January 7, 2014
Project No. EH130623A

Tetra Tech, Inc.
230 South Franklin, Suite 212
Juneau, Alaska 99801

Attention: Mr. Don Beard

Subject: Field Visit Report and Water Source Analysis
Yakutat Regional Aquaculture Association
Yakutat, Alaska

Dear Mr. Beard:

The following is a summary of our field visit to three potential sites under consideration by the Yakutat Regional Aquaculture Association (YRAA) for a new hatchery location in Yakutat, Alaska. It is our understanding that the YRAA seeks to develop a water source near the new hatchery location to support the incubation of 40 million chum and/or pink salmon eggs. A consistent water source capable of 800 gallons per minute (gpm), or approximately 1.7 cubic feet per second (cfs) is necessary to achieve these goals. The hatchery would operate for 227 days per year (August 1st – March 15th).

We performed our work under subcontract to Tetra Tech, Inc. The purpose of the field visit was to conduct an initial assessment of water quantity and quality of possible spring water sources near each proposed hatchery location and provide recommendation on future work to further evaluate locations that appear promising. We performed our field visits to the West Addition Hydrant, Broken Oar Cove, and Redfield Cove sites on November 25-26, 2013. We were accompanied by Don Beard and Bridget LaPenter of Tetra Tech, Inc., and board members of the YRAA including Harold Robbins, Johnathan Pavlik, and Herb Holcomb. We also met with YRAA board members Nate Endicott and Wayne Ivars. Our field visit included travel by vehicle to the West Addition Hydrant and Broken Oar Cove sites, and travel by boat to the Broken Oar Cove and Redfield Cove sites.

SETTING

Yakutat is located in the Yakutat Foreland, part of the Gulf of Alaska Coastal Section, which is bounded to the north and east by the St. Elias Mountains and to the south by the Gulf of Alaska. The climate is characterized by mild temperatures and heavy precipitation on the order of approximately 150 inches per year. The physical setting of the area, including local geology and hydrogeology are described in Holmes and Dorava (1995) and Neal (1998). End and ground moraine deposits (m – Figure 1) associated with the Yakutat Bay Glacier form low ridges that roughly parallel the Yakutat

bay shoreline. These till deposits – poorly sorted gravelly silt and sand with associated cobbles clay and boulders –are relatively impermeable as evidenced by the abundance of small lakes perched in the area. Inland from the moraine deposits are outwash sands and gravels (oc – Figure 1) that are well-drained. Surface waters in the outwash plain are drainages associated with Ophir Creek and the Situk River, rather than lakes.

POTENTIAL HATCHEY LOCATIONS

The three potential sites under consideration for the hatchery location are the West Addition Hydrant, Broken Oar Cove, and Redfield Cove. A brief description of each location is provided below. The general locations are shown approximately on Figure 1.

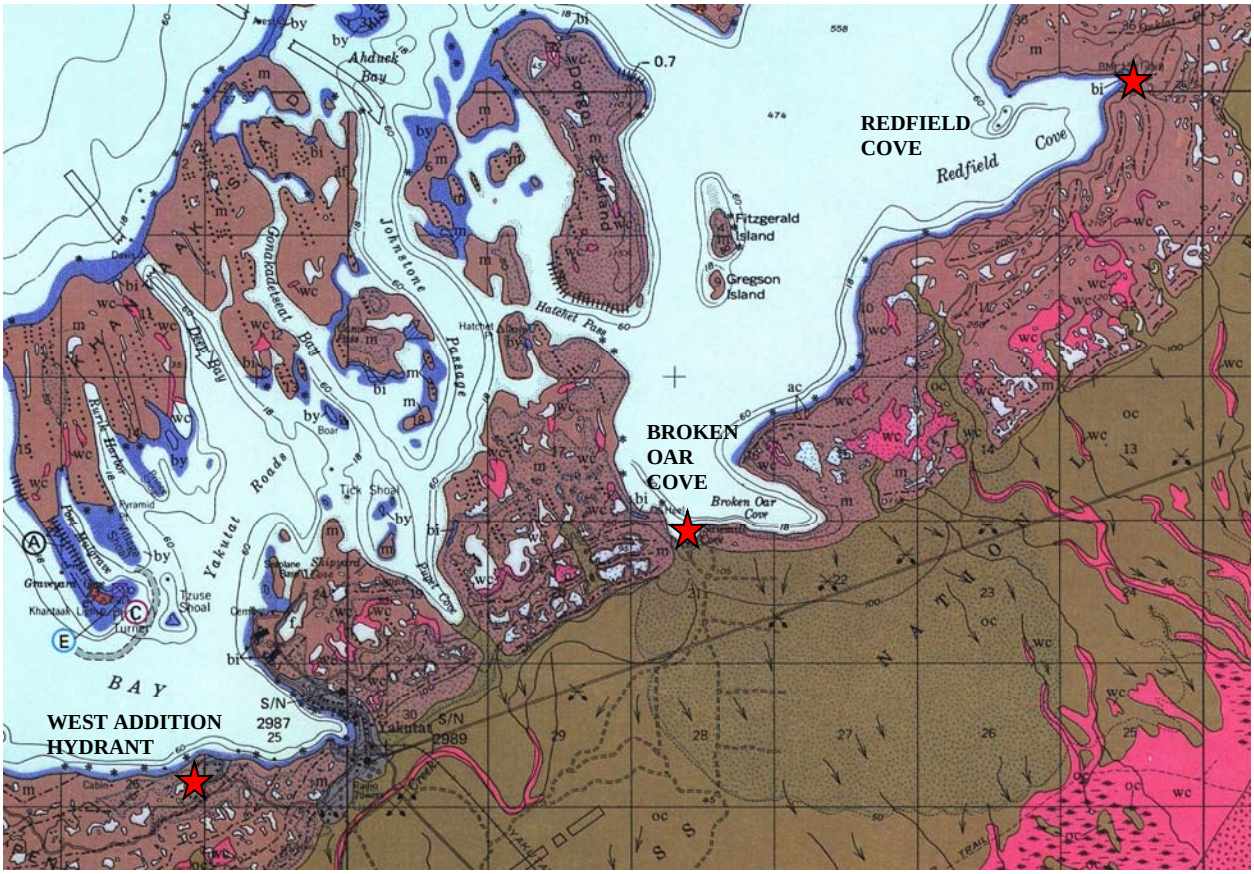

Figure 1: Surficial Geology and Potential Hatchery Sites

West Addition Hydrant

The West Addition Hydrant site (Figure 2) is located west of Yakutat, a few hundred feet inland from Monti Bay. The hydrant is behind one of several homes recently brought into the City of Yakutat's public water system service area (the west addition). The hydrant was one of six installed

for fire protection when the United States Military built a seaplane base on Monti Bay in the early 1940's. According to an article in Pacific Builder and Engineer (PBE, 1944), the source of the hydrants was gravity flow from a nearby lake. Although the source lake is somewhat uncertain, the PBE (1944) map shows a lake to west of the seaplane base that we interpret to be the source lake mentioned in the article. We installed a pressure gage on the hydrant and measured a static head of approximately 15 pounds per square inch (psi), which is equivalent to roughly 35 feet of water. This measurement indicates that the lake is located at an elevation at least approximately 35 above the hydrant location. This information is consistent with the thought that the source lake is the one located approximately 1,000 feet west of the hydrant. Preliminary estimates from US Geological Survey (USGS) topography maps and aerial photos suggest the lake has a surface area of approximately 2 to 3 acres and a total drainage area contributing to the lake of approximately 20 acres. The lake appears to be at the headwaters of a chain of interconnected lakes that drain to the southwest.

