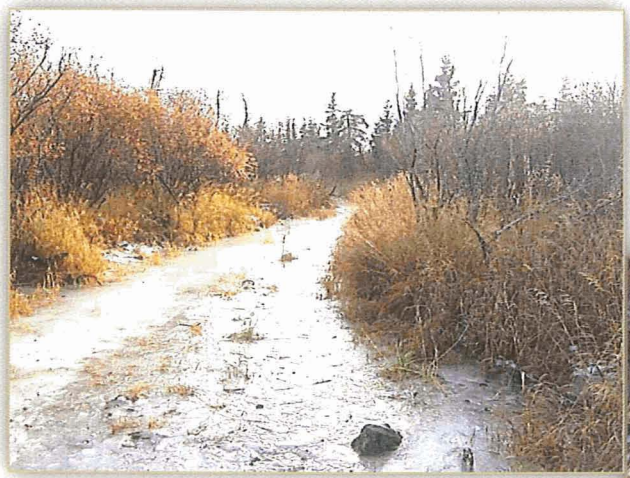
WATER SOURCE STUDY

Tuluksak Native Community
Tuluksak, Alaska

Prepared by: CE2 Engineers, Inc.

May 2011 FINAL



Utility Core Site Well Test Pumping
Tuluksak, Alaska

I. Introduction

A. Summary and Need

In Fall 2000, the Tuluksak Native Community (TNC) approved a plan for the development of a piped utility system and to co-locate their power plant, bulk fuel storage, community water source, water treatment plant and water storage tank to an area approximately one-quarter mile south of the community. This area is now known as the Utility Core Site.

Two wells have been drilled at this site to serve as the future water source for the community.

Before proceeding with design and construction of proposed water system improvements, there was a desire to review all potential water sources to ensure that fair consideration was given to all viable alternatives. CE2 Engineers, Inc. (CE2) was contracted to prepare a water source study, evaluating water source alternatives, including existing wells (washeteria, cemetery, BIA school and utility core site) and the Tuluksak River.

Documents used in the development of this water source study, and presented in the appendices, include:

- "Final Tuluksak River Site Inspection Report", September 2009, Technical Direction Document Number 08-02-0017; Prepared for USEPA by Ecology & Environment, Inc. (Cover Sheet and Section 8—Summary and Conclusions only, Appendix A)
- Well Log—Existing Washeteria Well (Appendix B)
- Well Logs & Pump Test Data—Utility Core Site Wells (Appendix C)
- Water Quality Results Dated 10-27-05—Utility Core Site 2005 Wells (Appendix D)

Capital cost estimates were developed through this study to determine and illustrate the cost differences between water source alternatives A, B and C. These estimates are provided in Section IV, Comparison of Alternatives.

II. Background

A. Project Setting

1. Location and Access

The community of Tuluksak lies on the south bank of the Tuluksak River approximately 1.5 miles upstream of its confluence with the Kuskokwim River. The village is 35 miles northeast of Bethel in the Bethel Recording District, and lies at approximately 61.1025° north latitude and 160.96167° west longitude. The village area encompasses 3.1 square miles of land and 0.1 square miles of water. Annual precipitation averages 16 inches in this area, with snowfall of 50 inches. Summer temperatures range from 82° to 42° Fahrenheit; winter average temperatures can be from 40° to -42° Fahrenheit.

2. Environmental Conditions

The topography of the area is generally low wetlands with small knolls, lakes, sloughs and old river channels. Undisturbed areas are forested with black spruce, some mature white spruce and willow brush. The village itself is partially forested.

General near surface geology at the site is primarily the result of reworked floodplain deposits. A thin layer of organic soil typically covers the ground surface over silt with silty sand at depth. Sporadic permafrost is present throughout the project area. Where the ground is unfrozen, the groundwater level is close to the level of the river and will vary with the regional water table.

The village of Tuluksak has silty sand fill material available for the construction of embankments. In 2003 Duane Miller Associates LLC collected a bulk sample from the existing borrow site and tested its gradation. The results show that the fill material is a silty, fine-grained sand, with slightly over 12% finer than the 0.02 mm size. Cleaner material is available, but difficult to mine in an efficient manner.

3. Present and Projected Population

The year 2000 population, certified by the State of Alaska Department of Commerce, Community and Economic Development (DCCED), was 428 persons. Assuming a 1.5% growth rate, the estimated 2010 population is 497, and the design year 2030 population is projected to be 669.

4. Proposed Sanitation Improvements

In Fall 2000, TNC approved a plan for the development of a piped utility system and to co-locate their power plant, bulk fuel storage, community water source, water treatment plant and water storage tank to an area approximately one-

quarter mile south of the community. This area is now known as the Utility Core Site.

Construction completed to date includes the access road to the utility core site and wastewater lagoon, construction of the utility core site building pad, construction of the new power plant, and drilling of two new wells on the site.

Construction is underway on Phases I and II of the wastewater system improvements, including installation of new gravity sewer mains, lift station, force main and the wastewater treatment lagoon. Future phases of the wastewater improvement project call for extension of gravity sewer mains to serve additional portions of the village.

5. Design Criteria—Water Demand

Assuming a demand of 50 gallons per capita per day (gpcd), the design maximum daily demand (Year 2030) is 43,485 gallons per day (gpd).

The design peak per capita demand is 65 gpcd.

For the design year 2030, the peak daily system design demand is:

$Q_{2030MAX}$ = 669 persons * 65 gpcd = 43,485 gpd

$Q_{2030MAX}$ = (43,485 gpd)/(1,440 min/day) = 30 gal/minute (gpm)

The peak hourly design demand = 4 * $Q_{2030MAX}$ = 4 * 30 gpm = 120 gpm

B. Existing Source History

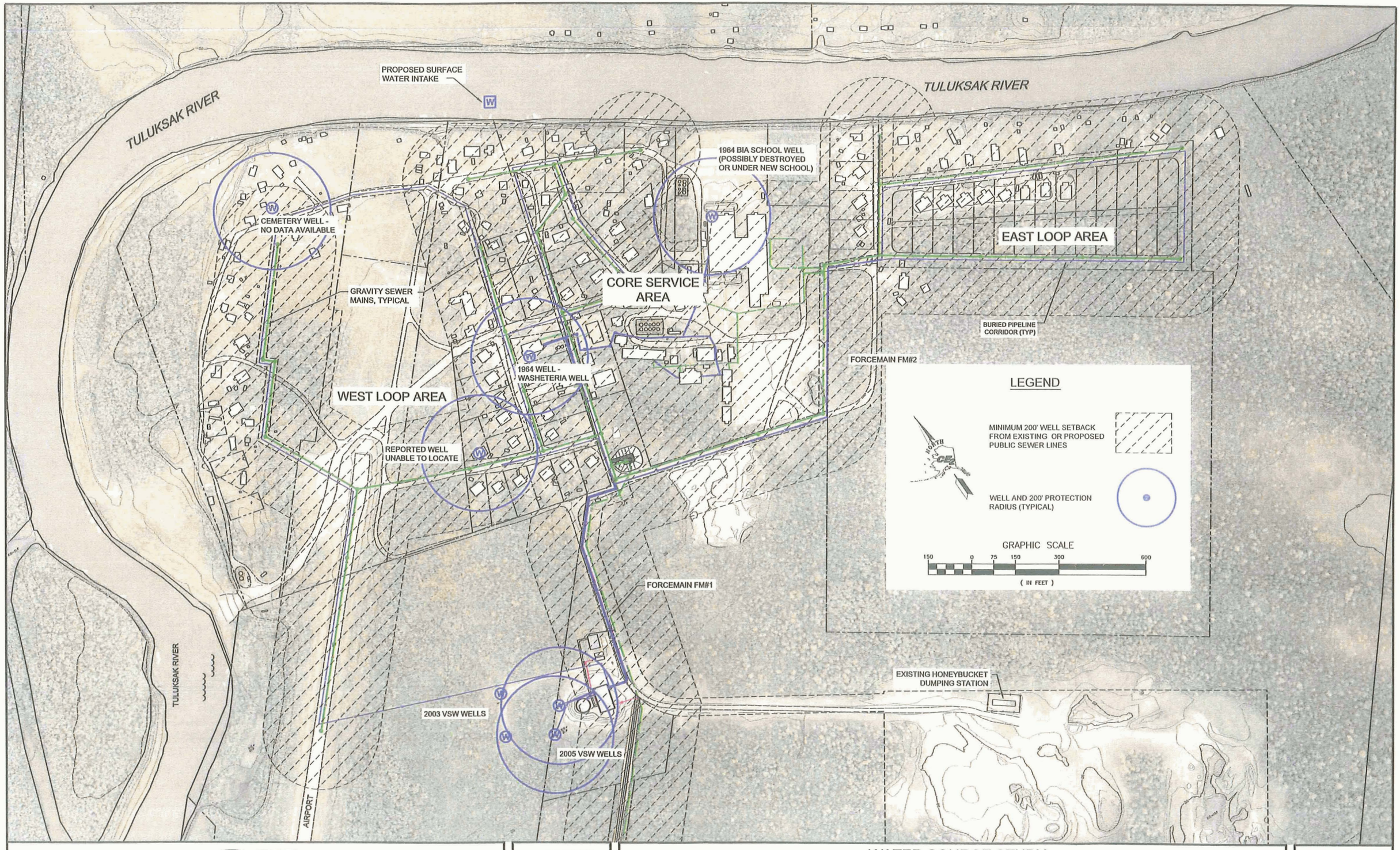
Existing historic and proposed drinking water sources that were evaluated in this study are described below and are shown on the next page in Figure 1.

1. Washeteria Well

This well is currently in use as the water source for the village. Records indicate that the well is 49 feet deep, is screened from 34 to 49 feet, and has a static water level of 10.5 feet.

2. Cemetery Well

This well is located beneath a house currently occupied by Mr. Nelson Napoka and family. We attempted on several occasions to get access to this well for testing, but the residents were unwilling to allow access.



CE2 ENGINEERS, INC.

Scale: AS SHOWN

Date: JAN. 2011

Drawn: CM

WATER SOURCE STUDY

WATER SOURCE ALTERNATIVES - LOCATION MAP

TULUKSAK, ALASKA

FIGURE 1

3. BIA School Well

This well was reportedly served the old elementary school. CE2 Senior Design Engineer Lloyd Persson, P.E. visited the site, along with a maintenance representative from the school, but was unable to locate the well. A later observation of the site by CE2 Design Engineer Mike Erdman, P.E., and CE2 Construction Manager David Harvey revealed no sign of the well. It appears likely that the well casing was buried when the old school, which had been destroyed by fire, was demolished and hauled from the site.

4. 2003/2005 Utility Core Site Well Field

In 2003, two wells were drilled on Airport property to the west of the Utility Core Site. It was subsequently learned that the State of Alaska was unable to grant an easement for these wells.

In 2005, two 6-inch wells were drilled at the Utility Core Site, approximately 1,350 linear feet southeast from the existing well and water treatment plant. The wells were drilled through numerous layers of very dense sand. Water-bearing layers were found from 135 to 159 feet from the ground surface in well W05-1, and from 172 to 191 feet from the ground surface in well W05-2. The static water level in both wells was approximately 13 feet below the land surface. At the time they were drilled, both wells were developed and then test pumped at 75 gpm for a 24-hour period. The drawdown at 75 gpm was approximately 21 feet static water level, indicating that each well has a specific capacity of 3.57 gpm per linear foot of drawdown. This indicates that the wells have sufficient capacity to meet the anticipated design pumping rates without drawing the water level in the wells down to near the pump level.

5. Tuluksak River

The river has been a traditional water source for the village.

6. Other

There are reportedly other wells within the townsite area. However, CE2 was unable to locate or obtain any specific information about these wells.

III. Evaluation of Alternative Water Sources

A. Water Sources

1. Washeteria Well

This well is currently in use, so it is a known entity; however, the well location does not provide the minimum separation distance from proposed wastewater collection system improvements, existing honey bucket pits, and other possible sources of contamination.

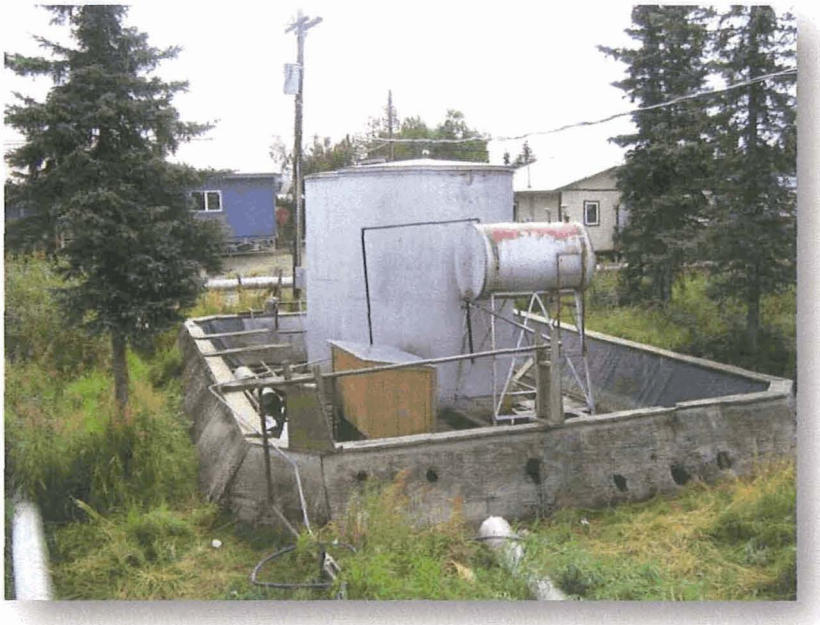


Figure 2—Washeteria Fuel Storage Adjacent to the Existing Well

The well is very shallow (screened from 34-49 feet), making it more susceptible to contamination. Although it is currently designated as a groundwater source, it is likely this well could be reclassified as groundwater under the influence of surface water, which would subject it to additional regulatory requirements.

The water from this well has very high iron levels.

2. Cemetery Well

The Cemetery Well is located beneath a house currently occupied by Mr. Nelson Napoka and his family (see Figure 3, next page). The residents were unwilling to allow us access, so we were unable to inspect or test this well.

The location does not meet the minimum separation distance requirements from the proposed wastewater collection system improvements, existing honey bucket pits, and other possible sources of contamination.

