



TECHNICAL MEMORANDUM

Date: July 11, 2016 **RGI Project Number:** 2012-107L

To: Mr. Michael Warfel
Washington Department of Ecology
Northwest Regional Office
3190 160th Avenue Southeast
Bellevue, Washington 98008

cc: Mr. Matt Segrest
Alamo Manhattan Bellevue, LLC

From: Mr. Jerry Sawetz/ Mr. Paul Riley
The Riley Group, Inc.

Subject: Method B Groundwater Evaluation
Main Street Apartments Development
10505 Main Street
Bellevue, Washington 98004
Ecology VCP No. NW2811

The Riley Group, Inc. (RGI) has been retained by Alamo Manhattan Bellevue, LLC (Alamo Manhattan) to manage environmental issues pertaining to the Main Street Development project located at 10505 Main Street in Bellevue, Washington (herein referred to as the Property). The location of the Property and significant features are depicted on the attached Figure 1.

The Property is currently owned by Alamo Manhattan and has been enrolled in the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP) since December of 2013. The Property is identified by Ecology as the Alamo Manhattan Main Street project (VCP No. NW2811).

BACKGROUND

Several previous investigations, including a completed cleanup action, have been performed on the Property. The following reports and correspondence pertaining to environmental investigations previously conducted for the Property:

- *Further Action at the following Site: Alamo Manhattan Main Street* (Ecology June 6, 2016 Opinion Letter).
- *Groundwater Characterization Report, Alamo Manhattan Main Street* (Groundwater Characterization Report) dated July 22, 2015.
- *Groundwater Characterization Work Plan, Alamo Manhattan Main Street* (Groundwater Characterization Report) dated October 30, 2014.
- *Remedial Action Report, Main Street Apartments Development* (RA report) dated June 13, 2014.

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- *Excavation Work Plan, Main Street Development* (Excavation Work Plan) dated July 17, 2013 by RGI.
- *Phase I Environmental Site Assessment Update Report* (Phase I ESA Update) Main Street Development dated June 26, 2013 by RGI.
- *Additional Groundwater Monitoring Well Installation and Sampling Report* (Well and Sampling Report) Proposed Main Street Development dated June 19, 2013 by RGI.
- *Phase II Subsurface Investigation Report* (Phase II); *Proposed Main Street Development* dated July 24, 2012 by RGI.
- *Phase I Environmental Site Assessment Report* (Phase I ESA); Aaron Bothers Retail Property dated March 21, 2012 by RGI.

The history of the Property and details pertaining to environmental investigations are described in the above-referenced documents and the reader should refer to these documents in their entirety for details pertaining to these investigations. Additionally, all of the above-mentioned documents prepared by RGI have been submitted to Ecology for review.

ECOLOGY CORRESPONDENCES

On June 16, 2016, Ecology (Michael Warfel and Louise Bardy), Alamo Manhattan (Matt Segrest), and RGI (Paul Riley and Jerry Sawetz) met at Ecology's Northwest Regional Office to discuss the findings documented in the June 6, 2016 Ecology Opinion Letter. Pertinent points pertaining to this discussion included the following:

- RGI and Alamo Manhattan indicated they are of the firm opinion that no additional soil or groundwater characterization is warranted for the eastern portion of the Property.
- RGI and Ecology agreed that the first step in the process would be to evaluate groundwater concentrations of COPCs in RW1 and RW2 using MTCA Method B in accordance with WAC 173-340-720 to determine if groundwater concentrations on the Property are currently in compliance with the MTCA regulation.
- Based on the results of the Method B evaluation, prepare a work plan describing the methodologies for any potential future work on the Property. The work plan is to be submitted to Ecology for review and approval.
- Ecology additionally requested that the potential for vapor intrusion be evaluated using the most recent Ecology and EPA vapor intrusion guidance's. This was not included in the June 6, 2016 Opinion Letter.

Alamo Manhattan has retained RGI to perform the Method B Groundwater Evaluation and subsequent tasks requested by Ecology. The purpose of this Technical Memorandum is to document the results of the Method B Groundwater Evaluation as the results of this evaluation will have a significant impact on the scope of work moving forward for the Property. The scope of work and results for future tasks requested by Ecology will be presented in a future work plan and technical memorandum. The ultimate objective is to obtain a NFA determination for the Property from Ecology.

METHOD B GROUNDWATER EVALUATION

The Method B Groundwater Evaluation was conducted by collecting and analyzing groundwater samples from groundwater monitoring wells RW1 and RW2, situated on the southeastern portion of the Property (see Figure 1). These groundwater samples were evaluated using MTCA Method B in accordance with Washington Administrative Code (WAC) 173-340-720 and 246-290-310 and

the guidance set forth by Ecology in the *Workbook Tools for Calculating Soil and Groundwater Cleanup Levels under the Model Toxics Control Cleanup Regulation: User's Guide for MTCATPH11.1 & MTCASGL11.0* (Ecology Workbook Tools Guidance) revised December 2007 by Ecology. Groundwater analytical data used in the evaluation is included in Attachment A and the Ecology spreadsheet used to conduct the evaluation is included in Attachment B.