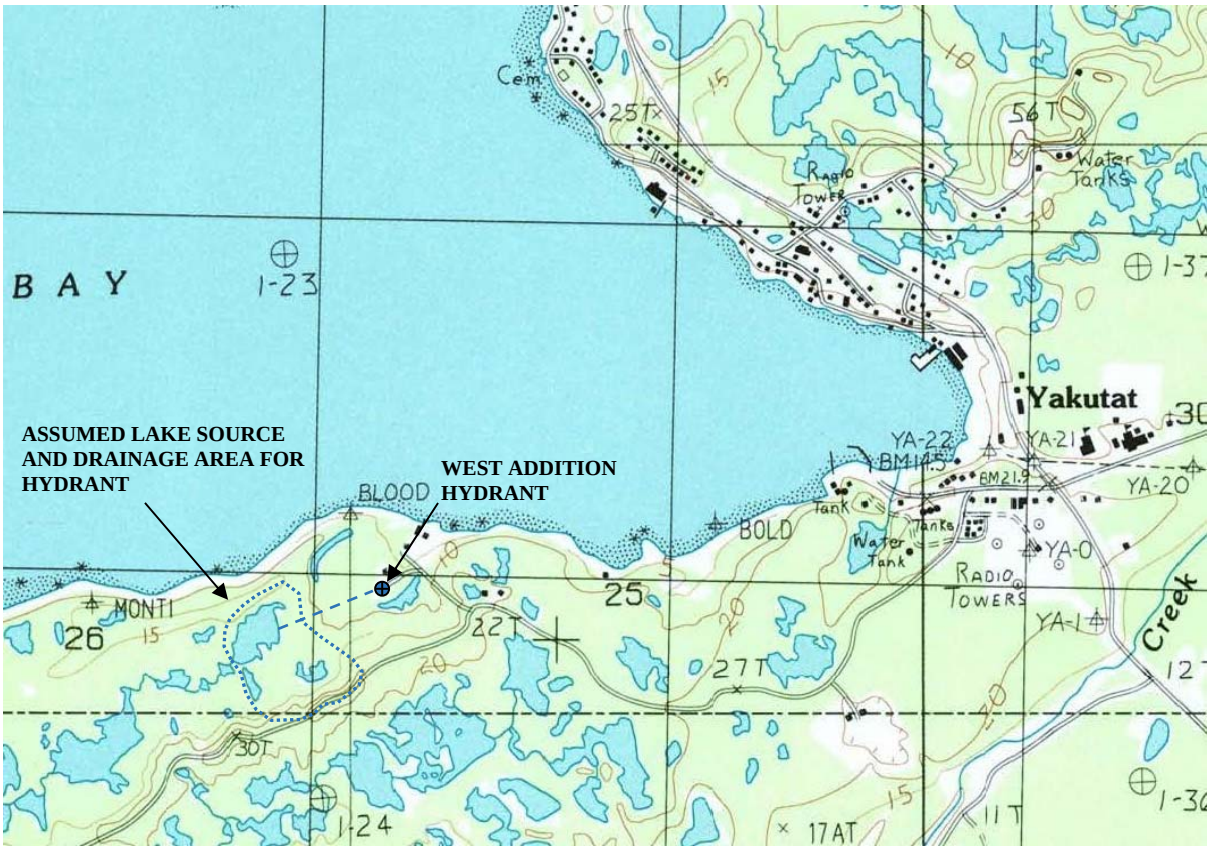

FIGURE 2: West Addition Hydrant Location

Broken Oar Cove

The Broken Oar Cove site is located approximately 3 miles northeast of Yakutat. The site is the location of a former log storage and transfer facility. The potential source of water for a hatchery at this site is spring discharges into the cove. During our site visit we noted abundant springs along the shoreline to the cove in three primary areas (Figure 3). A gravel access road, large gravel loading area, and sheet pile bulkhead associated with the transfer facility are still present in southwest portion of the cove (Sawmill Cove). These features appear to concentrate discharge from springs and seeps from the hillside above Sawmill Cove into two primary points (BOC-SP-1 and BOC-SP-3). The shoreline near spring BOC-SP-2 had many diffuse springs across a wide area. We also noted from our boat tour that 8-10 concentrated spring discharge points were present the east corner of Broken Oar Cove.

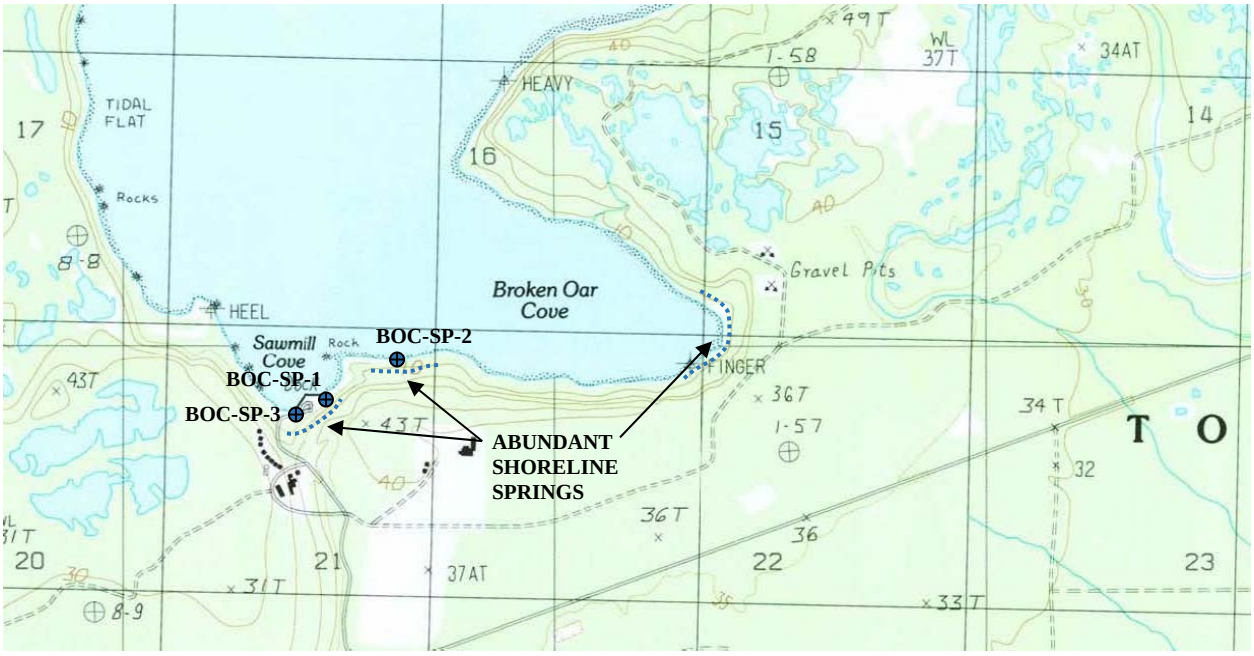

FIGURE 3: Broken Oar Location

Redfield Cove

The Redfield Cove site is located approximately 6.5 miles northeast of Yakutat. The potential source of water for a hatchery is a small surface water drainage in the northeast corner of the cove (Figure 4). It is unclear at this time if the drainage is spring derived or originates from one of the lakes in the area.

