC for a heater treater release (fire tube gasket blowout) for the NOWATA "AGR" State 1 location. The NMOCD (Maxey G. Brown) was immediately notified of the release as documented on the updated C-141 (attached).

NMOCD Site Ranking Criteria Form and Acceptable Clean-up Limit(s) Determination

In addition, attached please find the OCD Site Ranking Criteria Form with the calculated ranking score and acceptable concentrations highlighted (in blue). The ranking score calculated for the NOWATA "AGR" State 1 release site was ten (10).

As shown below, the **Acceptable Clean-Up Criteria** for the site are:

Constituent	Clean-Up Criteria Limit (ppm)
Benzene	10
BTEX	50
TPH	1,000
Chlorides	600 (per NMOCD)

Proposed Remediation Work Plan and Request for Approval

Initial site characterization was performed at the release site so an appropriate remediation plan could be compiled for NMOCD submittal. Attached please find the lab report and a site plan that includes the locations where initial samples were collected at the Nowata site. On November 14, 2017, four (4) soil samples were collected. Each sample consisted of a five-point aliquot composite. The sample locations are shown by group within the blue and yellow portions of the attachment.

As part of the Proposed Remediation Work Plan, we will ensure that Benzene, BTEX, TPH, and Chlorides will be addressed and composite samples collected to verify successful clean-up of the release site to the limits listed in the table above. Laboratory analysis of Benzene, BTEX, and TPH concentrations will be performed by an approved and NELAP accredited laboratory using Methods 8021B and SW8015Mod, respectively.

Chlorides will be addressed as part of the site reclamation with particular attention paid to the root zone (top four feet of soil). Soil with chloride concentrations greater than 600 ppm within the root zone will be removed and properly disposed of at an approved facility. Delineation of chlorides will be performed using field titrations to 250 ppm and confirmed with laboratory analysis of composite samples from the excavation walls and 4' excavation floor (Method EPA 300). Feathering of the site with native soils and reseeding with a NMOCD approved seed mixture will be performed after cleanup confirmation.

If acceptable to the NMOCD, we will schedule the field work portion of the job, perform the appropriate one-call and provide the required 48-hour notification to the OCD. Please advise us of the approval or disapproval of the remediation work plan addressed above.

Please feel free to email or call if you have any questions regarding the proposed work plan. We are available at (432) 683-1100.

Sincerely,

Cianna J. Logie

Cianna J. Logie, MS, REP, CESCO
Environmental Associate
Sport Environmental Services, LLC

cc: Ms. Amber Groves
Hobbs District Resource Manager
New Mexico State Land Office
agroves@slo.state.nm.us
Sent via email

List of Associated Documents

- Site Ranking Criteria Form
- Nowata Release Map
- Revised Form C-141
- Laboratory Analytical Results
- Soil Sample Location Map
- Water Well Location Map