Groundwater Sampling

On June 24, 2016, RGI collected groundwater samples from wells RW-1 and RW-2 situated in the parking garage of the Property building. Prior to sampling, water levels in each well were measured relative to the northernmost point of the well casing. After collection of water level data, each well was purged using a submersible pump and dedicated tubing. RGI also recorded measurements of temperature, conductivity, and pH during purging. Each well was purged dry twice and allowed to recharge then sampled using standard low-flow sampling methodology. Groundwater samples were placed in an iced cooler and transferred to the laboratory in accordance with standard chain of custody protocols.

Groundwater Analytical Results

Groundwater samples collected from wells RW1 and RW2 were submitted to ALS Environmental Laboratory (ALS) in Everett for the following analyses:

- Volatile Petroleum Hydrocarbons (VPH) and hexane using Method NWVPH.
- Extractable Petroleum Hydrocarbons (EPH) using Method NWEPH.
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8260.
- Carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and naphthalenes using EPA Method 8270 SIM.

Analytical results including historical groundwater data obtained from groundwater monitoring wells RW1 and RW2 are illustrated on Figure 1 and discussed below. Analytical results from these samples indicated that groundwater in RW1 contained concentrations of petroleum fractions C12-C16 Aliphatics, C16-C21 Aliphatics, and C21-34 Aliphatics at 130 micrograms/liter ($\mu\text{g/L}$), 230 $\mu\text{g/L}$, and 82 $\mu\text{g/L}$, respectively. No other COPCs were detected in groundwater in RW-1 at concentrations exceeding compound-specific laboratory detection limits.

In RW-2, no COPCs were detected in groundwater at concentrations exceeding compound-specific laboratory detection limits.

Method B Groundwater Evaluation

Since no COPCs were detected in groundwater obtained from well RW-2 at concentrations above compound-specific laboratory detection limits, there was no need to further evaluate groundwater results obtained from this well.

Groundwater data obtained from RW1 was evaluated by entering all required groundwater data into the Ecology *Worksheet for Calculating Potable Groundwater Cleanup Levels* (Cleanup Level Worksheet) in accordance with the Ecology Workbook Tools Guidance. This Cleanup Level Worksheet calculates the applicable MTCA Method B TPH Groundwater Cleanup Level considered protective of human health and the environment. This Method B approach takes into account the additive effects of the petroleum fractions and volatile organic compounds present in the mixture using Equation 720-3 [WAC 173-340-720(4)(C)]. The concentration derived in the spreadsheet was

then further evaluated to ensure that it complies with WAC 246-290-310 regarding State and Federal Maximum Contaminant Levels (MCLs).

The results of the calculation and data entered are displayed on the Cleanup Level Worksheet presented in Attachment B. The calculated Method B groundwater concentration considered protective of potable drinking water on the Property is 795 µg/L and the measured groundwater concentration in well RW1 was 675 µg/L. Therefore, the results of this groundwater evaluation demonstrate that groundwater on the Property is in compliance with the most stringent criterion (Hazard Index of 1). It should be noted that the calculation was performed in a very conservative manner using half the detection limit for all the petroleum fractions that were not detected at concentrations above laboratory method detection limits per the Ecology Workbook Tools Guidance.

Additionally, no MCL has been established for TPH or petroleum fractions, therefore groundwater on the Property is in compliance with the MTCA regulation. No additional groundwater assessment is necessary for the Property.

Once you have had the opportunity to review the results of the Method B Groundwater Evaluation, please let us know if Ecology agrees with our evaluation.

PLANNED FUTURE ACTIONS

Based on the results of this evaluation combined with what was discussed during the Ecology June 16, 2016 meeting, RGI understands that the following tasks will be required in order to obtain a NFA determination for the Property:

- Conduct a vapor intrusion evaluation for the Property in accordance with the most recent EPA and Ecology guidance's.
- Prepare a Focused Feasibility Study and Disproportionate Cost Analysis (FS/DCA) for the Property.
- Prepare an east-west cross section across the entire Property.