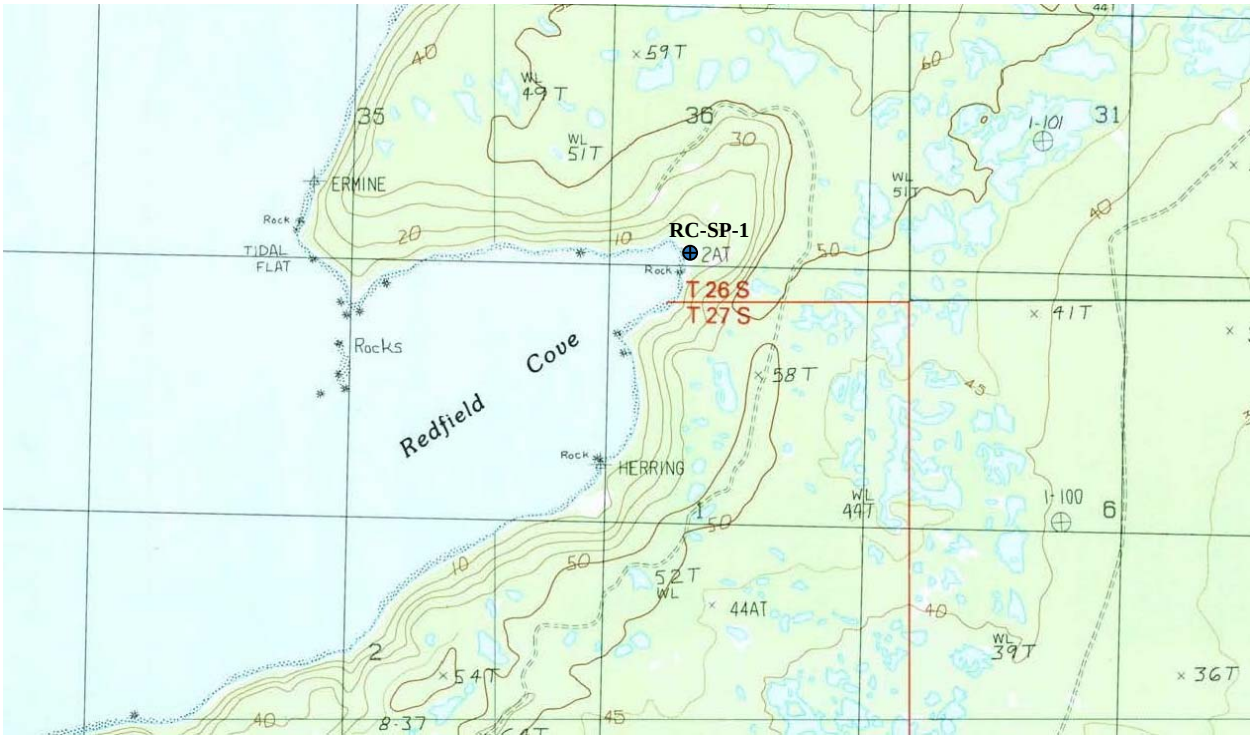

FIGURE 4: Redfield Cove Location

WATER QUANTITY ANALYSIS

During our site visit, we attempted to estimate the available water quantity at each location as described below.

West Addition Hydrant

The PBE (1944) article states that the hydrant system was capable of delivering approximately 75 gpm of water. It is unclear how long the system might be able to sustain that flow rate. Furthermore, that rate is dependent on the details of the pipe conveyance system and intake structure that aren't currently known. Additionally, pipe degradation (the pipe is reportedly wood stave) since the system was installed in the 1940's could also limit the flow rate from what was reported at the time.

The YRAA has indicated that they would replace the existing intake and conveyance system if the West Addition Hydrant site is developed. With that in mind, the water quantity available at the site becomes a function of the drainage area for the source lake and annual precipitation. The drainage area for the lake is estimated at approximately 20 acres (Figure 3). A simple way to estimate the potential available water at this site is to assume that 60 percent of precipitation recharges the lake on an annual basis (the other 40 percent split among evaporation, transpiration from plants, surface

water runoff to the southwest and ground water recharge). Using those assumptions, the annual recharge to the lake is approximately 150 acre-feet, which is equivalent to approximately 150 gpm for the period of hatchery operation (227 days).

*Broken Oar Cov*e

We estimated flow at spring locations BOC-SP-1, BOC-SP-2, and BOC-SP-3 using a surface float method. The surface float method is a simple way to quickly estimate the flow rate of surface water by measuring the cross-section area of the concentrated discharge and timing the surface velocity with a stopwatch. To limit the error associated with this method we chose measuring locations that had relatively steady, uniform flow, and simple cross-section geometry. To estimate the velocity, we measured the time it took for a surface float (typically a small twig) to travel a known distance (4 to 7 feet). We repeated the method between 5 and 8 times and averaged the results. Because the surface float method uses the surface velocity we multiplied the estimated velocity by a factor of 0.7 to account for slower velocities near the edges and bottom of the flow channel for locations BOC-SP-1 and BOC-SP-3. Due to the more turbulent nature of flow and non-uniform cross section observed at BC-SP-2, we multiplied the estimated velocity by a factor of 0.5 at that location. The method is generally considered to have an accuracy of +/- 25 percent.

The flow estimates for BOC-SP-1, BOC-SP-2, and BOC-SP-3 are summarized in Table 1. The two springs measured near the former log loading area (BOC-SP-1, BOC-SP-3) were estimated at 360 gpm and 320 gpm, respectively (680 gpm total). There were also three additional spring discharge locations near BOC-SP-1 and BOC-SP-2 that were not captured by flow measurements. These locations were likely each on the order of 10 to 25 gpm. Flow at location BOC-SP-2 was estimated at 60 gpm.

These flow estimates represent a snapshot in time, and it is unclear how the flow rates might change seasonally. Heavy precipitation fell the night before our site visit so a portion of the estimated flows could be the result of surface runoff.

Table 1: Flow Estimates for Broken Oar Cove

	Location	Width in feet	Depth in feet	Average Velocity in feet/second	Flow in cfs	Flow in gpm
Broken Oar Cove	BOC-SP-1	3.8	0.5	0.4	0.8	360
	BOC-SP-2	1.25	0.25	0.4	0.1	60
	BOC-SP-3	1.5	0.35	1.4	0.7	320

cfs – cubic feet per second
gpm – gallons per minute

Redfield Cove

Flow was estimated in the surface drainage in Redfield Cove using the same methods as described above. The flow was estimated at 1,390 gpm (Table 2). This flow also represents a single snapshot in time and would likely vary seasonally.