Figure 3—Old Pumphouse and Cemetery Well (under building)

This well has not been included for further evaluation as a potential water source.

3. BIA School Well

Several unsuccessful attempts have been made to locate this well, which was reportedly near the old school. It is believed that the well may have been destroyed when the burned school building was demolished and removed.

This well has not been included for further evaluation as a potential water source.

4. 2005 Utility Core Site Well Field

This source meets all minimum separation distance requirements, and is adjacent to the power plant and proposed water treatment plant site.

Figure 4—Utility Core Site and 2005 VSW Wells

5. Tuluksak River

The river has been a traditional water source for the village. Some villagers have expressed concern that the river water may be contaminated as a result of placer mining which has occurred along the upper reaches of the river for more than 100 years. EPA studies of the river have concluded that hazardous substances are migrating from the mine sites to the river. Elevated concentrations of arsenic, cadmium, chromium, cobalt, copper and nickel were detected in river sediments at various locations as far downstream as Fog River (18 river miles upstream from Tuluksak), but were not detected in a sample of river water. Three additional samples collected between the Fog River confluence and the village of Tuluksak showed no elevated concentrations of contaminants.

The quality of river water often varies greatly during the year, which complicates the design and operation of treatment systems. A trained and experienced water system operator would be needed to monitor raw water quality and adjust the treatment system accordingly.

Since this would be a surface water source, additional regulatory requirements would apply, adding additional operational complexity and expense.

6. Other

Several other wells are reportedly located within the townsite area; however, the specific locations are unknown. The general location does not provide the required separation distance from proposed wastewater collection system improvements and other possible sources of contamination.

These wells have not been included for further evaluation as potential water sources.

IV. Comparison of Alternatives

Based upon the assessment of existing and potential sources above, the following alternative water sources were selected for further consideration and evaluation.

- Source A - Existing Washeteria Well
- Source B - Existing Utility Core Site Wells
- Source C - Tuluksak River

As is often the case, the alternatives have various advantages and disadvantages, which can complicate the selection process. To simplify the comparison and evaluation of alternatives, the following selection criteria were established, and each alternative was evaluated based upon these criteria.

A. Selection Criteria

1. Raw Water Quality and Treatability

This criterion addresses the quality of the raw water, and our assessment of the ease with which the water can be treated.

2. Operational Complexity and Reliability

This criterion addresses the complexity of operating the water source and water treatment system. For example, the operation of a well source is relatively simple, as compared to a river intake.

3. Source Protection—Vulnerability to Contamination

This criterion addresses the susceptibility of the water source to contamination. For example, a shallow well is more susceptible to contamination from the surface than a deeper well. A river source would be susceptible to contamination from activities upstream.

4. Development Costs

The current plan calls for the water source and water treatment plant to be co-located at the utility core site. For the purpose of this study, we have assumed that the water treatment plant will remain at the utility core site, regardless of which water source option is selected. This site offers a significant advantage, in that it allows for the use of waste heat from the adjacent power plant, greatly reducing the energy cost to operate the plant and add heat to the water circulation loops.

Water sources other than the utility core site wells will require construction of a raw water supply line to the water treatment plant site, adding to the development cost for those sources.

5. Operation and Maintenance Costs

This criterion factors in the differences in operation and maintenance costs for the different options.

B. Scoring Matrix

Presenting alternatives for comparison in a scoring matrix is sometimes helpful to decision makers, but must be used with care, because the selection and weighting of criteria, and scoring, are somewhat subjective. The scoring matrix, presented on the following page, was prepared to focus the decision process. The left column contains criteria thought to be important to making a selection between the alternative water sources. Next to each criterion is a weighting factor that assigns a relative importance (1 low to 10 high) to each of the criterion. For example, annual O&M cost is paid entirely by utility customers and was given a weight of "8" versus development cost, which was judged less important to the ultimate decision, and therefore weighted as "6".

The scoring boxes to the right of the criteria weighting factors allow the user to assign a score (1 low to 5 high) to evaluate each alternative source for each criterion and numerically score that criterion for each alternative. As an example, for the criterion "Development Cost", Source A has the lowest cost and scores a "5" (high numbers being "best") and Source C, having the highest development cost of the alternatives, scores a "1". For each criterion the weighting factor is multiplied by the score for each alternative and the result is entered in the far right column.

The matrix is presented here mainly to give decision-makers another way to look at the alternatives.

SCORING MATRIX ANALYSIS	Weighting	Water Source	Scoring (Best →)					Weighted Score
Criteria			1	2	3	4	5	
1) Raw Water Quality & Treatability	10	A		√				20
		B			√			30
		C					√	50
2) Operational Complexity & Reliability	8	A				√		32
		B				√		32
		C		√				16
3) Source Protection—Vulnerability of Source to Contamination	7	A	√					7
		B					√	35
		C		√				14
4) Development Costs	6	A		√				12
		B					√	30
		C	√					6
5) Operation & Maintenance Costs	8	A			√			24
		B					√	40
		C		√				16

SCORING SUMMARY	
Source A—Existing Washeteria Well	95
Source B—Existing Utility Core Site 2005 Wells*	167
Source C—Tuluksak River	102

* Highest Score

C. Scoring Rationale

1. Scoring Rationale for Raw Water Quality and Treatability

The following table provides a comparison of water quality analyses of samples from the utility core site wells and the Tuluksak River. The results show some advantage to the river water quality (no arsenic detected, lower levels of iron

and color). However, this needs to be offset by the knowledge that the quality of river water often varies greatly throughout the year, which can cause difficulties in maintaining consistent treatment efficiency.

Table 1—Comparison of Select Water Quality Parameters

Parameter	Units	Utility Core Site north well W05-1	Utility Core Site south well W05-2	Tuluksak River	MCL
Arsenic	ug/L	16.3	49.6	0	10
Color, True	PCU	400	282	20	5
Color, Apparent	PCU	255	78		
Hardness (CaCO3)	mg/L	102	100	43	
HAA5 Formation Pot.	ug/L	61	109		
Iron	mg/L	15	10.5	2.28	0.3
Langlier Index @ 40 deg F	Lang	-0.93	-0.63	-2.18	
Manganese	mg/L	0.4	0.375	0.354	50
pH	pH	7.0	7.0	6.8	
Total Diss. Solids	mg/L	135	145	77	500
Total Org. Carbon	mg/L	2.1	3.2	16.4	
Total Organic Carbon, Dissolved	mg/L	1.7	2	2.51	
TTHM Formation Pot.	ug/L	239	333		
Turbidity	NTU	105	28.7	13.1	
E. Coli	Present/Absent	Absent	Absent	Absent	Absent
Total Coliform	Present/Absent	Absent	Absent	Present	Absent

Notes:
1. Most results shown are an average of several samples.
2. An entry of "0" equals non detect or less than the method recording limit (MRL).
3. MCL = Maximum Contaminant Limit
4. Highlighted cells indicate result exceeds MCL

Previous data for the washeteria well has shown that is has extremely high levels of iron (up to 70 mg/l), which has caused problems with the treatment process.

Therefore, we assigned scores of "5" to the Tuluksak River water, "3" to the utility core site wells and "2" to the Washeteria well.

2. Scoring Rationale for Operational Complexity and Reliability

For each of the alternative sources, we would anticipate a treatment system consisting of coagulation/flocculation, filtration and disinfection. However, the river source can be expected to have higher turbidities during breakup (300 NTU or higher), and will almost certainly be less consistent. This will require additional attention on the part of the operator, and possibly frequent adjustment of the treatment process, jar testing to modify coagulant dosage, more frequent filter backwash, and consequently a higher operation cost. Thus, the Washeteria and utility core site wells were scored highest, and the River Source was scored lower.

3. Scoring Rationale for Source Protection

The utility core site wells were purposely located away from the village and sources of contamination to meet ADEC minimum source protection requirements, and thus was assigned the highest score of "5". The Tuluksak River surface water is susceptible to spills or other contamination of the river, such as migration of mine waste from upstream and fuel spills, and was assigned a score of "2". These contaminants would not be removed by a typical treatment system. Modifications to the treatment process would be required if these contaminants began to appear in the raw water. The Washeteria well draws from a shallow aquifer, and does not meet the ADEC minimum source protection separation distances, so it was assigned the lowest score of "1".

4. Scoring Rationale for Development Costs

The alternatives were scored based upon the estimated capital cost of the improvements associated with each. Estimated capital costs for each source are presented in the tables below.

Table 2— Raw Water Supply Line Capital Cost Estimate - Source A, Washeteria Well

Capital Cost Estimate - Raw Water Supply Line
Source A - Washeteria Well

Work Item	Quantity	Unit	Unit Cost	Total Cost
Mob & Demob	1	LS	$50,000	$50,000
Buried Arctic Water Main w/ Glycol Heat Trace	1,500	LF	$225	$337,500
Easements	1	LS	$5,000	$5,000
Misc Utilities	1	LS	$5,000	$5,000
			Estimated Construction Cost	**$397,500**
			Contingency (10%)	$39,750
			Subtotal	**$437,250**
			VSW Administration (8%)	$34,980
			Engineering & Administration (10%)	$43,725
			Construction Management (12%)	$52,470
			TOTAL PROJECT COST	**$568,425**

Table 3— Raw Water Supply Line Capital Cost Estimate – Source B, 2005 Utility Core Site Wells

Capital Cost Estimate - Raw Water Supply Line
Source B - 2005 Utility Core Site Wells

Work Item	Quantity	Unit	Unit Cost	Total Cost
Mob & Demob	1	LS	$50,000	$50,000
Buried Arctic Water Main w/ Glycol Heat Trace	400	LF	$225	$90,000
Misc Utilities	1	LS	$5,000	$5,000
			Estimated Construction Cost	**$145,000**
			Contingency (10%)	$14,500
			Subtotal	**$159,500**
			VSW Administration (8%)	$12,760
			Engineering & Administration (10%)	$15,950
			Construction Management (12%)	$19,140
			TOTAL PROJECT COST	**$207,350**

Table 4—Raw Water Supply Line Capital Cost Estimate - Source C, Tuluksak River

Capital Cost Estimate - Raw Water Supply Line
Source C - Tuluksak River

Work Item	Quantity	Unit	Unit Cost	Total Cost
Mob & Demob	1	LS	$50,000	$50,000
Buried Arctic Water Main w/ Glycol Heat Trace	3,000	LF	$225	$675,000
Intake Structures	2	LS	$35,000	$70,000
Easements	1	LS	$15,000	$15,000
Misc Utilities	1	LS	$25,000	$25,000
			Estimated Construction Cost	**$835,000**
			Contingency (10%)	$83,500
			Subtotal	**$918,500**
			VSW Administration (8%)	$73,480
			Engineering & Administration (10%)	$91,850
			Construction Management (12%)	$110,220
			TOTAL PROJECT COST	**$1,194,050**

The utility core site wells scored the highest, because their location adjacent to the water treatment plant site makes them the least costly to develop. The

Tuluksak River was scored the lowest, because this source is furthest from the WTP site, requiring a lengthy raw water transmission line, and it would also require winter and summer intake structures.

5. Scoring Rationale for O&M Costs: Develop O&M cost estimate

The primary difference in operation and maintenance costs between the alternative sources would be the heating and maintenance cost of the raw water transmission line. Obviously the longer lines will have a higher O&M cost. In addition, Tuluksak River source would have additional cost to transition between the summer and winter surface water intake structures each spring and fall, and for maintenance and repair of these structures.

As a result, the utility core site wells have the lowest cost, and were assigned the highest score. The Tuluksak River has the highest cost, and was assigned the lowest score. The following table outlines the differences in O&M costs.

Table 5—Annual O&M Cost Comparison

Annual Operation & Maintenance Cost Comparison
Raw Water Transmission Line

Work Item	Washeteria Well (1,500 LF)	Utility Core Site Wells (400 LF)	Tuluksak River (3,000 LF)
Heating/Freeze Protection	$10,000	$1,000	$20,000
Routine Operation & Repairs	$1,500	$400	$3,000
Intake Structure Operation & Repairs	$0	$0	$2,500
Annual O&M Cost	**$11,500**	**$1,400**	**$25,500**
Monthly Cost per Service	**$6**	**$1**	**$14**

Assumptions:
1. Heat requirement 10 BTU/Ft-Hr
2. Diesel 100,000 BTU/Gal
3. Diesel $7.71/Gal
4. Core site RW line will drain back to wells and require only intermittent heat trace.

V. Recommendations

A. Water Source—Utility Core Site Wells

Based upon a thorough review and evaluation of the criteria contained herein, we recommend selection of the existing 2005 utility core site wells. Although each alternative presented advantages and disadvantages, we believe the advantages of the Utility Core Site make it the best option for the Village of Tuluksak. The key advantages include:

- Deep Groundwater Source
  - The source is well protected from contamination, and a groundwater source has simpler regulatory requirements. The two wells also provide redundancy, so the water source can remain in operation if maintenance to one of the wells is needed.
- Located Adjacent to Treatment Plant & Power Plant Site
  - The location of all these facilities at a common site minimizes the cost of transporting raw water, and provides operational efficiency. The availability of waste heat from the power plant will substantially reduce utility costs for the treatment plant and water circulation loops.
- Consistent Water Quality
  - The water quality from the groundwater source can be expected to be relatively consistent, as compared to the variability of surface water quality. This will provide for a more stable water treatment system operation. The water treatment system for a surface water source would require closer monitoring, and adjustment of the treatment process in response to changes in raw water quality.
  - The ability to successfully treat the water from the utility core site wells by conventional treatment was demonstrated by the CE2 Water Treatment Study (report dated January 2007).
- Consistent Water Intake
  - The water intake from the river source would have to be changed seasonally, and water would be unavailable during the transition periods at breakup and freeze-up. In contrast, the wells will supply water year-round from submersible pumps and buried supply lines to the treatment plant.

B. Community Resolution Accepting the Water Source Selection Recommendation

TNC resolution 11-05-01 affirms the Water Source Study recommendation to continue development of a new water treatment facility utilizing the utility core site wells. This resolution was approved on May 20, 2011, and is provided on the following page.