Site Information and Metrics

NMOCD Notified: **Maxey G Brown, OCD**
C-141 dated November 9, 2017




SITE: NOWATA "AGR" State 1		Assigned Site Reference #: 1RP-4870	
Company: Vanguard Operating, LLC			
Street Address: 4001 Penbrook, Ste. 201			
Mailing Address: Same			
City, State, Zip: Odessa, Texas 79761			
Representative: Deborah S. Moore, Sport Environmental Services, LLC			
Representative Telephone: (432) 683-1100			
Telephone: (432) 248-8154			
Fluid volume released (bbls): 40 bbl		Recovered (bbls): 35 bbls	
>25 bbls: Notify NMOCD verbally within 24 hrs and submit form C-141 within 15 days. (Also applies to unauthorized releases >500 mcf Natural Gas)			
5-25 bbls: Submit form C-141 within 15 days (Also applies to unauthorized releases of 50-500 mcf Natural Gas)			
Leak, Spill, or Pit (LSP) Name: NOWATA "AGR" State 1 Release			
Source of Contamination: heater treater release (fire tube gasket blowout)			
Land Owner, i.e., BLM, ST, Fee, Other: State			
LSP Dimensions: Refer to attached impact area determination site map			
LSP Area: 20,080 sq. ft. (Release Area is 7,446 sq. ft. and Mist Area is 12,634 sq. ft.)			
Location of Reference Point (RP): (RP = release site)			
Location distance and direction from RP (RP = release site)			
Latitude: 32.75737 degrees N			
Longitude: -103.45714 degrees W			
Elevation above mean sea level: 3933			
Feet from South Section Line: 860			
Feet from East Section Line: 990			
Location - Unit or 1/4:		Unit Letter:	
Location - Section: 9			
Location - Township: 18S			
Location - Range: 35E			
Surface water body within 1000' radius of site: No			
Surface water body within 1000' radius of site: No			
Domestic water wells within 1000' radius of site: No			
Domestic water wells within 1000' radius of site: No			
Agricultural water wells within 1000' radius of site: No			
Agricultural water wells within 1000' radius of site: No			
Public water supply wells within 1000' radius of site: No			
Depth from land surface to ground water (DG): 72 feet			
Depth of Contamination (DC): exact depth unknown, believed to be shallow due to small release volume and surface footprint			
Depth to ground water (DG - DC = DtGW):			
1. Ground Water		2. Wellhead Protection Area	
If Depth to GW <50 feet: 20 points		If <1000' from water source, or, <200' from private domestic water source: 20 points	
If Depth to GW 50 to 99 feet: 10 points		If >1000' from water source, or, >200' from private domestic water source: 0 points	
If Depth to GW >100 feet: 0 points			
Ground Water Score = 10		Wellhead Protection Area Score = 0	
Site Rank (1+2+3)= 10			
Total Site Ranking Score and Acceptable Concentrations			
Parameter	>19	10 - 19	0 - 9
Benzene ¹	10 ppm	10 ppm	10 ppm
BTEX ¹	50 ppm	50 ppm	50 ppm
TPH	100 ppm	1000 ppm	5000 ppm
¹ 100 ppm field VOC headspace measurement may be substituted for lab analysis			



Vanguard Operating, LLC

Nowata "AGR" State #1
32.75737, -103.45714

Legend

-  Excavated Soil - 38 yrds
-  Mist Area - 12,634 sq ft
-  Release Area - 7,446 sq ft



District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised April 3, 2017

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Vanguard Operating	Contact John Terry
4001 Penbrook Odessa TX	Telephone No. 575-631-6933
Facility Name NOWATA "AGR" State 1	Facility Type. Battery

Surface Owner	Mineral Owner	API No.
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LOCATION OF RELEASE

860' FSL	990' FEL	Sec 9	18s	35e	Lea	#E-7653	
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Latitude _____ Longitude _____ NAD83

NATURE OF RELEASE

Type of Release Oil and Water	Volume of Release 40	Volume Recovered 35
Source of Release Fire tube gasket (heater treater)	Date and Hour of Occurrence 9am	Date and Hour of Discovery 10am
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Maxi Brown	
By Whom? John Terry	Date and Hour 11/9/17 10 am	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

Notified Maxi with NMOCD immediately we had a fire tube gasket blow out on heater treater. Called vacuum truck and had ground spill picked up. Called backhoe to scrape up oily dirt and put on plastic liner so cows could not get into.

Describe Area Affected and Cleanup Action Taken.*

Inside dyke around heater fluid was standing that we picked up. Overspray effected area around heater treater. Called vacuum truck and had ground spill picked up. Called backhoe to scrape up oily dirt and put on plastic liner so cows could not get into.

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

OIL CONSERVATION DIVISION

Signature: John Terry

Printed Name: John Terry

Title: Foreman

E-mail Address: jterry@vnrenergy.com

Date: 11/9/17

Phone: 575-631-6933

Approved by Environmental Specialist:

Approval Date:

Expiration Date:

Conditions of Approval:

Attached ☐

* Attach Additional Sheets If Necessary

Analytical Report 568452
for
Sport Environmental Services, LLC

Project Manager: Debi Moore
Vanguard Natural Resources Nowata "AGR"

State #1 Release

22-NOV-17

Collected By: Client



1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):
Texas (T104704295-17-15), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)
Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-17-13)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)



22-NOV-17

Project Manager: **Debi Moore**
Sport Environmental Services, LLC
502 North Big Spring Street
Midland, TX 79701

Reference: XENCO Report No(s): **568452**
Vanguard Natural Resources Nowata "AGR"
Project Address: Lea County, NM

Debi Moore:

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) 568452. 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. 568452 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,

Brandi Ritcherson

Project Manager

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Sample Cross Reference 568452



Sport Environmental Services, LLC, Midland, TX

Vanguard Natural Resources Nowata "AGR"