Table 2: Flow Estimate for Redfield Cove

	Location	Width in feet	Depth in feet	Average Velocity in feet/second	Flow in cfs	Flow in gpm
Redfield Cove	RC-SP-1	4.4	0.7	0.4	3.1	1,390

cfs – cubic feet per second
gpm – gallons per minute

WATER QUALITY ANALYSIS

Preliminary water quality at each potential site was evaluated in the field for temperature, dissolved oxygen (DO), pH, and conductivity using a YSI 556 multi-parameter probe. Additionally, a water sample was collected from the West Addition Hydrant, Broken Oar Cove spring BOC-SP-1, and Redfield Cove location RC-SP-1. The water samples were submitted to Friedman and Bruya, Inc. in Seattle, Washington for laboratory analysis. The water quality data is presented in Table 3, with Alaska Department of Fish and Game (ADFG) recommended criteria for each parameter. The lab certificates for the samples are included in Attachment A.

In general, water quality at all locations is good. All parameters were within the ADFG recommended criteria with few exceptions:

- The West Addition Hydrant had low alkalinity (5.8 milligrams/liter [mg/L]) compared to the recommended level (>20 mg/L), and elevated iron (0.536 mg/L), manganese (0.0306 mg/L) and zinc (0.0224 mg/L) compared to the recommended levels (<0.1 mg/L, <0.01 mg/L and <0.005mg/L, respectively).

- The Broken Oar Cove site BOC-SP-1 and Redfield Cove site RC-SP-1 had slightly elevated iron concentrations (0.205 and 0.105 mg/L, respectively).

Table 3: Water Quality Summary

			Lab Results			Lab Info		Recommended Water Quality Criteria
			11/26/2012	11/26/2012	11/26/2012			
		Unit	West Addition Hydrant	Broken Oar Cove (BOC-SP-1)	Redfield Cove (RC-SP-1)	PQL*	Test Method	ADFG
Field Para.	Conductivity	mS/cm	30	340	67	0.001	Field YSI 556	
	Dissolved Oxygen	mg/L	8.9	9.1	11.1	0.01	Field YSI 556	>7.0
	pH		5.7	8.1	7.5	0.01	Field YSI 556	
	Temperature	°C	1.5	3.8	2.2	0.1	Field YSI 556	
Laboratory Parameter	Alkalinity (as CaCO3)	mg/L	5.8	208	29.3	10	SM2320B	> 20
	Ammonia (as NH3-N)	mg/L	<0.01	<0.01	<0.01	0.05	SM4500NH3G	0.0125
	Arsenic	mg/L	<0.001	<0.001	<0.001	0.001	EPA 200.8	0.05
	Barium	mg/L	0.00648	0.0219	0.0068	0.001	EPA 200.8	< 5.0
	Cadmium (Alk > 100 mg/L)	mg/L	--	<0.001	<0.001	0.001	EPA 200.8	< 0.0005
	Cadmium (Alk < 100 mg/L)	mg/L	<0.001	--	--	0.001	EPA 200.8	< 0.005
	Carbon Dioxide	mg/L						<1.0
	Chloride	mg/L	6.16	3.42	3.91	0.5	SM 4500CL-C	<4.0
	Chlorine	mg/L				0.01	SM 4500CL-G	<0.003
	Chromium	mg/L	<0.001	<0.001	<0.001	0.001	EPA 200.8	<0.03
	Copper (Alk > 100 mg/L)	mg/L	--	<0.001	<0.001	0.001	EPA 200.8	< 0.006
	Copper (Alk < 100 mg/L)	mg/L	0.00444	--	--	0.001	EPA 200.8	< 0.03
	Iron	mg/L	0.536	0.205	0.105	0.01	EPA 200.7	<.10
	Lead	mg/L	<0.001	<0.001	<0.001	0.001	EPA 200.8	<0.02
	Magnesium	mg/L	0.59	4.26	1.09	0.01	EPA 200.7	<15
	Manganese	mg/L	0.0306	0.00151	0.00363	0.001	EPA 200.8	<0.01
	Mercury	µg/L	<0.1	<0.1	<0.1	0.0005	EPA 1631e	<0.2
	Nickel	mg/L	0.00149	0.00197	<0.001	0.001	EPA 200.8	<0.01
	Nitrate +Nitrite	mg/L	0.012	0.124	0.026	0.1	SM 4500N03F	<1.0
	Nitrogen	% sat						<103%
	Petroleum (Oil)	mg/L	<0.25	<0.25	<0.25	0.25	AK 103	<0.001
	Potassium	mg/L	<0.500	2.33	0.737	0.5	EPA 200.7	<5.0
	Salinity	ppt	<0.50	<0.50	<0.50	0.5	SM 210C	<5.0
	Selenium	mg/L	<0.001	<0.001	<0.001	0.001	EPA 200.8	<0.01
	Silver	mg/L	<0.001	<0.001	<0.001	0.001	EPA 200.8	<0.003
	Sodium	mg/L	2.93	2.59	1.74	0.01	EPA 200.7	<75.0
	Sulfate	mg/L	<1	10.7	1.04	1	SM 4500SO4E	<50
	Sulfide	mg/L	<0.05	<0.05	0.08	0.05	EPA 376.1	
	Total Dissolved Solids	mg/L	33	223	47	5	SM 2540C	<400
	Settleable Solids	mg/L	<10	<10	<10	10	SM 2540B	<80
	Zinc	mg/L	0.0224	<0.005	<0.005	0.001	EPA 200.8	<0.005

*Practical Quantitation Limit. Compare with Detection Limit.
YELLOW = EXCEEDS LIMITS
GRAY = MISSING TEST
ND = Not Detected

RECCOMENDATIONS

Based on our preliminary water quantity and quality evaluations all three potential sites have a potential water source that could serve a new hatchery, depending on the size and scope of the initial operation. The preliminary evaluation indicates that the West Addition Hydrant location has the

smallest quantity of water potentially available, but may have enough to meet the YRAA initial needs. Additional data is needed to further evaluate the sites.

West Addition Hydrant

In order to better evaluate the potential of the West Addition Hydrant site, additional information is necessary as outlined below.

- **Locate Existing Water Rights Documentation**: Water rights documents for the West Addition hydrants should be located, if possible, to determine if they are still active, can be transferred to the YRAA for hatchery use, and what the annual quantity of appropriated water.

- **Determine Specific Source Lake**: The specific lake that is the source for the hydrants needs to be determined to provide a more confident analysis for the annual quantity of available water. Documentation on the construction of the system would likely contain these necessary details.