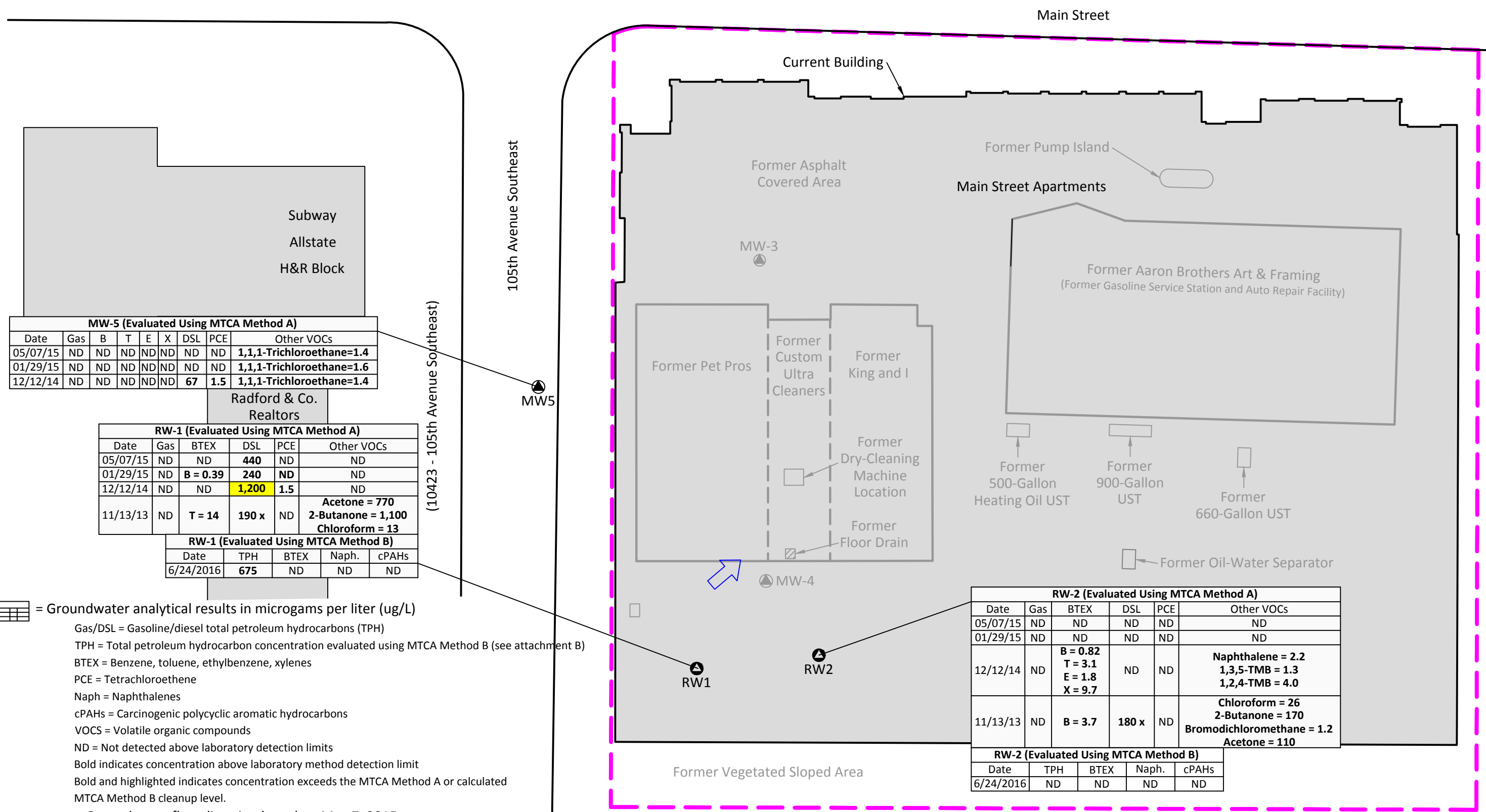
After your review, we would like to discuss the next steps towards obtaining a NFA determination for the Property. Given the time sensitive nature of the project we would appreciate it if you would please expedite the review.

Please do not hesitate to contact us at 425-415-0551 with any questions or comments regarding this Technical Memorandum.

Attachments: Figure 1, Property Representation Map

Attachment A, Groundwater Analytical Laboratory Report

Attachment B, Ecology Worksheet for Calculating Method B Potable Groundwater Cleanup Levels (pertaining to well RW-1)



MW-5 (Evaluated Using MTCA Method A)

Date	Gas	B	T	E	X	DSL	PCE	Other VOCs
05/07/15	ND	ND	ND	ND	ND	ND	ND	1,1,1-Trichloroethane=1.4
01/29/15	ND	ND	ND	ND	ND	ND	ND	1,1,1-Trichloroethane=1.6
12/12/14	ND	ND	ND	ND	ND	67	1.5	1,1,1-Trichloroethane=1.4

Radford & Co.
Realtors

RW-1 (Evaluated Using MTCA Method A)