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Nowata-Inside-S001	S	11-14-17 10:50		568452-001
Nowata-Outside-S001	S	11-14-17 11:10		568452-002
Nowata-N Mist-S001	S	11-14-17 11:20		568452-003
Nowata-S Mist-S001	S	11-14-17 13:00		568452-004



CASE NARRATIVE

Client Name: Sport Environmental Services, LLC

Project Name: Vanguard Natural Resources Nowata "AGR"

Project ID: *State #1 Release*
Work Order Number(s): *568452*

Report Date: *22-NOV-17*
Date Received: *11/15/2017*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3034021 BTEX by EPA 8021

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

Batch: LBA-3034040 BTEX by EPA 8021

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



Certificate of Analysis Summary 568452

Sport Environmental Services, LLC, Midland, TX

Project Name: Vanguard Natural Resources Nowata "AGR"



Project Id: State #1 Release
Contact: Debi Moore
Project Location: Lea County, NM

Date Received in Lab: Wed Nov-15-17 12:56 pm
Report Date: 22-NOV-17
Project Manager: Brandi Ritcherson

<i>Analysis Requested</i>	<i>Lab Id:</i>	568452-001	568452-002	568452-003	568452-004		
	<i>Field Id:</i>	Nowata-Inside-S001	Nowata-Outside-S001	Nowata-N Mist-S001	Nowata-S Mist-S001		
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL		
	<i>Sampled:</i>	Nov-14-17 10:50	Nov-14-17 11:10	Nov-14-17 11:20	Nov-14-17 13:00		
BTEX by EPA 8021	<i>Extracted:</i>	Nov-21-17 09:30	Nov-21-17 09:30	Nov-19-17 09:30	Nov-19-17 09:30		
	<i>Analyzed:</i>	Nov-21-17 17:06	Nov-21-17 16:36	Nov-20-17 12:24	Nov-20-17 12:43		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Benzene		7.74 0.992	3.90 0.998	ND 0.00202	ND 0.00202		
Toluene		146 0.992	86.7 0.998	ND 0.00202	ND 0.00202		
Ethylbenzene		197 0.992	190 0.998	ND 0.00202	ND 0.00202		
m,p-Xylenes		143 1.98	141 2.00	ND 0.00403	ND 0.00404		
o-Xylene		66.3 0.992	70.8 0.998	ND 0.00202	ND 0.00202		
Total Xylenes		209 0.992	212 0.998	ND 0.00202	ND 0.00202		
Total BTEX		560 0.992	492 0.998	ND 0.00202	ND 0.00202		
Inorganic Anions by EPA 300	<i>Extracted:</i>	Nov-20-17 16:30	Nov-20-17 16:30	Nov-20-17 16:30	Nov-20-17 16:30		
	<i>Analyzed:</i>	Nov-20-17 23:04	Nov-20-17 23:22	Nov-20-17 23:28	Nov-20-17 23:34		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Chloride		3780 24.8	5220 49.2	1910 24.8	2110 24.8		
TPH by SW8015 Mod	<i>Extracted:</i>	Nov-17-17 10:00	Nov-17-17 10:00	Nov-17-17 10:00	Nov-16-17 09:00		
	<i>Analyzed:</i>	Nov-17-17 20:02	Nov-17-17 20:22	Nov-17-17 20:43	Nov-16-17 20:15		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Gasoline Range Hydrocarbons		2840 75.0	3130 75.0	ND 15.0	ND 15.0		
Diesel Range Organics		16300 75.0	17700 75.0	268 15.0	646 15.0		
Oil Range Hydrocarbons		2580 75.0	2420 75.0	82.5 15.0	104 15.0		
Total TPH		21700 75.0	23300 75.0	351 15.0	750 15.0		

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

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Version: 1.9%

Brandi Ritcherson

Brandi Ritcherson
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

+ NELAC certification not offered for this compound.