- **Conduct Detailed Survey of Source Lake**: A more detailed topographic survey of the source lake, including surface area, drainage area, bathemetry, and relationship to other lakes is necessary to further refine estimates of water availability. It is possible that available LiDAR (Light Detecting and Ranging) topography data is sufficient to determine the drainage area and surface area of the lake. A field investigation would be necessary to determine the bathemetry and relationship to other lakes.

Broken Oar and Redfield Cove

In order to better evaluate the potential of the Broken Oar and Redfield Cove sites, additional information is necessary as outlined below.

- **Evaluate Seasonal Water Quantity Variability**: Flows at spring locations BOC-SP-1 and BOC-SP-2 at Broken Oar Cove and RC-SP-1 at Redfield Cove should be estimated using the float method (described above, and demonstrated to Johnathan Pavlik in the field) every 2 weeks to evaluate the seasonal variability in flows at those sites. YRAA staff can conduct this monitoring. We marked each measurement location with orange flagging while on our field visit. A vertical staff gage (yard stick installed in the stream to measure water depth) could also be installed at each location to quickly determine if the flow is the same, greater, or less than during the previous visit.

- **Evaluate Seasonal Water Quality Variability**: Water quality field parameters at spring locations BOC-SP-1, BOC-SP-2, and RC-SP-1 should be measured using a field probe every 2 weeks to evaluate the seasonal variability in water quality at those sites. Temperature can be monitored using data loggers that the YRAA already owns. Handheld field meters that

directly measure pH, total dissolved solids, conductivity, and salinity are available for around $200. Field meters to directly measure dissolved oxygen are also available for around $400.

Field forms to help the YRAA collect the seasonal water quantity and quality information described above are included in Attachment B. Information on handheld water quality field meters is included in Attachment C.

LIMITATIONS

We have prepared these documents for Tetra Tech, Inc. as an initial evaluation of potential water supply sources for the Yakutat Regional Aquaculture Association. The information presented in this report is based on our field visit, the available information that you have provided us, and from sources of information described in this report.

Within the limitations of scope, schedule, and budget, Associated Earth Sciences, Inc. (AESI) attempted to execute these services in accordance with generally accepted professional principles in the fields of geology and hydrogeology at the time this report was prepared. No warranty, express or implied, is made.

We have enjoyed working with you on this project. If you should have any questions or if we can be of additional help to you, please do not hesitate to call.

Sincerely,
ASSOCIATED EARTH SCIENCES, INC.
Everett, Washington

Jay W. Chennault, L.Hg., P.E.
Senior Hydrogeologist/Engineer

Attachments: A. Laboratory Certificates
B. Field Forms
C. Water Quality Field Meter Information

REFERENCES

Holmes, W.F. and Dorava, J.M., 1995, Overview of environmental and hydrogeologic conditions of Yakutat, Alaska, U.S. Geological Survey Open File Report 94-713.

Neal, E.G., 1998, Hydrologic investigation of the Ophir Creek watershed near Yakutat, Alaska, U.G. Geological Survey Open-File Report 98-199.

Pacific Builder and Engineer, 1944, Victory over rain at Yakutat, Army Construction in Alaska – Part Two, pp 49-57, January 1944.

Attachment A

Laboratory Certificates

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Kurt Johnson, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
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December 31, 2013

Jay Chennault, Project Manager
Associated Earth Sciences, Inc.
2911 ½ Hewitt Ave Ste. 2
Everett, WA 98201

Dear Mr. Chennault:

Included is the amended report from the testing of material submitted on December 2, 2013 from the EH 130623, F&BI 312009 project. Chromium, TDS, and potassium have been added to the report.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
AE11226R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Kurt Johnson, B.S.
Eric Young, B.S.

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December 26, 2013

Jay Chennault, Project Manager
Associated Earth Sciences, Inc.
2911 ½ Hewitt Ave Ste. 2
Everett, WA 98201

Dear Mr. Chennault:

Included are the results from the testing of material submitted on December 2, 2013 from the EH 130623, F&BI 312009 project. There are 14 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
AE11226R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 2, 2013 by Friedman & Bruya, Inc. from the Associated Earth Sciences EH 130623, F&BI 312009 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Associated Earth Sciences
312009 -01	BOC-SP-1
312009 -02	RC-SP-1
312009 -03	HYD-LK-1

The samples were sent to Aquatic Research for TDS, salinity, sulfate, nitrate, nitrite, alkalinity, ammonia, chloride, sulfide, Mg, and Na analyses. The report is included.

The AK 103 surrogate failed the acceptance criteria in the method blank. The data were failed accordingly.

The metals samples were preserved at the laboratory. The data were flagged accordingly.

All other quality control requirements were acceptable.

Date of Report: 12/26/13
Date Received: 12/02/13
Project: EH 130623, F&BI 312009
Date Extracted: 12/03/13
Date Analyzed: 12/06/13

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL USING METHOD AK 102

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Surrogate (% Recovery) (Limit 50-150)
BOC-SP-1 312009-01	<50	77
RC-SP-1 312009-02	<50	72
HYD-LK-1 312009-03	<50	76
Method Blank 03-2493 MB	<50	68

Date of Report: 12/26/13
Date Received: 12/02/13
Project: EH 130623, F&BI 312009
Date Extracted: 12/03/13
Date Analyzed: 12/06/13

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL USING METHOD AK 103

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 50-150)
BOC-SP-1 312009-01	<250	56
RC-SP-1 312009-02	<250	67
HYD-LK-1 312009-03	<250	66
Method Blank 03-2493 MB	<250 js	54 vo

Analysis For Total Metals By EPA Method 200.8

Client ID:	BOC-SP-1 ht	Client:	Associated Earth Sciences
Date Received:	12/02/13	Project:	EH 130623, F&BI 312009
Date Extracted:	12/10/13	Lab ID:	312009-01
Date Analyzed:	12/10/13	Data File:	312009-01.046
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	107	60	125
Indium	106	60	125
Holmium	107	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	<1
Nickel	1.97
Copper	<1
Zinc	<5
Arsenic	<1
Selenium	<1
Silver	<1
Cadmium	<1
Barium	21.9
Lead	<1
Manganese	1.51
Iron	205

Analysis For Total Metals By EPA Method 200.8

Client ID:	RC-SP-1 ht	Client:	Associated Earth Sciences
Date Received:	12/02/13	Project:	EH 130623, F&BI 312009
Date Extracted:	12/10/13	Lab ID:	312009-02
Date Analyzed:	12/10/13	Data File:	312009-02.047
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	110	60	125
Indium	109	60	125
Holmium	107	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	<1
Nickel	<1
Copper	<1
Zinc	<5
Arsenic	<1
Selenium	<1
Silver	<1
Cadmium	<1
Barium	6.80
Lead	<1
Manganese	3.63
Iron	105

Analysis For Total Metals By EPA Method 200.8

Client ID:	HYD-LK-1 ht	Client:	Associated Earth Sciences
Date Received:	12/02/13	Project:	EH 130623, F&BI 312009
Date Extracted:	12/10/13	Lab ID:	312009-03
Date Analyzed:	12/10/13	Data File:	312009-03.048
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	112	60	125
Indium	108	60	125
Holmium	108	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	<1
Nickel	1.49
Copper	4.44
Zinc	22.7
Arsenic	<1
Selenium	<1
Silver	<1
Cadmium	<1
Barium	6.48
Lead	<1
Manganese	30.6
Iron	536

