

March 14, 2018

Project No. B18-031-2257

Mr. James Martin
WV DEP OFFICE OF OIL AND GAS
601 57th Street, SE
Charleston, WV 25304-2345

Surface Water Sampling Results Crane Fork Locations
Underground Injection Control (UIC) Class II
Permit No. UIC 2D10901433002
Located near Kopperston, Wyoming County, West Virginia

Dear Mr. Martin:

Alliance Consulting, Inc. (Alliance) herein submits the following documentation for surface water sampling associated with Nytis Exploration Company, LLC's (NYTIS) Underground Injection Control (UIC) Class II Injection Well (Permit No. UIC 2D10901433002). The surface water sampling for the two (2) locations requested by permit conditions set forth by the West Virginia Department of Environmental Protection (WVDEP). All analyses were performed by Research Environmental & Industrial Consultants, Inc. (REIC), located in Beaver, West Virginia and based on Part 13, Table 2 of the "Authorization to Operate and Underground Injection Control (UIC) Class II Injection Well" document. Two (2) samples were collected, one from the permit designated "upstream location" above the unloading area (sample I.D. LC-19 US) and the other "downstream location" below injection well LC-19 (sample I.D. LC-19 DS). The following are the sample location coordinates:

- LC-19 US – Latitude 37.788347, Longitude -81.506371
- LC-19 DS – Latitude 37.777211, Longitude -81.511569

A map designating the sample identification as well as location is included. Should you have any questions or require further clarification pertaining to our submittal, please call and we will be happy to discuss those matters with you.

Respectfully submitted,

ALLIANCE CONSULTING, INC.



Joseph M. Bailey
Project Scientist



Michael A. Zeto
Senior Project Manager

JMB/MZ:kjs

NYTIS UIC 2D10901433002

STREAM SAMPLE LOCATIONS

Legend

 SAMPLE ID LC-19



SAMPLE ID LC-19 US 37.788346° -81.506371°



SAMPLE ID LC-19 DS 37.777211° -81.511569°





REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
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Website: www.reiclabs.com

782 North Lee Highway
Lexington, VA 24450
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Tuesday, March 13, 2018

MR. JOE BAILEY
ALLIANCE CONSULTING INC
124 PHILPOTT LN
BEAVER, WV 25813

TEL: (304) 255-0491
FAX: (304) 255-4232

RE: B18-031-2257
Work Order #: 18030587
Dear MR. JOE BAILEY:

REI Consultants, Inc. received 3 sample(s) on 3/6/2018 for the analyses presented in the following report.

Sincerely,

Kathy Berry
Project Manager
(304) 250-6209

Client: ALLIANCE CONSULTING INC**Project:** B18-031-2257

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP and/or VELAP requirements for parameters clearly designated as PA, VA, PA/VA, or VELAP in the column labeled NELAP.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

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DEFINITIONS:

MCL: Maximum Contaminant Level

MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.

Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).

NA: Not Applicable

ND: Not Detected at the PQL or MDL

PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.

Qual: Qualifier that applies to the analyte reported.

TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.

Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:

X: Reported value exceeds required MCL

B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL

E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be considered estimated.

H: Holding time for preparation or analysis has been exceeded.

J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.

S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:

Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, NCDWQ 466, PADEP 68-00839, VADCLS(VELAP) 460148

Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839

Roanoke, VA: VADCLS(VELAP) 460150

Verona, VA: VADCLS(VELAP) 460151

Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 18030587

Date Reported: 3/13/2018
Original

Client:	ALLIANCE CONSULTING INC	Collection Date:	3/6/2018 10:00:00 AM
Project:	B18-031-2257	Date Received:	3/6/2018
Lab ID:	18030587-01A	Matrix:	Liquid
Client Sample ID:	LC-19 DS	Site ID:	CRANE FORK, WV