Date	Gas	BTEX	DSL	PCE	Other VOCs
05/07/15	ND	ND	440	ND	ND
01/29/15	ND	B = 0.39	240	ND	ND
12/12/14	ND	ND	1,200	1.5	ND
11/13/13	ND	T = 14	190 x	ND	Acetone = 770 2-Butanone = 1,100 Chloroform = 13

RW-1 (Evaluated Using MTCA Method B)

Date	TPH	BTEX	Naph.	cPAHs
6/24/2016	675	ND	ND	ND

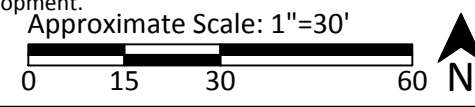
RW-2 (Evaluated Using MTCA Method A)

Date	Gas	BTEX	DSL	PCE	Other VOCs
05/07/15	ND	ND	ND	ND	ND
01/29/15	ND	ND	ND	ND	ND
12/12/14	ND	B = 0.82 T = 3.1 E = 1.8 X = 9.7	ND	ND	Naphthalene = 2.2 1,3,5-TMB = 1.3 1,2,4-TMB = 4.0
11/13/13	ND	B = 3.7	180 x	ND	Chloroform = 26 2-Butanone = 170 Bromodichloromethane = 1.2 Acetone = 110

RW-2 (Evaluated Using MTCA Method B)

Date	TPH	BTEX	Naph.	cPAHs
6/24/2016	ND	ND	ND	ND

- = Groundwater analytical results in micrograms per liter (ug/L)
- Gas/DSL = Gasoline/diesel total petroleum hydrocarbons (TPH)
- TPH = Total petroleum hydrocarbon concentration evaluated using MTCA Method B (see attachment B)
- BTEX = Benzene, toluene, ethylbenzene, xylenes
- PCE = Tetrachloroethene
- Naph = Naphthalenes
- cPAHs = Carcinogenic polycyclic aromatic hydrocarbons
- VOCs = Volatile organic compounds
- ND = Not detected above laboratory detection limits
- Bold indicates concentration above laboratory method detection limit
- Bold and highlighted indicates concentration exceeds the MTCA Method A or calculated MTCA Method B cleanup level.
- = Groundwater flow direction based on May 7, 2015 measurements.
- = Existing groundwater monitoring well location
- = Groundwater monitoring well location by RGI, 12/2014
- = (in gray) Former groundwater monitoring well location
- MW-3 and MW-4 were installed by RGI prior to redevelopment.
- B-1A was a temporary monitoring well installed by RGI and decommissioned during redevelopment.
- = (in pink) Property boundary



RILEYGROUP

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Main Street Apartments Development		Figure 1
RGI Project Number 2012-107L	Property Representation Map with Groundwater Analytical Data	Date Drawn: 07/2016
Address: 10505 Main Street, Bellevue, Washington 98004		

Drawn from Bush, Roed & Hitchings, Inc., ALTA/ACSM Land Title Survey, dated 03/2012.



July 7, 2016

Mr. Jerry Sawetz
The Riley Group, Inc.
17522 Bothell Way NE, Suite A
Bothell, WA 98011

Dear Mr. Sawetz,

On June 27th, 2 samples were received by our laboratory and assigned our laboratory project number EV16060187. The project was identified as your None Given. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rick Bagan
Laboratory Director



CERTIFICATE OF ANALYSIS

CLIENT: The Riley Group, Inc.
 17522 Bothell Way NE, Suite A
 Bothell, WA 98011

CLIENT CONTACT: Jerry Sawetz
 CLIENT PROJECT: None Given
 CLIENT SAMPLE ID: RW-1

DATE: 7/7/2016
 ALS JOB#: EV16060187
 ALS SAMPLE#: EV16060187-01
 DATE RECEIVED: 06/27/2016
 COLLECTION DATE: 6/24/2016 12:12:00 PM
 WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
C5-C6 Aliphatics	NWVPH	U	50	1	UG/L	07/06/2016	PAB
>C6-C8 Aliphatics	NWVPH	U	50	1	UG/L	07/06/2016	PAB
>C8-C10 Aliphatics	NWVPH	U	50	1	UG/L	07/06/2016	PAB
>C8-C10 Aromatics	NWVPH	U	50	1	UG/L	07/06/2016	PAB
Hexane	NWVPH	U	2.0	1	UG/L	07/06/2016	PAB
>C10-C12 Aliphatics	NWEPH	U	53	1	UG/L	06/29/2016	EBS
>C12-C16 Aliphatics	NWEPH	130	53	1	UG/L	06/29/2016	EBS
>C16-C21 Aliphatics	NWEPH	230	53	1	UG/L	06/29/2016	EBS
>C21-C34 Aliphatics	NWEPH	82	53	1	UG/L	06/29/2016	EBS
>C10-C12 Aromatics	NWEPH	U	53	1	UG/L	06/29/2016	EBS
>C12-C16 Aromatics	NWEPH	U	53	1	UG/L	06/29/2016	EBS
>C16-C21 Aromatics	NWEPH	U	53	1	UG/L	06/29/2016	EBS
>C21-C34 Aromatics	NWEPH	U	53	1	UG/L	06/29/2016	EBS
Benzene	EPA-8260	U	2.0	1	UG/L	07/05/2016	DLC
Toluene	EPA-8260	U	2.0	1	UG/L	07/05/2016	DLC
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	07/05/2016	DLC
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	07/05/2016	DLC
o-Xylene	EPA-8260	U	2.0	1	UG/L	07/05/2016	DLC
Naphthalene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP
2-Methylnaphthalene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP
1-Methylnaphthalene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP
Benzo[A]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP
Chrysene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP
Benzo[B]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP
Benzo[K]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP
Benzo[A]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP