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Associated Earth Sciences
Date Received:	NA	Project:	EH 130623, F&BI 312009
Date Extracted:	12/10/13	Lab ID:	I3-839 mb
Date Analyzed:	12/10/13	Data File:	I3-839 mb.040
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	103	60	125
Indium	100	60	125
Holmium	101	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	<1
Nickel	<1
Copper	<1
Zinc	<5
Arsenic	<1
Selenium	<1
Silver	<1
Cadmium	<1
Barium	<1
Lead	<1
Manganese	<1
Iron	<10

Date of Report: 12/26/13
Date Received: 12/02/13
Project: EH 130623, F&BI 312009
Date Extracted: 12/09/13
Date Analyzed: 12/10/13

RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL MERCURY
USING EPA METHOD 1631E
Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Total Mercury
BOC-SP-1 312009-01	<0.1 ht
RC-SP-1 312009-02	<0.1 ht
HYD-LK-1 312009-03	<0.1 ht
Method Blank	<0.1

Date of Report: 12/26/13
Date Received: 12/02/13
Project: EH 130623, F&BI 312009
Date Extracted: 12/02/13
Date Analyzed: 12/03/13

RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL SETTLABLE SOLIDS
BY METHOD 2540B
Results Reported as ml/L (ppm)

Sample ID Laboratory ID	Total Settlable Solids
BOC-SP-1 312009-01	<1
RC-SP-1 312009-02	<1
HYD-LK-1 312009-03	<1
Method Blank	<1

Date of Report: 12/26/13
Date Received: 12/02/13
Project: EH 130623, F&BI 312009

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL USING METHOD AK 103

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Motor Oil	ug/L (ppb)	2,500	79	76	60-120	4

Date of Report: 12/26/13
Date Received: 12/02/13
Project: EH 130623, F&BI 312009

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL USING METHOD AK 102

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel	ug/L (ppb)	2,500	75	79	75-125	5

Date of Report: 12/26/13
Date Received: 12/02/13
Project: EH 130623, F&BI 312009

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 312093-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Chromium	ug/L (ppb)	20	3.73	96	98	64-132	2
Nickel	ug/L (ppb)	20	7.22	94 b	98 b	61-128	4 b
Copper	ug/L (ppb)	20	828	220 b	280 b	63-124	24 b
Zinc	ug/L (ppb)	50	1,000	203 b	219 b	55-141	8 b
Arsenic	ug/L (ppb)	10	5.99	100 b	101 b	60-150	1 b
Selenium	ug/L (ppb)	5	<1	92	97	43-178	5
Silver	ug/L (ppb)	5	<1	87	91	71-115	4
Cadmium	ug/L (ppb)	5	1.83	97 b	101 b	83-116	4 b
Barium	ug/L (ppb)	50	63.8	96 b	110 b	79-126	14 b
Lead	ug/L (ppb)	10	28.7	81 b	82 b	79-121	1 b
Manganese	ug/L (ppb)	20	460	226 b	238 b	47-155	5 b
Iron	ug/L (ppb)	100	3,120	158 b	233 b	50-150	38 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Chromium	ug/L (ppb)	20	100	80-119
Nickel	ug/L (ppb)	20	103	79-122
Copper	ug/L (ppb)	20	101	81-119
Zinc	ug/L (ppb)	50	103	76-124
Arsenic	ug/L (ppb)	10	105	80-111
Selenium	ug/L (ppb)	5	105	81-119
Silver	ug/L (ppb)	5	104	80-116
Cadmium	ug/L (ppb)	5	106	83-113
Barium	ug/L (ppb)	50	99	83-117
Lead	ug/L (ppb)	10	101	83-115
Manganese	ug/L (ppb)	20	101	76-120
Iron	ug/L (ppb)	100	99	70-130

Date of Report: 12/26/13
Date Received: 12/02/13
Project: EH 130623, F&BI 312009

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 312009-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	ug/L (ppb)	0.5	<0.1	107	101	63-132	6

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	ug/L (ppb)	0.5	97	78-118

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

312009

SAMPLE CHAIN OF CUSTODY

ME 12/2/13 AIG

Page # 1 of 1

Send Report To JAY CHENNAULT

Company AESI

Address 2911 ½ Hewitt Ave, Suite 2

City, State, ZIP Everett, WA 98201

Phone # 360-854-8705 Fax # 425-252-3408

Email Address jchennault@aesgeo.com

SAMPLERS (signature)

PROJECT NAME/NO. EH 130623

PO #

PROJECT ADDRESS YRAA SPRING EVALUATION

• ELECTRONIC DATA REQUESTED
Metals: Ag, Ba, Cd, Cr, Fe, Pb, Ni, Hg, As, Zn, Se, Mn, Mg, Na

TURNAROUND TIME
• Standard Turnaround
• RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
• Dispose after 30 days
• Return samples
• Will call with instructions

Samples Received at ___ °C

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	ANALYSES REQUESTED: Diesel/Oil TPH	TDS/TSS TPH Gasoline	Sulfide BTEX by 8021B	Sulfate VOCs by 8260	Sulfite SVOCs by 8270	Nitrate/Nitrite HMS	Metals	Alkalinity	Ammonia	Chloride	Sulfate	Notes
BOC-SP-1	01 A-B	11/26/13	10:00	W	2	X	X	X	X	X	X	X	X	X	X	X	~~HOLD pending~~
RC-SP-1	02	11/26/13	1:30	W	2	X	X	X	X	X	X	X	X	X	X	X	~~HOLD pending~~
HYD-LK-1	03	11/26/13	11:30	W	2	X	X	X	X	X	X	X	X	X	X	X	~~HOLD pending~~
																	X-per JC 12/3/13 mc
													Samples received at 3 °C				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	JAY CHENNAULT	AESI	12/2/13	10:00
Received by:	Nhan Phan	FEBI	12/2/13	1230
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FORMS\COC\COC.DOC

* PLEASE HOLD SAMPLES UNTIL FURTHER NOTICE

IEH - AQUATIC RESEARCH

LABORATORY & CONSULTING SERVICES

3927 AURORA AVENUE NORTH, SEATTLE, WA 98103

PHONE: (206) 632-2715 FAX: (206) 632-2417

CASE FILE NUMBER:	**FBI012-26**		**PAGE 1**
REPORT DATE:	**12/23/13 REVISED 12/31/13**		
DATE SAMPLED:	**11/20/13**	**DATE RECEIVED:**	**12/03/13**

FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER SAMPLES FROM FRIEDMAN & BRUYA, INC. / PROJECT NO. 312009

CASE NARRATIVE

Three water samples were received by the laboratory in good condition and analyzed according to the chain of custody. No difficulties were encountered in the preparation or analysis of these samples. Sample data follows while QA/QC data is contained on subsequent pages. The report has been revised to include Potassium and TDS data.