Tuluksak Native Community
P.O. Box 95
Tuluksak AK, 99679
Phone: (907) 695-6420
Fax: (907) 695-6932

RESOLUTION

Water Source Selection

Resolution Number 11-05-01

A Resolution Selecting the Proposed Water Source for Ongoing Sanitation Improvements

WHEREAS: The Tuluksak Native Community Council, hereinafter called the Council, is the governing body of Tuluksak, Alaska, and

WHEREAS: Tuluksak Native Community has received funding for planning, design, and construction through the State of Alaska, Village Safe Water Program for piped water and sewer facilities, including a water treatment facility;

WHEREAS: The Council has reviewed the Draft Water Source Study dated January 2011, comparing water source alternatives for the proposed water treatment facility, as prepared by CE2 Engineers and reviewed by the State of Alaska Village Safe Water Program, and

WHEREAS: The Council has discussed the alternatives presented in the ~~2011~~ Draft Water Source Study and agrees with the recommendation, repeated here: "Based upon a thorough review and evaluation of the criteria contained herein, we recommend selection of the existing Utility Core Site wells."

NOW THEREFORE BE IT RESOLVED; that the Tuluksak Native Community hereby accepts the recommendation made in the 2011 Water Source Study and chooses to pursue construction of water treatment plant utilizing the Utility Core Site wells drilled in 2005 (described in the study as "Source B") as the selected water source for the proposed water treatment facility.

We, the undersigned, hereby certify that the Council is composed of 5 members, of whom 4 constitute a QUORUM, were present and that the foregoing resolution was **PASSED AND APPROVED** by the Tuluksak Native Community, this 20th day of May, 2011.

Vote: 5 Yeas 0 Nays

Signed: _____
Council President

Attest: _____
Council Member

VI. Appendices

Appendices to this water source study are:

Appendix A	"Final Tuluksak River Site Inspection Report", September 2009, Technical Direction Document Number: 08-02-0017; Prepared for USEPA; Prepared by Ecology & Environment, Inc. (Cover Sheet and Section 8—Summary and Conclusions only)
Appendix B	Well Log—Existing Washeteria Well
Appendix C	Well Logs & Pump Test Data—Utility Core Site Wells
Appendix D	Water Quality Results Dated 10-27-05—Utility Core Site 2005 Wells

Appendix A

"Final Tuluksak River Site Inspection Report", September 2009, Technical Direction Document Number: 08-02-0017; Prepared for USEPA; Prepared by Ecology & Environment, Inc. (Cover Sheet and Section 8—Summary and Conclusions only)

Final Tuluksak River Site Inspection Report

Tuluksak, Alaska

Technical Direction Document Number: 08-02-0017

September 2009

Prepared for:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
1200 Sixth Avenue, Mail Stop ECL-112
Seattle, Washington 98101

Prepared by:

ECOLOGY AND ENVIRONMENT, INC.
720 Third Avenue, Suite 1700
Seattle, Washington 98104

8 Summary and Conclusions

In September 2008, the START conducted a field sampling event at the Tuluksak River site located near Tuluksak, Alaska. The city of Tuluksak is located at the confluence of the Kuskokwim and Tuluksak rivers. The Nyac townsite lies approximately 70 miles upstream of the city of Tuluksak on the Tuluksak River. Placer mining has been conducted at a number of locations in the upper reaches of the Tuluksak River for over 100 years. Additionally, dredging of the Tuluksak River has been conducted. Dredging and mining created an estimated volume of greater than 65,000,000 cubic yards of dredge spoil, dragline pile, and waste sand materials. The START collected 33 sediment samples during the two-day field event at various locations along Bear Creek, Granite Creek, and the Tuluksak River.

8.1 Sources

Sources associated with placer mining activities in the Tuluksak River include the Granite Creek dragline pile, three waste sand piles, and the dredge spoils piles on the Tuluksak River (Figure 2-1). A total of nine samples were collected from the sources, three from each location. Three TAL metals (cobalt, copper and nickel) were detected at significant concentrations in the waste sand pile samples, no TAL metals were detected at elevated concentrations in the dragline pile, and six TAL metals (cadmium, chromium, cobalt, copper, nickel, and zinc) were detected at significant concentrations in the dredge spoils piles samples. Based on analytical results, two of these sources appear to contain hazardous substances at significant concentrations.

8.2 Targets

There are no drinking water intakes located within the TDL. Surface water is not used as a water supply for more than five acres of commercial food crops, in commercial food preparation, or to water livestock.

No commercial fishing is known to occur along the Tuluksak River. Tribal members have reported eating fish caught from the Tuluksak River and the primary fishing area along the Tuluksak River is below the confluence with the Fog River; however, a fish camp was located within the TDL above the confluence with the Fog River, therefore a fishery is located within the influence of the site. Fish harvesting on the Tuluksak River is not recorded and limited sport fishing occurs.

Detailed wetland information is not available for the area. Observations during the sampling event indicate there are approximately 124 miles of wetland frontage along the TDL. There are no Federal- or State-listed threatened or endangered species within the TDL.

A total of 21 target samples were collected. The TAL metals cobalt, copper, and nickel were detected at elevated concentrations in sediment samples from the excavated area on Bear Creek. The TAL metal cobalt was detected at elevated concentrations in the Tuluksak River sediment sample collected above the confluence with Bear Creek. The TAL metals arsenic, cadmium, chromium, cobalt, copper, and nickel were detected at elevated concentrations in Granite Creek. The TAL metals cobalt and nickel were detected at elevated concentrations in the Tuluksak River sediment samples collected between the confluences of Bear Creek and the Fog River. No TAL metals were detected at elevated concentrations in the Tuluksak River sediment samples collected below the confluence with the Fog River.

8.3 Conclusions

Based on the results of the SI field sampling event, it appears that hazardous substances are migrating from sources to surface water targets. The TAL metals cobalt, copper, and nickel were detected at significant concentrations in the waste sand piles and the dredge spoils piles; and also were detected at elevated concentrations in the samples from Bear Creek and Granite Creek. Cobalt and nickel were detected at elevated concentrations in the Tuluksak River. Contaminated sediments are present from sample location TP01SD on Bear Creek downstream on the Tuluksak River to sample location TR04SD near the confluence with the Fog River. Fisheries and wetlands are present within this zone of contamination.

Table 7-4 Tuluksak River Sediment Samples Analytical Results Summary (Between Bear Creek and Fog River Confluences)

EPA Sample ID	08384302	08384217	08384215	08384214	08384213	08384212	08384211	08384210	08384209	08384208	08384207	08384206	08384205	08384204	08384203
CLP Sample ID	MJAAF7	MJAA72	MJAA70	MJAA69	MJAA68	MJAA67	MJAA66	MJAA65	MJAA64	MJAA63	MJAA62	MJAA61	MJAA60	MJAA59	MJAA58
Station Location	BG02SD	TR18SD	TR16SD	TR15SD	TR14SD	TR13SD	TR12SD	TR11SD	TR10SD	TR09SD	TR08SD	TR07SD	TR06SD	TR05SD	TR04SD
Description	Background		Tuluksak River												
Target Analyte List Metals (mg/kg)															
Aluminum	15400	5050	19800	13500	13000	17700	15500	11200	13200	11400	13900	13300	16300	13700	18400
Arsenic	15.8	4.5	23.1	11.8	15.1	12.7	14.2	8.4	10.5	7.3	8.7	7.3	8.7	13.6	17.8
Barium	161	72.4	152	103	87.1	135	121	76.1	98.5	62.7	85.8	76.4	104	134	161
Cadmium	1.4	0.69	1.9	1.4	1.4	1.6	1.6	1.1	1.4	1.2	1.5	1.5	1.8	1.8	2.2
Calcium	4580	1630	4340	2620	3000	4190	3720	2510	2720	2230	2420	2390	3040	2880	3500
Chromium	13.3	9.8	25.9	17.3	17.6	19.8	18.7	14.2	16.4	15.8	20.3	21.2	26.1	18.8	25.1
Cobalt	10.1 JQ (11.7 SQL)	5.8 JQ (6.1 SQL)	17.0	10.4	11.2	13.5	13.5	8.6	10.8	9.3	10.9	10.9	11.8	9.4	12.3
Copper	18.8	5.0	27.0	23.4	24.1	24.9	24.1	16.1	17.7	17.4	18.3	16.7	18.5	17.0	23.3
Iron	23900 JL	13500	35600	27200	26800	29300	30400	21200	25100	23500	27100	27700	33400	34100	39300
Lead	6.5	3.1	6.0	4.7	5.2	7.0	5.6	3.8	4.2	3.8	4.6	4.4	6.0	5.9	8.4
Magnesium	4380 JL	2770	9710	7930	6770	6550	7680	5360	6370	6100	6600	6450	7010	5060	5850
Manganese	1120 JL	322	670	665	591	637	768	501	505	536	715	537	395	401	519
Nickel	8.5 JQ (9.3 SQL)	6.4	23.6	15.6	15.7	16.3	17.4	12.9	15.7	16.1	20.6	23.0	26.2	16.4	21.6
Potassium	555 JQ	749	1000	875	800	1130	978	616 JQ	757	507 JQ	603 JQ	499 JQ	596 JQ	529 JQ	560 JQ
Vanadium	51.0	29.7	75.6	57.9	54.1	64.4	61.6	43.9	51.1	44.7	50.2	44.7	50.9	45.3	57.3
Zinc	61.5 JL	25.8 JL	75.6 JL	59.8 JL	55.9 JL	59.0 JL	64.3 JL	43.0 JL	51.9 JL	50.0 JL	58.2 JL	61.6 JL	72.0 JL	54.1 JL	72.7 JL

Note: Bold type indicates the result is above the sample quantitation limit.
Underline type indicates the sample result is elevated as defined in Section 5.

Key:

CLP = Contract Laboratory Program.
EPA = United States Environmental Protection Agency.
ID = Identification.
J = The analyte was positively identified. The associated numerical value is an estimate.
L = Low bias.
mg/kg = milligrams per kilogram.
Q = The result is estimated because the concentration is below the contract required quantitation limit.
SQL = Sample Quantitation Limit.

Table 7-5 Tuluksak River Sediment Samples Analytical Results Summary (Below Fog River Confluence)

EPA Sample ID	08384302	08384217	08384228	08384202	08384201	08384200
CLP Sample ID	MJAAF7	MJAA72	MJAA83	MJAA57	MJAA56	MJAA55
Station Location	BG02SD	TR18SD	FR01SD	TR03SD	TR02SD	TR01SD
Description	Background		Fog River Contribution		Tuluksak River	
Target Analyte List Metals (mg/kg)						
Aluminum	15400	5050	15300	14000	15100	13400
Arsenic	15.8	4.5	17.6	12.3	27.0	28.1
Barium	161	72.4	150	94.7	165	163
Cadmium	1.4	0.69	2.0	1.9	2.7	2.3
Calcium	4580	1630	3840	2900	3780	2890
Chromium	13.3	9.8	25.3	26.3	26.5	22.4
Cobalt	10.1 JQ (11.7 SQL)	5.8 JQ (6.1 SQL)	10.6	15.1	11.4	10.6
Copper	18.8	5.0	24.8	26.4	21.2	22.1
Iron	23900 JL	13500	37900	32600	46300	41300
Lead	6.5	3.1	8.7	7.1	7.6	8.2
Magnesium	4380 JL	2770	4580	6490	5170	4030
Manganese	1120 JL	322	583	939	443	575
Mercury	0.23 U	0.12 U	0.12 JQ (0.21 SQL)	0.12 U	0.20 U	0.20
Nickel	8.5 JQ (9.3 SQL)	6.4	25.7	32.2	26.5	21.4
Potassium	555 JQ	749	566 JQ	578 JQ	660 JQ	585 JQ
Vanadium	51.0	29.7	42.5	50.1	45.4	40.5
Zinc	61.5 JL	25.8 JL	72.7 JL	77.6 JL	77.9 JL	70.9 JL

Note: Bold type indicates the result is above the sample quantitation limit.
Underline type indicates the sample result is elevated as defined in Section 5.

Key:

CLP = Contract Laboratory Program.
EPA = United States Environmental Protection Agency.
ID = Identification.
J = The analyte was positively identified. The associated numerical value is an estimate.
L = Low bias.
mg/kg = milligrams per kilogram.
Q = The result is estimated because the concentration is below the contract required quantitation limit.
SQL = Sample Quantitation Limit.
U = The analyte was not detected at or above the reported limit.

Appendix B

Well Log—Existing Washeteria Well

WELL LOG

U.S. PUBLIC HEALTH SERVICE, DIVISION OF INDIAN HEALTH

.ION Tuluksak, Alaska DATE STARTED July 27, 1981

DATE COMPLETED August 7, 1981 DRILLER Fowler - Anderson

TOTAL DEPTH OF WELL 49 FT. CASING INSTALLED 45' DIAMETER 6"

GROUT 10' SCREEN SIZE 15 ~~XXXX~~ 2-1/2 LENGTH

STATIC WATER LEVEL 10'6" TOC HRS. PUMPED 24 @ 28 GPM DRAWDOWN 7'10" FT.

HOLE DIAMETER
CASING DIAMETER 6"

DEPTH	FORMATION
0 - 8'	Clay - black fine sand-wood
8' - 13'	Silt - very fine
13' - 30'	Fine black soil and sand
30' - 40'	H^2O - sand is getting course
40' - 49'	Much H^2O good size rocks course sand

SOIL DATA TO 15 FT.
FEET THAWED
BOTTOM OF FROST & MATERIAL
SEASONAL OR PERMA FROST Seasonal

WATER DATA FIELD TEST
TASTE None
APPEARANCE FRESH Clear
AFTER 24 HOURS Brownish
IRON -
CHLORIDES -
TDS

PUMP TEST 10'6" - STATIC LEVEL
PUMPING LEVEL 17'10 @ 28 GPM
AFTER 24 HRS.

HIGHEST RECOMMENDED PUMP RATE
WILL STATIC LEVEL CHANGE WITH TIDES negative OR FROST

VELOP PROCEDURE Surge block

ESTIMATED MAN HOURS FOR DRILLING HOURS FOR TOTAL JOB

CREW ~~Mark~~ Anderson - Glen Fowler

Appendix C

Well Logs & Pump Test Data—Utility Core Site Wells

CE2 ENGINEERS, INC.
DRILLING LOG

#1 WELL

Well Owner Community of Tuluksak, Alaska Use of Well Public Water Supply

Location (address of: Township, Range, Section, if known) _____

GPS Coordinates _____

Size of casing 6" Depth of Hole 159 feet Cased to 135 feet

Static water level 12 ft. (above) (below) land surface.