SURROGATE	METHOD	%REC	ANALYSIS	ANALYSIS
			DATE	BY
TFT - Aliphatic	NWVPH	102	07/06/2016	PAB
TFT - Aromatic	NWVPH	113	07/06/2016	PAB
TFT - Hexane	NWVPH	105	07/06/2016	PAB
C25	NWEPH	103	06/29/2016	EBS
p-Terphenyl	NWEPH	89.2	06/29/2016	EBS
Toluene-d8	EPA-8260	99.3	07/05/2016	DLC
Terphenyl-d14	EPA-8270 SIM	111	07/05/2016	GAP



CERTIFICATE OF ANALYSIS

CLIENT:	The Riley Group, Inc. 17522 Bothell Way NE, Suite A Bothell, WA 98011	DATE:	7/7/2016
CLIENT CONTACT:	Jerry Sawetz	ALS JOB#:	EV16060187
CLIENT PROJECT:	None Given	ALS SAMPLE#:	EV16060187-01
CLIENT SAMPLE ID	RW-1	DATE RECEIVED:	06/27/2016
		COLLECTION DATE:	6/24/2016 12:12:00 PM
		WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: The Riley Group, Inc.
 17522 Bothell Way NE, Suite A
 Bothell, WA 98011

CLIENT CONTACT: Jerry Sawetz
 CLIENT PROJECT: None Given
 CLIENT SAMPLE ID: RW-2

DATE: 7/7/2016
 ALS JOB#: EV16060187
 ALS SAMPLE#: EV16060187-02
 DATE RECEIVED: 06/27/2016
 COLLECTION DATE: 6/24/2016 11:05:00 AM
 WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
C5-C6 Aliphatics	NWVPH	U	50	1	UG/L	07/06/2016	PAB
>C6-C8 Aliphatics	NWVPH	U	50	1	UG/L	07/06/2016	PAB
>C8-C10 Aliphatics	NWVPH	U	50	1	UG/L	07/06/2016	PAB
>C8-C10 Aromatics	NWVPH	U	50	1	UG/L	07/06/2016	PAB
Hexane	NWVPH	U	2.0	1	UG/L	07/06/2016	PAB
>C10-C12 Aliphatics	NWEPH	U	58	1	UG/L	06/29/2016	EBS
>C12-C16 Aliphatics	NWEPH	U	58	1	UG/L	06/29/2016	EBS
>C16-C21 Aliphatics	NWEPH	U	58	1	UG/L	06/29/2016	EBS
>C21-C34 Aliphatics	NWEPH	U	58	1	UG/L	06/29/2016	EBS
>C10-C12 Aromatics	NWEPH	U	58	1	UG/L	06/29/2016	EBS
>C12-C16 Aromatics	NWEPH	U	58	1	UG/L	06/29/2016	EBS
>C16-C21 Aromatics	NWEPH	U	58	1	UG/L	06/29/2016	EBS
>C21-C34 Aromatics	NWEPH	U	58	1	UG/L	06/29/2016	EBS
Benzene	EPA-8260	U	2.0	1	UG/L	07/01/2016	DLC
Toluene	EPA-8260	U	2.0	1	UG/L	07/01/2016	DLC
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	07/01/2016	DLC
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	07/01/2016	DLC
o-Xylene	EPA-8260	U	2.0	1	UG/L	07/01/2016	DLC
Naphthalene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP
2-Methylnaphthalene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP
1-Methylnaphthalene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP
Benzo[A]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP
Chrysene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP
Benzo[B]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP
Benzo[K]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP
Benzo[A]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	07/05/2016	GAP