SAMPLE DATA

SAMPLE ID	ALKALINITY (mgCaCO3/l)	SULFATE (mg/L)	AMMONIA (mg/L)	NO3+NO2 (mg/L)	SALINITY (o/oo)	CHLORIDE (mg/L)	SULFIDE (mg/L)
BOC-SP-1	208	10.7	<0.010	0.124	<0.50	3.42	<0.05
RC-SP-1	29.3	1.04	<0.010	0.026	<0.50	3.91	0.08
HYD-LK-1	5.80	<1.00	<0.010	0.012	<0.50	6.16	<0.05

SAMPLE ID	MAGNESIUM (mg/L)	SODIUM (mg/L)	POTASSIUM (mg/L)	TDS (mg/L)
BOC-SP-1	4.26	2.59	2.33	223
RC-SP-1	1.09	1.74	0.737	47
HYD-LK-1	0.590	2.93	<0.500	33

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LABORATORY & CONSULTING SERVICES

3927 AURORA AVENUE NORTH, SEATTLE, WA 98103

PHONE: (206) 632-2715 FAX: (206) 632-2417

CASE FILE NUMBER:	**FBI012-26**	**PAGE 2**	
REPORT DATE:	**12/23/13 REVISED 12/31/13**		
DATE SAMPLED:	**11/20/13**	**DATE RECEIVED:**	**12/03/13**

FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER SAMPLES FROM FRIEDMAN & BRUYA, INC. / PROJECT NO. 312009

QA/QC DATA

QC PARAMETER	ALKALINITY (mgCaCO3/l)	SULFATE (mg/L)	AMMONIA (mg/L)	NO3+NO2 (mg/L)	SALINITY (o/oo)	CHLORIDE (mg/L)	SULFIDE (mg/L)
METHOD	SM18 2320B	SM184500SO4E	SM184500NH3H	SM184500N03F	SM210C	SM18 4500CL-C	EPA 376.1
DATE ANALYZED	12/10/13	12/10/13	12/06/13	12/06/13	12/06/13	12/09/13	12/03/13
DETECTION LIMIT	1.00	1.00	0.010	0.010	0.50	0.50	0.05
DUPLICATE							
SAMPLE ID	HYD-LK-1	BATCH	BATCH	BATCH	HYD-LK-1	HYD-LK-1	HYD-LK-1
ORIGINAL	5.80	6.40	0.118	0.349	<0.50	6.16	<0.05
DUPLICATE	5.20	6.63	0.118	0.371	<0.50	6.16	<0.05
RPD	10.91%	3.53%	0.09%	6.14%	NC	0.00%	NC
SPIKE SAMPLE							
SAMPLE ID		BATCH	BATCH	BATCH		HYD-LK-1	
ORIGINAL		6.40	0.118	0.349		6.16	
SPIKED SAMPLE		16.4	0.308	0.559		15.6	
SPIKE ADDED		10.0	0.200	0.200		10.0	
% RECOVERY	NA	99.98%	95.34%	105.26%	NA	94.82%	NA
QC CHECK							
FOUND	101	10.2	0.312	0.401		30.5	
TRUE	100	10.0	0.324	0.408		30.0	
% RECOVERY	101.00%	102.00%	96.21%	98.26%	NA	101.67%	NA
BLANK	NA	<1.00	<0.010	<0.010	<0.50	<0.50	<0.05

RPD = RELATIVE PERCENT DIFFERENCE.
NA = NOT APPLICABLE OR NOT AVAILABLE.
NC = NOT CALCULABLE DUE TO ONE OR MORE VALUES BEING BELOW THE DETECTION LIMIT.
OR = RECOVERY NOT CALCULABLE DUE TO SPIKE SAMPLE OUT OF RANGE OR SPIKE TOO LOW RELATIVE TO SAMPLE CONCENTRATION.

IEH - AQUATIC RESEARCH

LABORATORY & CONSULTING SERVICES

3927 AURORA AVENUE NORTH, SEATTLE, WA 98103

PHONE: (206) 632-2715 FAX: (206) 632-2417

CASE FILE NUMBER:	**FBI012-26**		**PAGE 3**
REPORT DATE:	**12/23/13 REVISED 12/31/13**		
DATE SAMPLED:	**11/20/13**	**DATE RECEIVED:**	**12/03/13**

FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER SAMPLES FROM FRIEDMAN & BRUYA, INC. / PROJECT NO. 312009

QA/QC DATA

QC PARAMETER	MAGNESIUM (mg/L)	SODIUM (mg/L)	POTASSIUM (mg/L)	TDS (mg/L)
METHOD	EPA 200.7	EPA 200.7	EPA 200.7	SM18 2540C
DATE ANALYZED	12/04/13	12/04/13	12/04/13	12/30/13
DETECTION LIMIT	0.100	0.500	0.500	5.0
DUPLICATE				
SAMPLE ID	BATCH	BATCH	BATCH	BOC-SP-1
ORIGINAL	13.0	13.0	6.33	223
DUPLICATE	12.8	12.7	6.23	209
RPD	1.41%	2.55%	1.47%	6.48%
SPIKE SAMPLE				
SAMPLE ID	BATCH	BATCH	BATCH	
ORIGINAL	13.0	13.0	6.33	
SPIKED SAMPLE	24.4	23.9	17.3	
SPIKE ADDED	10.0	10.0	10.0	
% RECOVERY	114.70%	108.41%	109.58%	NA
QC CHECK				
FOUND	10.4	10.8	10.2	
TRUE	10.0	10.0	10.0	
% RECOVERY	104.00%	108.00%	102.40%	NA
BLANK	<0.100	<0.500	<0.500	<5.0

RPD = RELATIVE PERCENT DIFFERENCE.
NA = NOT APPLICABLE OR NOT AVAILABLE.
NC = NOT CALCULABLE DUE TO ONE OR MORE VALUES BEING BELOW THE DETECTION LIMIT.
OR = RECOVERY NOT CALCULABLE DUE TO SPIKE SAMPLE OUT OF RANGE OR SPIKE TOO LOW RELATIVE TO SAMPLE CONCENTRATION.

SUBMITTED BY:

Damien Gadomski
Project Manager

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

FB1012-26

Page # 1 of 1

Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 Fax # (206) 283-5044

SUBCONTRACTER Ag. Research
PROJECT NAME/NO. 312009
PO # C-659
REMARKS HT 7 days for sulfide
Please Email Results

TURNAROUND TIME
☒ Standard (2 Weeks)
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	Dioxins and Furans by 8290	EPH	Mg+Na VPH	Nitrite+ Nitrate	Sulfate	Alkalinity	Ammonia	Chloride	Sulfide	Salinity	Notes
BOC-SP-1		11/26/13	1000	water	1			x	x	x	x	x	x	x	x	
RC-SP-1		↓	130	↓				x	x	x	x	x	x	x	x	
HYD-LK-1		↓	1130	↓				x	x	x	x	x	x	x	x	

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Michael Erdahl	Friedman & Bruya	12/3/13	9:43
Received by:	MARIE HENDRICKSON	ARI	12/3/13	10:50
Relinquished by:				
Received by:				

Attachment B

Field Forms

Flow Measurement Form - Surface Float Method

Location: _____

Date: _____

Length (L) _____ FT

Width (W) _____ FT

Average Depth (D) _____ FT

Average Time (t) _____ Seconds

Coefficent * _____ (0.7 or 0.5)

Trial	Time in Seconds
1	
2	
3	
4	
5	
Average	

* Coefficient factor for the float method, either 0.7 (ideal conditions, long and strait section, uniform flow, etc.) or 0.5 (short section, tubulent flow, etc.)