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Field/Miscellaneous Parameters			Method: FLD/MISC			Analyst:		
Conductivity	407			NA		?s		
pH	7.05			NA				
Temperature	8.4			NA		DEG C		
METALS BY ICP			Method: EPA 200.7 Rev. 4.4 (1994)			Analyst: JD		
Aluminum	0.339	0.006	0.100	NA		mg/L	3/8/2018 6:50 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	3/8/2018 6:50 PM	PA/VA
Barium	0.037	0.002	0.100	NA	J	mg/L	3/8/2018 6:50 PM	PA/VA
Calcium	33.0	0.050	1.00	NA		mg/L	3/8/2018 6:50 PM	PA/VA
Iron	0.152	0.010	0.100	NA		mg/L	3/8/2018 6:50 PM	PA/VA
Manganese	0.084	0.003	0.100	NA	J	mg/L	3/8/2018 6:50 PM	PA/VA
Sodium	9.71	0.100	1.00	NA		mg/L	3/8/2018 6:50 PM	PA/VA
Strontium	1.08	0.001	0.010	NA		mg/L	3/9/2018 10:33 AM	PA/VA
SEMI-VOLATILE RANGE ORGANICS			Method: SW8015C			Analyst: DC		
TPH (Diesel Range: C10 - C28)	ND	0.10	0.20	NA		mg/L	3/8/2018 8:25 PM	PA/VA
TPH (Oil Range: C22 - C36)	ND	0.10	0.20	NA		mg/L	3/8/2018 8:25 PM	VA
Surr: o-Terphenyl	82.8	NA	17.6-135	NA		%Rec	3/8/2018 8:25 PM	
VOLATILE RANGE ORGANICS			Method: SW8015C			Analyst: CB		
TPH (Gasoline Range: C6 - C10)	ND	0.250	0.500	NA		mg/L	3/8/2018 8:41 PM	PA/VA
Surr: 2,5-Dibromotoluene	99.9	NA	63-140	NA		%Rec	3/8/2018 8:41 PM	
VOLATILE ORGANIC COMPOUNDS			Method: SW8021B			Analyst: CB		
Benzene	ND	0.500	1.00	NA		µg/L	3/8/2018 8:41 PM	VA
Toluene	ND	0.500	1.00	NA		µg/L	3/8/2018 8:41 PM	VA
Ethylbenzene	ND	0.500	1.00	NA		µg/L	3/8/2018 8:41 PM	VA
m,p-Xylene	ND	1.00	2.00	NA		µg/L	3/8/2018 8:41 PM	VA
o-Xylene	ND	0.500	1.00	NA		µg/L	3/8/2018 8:41 PM	VA
Surr: 1,1,1-Trifluorotoluene	103	NA	65.6-132	NA		%Rec	3/8/2018 8:41 PM	
ANIONS by ION CHROMATOGRAPHY			Method: EPA 300.0, Rev.2.1 (1993)			Analyst: CF		
Bromide	ND	0.05	0.10	NA		mg/L	3/7/2018 11:29 PM	PA/VA
Chloride	1.98	0.30	1.00	NA		mg/L	3/7/2018 11:29 PM	PA/VA
Sulfate	133	5.00	25.0	NA		mg/L	3/8/2018 9:18 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 18030587

Date Reported: 3/13/2018
Original

Client: ALLIANCE CONSULTING INC
Project: B18-031-2257
Lab ID: 18030587-01A
Client Sample ID: LC-19 DS

Collection Date: 3/6/2018 10:00:00 AM
Date Received: 3/6/2018
Matrix: Liquid
Site ID: CRANE FORK, WV

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
TOTAL DISSOLVED SOLIDS			Method: SM2540 C-1997				Analyst: KY	
Total Dissolved Solids	282	5	10	NA		mg/L	3/7/2018 5:42 PM	PA/VA
TOTAL SUSPENDED SOLIDS			Method: SM2540 D-1997				Analyst: KY	
Total Suspended Solids	2	1	5	NA	J	mg/L	3/7/2018 4:30 PM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED:			Method: SM4500-H+-B-2000				Analyst: VS	
pH	6.88	NA	NA	NA	H	SU	3/9/2018 8:05 AM	
ORGANIC CARBON, TOTAL			Method: SM5310 C-2000				Analyst: VS	
Total Organic Carbon	0.54	0.20	1.00	NA	J	mg/L	3/8/2018 6:43 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 18030587

Date Reported: 3/13/2018
Original

Client:	ALLIANCE CONSULTING INC	Collection Date:	3/6/2018 11:30:00 AM
Project:	B18-031-2257	Date Received:	3/6/2018
Lab ID:	18030587-02A	Matrix:	Liquid
Client Sample ID:	LC-19 US	Site ID:	CRANE FORK, WV