SURROGATE	METHOD	%REC	ANALYSIS	ANALYSIS
			DATE	BY
TFT - Aliphatic	NWVPH	98.2	07/06/2016	PAB
TFT - Aromatic	NWVPH	108	07/06/2016	PAB
TFT - Hexane	NWVPH	99.6	07/06/2016	PAB
C25	NWEPH	104	06/29/2016	EBS
p-Terphenyl	NWEPH	69.7	06/29/2016	EBS
Toluene-d8	EPA-8260	96.3	07/01/2016	DLC
Terphenyl-d14	EPA-8270 SIM	58.3	07/05/2016	GAP

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: The Riley Group, Inc.
 17522 Bothell Way NE, Suite A
 Bothell, WA 98011

CLIENT CONTACT: Jerry Sawetz
 CLIENT PROJECT: None Given

DATE: 7/7/2016
 ALS SDG#: EV16060187
 WDOE ACCREDITATION: C601

LABORATORY BLANK RESULTS

MBLK-277678 - Batch R277678 - Water by NWVPH

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	U	UG/L	50	07/06/2016	PAB
>C6-C8 Aliphatics	NWVPH	U	UG/L	50	07/06/2016	PAB
>C8-C10 Aliphatics	NWVPH	U	UG/L	50	07/06/2016	PAB
>C8-C10 Aromatics	NWVPH	U	UG/L	50	07/06/2016	PAB
Hexane	NWVPH	U	UG/L	2.0	07/06/2016	PAB

U - Analyte analyzed for but not detected at level above reporting limit.

MBLK-277685 - Batch R277685 - Water by NWEPH

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
>C10-C12 Aliphatics	NWEPH	U	UG/L	53	06/29/2016	EBS
>C12-C16 Aliphatics	NWEPH	U	UG/L	53	06/29/2016	EBS
>C16-C21 Aliphatics	NWEPH	U	UG/L	53	06/29/2016	EBS
>C21-C34 Aliphatics	NWEPH	U	UG/L	53	06/29/2016	EBS
>C10-C12 Aromatics	NWEPH	U	UG/L	53	06/29/2016	EBS
>C12-C16 Aromatics	NWEPH	U	UG/L	53	06/29/2016	EBS
>C16-C21 Aromatics	NWEPH	U	UG/L	53	06/29/2016	EBS
>C21-C34 Aromatics	NWEPH	U	UG/L	53	06/29/2016	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

MB-062916W - Batch 105821 - Water by EPA-8260

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
1,1-Dichloroethene	EPA-8260	U	UG/L	2.0	06/29/2016	DLC
Benzene	EPA-8260	U	UG/L	2.0	06/29/2016	DLC
Toluene	EPA-8260	U	UG/L	2.0	06/29/2016	DLC
Ethylbenzene	EPA-8260	U	UG/L	2.0	06/29/2016	DLC
m,p-Xylene	EPA-8260	U	UG/L	4.0	06/29/2016	DLC
o-Xylene	EPA-8260	U	UG/L	2.0	06/29/2016	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-062816W2 - Batch 105964 - Water by EPA-8270 SIM

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Naphthalene	EPA-8270 SIM	U	UG/L	0.020	07/05/2016	GAP
2-Methylnaphthalene	EPA-8270 SIM	U	UG/L	0.020	07/05/2016	GAP
1-Methylnaphthalene	EPA-8270 SIM	U	UG/L	0.020	07/05/2016	GAP
Benzo[A]Anthracene	EPA-8270 SIM	U	UG/L	0.020	07/05/2016	GAP



CERTIFICATE OF ANALYSIS

CLIENT: The Riley Group, Inc.
17522 Bothell Way NE, Suite A
Bothell, WA 98011

DATE: 7/7/2016
ALS SDG#: EV16060187
WDOE ACCREDITATION: C601

CLIENT CONTACT: Jerry Sawetz
CLIENT PROJECT: None Given

LABORATORY BLANK RESULTS

MB-062816W2 - Batch 105964 - Water by EPA-8270 SIM

Chrysene	EPA-8270 SIM	U	UG/L	0.020	07/05/2016	GAP
Benzo[B]Fluoranthene	EPA-8270 SIM	U	UG/L	0.020	07/05/2016	GAP
Benzo[K]Fluoranthene	EPA-8270 SIM	U	UG/L	0.020	07/05/2016	GAP
Benzo[A]Pyrene	EPA-8270 SIM	U	UG/L	0.020	07/05/2016	GAP
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	UG/L	0.020	07/05/2016	GAP
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	UG/L	0.020	07/05/2016	GAP
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	UG/L	0.020	07/05/2016	GAP

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: The Riley Group, Inc.
 17522 Bothell Way NE, Suite A
 Bothell, WA 98011