Finish of well (check one): Open End ( ) Screen (X) Perforated( )

Describe screen or perforation 15', .010 SLOT 10', .016 SLOT TOT 25'

Well pumping test at 75 gallons per (Hour) (Minute) for 24 hours with 20 ft. of drawdown from static level.

Date of completion 9-18

DRILLER Roy Longbottom MY LAST (8 AM 83)

WELL LOG

Depth in feet from ground surface	Give details of formations penetrated, size of material, color and hardness.
0 TO 19	FINE SAND
19 TO 41	FINE MUCKY SAND & WATER
41 TO 66	GRAY SAND & WATER 66' PEA GRAVEL
66 TO 72	COARS SAND & WATER SOME PEA GRAVEL
72 TO 135	PACK SAND VERY LITTLE WATER
135 TO 158	LITTEE STRIPS OF WATER IN THE
___ TO ___	PACKAAN SOM PEA GRAVEL MOSLEY
___ TO ___	FINE SAND
159 TO 161	HARD PACK SAND NO WATER
___ TO ___	
___ TO ___	
___ TO ___	
___ TO ___	
___ TO ___	

PUMPING TEST RECORD
ODNR Division of Water
Water Resources Section

#1 WELL

Page No. 1

Owner TULUKSAK Address

County Township

Date 9-17-05 (Test Started) (Test Ended) ODNR Log Other Well ID

Company Conducting Test R L DRILLING Individual Making Measurements

Type of Test Distance From Pumping Well

Measuring Equipment Used DEPTH METER

Static Water Level (S_0) 12' 8" Measuring Point TOP CASING Elevation Above Ground 3'

Date	Clock Time (Use Military Time)	Time Since Pumping Started (In Minutes)	Depth to Water (S)	Change in Water Level ($S - S_0$)	Discharge Rate (GPM)	Comments (Include Weather Conditions)
9-17-05	8:10	0	12' 8"		75	
	8:15	1 5	32' 8"			
	8:20	2 5	32 9.5			
	8:25	3 5	32 10			
	8:30	4 5	32 10			
	8:40	5 5	32 10			
	8:45	6 5	32 10.5			
	8:55	7 10	32 10			
	9:05	8 10	32 10.5			
	9:10	9 10	32 10			
	9:20	10 10	32 11			
	9:30	11 10	32 11.5			
	9:40	12 10	32 10.5			
	10:40	13 60	32 9.5			
	11:40	14 60	32 9			
	12:40	15 60	32 11			
	13:40	20 60	32 11			
	14:40	25 60	32 10.5			
	15:40	30 60	32 11			
	16:40	35 60	33 1			
	17:40	40 60	33			
	18:40	45 60	33 1			
	19:40	50 60	33			
	20:40	55 60	33			
	21:40	60 (1hr) 60	33.5			
	22:40	90 60	33 1.5			
	23:40	120 (2hr) 60	33 2			
	24:40	150 60	33 3			
		180 (3hr)				
		240 (4hr)				

DNR 7811,83

PUMPING TEST RECORD

Observation Wells

ODNR-Division of Water
Water Resources Section

#1 WELL

Page No. 2

Owner TULUKSAK Address

Location of well on property

County Township

Date 9-18-05 (Test Started / Test Ended) ODNR Log# Other Well ID

Company Conducting Test R.L. DRILLING Individual Making Measurements

Type of Test DROWDOWN Distance From Pumping Well

Measuring Equipment Used DEPTH METER

Static Water Level (S_0) 12 6 Measuring Point TOP CASING Elevation Above Ground 3'

Pumping Water Level (ft.) 33' Depth of Pump (ft.) 40

Date	Clock Time (Use Military Time)	Time Since Pumping Started (In Minutes)	Depth to Water (ft)	Change in Water Level ($S - S_0$)	Discharge Rate (GPM)	Comments (Include Weather Conditions)
9-18-05	1:40	60	33 3		75	
	2:40	60	33 4			
	3:40	60	33 2			
	4:40	60	33 1			
	5:40	60	33 3			
	6:40	60	33 1			
	7:40	60	33 2			
	8:40	60	33 1			
	END	OF	DROWDOWN	TEST		
	8:45	5	12 6			
	8:50	5	12 6			
	8:55	5	12 6			
	9:00	5	12 6			
	9:10	10	12 5.8			
	9:20	10	12 5.8			
	9:30	10	12 6			
	9:40	10	12 6			

Driller [signature]

CE2 ENGINEERS, INC.
DRILLING LOG

Well Owner Community of Tuluksak, Alaska #2 WELL Use of Well Public Water Supply

Location (address of: Township, Range, Section, if known) _____

GPS Coordinates _____

Size of casing 6" Depth of Hole 191 feet Cased to 172 feet

Static water level 13 4 ft. (above) (below) land surface.

Finish of well (check one): Open End ( ) Screen (X) Perforated( )

Describe screen or perforation 21 10" TOTAL .010 - .010 - .016 - .030

Well pumping test at 75 gallons per (Hour) (Minute) for 24 hours with 20 10" ft. of drawdown from static level.

Date of completion 9-7-05

WELL LOG
DRILLER Roy Longbrake Jr

Depth in feet from ground surface	Give details of formations penetrated, size of material, color and hardness.
0 TO 4	TOP SOIL
4 TO 10	BROWN SAND
10 TO 16	FROZEN SILT,
16 TO 24	FINE SAND
24 TO 50	FINE SAND & WATER
50 TO 51 6	COARSE SAND & PEA GRAVEL
51 6 TO 61 6	FINE SAND & WATER
61 6 TO 82 10	PACK SAND NO WATER
82 10 TO 83	FINE SAND & WATER
83 TO 107	PACK SAND
107 TO 108	SAND & PEA GRAVEL & WATER WATER TESTED FOR IRON
108 TO 125	PACK SAND
125 TO 167	PACK SAND & LITTLE STREAKS OF WATER.
167 TO 191	COARSE SAND PEA GRAVEL WATER. HAS STREAKS OF PACK SAND IN BETWEEN LAYERS OF SAND & WATER.

DNR 7011.89

PUMPING TEST RECORD
Observation Wells
ODNR-Division of Water
Water Resources Section

Page No. 1

Owner _____ Address _____

Location of well on property _____

County _____ Township _____

Date 9-7-05 (Test Started) / (Test Ended) ODNR Log# _____ Other Well ID _____

Company Conducting Test R.L. DRILLING Individual Making Measurements LONGSTAFF

Type of Test DRAWDOWN Distance From Pumping Well _____

Measuring Equipment Used DEPTH MEATOR

Static Water Level (S_o) 13'4" Measuring Point TOP-CASING Elevation Above Ground 3'

Pumping Water Level (ft.) _____ Depth of Pump (ft.) 40

Date	Clock Time (Use Military Time)	Time Since Pumping Started (In Minutes)	Depth to Water (S)	Change in Water Level ($S - S_o$)	Discharge Rate (GPM)	Comments (Include Weather Conditions)
9-7-05	11:15	5	13'4"	33' 2"	75	
	11:20	5		33 1		
	11:30	5		31 1		
	11:35	5		33 2		
	11:40	5		33 2.5		
	11:45	5		33 3		
	11:55	10		33 3		
	12:05	10		33 4		
	12:15	10		33 4		
	12:35	10		33 4.0		
	12:45	20		33 5		
	12:55	10		33 5		
	13:05	10		33 5		
	13:30	30		33 6.0		
	14:05	30		33 7.0		
	14:35	30		33 8		
	15:05	30		33 9		
	16:05	60		33 10.0		
	17:05	60		33 8.5		
	18:05	60		33 8.0		
	19:05	60		33 9.5		
	20:05	60		33 11.5		
	21:05	60		34 .5		
	22:05	60		34 .5		
	23:05	60		34 15		
	24:05	60		34 3		
9-8-05	1:05	60		34 3		
	2:05	60		34 4		
	3:05	60		34 4.5		

Roy Longstaff Jr.

PUMPING TEST RECORD

ONR 7011.03

Observation Wells
ODNR-Division of Water
Water Resources Section

Page No. 2

Owner _____ Address _____

Location of well on property _____

County _____ Township _____

Date 9-8-05 (Test started) / (Test Ended) ODNR Log# _____ Other Well ID _____

Company Conducting Test R.H. DRILLING Individual Making Measurements LONGBOTHAM

Type of Test DREWDOWN Distance From Pumping Well _____

Measuring Equipment Used DEPTH METER

Static Water Level (S_0) 13' 4" Measuring Point TOP CASING Elevation Above Ground 3'

Pumping Water Level (ft.) _____ Depth of Pump (ft.) 40

Date	Clock Time (Use Military Time)	Time Since Pumping Started (In Minutes)	Depth to Water (S)	Change in Water Level ($S - S_0$)	Discharge Rate (GPM)	Comments (Include Weather Conditions)
9-8-05	4:05	60		34 5	75	
	5:05	60		34 5.5		
	6:05	60		34 6		
	7:05	60		34 6.5		
	8:05	60		34 7.0		
	9:05	60		34 6.5		
	10:05	60		34 7		
	11:05	60		34 7		
	12:05	60		34 7.5		
	END OF	PUMP	TEST			
9-9-05	12:10	5		14 3		
	12:15	5		14 3		
	12:20	5		14 3		
	12:25	5		14 3		
	12:35	10		14 3		
	12:45	10		14 3		
	12:55	10		14 3		
	13:05	10		14 3		
	13:15	10		14 0		
	13:50	45		13.45		

Appendix D

Water Quality Results

WATER SOURCE STUDY - TULUKSAK, ALASKA

Comparison of Water Quality Parameters

		Utility Core Site North Well W05-1			Utility Core Site South Well W05-2				Tuluksak River	MCL
Parameter	Units	9/30/2005 @ 9:00 AM	9/30/2005 @ 9:05 AM	6/20/2006 @ 4:15 PM	9/30/2005 @ 9:20 AM	9/30/2005 @ 9:40 AM	6/20/2006 @ 4:05 PM	12/10/2008 @ 2:15 PM	11/17/2010 @ 4:05 PM	
Alkalinity	mg/L as CaCO3	107	108	108	107	108	108	105	45.2	
Aluminum	mg/L	0.0626	0.223	0	0.08	0	0	0	0	200
Arsenic	ug/L	6.48	6.03	36.3	42.7	49.9	49.9	55.7	0	10
Bromide	mg/L		0	0	0	0	0	0		
Calcium	mg/L	34.7	34.7	32.4	31.6	31.4	34.3	32.2	11200	
Chloride	mg/L	2.54	2.36	3.09	2.29	2.28	2.49	3.87	1.66	250
Chlorine Demand	mg/L		27		21	21				
Color, True	PCU		400		400	400		45	20	5
Color, Apparent	PCU	350	250	65	90	90	55	55		
Fluoride	mg/L	0	0	0	0	0	0	0.217	0	2
Hardness (CaCO3)	mg/L	100	100	106	98	98	104	100	43	
HAA5 Formation Pot.	ug/L		61		109	109				
Iron	mg/L	13.5	16.4		10.5	9.33	8.41	8.32	2.28	0.3
Langlier Index @ 40 deg F	Lang	-0.73	-0.91	-1.15	-0.78	-0.91	-0.1997	-0.99	-2.18	
Manganese	mg/L	0.365	0.503	0.331	0.375	0.361	0.326	0.343	300	50
Magnesium	mg/L	3.82	3.76	3.84	4.67	4.64	4.54	5.32	3670	
Nitrate	mg/L	0	0	0	0	0	0	0		10
Nitrite	mg/L	0	0.029	0	0	0	0	0		1
Total Nitrate/Nitrite	mg/L								0.194	10
pH	pH	7.1	6.9	7.06	7.1	6.9	6.98	7	6.8	
Sodium	mg/L	0	0	2.65	0	0	2.47	0	3770	250000
Sulfate	mg/L	2	1.86	2.18	0	0	0	2.01	6.37	250
Total Diss. Solids	mg/L	114	115	176	136	133	185	126	77	500
Total Org. Carbon	mg/L		2.1	47.1 [1.]	2.3	2.3	48 [1.]	3.2	16.4	
Total Organic Carbon, Dissolved	mg/L		1.7	44.8 [1.]	2	2	45.7 [1.]		2.51	
TTHM Formation Pot.	ug/L		239		333	333		105		
Turbidity	NTU		105		29.1	29.1		28	13.1	
UV-254	cm-1			0.054			0.09			
Zinc	ug/L	307	121	0	17	6.01	0	0	0	5000

Note 1. The Total Organic Carbon (TOC) and TOC, Dissolved sample data collected on June 20, 2006 are extremely high and are not consistent with other samples and have been dismissed as an erroneous sampling error.