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Field/Miscellaneous Parameters			Method: FLD/MISC			Analyst:		
Conductivity	221			NA		?s		
FieldSampler	JOE BAILEY			NA				
pH	6.56			NA				
Temperature	8.0			NA		DEG C		
METALS BY ICP			Method: EPA 200.7 Rev. 4.4 (1994)			Analyst: JD		
Aluminum	0.045	0.006	0.100	NA	J	mg/L	3/8/2018 6:53 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	3/8/2018 6:53 PM	PA/VA
Barium	0.060	0.002	0.100	NA	J	mg/L	3/8/2018 6:53 PM	PA/VA
Calcium	5.75	0.050	1.00	NA		mg/L	3/8/2018 6:53 PM	PA/VA
Iron	0.046	0.010	0.100	NA	J	mg/L	3/9/2018 12:32 PM	PA/VA
Manganese	ND	0.003	0.100	NA		mg/L	3/8/2018 6:53 PM	PA/VA
Sodium	23.4	0.100	1.00	NA		mg/L	3/8/2018 6:53 PM	PA/VA
Strontium	0.109	0.001	0.010	NA		mg/L	3/9/2018 10:36 AM	PA/VA
SEMI-VOLATILE RANGE ORGANICS			Method: SW8015C			Analyst: DC		
TPH (Diesel Range: C10 - C28)	ND	0.13	0.25	NA		mg/L	3/9/2018 10:01 AM	PA/VA
TPH (Oil Range: C22 - C36)	ND	0.13	0.25	NA		mg/L	3/9/2018 10:01 AM	VA
Surr: o-Terphenyl	59.8	NA	17.6-135	NA		%Rec	3/9/2018 10:01 AM	
VOLATILE RANGE ORGANICS			Method: SW8015C			Analyst: CB		
TPH (Gasoline Range: C6 - C10)	ND	0.250	0.500	NA		mg/L	3/8/2018 9:13 PM	PA/VA
Surr: 2,5-Dibromotoluene	106	NA	63-140	NA		%Rec	3/8/2018 9:13 PM	
VOLATILE ORGANIC COMPOUNDS			Method: SW8021B			Analyst: CB		
Benzene	ND	0.500	1.00	NA		µg/L	3/8/2018 9:13 PM	VA
Toluene	ND	0.500	1.00	NA		µg/L	3/8/2018 9:13 PM	VA
Ethylbenzene	ND	0.500	1.00	NA		µg/L	3/8/2018 9:13 PM	VA
m,p-Xylene	ND	1.00	2.00	NA		µg/L	3/8/2018 9:13 PM	VA
o-Xylene	ND	0.500	1.00	NA		µg/L	3/8/2018 9:13 PM	VA
Surr: 1,1,1-Trifluorotoluene	94.6	NA	65.6-132	NA		%Rec	3/8/2018 9:13 PM	
ANIONS by ION CHROMATOGRAPHY			Method: EPA 300.0, Rev.2.1 (1993)			Analyst: CF		
Bromide	ND	0.05	0.10	NA		mg/L	3/7/2018 11:48 PM	PA/VA
Chloride	45.1	0.30	1.00	NA		mg/L	3/7/2018 11:48 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 18030587

Date Reported: 3/13/2018
Original

Client: ALLIANCE CONSULTING INC
Project: B18-031-2257
Lab ID: 18030587-02A
Client Sample ID: LC-19 US

Collection Date: 3/6/2018 11:30:00 AM
Date Received: 3/6/2018
Matrix: Liquid
Site ID: CRANE FORK, WV

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Sulfate	12.3	1.00	5.00	NA		mg/L	3/7/2018 11:48 PM	PA/VA
TOTAL DISSOLVED SOLIDS		Method: SM2540 C-1997				Analyst: KY		
Total Dissolved Solids	126	5	10	NA		mg/L	3/7/2018 5:42 PM	PA/VA
TOTAL SUSPENDED SOLIDS		Method: SM2540 D-1997				Analyst: KY		
Total Suspended Solids	2	1	5	NA	J	mg/L	3/7/2018 4:30 PM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED:		Method: SM4500-H+-B-2000				Analyst: VS		
pH	6.34	NA	NA	NA	H	SU	3/9/2018 8:06 AM	
ORGANIC CARBON, TOTAL		Method: SM5310 C-2000				Analyst: VS		
Total Organic Carbon	0.48	0.20	1.00	NA	J	mg/L	3/8/2018 6:55 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 18030587

Date Reported: 3/13/2018
Original

Client: ALLIANCE CONSULTING INC
Project: B18-031-2257
Lab ID: 18030587-03A
Client Sample ID: TRIP

Collection Date: 3/6/2018 12:00:00 AM
Date Received: 3/6/2018
Matrix: Trip Blank
Site ID: CRANE FORK, WV