CLIENT CONTACT: Jerry Sawetz
 CLIENT PROJECT: None Given

DATE: 7/7/2016
 ALS SDG#: EV16060187
 WDOE ACCREDITATION: C601

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: R277678 - Water by NWVPH

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
C5-C6 Aliphatics - BS	NWVPH	101			70	130	07/06/2016	PAB
C5-C6 Aliphatics - BSD	NWVPH	99.4	1		70	130	07/06/2016	PAB
>C6-C8 Aliphatics - BS	NWVPH	101			70	130	07/06/2016	PAB
>C6-C8 Aliphatics - BSD	NWVPH	101	1		70	130	07/06/2016	PAB
>C8-C10 Aliphatics - BS	NWVPH	101			70	130	07/06/2016	PAB
>C8-C10 Aliphatics - BSD	NWVPH	104	3		70	130	07/06/2016	PAB
>C8-C10 Aromatics - BS	NWVPH	104			70	130	07/06/2016	PAB
>C8-C10 Aromatics - BSD	NWVPH	108	4		70	130	07/06/2016	PAB
Hexane - BS	NWVPH	103			70	130	07/06/2016	PAB
Hexane - BSD	NWVPH	102	1		70	130	07/06/2016	PAB

ALS Test Batch ID: R277685 - Water by NWEPH

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
>C10-C12 Aliphatics - BS	NWEPH	85.3			70	130	06/29/2016	EBS
>C10-C12 Aliphatics - BSD	NWEPH	93.6	9		70	130	06/29/2016	EBS
>C12-C16 Aliphatics - BS	NWEPH	96.8			70	130	06/29/2016	EBS
>C12-C16 Aliphatics - BSD	NWEPH	98.1	1		70	130	06/29/2016	EBS
>C16-C21 Aliphatics - BS	NWEPH	101			70	130	06/29/2016	EBS
>C16-C21 Aliphatics - BSD	NWEPH	102	1		70	130	06/29/2016	EBS
>C21-C34 Aliphatics - BS	NWEPH	108			70	130	06/29/2016	EBS
>C21-C34 Aliphatics - BSD	NWEPH	111	2		70	130	06/29/2016	EBS
>C10-C12 Aromatics - BS	NWEPH	109			70	130	06/29/2016	EBS
>C10-C12 Aromatics - BSD	NWEPH	116	6		70	130	06/29/2016	EBS
>C12-C16 Aromatics - BS	NWEPH	114			70	130	06/29/2016	EBS
>C12-C16 Aromatics - BSD	NWEPH	123	8		70	130	06/29/2016	EBS
>C16-C21 Aromatics - BS	NWEPH	119			70	130	06/29/2016	EBS
>C16-C21 Aromatics - BSD	NWEPH	129	8		70	130	06/29/2016	EBS
>C21-C34 Aromatics - BS	NWEPH	120			70	130	06/29/2016	EBS
>C21-C34 Aromatics - BSD	NWEPH	129	8		70	130	06/29/2016	EBS

ALS Test Batch ID: 105821 - Water by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
1,1-Dichloroethene - BS	EPA-8260	93.4			72.5	136	06/29/2016	DLC
1,1-Dichloroethene - BSD	EPA-8260	92.9	1		72.5	136	06/29/2016	DLC
Benzene - BS	EPA-8260	99.1			74.7	143	06/29/2016	DLC
Benzene - BSD	EPA-8260	94.0	5		74.7	143	06/29/2016	DLC
Toluene - BS	EPA-8260	95.3			71.7	139	06/29/2016	DLC



CERTIFICATE OF ANALYSIS

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 17522 Bothell Way NE, Suite A
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DATE: 7/7/2016
 ALS SDG#: EV16060187
 WDOE ACCREDITATION: C601

CLIENT CONTACT: Jerry Sawetz
 CLIENT PROJECT: None Given

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
Toluene - BSD	EPA-8260	92.4	3		71.7	139	06/29/2016	DLC

ALS Test Batch ID: 105964 - Water by EPA-8270 SIM

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
Naphthalene - BS	EPA-8270 SIM	63.6			36	118	07/05/2016	GAP
Naphthalene - BSD	EPA-8270 SIM	76.6	19		36	118	07/05/2016	GAP
Benzo[G,H,I]Perylene - BS	EPA-8270 SIM	56.6			43	140	07/05/2016	GAP
Benzo[G,H,I]Perylene - BSD	EPA-8270 SIM	66.4	16		43	140	07/05/2016	GAP

APPROVED BY

Laboratory Director

**B. Worksheet for Calculating Potable Ground Water Cleanup Levels
(Method B only) WAC 173-340-720**

1. Enter Site Information

Date: 7/8/2016
 Site Name: Main Street Development Project
 Sample info: Groundwater sample: RW-1