WATER SOURCE STUDY - TULUKSAK, ALASKA

Comparison of Water Quality Parameters

		Utility Core Site North Well W05-1			Utility Core Site South Well W05-2				Tuluksak River	MCL
Primary Inorganics	**Units**	9/30/2005 @ 9:00 AM	9/30/2005 @ 9:05 AM	6/20/2006 @ 4:15 PM	9/30/2005 @ 9:20 AM	9/30/2005 @ 9:40 AM	6/20/2006 @ 4:05 PM	12/10/2008 @ 2:15 PM	711/17/2010 @ 4:05 PM	
Antimony	ug/L	0	0	0	0	0	0		0	6
Barium	ug/L	141	145	146	169	169	184		29.7	2000
Berylium	ug/L	0	0	0	0	0	0		0	4
Cadmium	ug/L	0	0	0	0	0	0		0	5
Chromium	ug/L	13.6	7.53	0	16.5	13.6	0		0	100
Cyanide	ug/L	0	0	0	0	0	0		0	0.2
Mercury	mg/L	0	0	0	0	0	0		0	2
Nickel	ug/L	3.3	2.87	0	2.24	2.01	0		0	100
Selenium	ug/L	0	0.547	0	0	0	0		0	50
Thallium	ug/L	0	0.0516	0	0	0	0		0	2
Secondary Chem. Contaminants	**Units**									
Copper	ug/L	0.293	1.41	0	0.542	0.542	0		0	1000
E. Coli	Present/Absent	Absent	Absent		Absent	Absent			Absent	Absent
Foaming Agents	mg/L	0	0		0	0				0
Odor	TON	0	0	0	0	0	2		0	0
Silver	ug/L		0.148	0	0.131	0.131			0	100
Total Coliform	Present/Absent	Absent	Absent		Absent	Absent			Present	Absent

Notes:

1. An entry of "0" equals non detect or less than the method recording limit (MRL).
2. MCL = Maximum Contaminant Limit
3. Highlighted cells indicate result exceeds MCL

Analytica International, Inc.
5761 Silverado Way, Unit N
Anchorage, AK 99518
Phone: 907-258-2155
Fax: 907-258-6634

CE2
Attn: Lloyd Persson
P.O. Box 232946
Anchorage, AK 99523
907-349-1010
Fax: 907-349-1015

Report Date: 10/27/2005
Receipt Date: 9/30/2005
Sample Date: 9/30/2005
Sample Time: 9:05:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 North Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
H = Exceeds Regulatory Limit
M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected

Sample Comment:

Lab#: A0509324-01A

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
4500-NO2-B (Aqueous) - Nitrite					*Test was conducted by: Analytica - Anchorage*				
Nitrite as N	0.0290	mg/L		0.020	*1*		10/2/2005	10/2/2005	AJ

Lab#: A0509324-01B

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
2120B/2120B (Aqueous) - True Color					*Test was conducted by: Analytica - Anchorage*				
Color	250	Color Unit	H	5.0	*15*	2120B	10/1/2005	10/1/2005	EK

Lab#: A0509324-01C

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
2120B/2120B (Aqueous) - Apparent Color					*Test was conducted by: Analytica - Anchorage*				
Color	350	Color Unit	H	5.0	*15*	2120B	10/1/2005	10/1/2005	EK

Lab#: A0509324-01E

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
4500-NO3E (Aqueous) - Nitrate					*Test was conducted by: Analytica - Anchorage*				

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Fax: 907-349-1015

Report Date: 10/27/2005
Receipt Date: 9/30/2005
Sample Date: 9/30/2005
Sample Time: 9:05:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 North Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
H = Exceeds Regulatory Limit
M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected

Sample Comment:

Lab#: A0509324-01E

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
4500-NO3E (Aqueous) - Nitrate						*Test was conducted by: Analytica - Anchorage*			
Nitrate as N	<MRL	mg/L		0.10	*10*		10/6/2005	10/6/2005	AJ

Lab#: A0509324-01F

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
5540C (Aqueous) - Surfactants as MBAS						*Test was conducted by: Analytica - Anchorage*			
MBAS Foaming Agents	<MRL	mg/L		0.10			10/12/200510/2/2005		AJ

Lab#: A0509324-01G

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
2150B/2150B (Aqueous) - Odor						*Test was conducted by: Analytica - Anchorage*			
Odor	NO ODO	T.O.N.		1.0		2150B	10/1/2005	10/1/2005	MA

Lab#: A0509324-01H

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
4500-CNE/4500-CNB (Aqueous) - Total CN						*Test was conducted by: Analytica - Thornton*			

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Report Date: 10/27/2005
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Sample Date: 9/30/2005
Sample Time: 9:05:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 North Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
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J = Estimated Value
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Sample Comment:

Lab#: A0509324-01H

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
4500-CNE/4500-CNB (Aqueous) - Total CN						*Test was conducted by: Analytica - Thornton*			
Cyanide	<MRL	mg/L		0.0069		4500-CNB	10/10/2005	10/13/2005	STONE

Lab#: A0509324-01I

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
300.0/300.0 (Aqueous) - Anions						*Test was conducted by: Analytica - Fairbanks*			
Bromide	<MRL	mg/L		0.10		300.0	10/5/2005	10/5/2005	KAH
Chloride	2.36	mg/L		0.50	*250*	300.0	10/5/2005	10/5/2005	KAH
Fluoride	<MRL	mg/L		0.20	*4.0*	300.0	10/5/2005	10/5/2005	KAH
Sulfate	1.86	mg/L		0.75	*250*	300.0	10/5/2005	10/5/2005	KAH

Lab#: A0509324-01J

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
150.1/150.1 (Aqueous) - pH						*Test was conducted by: Analytica - Anchorage*			
pH	7.2	pH		0.0		150.1	10/1/2005	10/1/2005	EK
2330B (Aqueous) - Langelier Index						*Test was conducted by: Analytica - Anchorage*			

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Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
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Comments:

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Sample Comment:

Lab#: A0509324-01J

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
2330B (Aqueous) - Langelier Index					*Test was conducted by: Analytica - Anchorage*				
Langelier Index/Corrosivity	-0.63	Lang units		-1.0			10/21/2005	10/21/2005	KN
2320B/2320B (Aqueous) - Total Alkalinity					*Test was conducted by: Analytica - Anchorage*				
Alkalinity, Total	108	mg/L CaCO3		4.0		2320B	10/8/2005	10/8/2005	AJ
2540C/2540C (Aqueous) - TDS					*Test was conducted by: Analytica - Anchorage*				
Total Dissolved Solids	115	mg/L		20	*500*	2540C	10/6/2005	10/6/2005	AJ
2130B/2130B (Aqueous) - Turbidity					*Test was conducted by: Analytica - Anchorage*				
Turbidity	105	NTU	H	0.20	*1*	2130B	10/2/2005	10/2/2005	AJ

Lab#: A0509324-01K

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
245.1 (Aqueous) - Total Hg					*Test was conducted by: Analytica - Thornton*				
Mercury	<MRL	mg/L		0.00020	*0.002*		10/10/2005	10/11/2005	KAW
2340B (Aqueous) - Total Hardness					*Test was conducted by: Analytica - Thornton*				
Hardness, Total	100	mg/L		1.0			10/7/2005	10/7/2005	CJ
200.7/200.7 (Aqueous) - Treatment Design					*Test was conducted by: Analytica - Thornton*				
Aluminum	0.223	mg/L	H	0.050	*0.2*	200.7	10/6/2005	10/6/2005	CCJ
Calcium	34.7	mg/L		0.10		200.7	10/6/2005	10/6/2005	CCJ

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Sample Time: 9:05:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 North Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
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Sample Comment:

Lab#: A0509324-01K

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
200.7/200.7 (Aqueous) - Treatment Design					*Test was conducted by: Analytica - Thornton*				
Iron	16.4	mg/L	H	0.050	*0.3*	200.7	10/6/2005	10/6/2005	CCJ
Magnesium	3.76	mg/L		0.10		200.7	10/6/2005	10/6/2005	CCJ
Manganese	0.503	mg/L	H	0.0100	*0.05*	200.7	10/6/2005	10/6/2005	CCJ
Sodium	<MRL	mg/L		3.0		200.7	10/6/2005	10/6/2005	CCJ
200.8/200.8 (Aqueous) - Primary and Secondary					*Test was conducted by: Analytica - Thornton*				
Antimony	<MRL	ug/L		0.10	*6.0*	200.8	10/11/2005	10/12/2005	KS
Arsenic	10.6	ug/L		0.15	*50*	200.8	10/11/2005	10/11/2005	KSB
Barium	145	ug/L		0.25	*2000*	200.8	10/11/2005	10/11/2005	KSB
Beryllium	<MRL	ug/L		0.15	*4.0*	200.8	10/11/2005	10/12/2005	KS
Cadmium	<MRL	ug/L		0.20	*5.0*	200.8	10/11/2005	10/11/2005	KSB
Chromium	7.53	ug/L		0.15	*100*	200.8	10/11/2005	10/11/2005	KSB
Copper	1.41	ug/L		0.10	*1300*	200.8	10/11/2005	10/11/2005	KSB
Nickel	2.87	ug/L		0.15	*100*	200.8	10/11/2005	10/11/2005	KSB
Selenium	0.547	ug/L		0.50	*50*	200.8	10/11/2005	10/11/2005	KSB
Silver	0.148	ug/L		0.10	*100*	200.8	10/11/2005	10/11/2005	KSB
Thallium	0.0516	ug/L		0.050	*2.0*	200.8	10/11/2005	10/12/2005	KS

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Report Date: 10/27/2005
Receipt Date: 9/30/2005
Sample Date: 9/30/2005
Sample Time: 9:05:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 North Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
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B = Present also in Method Blank
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J = Estimated Value
D = Lost to Dilution
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Sample Comment:

Lab#: A0509324-01K

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
200.8/200.8 (Aqueous) - Primary and Secondary					*Test was conducted by: Analytica - Thornton*				
Zinc	121	ug/L		0.25	*5000*	200.8	10/11/2005	10/11/2005	KSB

Lab#: A0509324-01L

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2 (Aqueous) - VOA DW					*Test was conducted by: Analytica - Thornton*				
1,1,1,2-Tetrachloroethane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,1,1-Trichloroethane	<MRL	ug/L		0.50	*200*		10/12/2005	10/12/2005	MBI
1,1,2,2-Tetrachloroethane	<MRL	ug/L		1.0			10/12/2005	10/12/2005	MBI
1,1,2-Trichloroethane	<MRL	ug/L		1.0	*5.0*		10/12/2005	10/12/2005	MBI
1,1-Dichloroethane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,1-Dichloroethene	<MRL	ug/L		1.0	*7.0*		10/12/2005	10/12/2005	MBI
1,1-Dichloropropene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,2,3-Trichlorobenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,2,3-Trichloropropane	<MRL	ug/L		1.0			10/12/2005	10/12/2005	MBI
1,2,4-Trichlorobenzene	<MRL	ug/L		1.0	*70*		10/12/2005	10/12/2005	MBI
1,2,4-Trimethylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI

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Report Date: 10/27/2005
Receipt Date: 9/30/2005
Sample Date: 9/30/2005
Sample Time: 9:05:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 North Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
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J = Estimated Value
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** = RL higher than MCL; target not detected

Sample Comment:

Lab#: A0509324-01L

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2 (Aqueous) - VOA DW					*Test was conducted by: Analytica - Thornton*				
1,2-Dibromoethane	<MRL	ug/L		0.50	*0.050*		10/12/2005	10/12/2005	MBI
1,2-Dichlorobenzene	<MRL	ug/L		0.50	*600*		10/12/2005	10/12/2005	MBI
1,2-Dichloroethane	<MRL	ug/L		0.50	*5.0*		10/12/2005	10/12/2005	MBI
1,2-Dichloropropane	<MRL	ug/L		0.50	*5.0*		10/12/2005	10/12/2005	MBI
1,3,5-Trimethylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,3-Dichlorobenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,3-Dichloropropane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,4-Dichlorobenzene	<MRL	ug/L		0.50	*75*		10/12/2005	10/12/2005	MBI
2,2-Dichloropropane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
2-Chlorotoluene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
4-Chlorotoluene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
4-Isopropyltoluene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Benzene	<MRL	ug/L		0.50	*5.0*		10/12/2005	10/12/2005	MBI
Bromobenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Bromochloromethane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Bromodichloromethane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI

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Report Date: 10/27/2005
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Sample Time: 9:05:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 North Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
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D = Lost to Dilution
** = RL higher than MCL; target not detected

Sample Comment:

Lab#: A0509324-01L

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2 (Aqueous) - VOA DW					*Test was conducted by: Analytica - Thornton*				
Bromoform	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Bromomethane	<MRL	ug/L		2.0			10/12/2005	10/12/2005	MBI
Carbon Tetrachloride	<MRL	ug/L		0.50	*5.0*		10/12/2005	10/12/2005	MBI
Chlorobenzene	<MRL	ug/L		0.50	*100*		10/12/2005	10/12/2005	MBI
Chloroethane	<MRL	ug/L		2.0			10/12/2005	10/12/2005	MBI
Chloroform	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Chloromethane	<MRL	ug/L		2.5			10/12/2005	10/12/2005	MBI
Cis-1,2-Dichloroethene	<MRL	ug/L		0.50	*70*		10/12/2005	10/12/2005	MBI
Cis-1,3-Dichloropropene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Dibromochloromethane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Dibromomethane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Dichlorodifluoromethane	<MRL	ug/L		2.0			10/12/2005	10/12/2005	MBI
Ethylbenzene	<MRL	ug/L		0.50	*700*		10/12/2005	10/12/2005	MBI
Hexachlorobutadiene	<MRL	ug/L		1.0			10/12/2005	10/12/2005	MBI
Isopropylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
m&p Xylenes	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI

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Report Date: 10/27/2005
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Sample Time: 9:05:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 North Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
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Comments:

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Sample Comment:

Lab#: A0509324-01L

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2 (Aqueous) - VOA DW					*Test was conducted by: Analytica - Thornton*				
Methylene Chloride	<MRL	ug/L		2.0	*5.0*		10/12/2005	10/12/2005	MBI
Naphthalene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
n-Butylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
n-Propylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
O-Xylene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
sec-Butylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Styrene	<MRL	ug/L		0.50	*100*		10/12/2005	10/12/2005	MBI
tert-Butyl Methyl Ether	<MRL	ug/L		1.0			10/12/2005	10/12/2005	MBI
tert-Butylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Tetrachloroethene	<MRL	ug/L		0.50	*5.0*		10/12/2005	10/12/2005	MBI
Toluene	<MRL	ug/L		0.50	*1000*		10/12/2005	10/12/2005	MBI
trans-1,2-Dichloroethene	<MRL	ug/L		0.50	*100*		10/12/2005	10/12/2005	MBI
trans-1,3-Dichloropropene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Trichloroethene	<MRL	ug/L		0.50	*5.0*		10/12/2005	10/12/2005	MBI
Trichlorofluoromethane	<MRL	ug/L		2.0			10/12/2005	10/12/2005	MBI
Trichlorotrifluoroethane	<MRL	ug/L		1.0			10/12/2005	10/12/2005	MBI

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Report Date: 10/27/2005
Receipt Date: 9/30/2005
Sample Date: 9/30/2005
Sample Time: 9:05:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 North Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
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Sample Comment:

Lab#: A0509324-01L

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2 (Aqueous) - VOA DW					*Test was conducted by: Analytica - Thornton*				
Vinyl Chloride	<MRL	ug/L		0.50	*2.0*		10/12/2005	10/12/2005	MBI
Xylenes, Total	<MRL	ug/L		1.0	*10000*		10/12/2005	10/12/2005	MBI
Surrogate Recoveries									
1,2-Dichloroethane-d4	**83.7**	% Recov		1.0			10/12/2005	10/12/2005	MBI
Dibromofluoromethane	**119**	% Recov		1.0			10/12/2005	10/12/2005	MBI
p-Bromofluorobenzene	**92.0**	% Recov		1.0			10/12/2005	10/12/2005	MBI
Toluene D-8	**88.4**	% Recov		1.0			10/12/2005	10/12/2005	MBI