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

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 9701 Harry Hines Blvd , Dallas, TX 75220
 5332 Blackberry Drive, San Antonio TX 78238
 1211 W Florida Ave, Midland, TX 79701
 2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282

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(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(432) 563-1800	(432) 563-1713
(602) 437-0330	



Form 2 - Surrogate Recoveries

Project Name: Vanguard Natural Resources Nowata "AGR"

Work Orders : 568452,

Lab Batch #: 3033814

Sample: 568452-004 / SMP

Project ID: State #1 Release

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/16/17 20:15

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	75.4	99.8	76	70-135	
o-Terphenyl	40.4	49.9	81	70-135	

Lab Batch #: 3033954

Sample: 568452-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/17/17 20:02

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	108	100	108	70-135	
o-Terphenyl	39.9	50.0	80	70-135	

Lab Batch #: 3033954

Sample: 568452-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/17/17 20:22

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	96.8	100	97	70-135	
o-Terphenyl	39.3	50.0	79	70-135	

Lab Batch #: 3033954

Sample: 568452-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/17/17 20:43

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	89.6	100	90	70-135	
o-Terphenyl	43.9	50.0	88	70-135	

Lab Batch #: 3034021

Sample: 568452-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/20/17 12:24

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0292	0.0300	97	80-120	
4-Bromofluorobenzene	0.0319	0.0300	106	80-120	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

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

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



Form 2 - Surrogate Recoveries

Project Name: Vanguard Natural Resources Nowata "AGR"

Work Orders : 568452,

Lab Batch #: 3034021

Sample: 568452-004 / SMP

Project ID: State #1 Release
Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/20/17 12:43

SURROGATE RECOVERY STUDY					
BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0297	0.0300	99	80-120	
4-Bromofluorobenzene	0.0274	0.0300	91	80-120	

Lab Batch #: 3034040

Sample: 568452-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/21/17 16:36

SURROGATE RECOVERY STUDY					
BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0254	0.0300	85	80-120	
4-Bromofluorobenzene	0.0279	0.0300	93	80-120	

Lab Batch #: 3034040

Sample: 568452-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/21/17 17:06

SURROGATE RECOVERY STUDY					
BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0244	0.0300	81	80-120	
4-Bromofluorobenzene	0.0270	0.0300	90	80-120	

Lab Batch #: 3033814

Sample: 7634594-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/16/17 11:33

SURROGATE RECOVERY STUDY					
TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	92.9	100	93	70-135	
o-Terphenyl	48.3	50.0	97	70-135	

Lab Batch #: 3033954

Sample: 7634732-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/17/17 09:07

SURROGATE RECOVERY STUDY					
TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	92.5	100	93	70-135	
o-Terphenyl	49.1	50.0	98	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: Vanguard Natural Resources Nowata "AGR"

Work Orders : 568452,

Lab Batch #: 3034021

Sample: 7634704-1-BLK / BLK

Project ID: State #1 Release

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/19/17 20:37

SURROGATE RECOVERY STUDY

BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0283	0.0300	94	80-120	
4-Bromofluorobenzene	0.0257	0.0300	86	80-120	

Lab Batch #: 3034040

Sample: 7634836-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/21/17 13:44

SURROGATE RECOVERY STUDY

BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0303	0.0300	101	80-120	
4-Bromofluorobenzene	0.0291	0.0300	97	80-120	

Lab Batch #: 3033814

Sample: 7634594-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/16/17 11:53

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	101	100	101	70-135	
o-Terphenyl	57.1	50.0	114	70-135	

Lab Batch #: 3033954

Sample: 7634732-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/17/17 09:27

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	107	100	107	70-135	
o-Terphenyl	49.6	50.0	99	70-135	

Lab Batch #: 3034021

Sample: 7634704-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/19/17 18:44

SURROGATE RECOVERY STUDY

BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0302	0.0300	101	80-120	
4-Bromofluorobenzene	0.0300	0.0300	100	80-120	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

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

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



Form 2 - Surrogate Recoveries

Project Name: Vanguard Natural Resources Nowata "AGR"

Work Orders : 568452,

Lab Batch #: 3034040

Sample: 7634836-1-BKS / BKS

Project ID: State #1 Release

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/21/17 11:51

SURROGATE RECOVERY STUDY

BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0287	0.0300	96	80-120	
4-Bromofluorobenzene	0.0296	0.0300	99	80-120	

Lab Batch #: 3033814

Sample: 7634594-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/16/17 12:12

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	100	100	100	70-135	
o-Terphenyl	55.0	50.0	110	70-135	

Lab Batch #: 3033954

Sample: 7634732-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/17/17 09:48

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	100	100	100	70-135	
o-Terphenyl	45.5	50.0	91	70-135	

Lab Batch #: 3034021

Sample: 7634704-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/19/17 19:03