2. Enter Ground Water Concentration Measured

Notes for Data Entry

Chemical of Concern or EC Group	Measured GW Conc ug/L	GW Cleanup Level ug/L	Current Condition			Adjusted Condition			
			HQ	RISK	Pass or Fail?	GW Conc being tested ug/L	HQ	RISK	Pass or Fail?
			unitless	unitless		ug/L	unitless	unitless	
Petroleum EC Fraction									
AL_EC >5-6	25		1.84E-03			2.50E+01	1.84E-03		
AL_EC >6-8	25		1.84E-03			2.50E+01	1.84E-03		
AL_EC >8-10	25		1.04E-01			2.50E+01	1.04E-01		
AL_EC >10-12	25		1.04E-01			2.50E+01	1.04E-01		
AL_EC >12-16	130		2.71E-01			1.30E+02	2.71E-01		
AL_EC >16-21	230		7.19E-03			2.30E+02	7.19E-03		
AL_EC >21-34	82		2.56E-03			8.20E+01	2.56E-03		
AR_EC >8-10	22		2.75E-02			2.20E+01	2.75E-02		
AR_EC >10-12	26		1.63E-01			2.60E+01	1.62E-01		
AR_EC >12-16	26		3.25E-02			2.60E+01	3.25E-02		
AR_EC >16-21	27		5.63E-02			2.70E+01	5.62E-02		
AR_EC >21-34	27		4.22E-02			2.70E+01	4.22E-02		
Benzene	1	5	3.13E-02	1.26E-06		1.00E+00	3.12E-02	1.26E-06	
Toluene	1	1000	1.56E-03			1.00E+00	1.56E-03		
Ethylbenzene	1	700	1.25E-03			1.00E+00	1.25E-03		
Total Xylenes	2	1000	1.25E-03			2.00E+00	1.25E-03		
Naphthalene	0.01	160	6.25E-05			1.00E-02	6.25E-05		
1-Methyl Naphthalene	0.01		2.50E-05			1.00E-02	2.50E-05		
2-Methyl Naphthalene	0.01		3.13E-04			1.00E-02	3.12E-04		
n-Hexane	0								
MTBE	0	20							
Ethylene Dibromide (EDB)	0	0.01							
1,2 Dichloroethane (EDC)	0	5							
Benzo(a)anthracene	0	for			for				for
Benzo(b)fluoranthene	0	all			all				all
Benzo(k)fluoranthene	0	cPAHs			cPAHs				cPAHs
Benzo(a)pyrene	0	Risk =							
Chrysene	0	1E-05							
Dibenz(a,h)anthracene	0				Σ Risk=				Σ Risk=
Indeno(1,2,3-cd)pyrene	0				0.00E+00				0.00E+00
Sum	675.03		8.49E-01	1.26E-06		6.75E+02	8.49E-01	1.26E-06	

TEST CURRENT CONDITION
Measured TPH GW Conc, ug/L = 675.03
HI = 8.492E-01
RISK = 1.257E-06
Pass or Fail? Pass
Please check WAC 246-290-310!

CALCULATE PROTECTIVE CONDITION
This tool allows the user to calculate a protective TPH ground water concentration based on various ground water quality criteria. The Workbook uses the same composition ratio as for the measured data.
Calculate Protective TPH GW Conc
Selected Criterion: HI = 1
Most Stringent? YES
Protective TPH GW Conc, ug/L = 794.86
HI = 1.00E+00
RISK = 1.48E-06

SUMMARY OF PROTECTIVE GW CONCENTRATIONS				
Protective GW TPH Conc, ug/L	794.86			
Most Stringent Criterion	HI = 1			
Ground Water Criteria	Most Stringent?	GW TPH, ug/L	RISK @	HI @
HI = 1	YES	7.95E+02	1.48E-06	1.00E+00
Total Risk = 1E-5	NO	5.37E+03	1.00E-05	6.76E+00
Total Risk = 1E-6	YES	5.37E+02	1.00E-06	6.76E-01
Benzene MCL = 5 ug/L	NO	3.38E+03	6.29E-06	4.25E+00
MTBE = 20 ug/L	NA	NA	NA	NA
Risk of cPAHs = 1E-5	NA	NA	NA	NA
Toluene = 1000 ug/L	NO	6.75E+05	1.26E-03	8.49E+02
Ethylbenzene = 700 ug/L	NO	4.73E+05	8.80E-04	5.94E+02
Total Xylenes = 1000 ug/L	NO	3.38E+05	6.29E-04	4.25E+02

TEST ADJUSTED CONDITION
This tool allows the user to test whether a particular TPH soil concentration is protective of human health. The Workbook uses the same composition ratio as for the measured data.
Test Adjusted TPH GW Conc
Tested TPH GW Conc, ug/L = 675
HI = 8.49E-01
RISK = 1.26E-06
Pass or Fail? Pass