Average Flow =
W x D x (L/t) x C _____ CFS

Average Flow =
CFS x 448.8 _____ GPM

Instructions:

1) Select measurement section that is relatively long (5-10 feet) and strait, with uniform flow, and uniform cross section depth.

2) Measure width and depth of cross section to the nearest 0.1 foot.

3) Measure length of measurement section to the nearest 0.1 foot.

4) Measure the time it takes a surface float (e.g. small twig, or leaf) to float the length of the measurement section to th nearest 0.1 second with a stopwatch.

5) Calculate the average travel time in seconds.

6) Calculate the average flow in cubic feet per second (cfs) by multipying the cross section width, depth, measurement section length divided by averge time, and the coeffiecent, either 0.7 or 0.5.

7) Calculate the average flow in cfs by 448.8 to convert to gallons per minute (gpm)

Water Quality Measurement Form - Field Parameters

Location:	_____	
Date:	_____	
Temperature	_____	°C
Conductivity	_____	µs
pH	_____	
TDS	_____	mg/L
Dissolved Oxygen	_____	mg/L

Instructions:

1) Turn field meters on and calibrate (once daily) in accordance with the manufacturers instructions

2) Submerge probes in flowing water and wait until the parameters stabalize before reading the values (the easiest way to do this is to submege the probes in the stream while you are conducting the flow measurement, then read the values after the flow measurement is done.

Water Quality Measurement Form - Field Parameters

Location:	_____	
Date:	_____	
Temperature	_____	°C
Conductivity	_____	µs
pH	_____	
TDS	_____	mg/L
Dissolved Oxygen	_____	mg/L

Instructions:

1) Turn field meters on and calibrate (once daily) in accordance with the manufacturers instructions

2) Submerge probes in flowing water and wait until the parameters stabalize before reading the values (the easiest way to do this is to submege the probes in the stream while you are conducting the flow measurement, then read the values after the flow measurement is done.

Attachment C

Water Quality Field Meter Information

44231

Place cursor over image to zoom

Extech® ExStik® II Dissolved Oxygen Meter

SKU: 76055 **Availability:** In Stock **Specs:**

Qty: 1 Add To Cart

Type: Meter **Price: $249.99**

Obtain and store up to 25 data sets of dissolved oxygen and temperature measurements with this waterproof meter. Oxygen level readings can be displayed as % saturation or concentration (mg/L [ppm]), and an analog bar graph indicates trends. The meter also features adjustable altitude compensation (0 to 20,000 ft. in 1,000 ft. increments), self-calibration, adjustable salinity compensation from 0 to 50 ppt, data hold, auto power off, and low battery indicator. Waterproof to IP67. Meter comes complete with dissolved oxygen electrode, protective sensor cap, spare membrane cap, electrolyte, four 1.5V SR44W batteries, and a 48" neck strap. One year manufacturer's warranty.

Specifications
Range: Dissolved oxygen (saturation mode), 0 to 200.0%; Dissolved oxygen (concentration mode), 0 to 20.00ppm (mg/L); Temperature, 32°F to 122°F (0°C to 50°C). Maximum resolution: Dissolved oxygen (saturation mode), 0.1%; Dissolved oxygen (concentration mode), 0.01ppm (mg/L); Temperature, 0.1°F/°C. Basic accuracy: Dissolved oxygen (saturation mode), 1.5% FS; Dissolved oxygen (concentration mode), 0.3ppm (mg/L); Temperature, ±1.8°F (1°C). Weight: 3.8 oz. Dimensions: 1.4" x 6.9" x 1.6".

Accessories

	Item Profile		Price
	**Extech Membrane Kit** **76058** Includes 6 screw-on membrane caps, 15 mL filling solution, and polishing paper.	**Specs:** None In Stock Qty: 1 Add to Cart	$69.99
	**30000 Forestry Suppliers Lanyard**	**Specs:** None In Stock Qty: 1 Add to Cart	$2.95

Customer Product Reviews

Be the first person to **write a product review** about this product.

44241

Place cursor over image to zoom

Extech® ExStik® II pH/Conductivity Meter

Five measurement parameters in one compact meter.

SKU: 76060 **Availability:** In Stock **Specs:**

Qty: 1 Add To Cart

Price: $159.99

Measure conductivity, TDS, salinity, pH, and temperature using only one electrode with this rugged, waterproof meter! Nine units of measure are available: pH, µS, mS, ppm, ppt, mg/L, g/L, °C, and °F. An analog bar graph indicates measurement trends, and the meter's memory stores up to 25 labeled readings. The RENEW feature alerts you when the electrode needs to be replaced. The meter also features adjustable conductivity to TDS ratio from 0.4 to 1.0, 0.5 fixed salinity ratio, auto power off, and low battery indicator. Waterproof to IP67. Included with the meter are an electrode, protective sensor cap, sample cup with cap, four 1.5V SR44W batteries, and a 48" neck strap. One year manufacturer's warranty.

Specifications
Range: Conductivity, 0 to 199 µS, 200 to 1,999 µS, 2.00 to 19.99 mS; TDS/Salinity, 0 to 99.9 ppm (mg/L), 100 to 999 ppm (mg/L), 1.00 to 9.99 ppt; pH, 0.00 to 14.00 pH; Temperature, 32°F to 149°F (0°C to 65°C). Maximum resolution: Conductivity, 0.1 µS; TDS/Salinity, 0.1 ppm (mg/L); pH, 0.01 pH; Temperature, 0.1°F/°C. Basic accuracy: Conductivity, ±2% FS; TDS/Salinity, ±2%FS; pH, ±0.01 pH; Temperature: ±1.8°F/1°C. Memory: 25 data sets. Weight: 3.8 oz. Dimensions: 1.4" x 7.3" x 1.6".
Note: Fluoride and chlorine meters are available. Call for details.

Replacement Parts

	Item	Profile		Price
	**76061**	**Extech Replacement pH/Conductivity Cell Module** Replacement pH/Conductivity cell module for use with the Extech ExStik II pH/Conductivity Meter.	**Specs:** None In Stock Qty: 1 Add to Cart	$64.99
	**76107**	**Oakton Conductivity Calibration Solution, 84 µS/cm** 84 µS/cm Conductivity standard. One-pint bottle.	**Specs:** None In Stock Qty: 1 Add to Cart	$12.25
	**30000**	**Forestry Suppliers Lanyard**	**Specs:** None In Stock Qty: 1 Add to Cart	$2.95

Customer Product Reviews

Be the first person to **write a product review** about this product.