SURROGATE RECOVERY STUDY

BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0296	0.0300	99	80-120	
4-Bromofluorobenzene	0.0279	0.0300	93	80-120	

Lab Batch #: 3034040

Sample: 7634836-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/21/17 12:10

SURROGATE RECOVERY STUDY

BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0255	0.0300	85	80-120	
4-Bromofluorobenzene	0.0263	0.0300	88	80-120	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

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

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



Form 2 - Surrogate Recoveries

Project Name: Vanguard Natural Resources Nowata "AGR"

Work Orders : 568452,

Lab Batch #: 3033814

Sample: 568179-013 S / MS

Project ID: State #1 Release

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/16/17 13:12

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	104	99.9	104	70-135	
o-Terphenyl	56.4	50.0	113	70-135	

Lab Batch #: 3033954

Sample: 568424-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/17/17 13:14

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	100	100	100	70-135	
o-Terphenyl	46.9	50.0	94	70-135	

Lab Batch #: 3034021

Sample: 568342-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/17 19:21

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0289	0.0300	96	80-120	
4-Bromofluorobenzene	0.0276	0.0300	92	80-120	

Lab Batch #: 3034040

Sample: 568546-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/21/17 12:29

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0283	0.0300	94	80-120	
4-Bromofluorobenzene	0.0277	0.0300	92	80-120	

Lab Batch #: 3033814

Sample: 568179-013 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/16/17 13:32

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	106	99.9	106	70-135	
o-Terphenyl	46.5	50.0	93	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: Vanguard Natural Resources Nowata "AGR"

Work Orders : 568452,

Lab Batch #: 3033954

Sample: 568424-001 SD / MSD

Project ID: State #1 Release

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/17/17 13:34

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	96.6	100	97	70-135	
o-Terphenyl	43.0	50.0	86	70-135	

Lab Batch #: 3034021

Sample: 568342-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/19/17 19:40

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0293	0.0300	98	80-120	
4-Bromofluorobenzene	0.0285	0.0300	95	80-120	

Lab Batch #: 3034040

Sample: 568546-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/21/17 12:48

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0322	0.0300	107	80-120	
4-Bromofluorobenzene	0.0328	0.0300	109	80-120	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

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

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



BS / BSD Recoveries



Project Name: Vanguard Natural Resources Nowata "AGR"

Work Order #: 568452

Project ID: State #1 Release

Analyst: ALJ

Date Prepared: 11/19/2017

Date Analyzed: 11/19/2017

Lab Batch ID: 3034021

Sample: 7634704-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Benzene	<0.00199	0.0996	0.105	105	0.100	0.0983	98	7	70-130	35	
Toluene	<0.00199	0.0996	0.0984	99	0.100	0.0945	95	4	70-130	35	
Ethylbenzene	<0.00199	0.0996	0.0996	100	0.100	0.0942	94	6	71-129	35	
m,p-Xylenes	<0.00398	0.199	0.192	96	0.200	0.184	92	4	70-135	35	
o-Xylene	<0.00199	0.0996	0.0947	95	0.100	0.0951	95	0	71-133	35	

Analyst: ALJ

Date Prepared: 11/21/2017

Date Analyzed: 11/21/2017

Lab Batch ID: 3034040

Sample: 7634836-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Benzene	<0.00198	0.0992	0.122	123	0.0996	0.104	104	16	70-130	35	
Toluene	<0.00198	0.0992	0.114	115	0.0996	0.0967	97	16	70-130	35	
Ethylbenzene	<0.00198	0.0992	0.117	118	0.0996	0.0994	100	16	71-129	35	
m,p-Xylenes	<0.00397	0.198	0.226	114	0.199	0.193	97	16	70-135	35	
o-Xylene	<0.00198	0.0992	0.112	113	0.0996	0.0973	98	14	71-133	35	

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

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

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

All results are based on MDL and Validated for QC Purposes



BS / BSD Recoveries



Project Name: Vanguard Natural Resources Nowata "AGR"

Work Order #: 568452

Project ID: State #1 Release

Analyst: JUM

Date Prepared: 11/20/2017

Date Analyzed: 11/20/2017

Lab Batch ID: 3033897

Sample: 7634738-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions 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	227	91	250	230	92	1	90-110	20	