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
VOLATILE ORGANIC COMPOUNDS		Method: SW8021B					Analyst: CB	
Benzene	ND	0.500	1.00	NA		µg/L	3/8/2018 9:44 PM	VA
Toluene	ND	0.500	1.00	NA		µg/L	3/8/2018 9:44 PM	VA
Ethylbenzene	ND	0.500	1.00	NA		µg/L	3/8/2018 9:44 PM	VA
m,p-Xylene	ND	1.00	2.00	NA		µg/L	3/8/2018 9:44 PM	VA
o-Xylene	ND	0.500	1.00	NA		µg/L	3/8/2018 9:44 PM	VA
Surr: 1,1,1-Trifluorotoluene	90.4	NA	65.6-132	NA		%Rec	3/8/2018 9:44 PM	

Sample Receipt Checklist

Client Name: ALL017		Work Order Number: 18030587	
RCPNo: 1	Date and Time Received: 3/6/2018 3:21:48 PM	Received by: Justin Harrah	
Completed By: Zach Cook		Reviewed By: Kathy Berry	
Completed Date: 3/6/2018 3:42:58 PM		Reviewed Date: 3/7/2018 9:16 AM	

Carrier Name: Client

1. Chain of custody present?	Yes ☒	No ☐	
2. Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
3. Are matrices correctly identified on Chain of custody?	Yes ☒	No ☐	
4. Is it clear what analyses were requested?	Yes ☒	No ☐	
5. Custody seals intact?	Yes ☐	No ☐	Not Present ☒
6. Samples in proper container type and preservative?	Yes ☒	No ☐	
7. Were correct preservatives noted on COC?	Yes ☒	No ☐	NA ☐
8. Sample containers intact?	Yes ☒	No ☐	
9. Sufficient sample volume for indicated test?	Yes ☒	No ☐	
10. Were container labels complete?	Yes ☒	No ☐	
11. All samples received within holding time?	Yes ☒	No ☐	
12. Was an attempt made to cool the samples?	Yes ☒	No ☐	NA ☐
13. Sample Temp. taken and recorded upon receipt?	Yes ☒	No ☐	To 1.2 °C
14. Water - Were bubbles absent in VOC vials?	Yes ☒	No ☐	No Vials ☐
15. Are Samples considered acceptable?	Yes ☒	No ☐	
16. COC filled out properly?	Yes ☒	No ☐	

Client Notification/Response

Client Name: ALL017		Work Order Number: 18030587	
Comment:			
Client Contacted:	Yes ☐	No ☐	NA ☒
Person Contacted:			
Contact Mode:	Phone ☐	Fax: ☐	Email: ☐
In Person:	☐		
Date Contacted:	Contacted By:		
Regarding:			
Client Instructions:			
Corrective Action:			

ALLIANCE CONSULTING INC

Kathy Berry

800-999-0105 • 304-255-2500 • 304-255-2572/fax • www.reiclabs.com

16 Commerce Drive
Westover, WV 26501
304-241-5861

☐ Fax

ANALYSIS & METHOD REQUESTED
See Attachment
Table 2

* (Use blank for a preservative not listed.)

Field Parameters			°C
	pH	Conduct	T _{temp}
LC-19 DS	7.05	407	8.4
LC-19 US	6.56	221	8.0

CUSTODY SEALS ☒ Y ☐ N

CUSTODY SEALS ☒ Y ☐ N

REC'D <i>the Bally</i>	Date/Time <i>3-6-18</i> <i>1340</i>	REC'D	Date/Time	REC'D	Date/Time
REC'D <i>Phil</i>	Date/Time <i>3-6-18</i> <i>1343</i>	REC'D	Date/Time	REC'D	Date/Time
REC'D	Date/Time	REC'D	Date/Time	REC'D	Date/Time
REC'D	Date/Time	REC'D	Date/Time	REC'D	Date/Time

Alliance County 3-6-18

LC-19 DS

LC-19 VS

★ TABLE 2 ★

Chloride	TPH-GRO
Bromide	TPH-DRO
Strontium	TPH-ORO
Barium	Benzene (B)
Iron	Ethylbenzene (E)
Manganese	Toluene (T)
Aluminum	Total Xylenes (X)
Arsenic	Total Dissolved Solids (TDS)
Sodium	Total Organic Carbon (TOC)
Calcium	Total Suspended Solids (TSS)
Sulfate	pH