Analyst: ARM

Date Prepared: 11/16/2017

Date Analyzed: 11/16/2017

Lab Batch ID: 3033814

Sample: 7634594-1-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	<15.0	1000	972	97	1000	954	95	2	70-135	35	
Diesel Range Organics	<15.0	1000	1020	102	1000	1010	101	1	70-135	35	

Analyst: JUM

Date Prepared: 11/17/2017

Date Analyzed: 11/17/2017

Lab Batch ID: 3033954

Sample: 7634732-1-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	<15.0	1000	1020	102	1000	942	94	8	70-135	35	
Diesel Range Organics	<15.0	1000	1090	109	1000	1010	101	8	70-135	35	

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

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

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

All results are based on MDL and Validated for QC Purposes



Form 3 - MS / MSD Recoveries



Project Name: Vanguard Natural Resources Nowata "AGR"

Work Order #: 568452

Project ID: State #1 Release

Lab Batch ID: 3034021

QC- Sample ID: 568342-001 S

Batch #: 1 Matrix: Soil

Date Analyzed: 11/19/2017

Date Prepared: 11/19/2017

Analyst: ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00202	0.101	0.0943	93	0.100	0.0908	91	4	70-130	35	
Toluene	<0.00202	0.101	0.0889	88	0.100	0.0845	85	5	70-130	35	
Ethylbenzene	<0.00202	0.101	0.0866	86	0.100	0.0855	86	1	71-129	35	
m,p-Xylenes	<0.00403	0.202	0.167	83	0.200	0.163	82	2	70-135	35	
o-Xylene	<0.00202	0.101	0.0832	82	0.100	0.0819	82	2	71-133	35	

Lab Batch ID: 3034040

QC- Sample ID: 568546-001 S

Batch #: 1 Matrix: Soil

Date Analyzed: 11/21/2017

Date Prepared: 11/21/2017

Analyst: ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00200	0.100	0.0942	94	0.0996	0.0959	96	2	70-130	35	
Toluene	<0.00200	0.100	0.0852	85	0.0996	0.0883	89	4	70-130	35	
Ethylbenzene	<0.00200	0.100	0.0860	86	0.0996	0.0823	83	4	71-129	35	
m,p-Xylenes	0.00654	0.200	0.169	81	0.199	0.162	78	4	70-135	35	
o-Xylene	<0.00200	0.100	0.0870	87	0.0996	0.0821	82	6	71-133	35	

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

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

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

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



Form 3 - MS / MSD Recoveries



Project Name: Vanguard Natural Resources Nowata "AGR"

Work Order #: 568452

Project ID: State #1 Release

Lab Batch ID: 3033897

QC- Sample ID: 568439-002 S

Batch #: 1 Matrix: Soil

Date Analyzed: 11/20/2017

Date Prepared: 11/20/2017

Analyst: JUM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions 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	118	247	372	103	247	363	99	2	90-110	20	

Lab Batch ID: 3033897

QC- Sample ID: 568440-006 S

Batch #: 1 Matrix: Soil

Date Analyzed: 11/20/2017

Date Prepared: 11/20/2017

Analyst: JUM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions 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	12.1	249	263	101	249	254	97	3	90-110	20	

Lab Batch ID: 3033814

QC- Sample ID: 568179-013 S

Batch #: 1 Matrix: Soil

Date Analyzed: 11/16/2017

Date Prepared: 11/16/2017

Analyst: ARM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons	<15.0	999	962	96	999	972	97	1	70-135	35	
Diesel Range Organics	<15.0	999	1050	105	999	1060	106	1	70-135	35	

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: Vanguard Natural Resources Nowata "AGR"

Work Order # : 568452

Project ID: State #1 Release

Lab Batch ID: 3033954

QC- Sample ID: 568424-001 S

Batch #: 1 **Matrix:** Soil

Date Analyzed: 11/17/2017

Date Prepared: 11/17/2017

Analyst: JUM

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	<15.0	1000	931	93	1000	915	92	2	70-135	35	
Diesel Range Organics	<15.0	1000	1010	101	1000	985	99	3	70-135	35	

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.



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Phoenix, Arizona (480-355-0900)

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Xenco Quote #		Xenco Job # 568452	
Client / Reporting Information		Analytical Information	
Company Name / Branch: Sport Environmental Company Address: 502 N Big Spring Midland, Tx 79701 Email: debi@sportenv.com cianna@sportenv.com (432) 683-1100 rbrady@sportenv.com clint@sportenv.com Project Contact: Debi Moore Samplers's Name: Ross Brady		Project Information Project Name/Number: Vanguard Natural Resources - Nowata "AGR" State #1 Release Project Location: Lea County, NM Invoice To: PO Number:	
No. Field ID / Point of Collection		Matrix Codes W = Water S = Soil/Sed/Solid GW = Ground Water DW = Drinking Water P = Product SW = Surface water SL = Sludge OW = Ocean/Sea Water WI = Wipe O = Oil WW = Waste Water A = Air	
Collection Sample Depth Date Time Matrix # of bottles HCl NaOH/Zn Acetate HNO3 H2SO4 NaOH NaHSO4 MeOH NONE		Number of preserved bottles BTEX TPH (SW 8015) CI	
1 Nowata - Inside - S001 0-3" 11/14/2017 1050 S 1 X X X X 2 Nowata - Outside - S001 0-2" 11/14/2017 1110 S 1 X X X X 3 Nowata - N Mist - S001 0-2" 11/14/2017 1120 S 1 X X X X 4 Nowata - S Mist - S001 0-2" 11/14/2017 1300 S 1 X X X X 5 6 7 8 9 10		Field Comments NM Methods ↑ NM methods	
Turnaround Time (Business days)		Data Deliverable Information	
<input type="checkbox"/> Same Day TAT <input checked="" type="checkbox"/> 5 Day TAT <input type="checkbox"/> Next Day EMERGENCY <input type="checkbox"/> 7 Day TAT <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> Contract TAT <input type="checkbox"/> 3 Day EMERGENCY		<input type="checkbox"/> Level II Std QC <input type="checkbox"/> Level IV (Full Data Pkg /raw data) <input type="checkbox"/> Level III Std QC+ Forms <input type="checkbox"/> TRRP Level IV <input type="checkbox"/> Level 3 (CLP Forms) <input type="checkbox"/> UST / RG -411 <input type="checkbox"/> TRRP Checklist	
TAT Starts Day received by Lab, if received by 5:00 pm		FED-EX / UPS: Tracking #	
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY			
Relinquished by Sampler: <i>[Signature]</i>		Received By: <i>[Signature]</i>	
Date Time: 11-15-17 12:56		Date Time: 11-15-17 12:56	
Relinquished by:		Relinquished By:	
Date Time:		Date Time:	
Received By:		Received By:	
Date Time:		Date Time:	
Relinquished by:		Relinquished By:	
Date Time:		Date Time:	
Received By:		Received By:	
Date Time:		Date Time:	
Relinquished by:		Relinquished By:	
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Received By:		Received By:	
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Date Time:		Date Time:	
Received By:		Received By:	
Date Time:		Date Time:	
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XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: Sport Environmental Services, LLC

Date/ Time Received: 11/15/2017 12:56:00 PM

Work Order #: 568452

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)?	3.6
#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)?	No
#18 Water VOC samples have zero headspace?	N/A

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

Analyst:

PH Device/Lot#:

Checklist completed by:

Shawnee Smith

Date: 11/15/2017

Checklist reviewed by:

Holly Taylor

Date: 11/15/2017

Nowata "AGR" State 1

Sample Location Map
32.75704, -103.45704

Legend





-  Misted Areas - 12,634 sq ft
-  Release Fluid - 7,446 sq ft
-  Sample Locations (0-2"bgs)
-  Sample Locations (0-3"bgs)
-  Stockpile - 38 yards

Google Earth



100 ft

Legend

-  Nowata Battery
-  Plugged Water Wells
-  Radius Circles
-  Water Wells

L 04931 - DTW=70'

L 04631 - DTW=60'

L 04591 - DTW=75'

L 04498 - DTW=70'

L 04250 - DTW=60'

L 04664 - DTW=70'

L 10294 - DTW=61'

L 07872 - DTW=62'

L 04206 - DTW=50'

L 08309 - DTW=49'

L 02350 - DTW=105'

L 02348 - DTW=105'

L 10304 - DTW=72'

L 06047 - DTW=65'

L 02676 - DTW=60'

L 05156 - DTW=90'

L 02675 - DTW=47'

L 02052 - DTW=72'

L 03171 - DTW=150'

L 09588 - DTW=84'

L 02677 - DTW=54'