Lab#: A0509324-01M

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
5910B/5910B (Aqueous) - UV254-UVA					*Test was conducted by: Analytica - Anchorage*				
UV 254 Ultraviolet Absorption	0.132	cm-1		0.020		5910B	10/2/2005	10/2/2005	AJ

Lab#: A0509324-01N

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst

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Report Date: 10/27/2005
Receipt Date: 9/30/2005
Sample Date: 9/30/2005
Sample Time: 9:05:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 North Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
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M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
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Sample Comment:

Lab#: A0509324-01N

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
5310B/5310B (Aqueous) - TOC						*Test was conducted by: Analytica - Anchorage*			
Total Organic Carbon	2.1	mg/L		1.0		5310B	10/5/2005	10/5/2005	SG

Lab#: A0509324-01O

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
5310B/5310B (Aqueous) - DOC						*Test was conducted by: Analytica - Anchorage*			
Dissolved Organic Carbon	1.7	mg/L		1.0		5310B	10/10/200510/10/2005		SG

Lab#: A0509324-01P

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2/5710 (Aqueous) - TTHM w/SDS Incubation						*Test was conducted by: Analytica - Thornton*			
Bromodichloromethane	3.56	ug/L		0.50		5710	10/20/200510/21/2005		MBI
Bromoform	<MRL	ug/L		0.50		5710	10/20/200510/21/2005		MBI
Chloroform	239	ug/L		13		5710	10/20/200510/21/2005		MB
Dibromochloromethane	<MRL	ug/L		0.50		5710	10/20/200510/21/2005		MBI
Total Trihalomethane	239	ug/L	H	130	*80*	5710	10/20/200510/21/2005		MB

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Client Sample ID: **Tuluksak 2005 North Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

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Sample Comment:

Lab#: A0509324-01P

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2/5710 (Aqueous) - TTHM w/SDS Incubation						*Test was conducted by: Analytica - Thornton*			
Surrogate Recoveries									
1,2-Dichloroethane-d4	**84.2**	% Recov		1.0		5710	10/20/2005	10/21/2005	MBI
Dibromofluoromethane	**85.1**	% Recov		1.0		5710	10/20/2005	10/21/2005	MBI
p-Bromofluorobenzene	**91.0**	% Recov		1.0		5710	10/20/2005	10/21/2005	MBI
Toluene D-8	**86.8**	% Recov		1.0		5710	10/20/2005	10/21/2005	MBI
552.2 (Aqueous) - HLAA5 w/SDS Incubation						*Test was conducted by: Analytica - Thornton*			
Dibromoacetic acid	<MRL	ug/L		1.0			10/24/2005	10/24/2005	LW
Dichloroacetic acid	49.8	ug/L		3.0			10/24/2005	10/24/2005	LW
Monobromoacetic acid	<MRL	ug/L		2.0			10/24/2005	10/24/2005	LW
Monochloroacetic acid	<MRL	ug/L		3.0			10/24/2005	10/24/2005	LW
Total Haloacetic Acids	61.0	ug/L	H	3.0	*60*		10/24/2005	10/24/2005	LW
Trichloroacetic acid	8.30	ug/L		1.0			10/24/2005	10/24/2005	LW
Surrogate Recoveries									
2-Bromoproprionic Acid	**105**	% Recov		1.0			10/24/2005	10/24/2005	LW
4500-ClG/5710 (Aqueous) - SDS Residual Chlorine						*Test was conducted by: Analytica - Thornton*			
Chlorine, Residual	6.9	mg/L		0.0100		5710	10/12/2005	10/19/2005	LM

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Sample Time: 9:05:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 North Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
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Sample Comment:

Lab#: A0509324-01Q

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
2350B/2350B (Aqueous) - Chlorine Demand						*Test was conducted by: Analytica - Anchorage*			
Chlorine, Free	27	mg/L		0.0100		2350B	10/12/2005	10/19/2005	LM

Lab#: A0509324-01R

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
9223B (Aqueous) - Coliforms in DW						*Test was conducted by: Analytica - Anchorage*			
E. Coli	PASS	PassFail					10/1/2005	10/1/2005	EK
Total Coliform	PASS	PassFail					10/1/2005	10/1/2005	EK

Lab#: A0509324-01S

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
200.8/200.8 (Aqueous) - Arsenic						*Test was conducted by: Analytica - Thornton*			
Arsenic	11.1	ug/L		0.15	*50*	200.8	10/10/2005	10/10/2005	KSB

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Sample Time: 9:40:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 South Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

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Sample Comment:

Lab#: A0509324-02A

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
4500-NO2-B (Aqueous) - Nitrite					*Test was conducted by: Analytica - Anchorage*				
Nitrite as N	<MRL	mg/L		0.020	*1*		10/2/2005	10/2/2005	AJ

Lab#: A0509324-02B

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
2120B/2120B (Aqueous) - True Color					*Test was conducted by: Analytica - Anchorage*				
Color	400	Color Unit	H	5.0	*15*	2120B	10/1/2005	10/1/2005	EK

Lab#: A0509324-02C

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
2120B/2120B (Aqueous) - Apparent Color					*Test was conducted by: Analytica - Anchorage*				
Color	250	Color Unit	H	5.0	*15*	2120B	10/1/2005	10/1/2005	EK

Lab#: A0509324-02D

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
4500-NO3E (Aqueous) - Nitrate					*Test was conducted by: Analytica - Anchorage*				

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Receipt Date: 9/30/2005
Sample Date: 9/30/2005
Sample Time: 9:40:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 South Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
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Sample Comment:

Lab#: A0509324-02D

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
4500-NO3E (Aqueous) - Nitrate						*Test was conducted by: Analytica - Anchorage*			
Nitrate as N	<MRL	mg/L		0.10	*10*		10/6/2005	10/6/2005	AJ

Lab#: A0509324-02F

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
5540C (Aqueous) - Surfactants as MBAS						*Test was conducted by: Analytica - Anchorage*			
MBAS Foaming Agents	<MRL	mg/L		0.10			10/12/2005	10/2/2005	AJ

Lab#: A0509324-02G

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
2150B/2150B (Aqueous) - Odor						*Test was conducted by: Analytica - Anchorage*			
Odor	**NO ODO**	T.O.N.		1.0		2150B	10/1/2005	10/1/2005	MA

Lab#: A0509324-02H

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
4500-CNE/4500-CNB (Aqueous) - Total CN						*Test was conducted by: Analytica - Thornton*			

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Report Date: 10/27/2005
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Sample Date: 9/30/2005
Sample Time: 9:40:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 South Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
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Sample Comment:

Lab#: A0509324-02H

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
4500-CNE/4500-CNB (Aqueous) - Total CN						*Test was conducted by: Analytica - Thornton*			
Cyanide	<MRL	mg/L		0.0069		4500-CNB	10/10/2005	10/13/2005	STONE

Lab#: A0509324-02I

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
300.0/300.0 (Aqueous) - Anions						*Test was conducted by: Analytica - Fairbanks*			
Bromide	<MRL	mg/L		0.10		300.0	10/5/2005	10/5/2005	KAH
Chloride	2.28	mg/L		0.50	*250*	300.0	10/5/2005	10/5/2005	KAH
Fluoride	<MRL	mg/L		0.20	*4.0*	300.0	10/5/2005	10/5/2005	KAH
Sulfate	<MRL	mg/L		0.75	*250*	300.0	10/5/2005	10/5/2005	KAH

Lab#: A0509324-02J

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
150.1/150.1 (Aqueous) - pH						*Test was conducted by: Analytica - Anchorage*			
pH	6.9	pH		0.0		150.1	10/1/2005	10/1/2005	EK
2330B (Aqueous) - Langelier Index						*Test was conducted by: Analytica - Anchorage*			

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Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
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Lab#: A0509324-02J

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
2330B (Aqueous) - Langelier Index					*Test was conducted by: Analytica - Anchorage*				
Langelier Index/Corrosivity	-0.91	Lang units		-1.0			10/21/2005	10/21/2005	KN
2320B/2320B (Aqueous) - Total Alkalinity					*Test was conducted by: Analytica - Anchorage*				
Alkalinity, Total	108	mg/L CaCO3		4.0		2320B	10/8/2005	10/8/2005	AJ
2540C/2540C (Aqueous) - TDS					*Test was conducted by: Analytica - Anchorage*				
Total Dissolved Solids	133	mg/L		20	*500*	2540C	10/6/2005	10/6/2005	AJ
2130B/2130B (Aqueous) - Turbidity					*Test was conducted by: Analytica - Anchorage*				
Turbidity	29.1	NTU	H	0.20	*1*	2130B	10/2/2005	10/2/2005	AJ

Lab#: A0509324-02K

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
245.1 (Aqueous) - Total Hg					*Test was conducted by: Analytica - Thornton*				
Mercury	<MRL	mg/L		0.00020	*0.002*		10/10/2005	10/11/2005	KAW
2340B (Aqueous) - Total Hardness					*Test was conducted by: Analytica - Thornton*				
Hardness, Total	98	mg/L		1.0			10/7/2005	10/7/2005	CJ
200.7/200.7 (Aqueous) - Treatment Design					*Test was conducted by: Analytica - Thornton*				
Aluminum	<MRL	mg/L		0.050	*0.2*	200.7	10/6/2005	10/6/2005	CCJ
Calcium	31.4	mg/L		0.10		200.7	10/6/2005	10/6/2005	CCJ

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Client Sample ID: **Tuluksak 2005 South Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
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Sample Comment:

Lab#: A0509324-02K

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
200.7/200.7 (Aqueous) - Treatment Design					*Test was conducted by: Analytica - Thornton*				
Iron	9.33	mg/L	H	0.050	*0.3*	200.7	10/6/2005	10/6/2005	CCJ
Magnesium	4.64	mg/L		0.10		200.7	10/6/2005	10/6/2005	CCJ
Manganese	0.361	mg/L	H	0.0100	*0.05*	200.7	10/6/2005	10/6/2005	CCJ
Sodium	<MRL	mg/L		3.0		200.7	10/6/2005	10/6/2005	CCJ
200.8/200.8 (Aqueous) - Primary and Secondary					*Test was conducted by: Analytica - Thornton*				
Antimony	<MRL	ug/L		0.10	*6.0*	200.8	10/11/2005	10/12/2005	KS
Arsenic	49.9	ug/L		0.15	*50*	200.8	10/11/2005	10/11/2005	KSB
Barium	169	ug/L		0.25	*2000*	200.8	10/11/2005	10/11/2005	KSB
Beryllium	<MRL	ug/L		0.15	*4.0*	200.8	10/11/2005	10/11/2005	KSB
Cadmium	<MRL	ug/L		0.20	*5.0*	200.8	10/11/2005	10/11/2005	KSB
Chromium	13.6	ug/L		0.15	*100*	200.8	10/11/2005	10/11/2005	KSB
Copper	0.542	ug/L		0.10	*1300*	200.8	10/11/2005	10/11/2005	KSB
Nickel	2.01	ug/L		0.15	*100*	200.8	10/11/2005	10/11/2005	KSB
Selenium	<MRL	ug/L		0.50	*50*	200.8	10/11/2005	10/11/2005	KSB
Silver	0.131	ug/L		0.10	*100*	200.8	10/11/2005	10/11/2005	KSB
Thallium	<MRL	ug/L		0.050	*2.0*	200.8	10/11/2005	10/12/2005	KS

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Client Sample ID: **Tuluksak 2005 South Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
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Sample Comment:

Lab#: A0509324-02K

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
200.8/200.8 (Aqueous) - Primary and Secondary					*Test was conducted by: Analytica - Thornton*				
Zinc	6.01	ug/L		0.25	*5000*	200.8	10/11/2005	10/11/2005	KSB

Lab#: A0509324-02L

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2 (Aqueous) - VOA DW					*Test was conducted by: Analytica - Thornton*				
1,1,1,2-Tetrachloroethane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,1,1-Trichloroethane	<MRL	ug/L		0.50	*200*		10/12/2005	10/12/2005	MBI
1,1,2,2-Tetrachloroethane	<MRL	ug/L		1.0			10/12/2005	10/12/2005	MBI
1,1,2-Trichloroethane	<MRL	ug/L		1.0	*5.0*		10/12/2005	10/12/2005	MBI
1,1-Dichloroethane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,1-Dichloroethene	<MRL	ug/L		1.0	*7.0*		10/12/2005	10/12/2005	MBI
1,1-Dichloropropene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,2,3-Trichlorobenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,2,3-Trichloropropane	<MRL	ug/L		1.0			10/12/2005	10/12/2005	MBI
1,2,4-Trichlorobenzene	<MRL	ug/L		1.0	*70*		10/12/2005	10/12/2005	MBI
1,2,4-Trimethylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI

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Client Sample ID: **Tuluksak 2005 South Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
H = Exceeds Regulatory Limit
M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected

Sample Comment:

Lab#: A0509324-02L

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2 (Aqueous) - VOA DW					*Test was conducted by: Analytica - Thornton*				
1,2-Dibromoethane	<MRL	ug/L		0.50	*0.050*		10/12/2005	10/12/2005	MBI
1,2-Dichlorobenzene	<MRL	ug/L		0.50	*600*		10/12/2005	10/12/2005	MBI
1,2-Dichloroethane	<MRL	ug/L		0.50	*5.0*		10/12/2005	10/12/2005	MBI
1,2-Dichloropropane	<MRL	ug/L		0.50	*5.0*		10/12/2005	10/12/2005	MBI
1,3,5-Trimethylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,3-Dichlorobenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,3-Dichloropropane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,4-Dichlorobenzene	<MRL	ug/L		0.50	*75*		10/12/2005	10/12/2005	MBI
2,2-Dichloropropane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
2-Chlorotoluene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
4-Chlorotoluene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
4-Isopropyltoluene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Benzene	<MRL	ug/L		0.50	*5.0*		10/12/2005	10/12/2005	MBI
Bromobenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Bromochloromethane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Bromodichloromethane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI

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Report Date: 10/27/2005
Receipt Date: 9/30/2005
Sample Date: 9/30/2005
Sample Time: 9:40:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 South Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
H = Exceeds Regulatory Limit
M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected

Sample Comment:

Lab#: A0509324-02L

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2 (Aqueous) - VOA DW						*Test was conducted by: Analytica - Thornton*			
Bromoform	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Bromomethane	<MRL	ug/L		2.0			10/12/2005	10/12/2005	MBI
Carbon Tetrachloride	<MRL	ug/L		0.50	*5.0*		10/12/2005	10/12/2005	MBI
Chlorobenzene	<MRL	ug/L		0.50	*100*		10/12/2005	10/12/2005	MBI
Chloroethane	<MRL	ug/L		2.0			10/12/2005	10/12/2005	MBI
Chloroform	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Chloromethane	<MRL	ug/L		2.5			10/12/2005	10/12/2005	MBI
Cis-1,2-Dichloroethene	<MRL	ug/L		0.50	*70*		10/12/2005	10/12/2005	MBI
Cis-1,3-Dichloropropene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Dibromochloromethane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Dibromomethane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Dichlorodifluoromethane	<MRL	ug/L		2.0			10/12/2005	10/12/2005	MBI
Ethylbenzene	<MRL	ug/L		0.50	*700*		10/12/2005	10/12/2005	MBI
Hexachlorobutadiene	<MRL	ug/L		1.0			10/12/2005	10/12/2005	MBI
Isopropylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
m&p Xylenes	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI

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Report Date: 10/27/2005
Receipt Date: 9/30/2005
Sample Date: 9/30/2005
Sample Time: 9:40:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 South Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
H = Exceeds Regulatory Limit
M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected

Sample Comment:

Lab#: A0509324-02L

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2 (Aqueous) - VOA DW					*Test was conducted by: Analytica - Thornton*				
Methylene Chloride	<MRL	ug/L		2.0	*5.0*		10/12/2005	10/12/2005	MBI
Naphthalene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
n-Butylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
n-Propylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
O-Xylene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
sec-Butylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Styrene	<MRL	ug/L		0.50	*100*		10/12/2005	10/12/2005	MBI
tert-Butyl Methyl Ether	<MRL	ug/L		1.0			10/12/2005	10/12/2005	MBI
tert-Butylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Tetrachloroethene	<MRL	ug/L		0.50	*5.0*		10/12/2005	10/12/2005	MBI
Toluene	<MRL	ug/L		0.50	*1000*		10/12/2005	10/12/2005	MBI
trans-1,2-Dichloroethene	<MRL	ug/L		0.50	*100*		10/12/2005	10/12/2005	MBI
trans-1,3-Dichloropropene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Trichloroethene	<MRL	ug/L		0.50	*5.0*		10/12/2005	10/12/2005	MBI
Trichlorofluoromethane	<MRL	ug/L		2.0			10/12/2005	10/12/2005	MBI
Trichlorotrifluoroethane	<MRL	ug/L		1.0			10/12/2005	10/12/2005	MBI

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Receipt Date: 9/30/2005
Sample Date: 9/30/2005
Sample Time: 9:40:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 South Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
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M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected

Sample Comment:

Lab#: A0509324-02L

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2 (Aqueous) - VOA DW						*Test was conducted by: Analytica - Thornton*			
Vinyl Chloride	<MRL	ug/L		0.50	*2.0*		10/12/2005	10/12/2005	MBI
Xylenes, Total	<MRL	ug/L		1.0	*10000*		10/12/2005	10/12/2005	MBI
Surrogate Recoveries									
1,2-Dichloroethane-d4	**83.6**	% Recov		1.0			10/12/2005	10/12/2005	MBI
Dibromofluoromethane	**120**	% Recov		1.0			10/12/2005	10/12/2005	MBI
p-Bromofluorobenzene	**91.4**	% Recov		1.0			10/12/2005	10/12/2005	MBI
Toluene D-8	**89.1**	% Recov		1.0			10/12/2005	10/12/2005	MBI

Lab#: A0509324-02M

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
5910B/5910B (Aqueous) - UV254-UVA						*Test was conducted by: Analytica - Anchorage*			
UV 254 Ultraviolet Absorption	0.118	cm-1		0.020		5910B	10/2/2005	10/2/2005	AJ

Lab#: A0509324-02N

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst

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Report Date: 10/27/2005
Receipt Date: 9/30/2005
Sample Date: 9/30/2005
Sample Time: 9:40:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 South Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
H = Exceeds Regulatory Limit
M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected

Sample Comment:

Lab#: A0509324-02N

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
5310B/5310B (Aqueous) - TOC					*Test was conducted by: Analytica - Anchorage*				
Total Organic Carbon	2.3	mg/L		1.0		5310B	10/5/2005	10/5/2005	SG

Lab#: A0509324-02O

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
5310B/5310B (Aqueous) - DOC					*Test was conducted by: Analytica - Anchorage*				
Dissolved Organic Carbon	2.0	mg/L		1.0		5310B	10/10/2005	10/10/2005	SG

Lab#: A0509324-02P

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2/5710 (Aqueous) - TTHM w/SDS Incubation					*Test was conducted by: Analytica - Thornton*				
Bromodichloromethane	4.17	ug/L		0.50		5710	10/20/2005	10/21/2005	MBI
Bromoform	<MRL	ug/L		0.50		5710	10/20/2005	10/21/2005	MBI
Chloroform	329	ug/L		13		5710	10/20/2005	10/21/2005	MB
Dibromochloromethane	<MRL	ug/L		0.50		5710	10/20/2005	10/21/2005	MBI
Total Trihalomethane	333	ug/L	H	130	*80*	5710	10/20/2005	10/21/2005	MB

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Report Date: 10/27/2005
Receipt Date: 9/30/2005
Sample Date: 9/30/2005
Sample Time: 9:40:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 South Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
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M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected

Sample Comment:

Lab#: A0509324-02P

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2/5710 (Aqueous) - TTHM w/SDS Incubation						*Test was conducted by: Analytica - Thornton*			
Surrogate Recoveries									
1,2-Dichloroethane-d4	**83.6**	% Recov		1.0		5710	10/20/2005	10/21/2005	MBI
Dibromofluoromethane	**86.1**	% Recov		1.0		5710	10/20/2005	10/21/2005	MBI
p-Bromofluorobenzene	**93.7**	% Recov		1.0		5710	10/20/2005	10/21/2005	MBI
Toluene D-8	**88.9**	% Recov		1.0		5710	10/20/2005	10/21/2005	MBI
552.2 (Aqueous) - HLAA5 w/SDS Incubation						*Test was conducted by: Analytica - Thornton*			
Dibromoacetic acid	<MRL	ug/L		1.0			10/24/2005	10/24/2005	LW
Dichloroacetic acid	86.0	ug/L		15			10/24/2005	10/24/2005	LW
Monobromoacetic acid	<MRL	ug/L		2.0			10/24/2005	10/24/2005	LW
Monochloroacetic acid	5.15	ug/L		3.0			10/24/2005	10/24/2005	LW
Total Haloacetic Acids	109	ug/L	H	15	*60*		10/24/2005	10/24/2005	LW
Trichloroacetic acid	19.6	ug/L		5.0			10/24/2005	10/24/2005	LW
Surrogate Recoveries									
2-Bromoproprionic Acid	**103**	% Recov		1.0			10/24/2005	10/24/2005	LW
4500-ClG/5710 (Aqueous) - SDS Residual Chlorine						*Test was conducted by: Analytica - Thornton*			
Chlorine, Residual	8.6	mg/L		0.0100		5710	10/12/2005	10/19/2005	LM

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Report Date: 10/27/2005
Receipt Date: 9/30/2005
Sample Date: 9/30/2005
Sample Time: 9:40:00AM
Collected By: LP

Client Sample ID: **Tuluksak 2005 South Well**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
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M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected

Sample Comment:

Lab#: A0509324-02Q

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
2350B/2350B (Aqueous) - Chlorine Demand					*Test was conducted by: Analytica - Anchorage*				
Chlorine, Free	21	mg/L		0.0100		2350B	10/12/2005	10/19/2005	LM

Lab#: A0509324-02R

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
9223B (Aqueous) - Coliforms in DW					*Test was conducted by: Analytica - Anchorage*				
E. Coli	PASS	PassFail					10/1/2005	10/1/2005	EK
Total Coliform	Fail	PassFail					10/1/2005	10/1/2005	EK

Lab#: A0509324-02S

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
200.8/200.8 (Aqueous) - Arsenic					*Test was conducted by: Analytica - Thornton*				
Arsenic	51.1	ug/L	H	0.15	*50*	200.8	10/10/2005	10/10/2005	KSB

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Report Date: 10/27/2005
Receipt Date: 9/30/2005
Sample Date: 9/30/2005
Sample Time: 9:40:00AM
Collected By: LP

Client Sample ID: **Trip Blank**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
H = Exceeds Regulatory Limit
M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected

Sample Comment:

Lab#: A0509324-03A

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2 (Aqueous) - VOA DW						*Test was conducted by: Analytica - Thornton*			
1,1,1,2-Tetrachloroethane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,1,1-Trichloroethane	<MRL	ug/L		0.50	*200*		10/12/2005	10/12/2005	MBI
1,1,2,2-Tetrachloroethane	<MRL	ug/L		1.0			10/12/2005	10/12/2005	MBI
1,1,2-Trichloroethane	<MRL	ug/L		1.0	*5.0*		10/12/2005	10/12/2005	MBI
1,1-Dichloroethane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,1-Dichloroethene	<MRL	ug/L		1.0	*7.0*		10/12/2005	10/12/2005	MBI
1,1-Dichloropropene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,2,3-Trichlorobenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,2,3-Trichloropropane	<MRL	ug/L		1.0			10/12/2005	10/12/2005	MBI
1,2,4-Trichlorobenzene	<MRL	ug/L		1.0	*70*		10/12/2005	10/12/2005	MBI
1,2,4-Trimethylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
1,2-Dibromoethane	<MRL	ug/L		0.50	*0.050*		10/12/2005	10/12/2005	MBI
1,2-Dichlorobenzene	<MRL	ug/L		0.50	*600*		10/12/2005	10/12/2005	MBI
1,2-Dichloroethane	<MRL	ug/L		0.50	*5.0*		10/12/2005	10/12/2005	MBI
1,2-Dichloropropane	<MRL	ug/L		0.50	*5.0*		10/12/2005	10/12/2005	MBI
1,3,5-Trimethylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI

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Report Date: 10/27/2005
Receipt Date: 9/30/2005
Sample Date: 9/30/2005
Sample Time: 9:40:00AM
Collected By: LP

Client Sample ID: **Trip Blank**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
H = Exceeds Regulatory Limit
M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected

Sample Comment:

Lab#: A0509324-03A

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2 (Aqueous) - VOA DW					*Test was conducted by: Analytica - Thornton*				
1,3-Dichlorobenzene	<MRL	ug/L		0.50				10/12/2005	MBI
1,3-Dichloropropane	<MRL	ug/L		0.50				10/12/2005	MBI
1,4-Dichlorobenzene	<MRL	ug/L		0.50	*75*			10/12/2005	MBI
2,2-Dichloropropane	<MRL	ug/L		0.50				10/12/2005	MBI
2-Chlorotoluene	<MRL	ug/L		0.50				10/12/2005	MBI
4-Chlorotoluene	<MRL	ug/L		0.50				10/12/2005	MBI
4-Isopropyltoluene	<MRL	ug/L		0.50				10/12/2005	MBI
Benzene	<MRL	ug/L		0.50	*5.0*			10/12/2005	MBI
Bromobenzene	<MRL	ug/L		0.50				10/12/2005	MBI
Bromochloromethane	<MRL	ug/L		0.50				10/12/2005	MBI
Bromodichloromethane	<MRL	ug/L		0.50				10/12/2005	MBI
Bromoform	<MRL	ug/L		0.50				10/12/2005	MBI
Bromomethane	<MRL	ug/L		2.0				10/12/2005	MBI
Carbon Tetrachloride	<MRL	ug/L		0.50	*5.0*			10/12/2005	MBI
Chlorobenzene	<MRL	ug/L		0.50	*100*			10/12/2005	MBI
Chloroethane	<MRL	ug/L		2.0				10/12/2005	MBI

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Report Date: 10/27/2005
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Sample Date: 9/30/2005
Sample Time: 9:40:00AM
Collected By: LP

Client Sample ID: **Trip Blank**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
H = Exceeds Regulatory Limit
M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected

Sample Comment:

Lab#: A0509324-03A

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2 (Aqueous) - VOA DW						*Test was conducted by: Analytica - Thornton*			
Chloroform	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Chloromethane	<MRL	ug/L		2.5			10/12/2005	10/12/2005	MBI
Cis-1,2-Dichloroethene	<MRL	ug/L		0.50	*70*		10/12/2005	10/12/2005	MBI
Cis-1,3-Dichloropropene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Dibromochloromethane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Dibromomethane	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Dichlorodifluoromethane	<MRL	ug/L		2.0			10/12/2005	10/12/2005	MBI
Ethylbenzene	<MRL	ug/L		0.50	*700*		10/12/2005	10/12/2005	MBI
Hexachlorobutadiene	<MRL	ug/L		1.0			10/12/2005	10/12/2005	MBI
Isopropylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
m&p Xylenes	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Methylene Chloride	<MRL	ug/L		2.0	*5.0*		10/12/2005	10/12/2005	MBI
Naphthalene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
n-Butylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
n-Propylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
O-Xylene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI

ANALYTICA
GROUP

Analytica International, Inc.
5761 Silverado Way, Unit N
Anchorage, AK 99518
Phone: 907-258-2155
Fax: 907-258-6634

CE2
Attn: Lloyd Persson
P.O. Box 232946
Anchorage, AK 99523
907-349-1010
Fax: 907-349-1015

Report Date: 10/27/2005
Receipt Date: 9/30/2005
Sample Date: 9/30/2005
Sample Time: 9:40:00AM
Collected By: LP

Client Sample ID: **Trip Blank**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
H = Exceeds Regulatory Limit
M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected

Sample Comment:

Lab#: A0509324-03A

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2 (Aqueous) - VOA DW						*Test was conducted by: Analytica - Thornton*			
sec-Butylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Styrene	<MRL	ug/L		0.50	*100*		10/12/2005	10/12/2005	MBI
tert-Butyl Methyl Ether	<MRL	ug/L		1.0			10/12/2005	10/12/2005	MBI
tert-Butylbenzene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Tetrachloroethene	<MRL	ug/L		0.50	*5.0*		10/12/2005	10/12/2005	MBI
Toluene	<MRL	ug/L		0.50	*1000*		10/12/2005	10/12/2005	MBI
trans-1,2-Dichloroethene	<MRL	ug/L		0.50	*100*		10/12/2005	10/12/2005	MBI
trans-1,3-Dichloropropene	<MRL	ug/L		0.50			10/12/2005	10/12/2005	MBI
Trichloroethene	<MRL	ug/L		0.50	*5.0*		10/12/2005	10/12/2005	MBI
Trichlorofluoromethane	<MRL	ug/L		2.0			10/12/2005	10/12/2005	MBI
Trichlorotrifluoroethane	<MRL	ug/L		1.0			10/12/2005	10/12/2005	MBI
Vinyl Chloride	<MRL	ug/L		0.50	*2.0*		10/12/2005	10/12/2005	MBI
Xylenes, Total	<MRL	ug/L		1.0	*10000*		10/12/2005	10/12/2005	MBI
Surrogate Recoveries									
1,2-Dichloroethane-d4	84.0	% Recov		1.0			10/12/2005	10/12/2005	MBI
Dibromofluoromethane	118	% Recov		1.0			10/12/2005	10/12/2005	MBI

ANALYTICA
GROUP

Analytica International, Inc.
5761 Silverado Way, Unit N
Anchorage, AK 99518
Phone: 907-258-2155
Fax: 907-258-6634

CE2
Attn: Lloyd Persson
P.O. Box 232946
Anchorage, AK 99523
907-349-1010
Fax: 907-349-1015

Report Date: 10/27/2005
Receipt Date: 9/30/2005
Sample Date: 9/30/2005
Sample Time: 9:40:00AM
Collected By: LP

Client Sample ID: **Trip Blank**
Client Project: Tuluksak - Treatment Design Package
Location: Tuluksak 05 North Well
Sample Matrix: Aqueous
COC #:
PWS#:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
H = Exceeds Regulatory Limit
M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected

Sample Comment:

Lab#: A0509324-03A

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
524.2 (Aqueous) - VOA DW						*Test was conducted by: Analytica - Thornton*			
p-Bromofluorobenzene	91.7	% Recov		1.0			10/12/2005	10/12/2005	MBI
Toluene D-8	88.3	% Recov		1.0			10/12/2005	10/12/2005	MBI

ANALYTICA
GROUP

DRINKING WATER ANALYSIS REPORT FOR COLIFORM BACTERIA

Attn: Lloyd Persson
CE2
P.O. Box 232946
Anchorage, AK 99523
Phone: 907-349-1010
Fax: 907-349-1015

Public Water System ID #:
Date Received: 9/30/05 Time Received 15:20
Date Reported: 10/7/05 Time Reporte 9:33

Method Of Analysis:
SM9223B Enzyme Substrate Test

Comments:

Comments:
- S = Satisfactory
- U = Unsatifactory
- POS = Positive Test Result
- ND = None Detected
- TNTC = Too Numerous to Count (>200 Colonies)
- CG = Confluent Growth
- HSM = Heavy Sediment Masking, Results May Not Be Reliable
- TLIT = Sample Age > 30 Hours, Too Long in Transit
- R = Resample Required
- NT = No Test

Sample Name	Sample Location	Sampled By	Sample Date	Sample Time	Lab #	Analysis Date	Analysis Time	Total Coliform	E. Coli	Comments
AX 907	**Tuluksak 05 North Well**	LP	9/30/05	9:05	A0509324-01R	10/1/05	13:00	**ND**	**ND**	**Satisfactory**
AX 932	**Tuluksak 05 south Well**	LP	9/30/05	9:45	A0509324-02R	10/1/05	13:00	**POS**	**ND**	**Satisfactory**

Steve Gaither, Project Manager
Analytica International, Inc. Anchorage, AK

P|A

A0509324

ANALYTICA INTERNATIONAL INC.

Please refer to the back portion of the sheet for instructions and information.

5761 Silverado Way, Unit N 01
Anchorage, AK 99518
(907) 258-2155
(907) 258-6634 FAX

Microbiological Water Analysis Workorder

TO BE COMPLETED BY CLIENT

Client Name: CE2 Engrn Contact: Lloyd Perssen

Address: P.O Box 232946 City, State, Zip: Anch AK

Phone: 349-1010 Fax: 349-1015 Email: lloyd@ce2engineers.com

Date/Time Sampled: 9/30 9:05 Location Sampled: Tuluksak OS North well

PWS ID# 9/30 9 X Sampler Initials: _____ Relinquished by: _____ AX 907

Source Type:
- [ ] Drinking Water
  - [ ] Treated
  - [x] Untreated
- [ ] Salt Water
- [ ] Pool/Spa
- [ ] Wastewater
- [ ] Other: _____

Sample Type:
- [ ] Routine
- [x] Special Purpose
- [ ] Real Estate Transaction

Lab#

Residual Chlorine: _____

Analysis Requested:

Drinking Water: Samples accepted Monday thru Thursday until 3:00 pm
- [x] Total Coliform Bacteria SM 9223B Presence/Absence (common for drinking water & espresso stands)
- [ ] Total Coliform Bacteria SM 9222 Membrane Filtraton

Pool/Spa: Samples accepted Monday thru Wednesday
- [ ] HPC and Total Coliform

Other: Samples accepted Monday thru Thursday until 3:00 pm
- [ ] Fecal SM9221 MF - Fecal Coliform by Membrane Filtration
- [ ] Fecal SM9221 MPN - Fecal Coliform by Most Probable Number
- [ ] Fecal Streptococcus SM 9230B
- [ ] Psuedomonas
- [ ] Quanti-tray MPN
- [ ] Iron Bacteria
- [ ] Iron/Sulphur Bacteria

TO BE COMPLETED BY LAB

Received by: _____ Date: 9/30/05 Time: 3:30

Date/Time Analyzed: _____

Comments: _____

called
10/03/05
@ 9:32

+ → TC
− → E.coli

A0509324-01
02

ANALYTICA
INTERNATIONAL
INC.

Please refer to the back portion of the sheet for instructions and information.

5761 Silverado Way, Unit N
Anchorage, AK 99518
(907) 258-2155
(907) 258-6634 FAX

Microbiological Water Analysis Workorder

TO BE COMPLETED BY CLIENT

Client Name: CEC ENGR Contact: Liam Pearson

Address: P.O. Box 232746 City, State, Zip: Anch AK

Phone: 344-1010 Fax: 344-1015 Email: Liam@CECENGINEERS.com

Date/Time Sampled: 9/30 9:45 Location Sampled: Talkeetna '05 South Well AX 932

PWS ID# _____ Sampler Initials: _____ Relinquished by: _____

Source Type:
- [X] Drinking Water
  - [ ] Treated
  - [X] Untreated
- [ ] Salt Water
- [ ] Pool/Spa
- [ ] Wastewater
- [ ] Other: _____

Sample Type:
- [ ] Routine
- [X] Special Purpose
- [ ] Real Estate Transaction

Lab#

Residual Chlorine: _____

Analysis Requested:

Drinking Water: Samples accepted Monday thru Thursday until 3:00 pm
- [X] Total Coliform Bacteria SM 9223B Presence/Absence (common for drinking water & espresso stands)
- [ ] Total Coliform Bacteria SM 9222 Membrane Filtraton

Pool/Spa: Samples accepted Monday thru Wednesday
- [ ] HPC and Total Coliform

Other: Samples accepted Monday thru Thursday until 3:00 pm
- [ ] Fecal SM9221 MF - Fecal Coliform by Membrane Filtration
- [ ] Fecal SM9221 MPN - Fecal Coliform by Most Probable Number
- [ ] Fecal Streptococcus SM 9230B
- [ ] Psuedomonas
- [ ] Quanti-tray MPN
- [ ] Iron Bacteria
- [ ] Iron/Sulphur Bacteria

TO BE COMPLETED BY LAB

Received by: JGroman Date: 9/30/05 Time: 3:20

Date/Time Analyzed: _____

Comments: _____

Analytica Chain of Custody Form

ANALYTICA GROUP

12189 Pennsylvania St, Thornton, CO 80241, (303) 469-8868, (303) 469-5254 fax
5438 Shaune Drive, Juneau, AK 99801, (907) 780-6668, (907) 780-6670 fax
5761 Silverado Way, # N, Anchorage, AK 99518, (907) 258-2155, (907) 258-6634 fax
3330 Industrial Ave, Fairbanks, AK 99701, (907) 456-3116, (907) 456-3125 fax
Pouch 34043, Prudhoe Bay, AK 99734, (907) 659-2145, (907) 659-2146 fax

Chain of Custody No: _____

ame & Address:
:2
ıx 232946
ıchorage, AK 99523
Person: 349-1010 ✓
lo: 349-1015 ✓
LLOYD@CELENGINEERS.COM

Project Name: Treatment Design Package
Public Water System ID#:
Results to STATE: x YES NO
Data Deliverables: Level I Level II Level III Level IV
EDD: YES NO Type of EDD:
Requested TAT: 10 days **RUSH** (lab authorization required)
Results Due Date:

Instructions:

To be Completed by Analytica
Quote ID No: LGN: A0509324
Report to: LLOYD PEARSON
Invoice to: CEC ENGINEERS - TULUKSAK
P.O. or Contract No:

tle Order No:

Sample Location	Date Sampled	Time Sampled	Matrix (S-DW-WW-Other)	No. of Containers	Requested Analysis/Method: NO2 Color True	Color App & Odor	No3	Foaming Agent	Cyanide	Cl.SO4,F-,Br	Langlier, Turbidity	Pri/Secon Metals Ha	524.2	UV254	TOC	Comments
DESIGN																
TREATMENT PACKAGES					X	X	X	X	X	X	X	X	X	X		All x2 for Second well
Trip Blank													X			
TULUKSAK 2005 NORTH WELL (THIS COOLER)	9/30	9:05			X	X	X	X	X	X	X	X	X	X	X	☒ AEL ☒ FBX
TULUKSAK 2005 SOUTH WELL (OTHER COOLER)	9/30	9:40			X	X	X	X	X	X	X	X	X	X	X	
Trip Blank-DW																

d/Relinquished by:	Date	Time	Received by:	Date	Time
LLOYD PEARSON	9/30	10:00 AM	[illegible]	9/30/05	3:20
shed by:	Date	Time	Received by:	Date	Time
Crown	10/4	12:00			
shed by:	Date	Time	Received by:	Date	Time
f Sampler: (printed)					

To be Completed by Analytica
Chain-of-Custody Seal: Intact Broken Absent
Location Rcvd/Temp on Arrival:
THO ___C JUN ___C ANC 5.6 C FAI ___C PB ___C
Thermometer ID # 14 Measurement Method: Temp. Blank Other
Shipping Method/Tracking Number:

Telephone proceed with analysis. MPAS will be resampled in approx 2 weeks. PK LP CE2 Jr 10/3/05 16:00

Analytica Chain of Custody Form

ANALYTICA GROUP

12189 Pennsylvania St
Thornton, CO 80241
(303) 469-8868
(303) 469-5254 fax

5436 Shaune Drive
Juneau, AK 99801
(907) 780-6668
(907) 780-6670 fax

5761 Silverado Way, # N
Anchorage, AK 99518
(907) 258-2155
(907) 258-6634 fax

3330 Industrial Ave
Fairbanks, AK 99701
(907) 456-3116
(907) 456-3125 fax

Pouch 340043
Prudhoe Bay, AK 99734
(907) 659-2145
(907) 659-2146 fax

Chain of Custody No: _____

.me & Address:	Project Name: Treatment Design Package	To be Completed by Analytica
?	Public Water System ID#:	Quote ID No: LGN: AC56932U
. 232946	Results to STATE: x YES NO	
:horage, AK 99523	Data Deliverables: Level I Level II Level III Level IV	Report to:
Person: 349-1010	EDD: YES NO Type of EDD:	
): 349-1015	Requested TAT: 10 days **RUSH** (lab authorization required)	Invoice to:
	Results Due Date:	
nstructions:		P.O. or Contract No:

Requested Analysis/Method

:le Order No: / Sample Location	Date Sampled	Time Sampled	Matrix (S-DW-WW-Other)	No. of Containers	DOC	THM/HAA5 Formation	524.2		Chlorine Demand								Comments
North	9/30	9:05			x	x	x	x	x								☒ AEL
South	9/30	9.40			x	x	x	x	x								☒ EBX
Trip Blank							x										

ed/Relinquished by:	Date	Time	Received by:	Date	Time
			J Cronen	9/30/05	3:20
ished by:	Date	Time	Received by:	Date	Time
Cronen					
ished by:	Date	Time	Received by:	Date	Time
of Sampler: (printed)					

To be Completed by Analytica

Chain-of-Custody Seal: Intact Broken Absent

Location Rcvd/Temp on Arrival:

THO ____C JUN ____C ANC ____C FAI ____C PB ____C

Thermometer ID # _____ Measurement Method: Temp. Blank Other

Shipping Method/Tracking Number:

MWH Laboratories
A Division of MWH Americas, Inc.

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: 626 386 1100
Fax: 626 386 1101
1 800 566 LABS (1 800 566 5227)

Laboratory Report

for

SGS Environmental Services Inc.
200 W. Potter Drive

Anchorage , AK 99518

Attention: Forest Taylor
Fax: (907) 561-5301

DATE OF ISSUE
JUL 27 2006
MWH LABORATORIES

YOM Yolanda Martin
Project Manager

ACCREDITED IN ACCORDANCE WITH nelac 01114CA

Report#: 177353
DRINKING

Laboratory certifies that the test results meet all **NELAC** requirements unless noted in the Comments section or the Case Narrative. Following the cover page are QC Report,QC Summary,Data Report,Hits Report, totaling 5 page[s].

MWH Laboratories
A Division of MWH Americas, Inc.

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: 626 386 1100
Fax: 626 386 1101
1 800 566 LABS (1 800 566 5227)

Laboratory
Hits Report
#177353

SGS Environmental Services Inc.
Forest Taylor
200 W. Potter Drive
Anchorage , AK 99518

Samples Received
24-jun-2006 09:18:43

Analyzed	Sample#	Sample ID	Result	Federal MCL	UNITS	MRL
	2606240164	W-05-1 RW 1063346001				
07/19/06	Bromochloroacetic acid		2.97		ug/l	1.0
07/19/06	Bromodichloroacetic acid		4.24		ug/l	1.0
07/07/06	Chlorine Dose		10		mg/l	1.0
07/14/06	Chlorine Residual		2.2		mg/l	0.1
07/19/06	D/DBP Haloacetic Acids (HAA5)		60.1	60	ug/l	1.0
07/19/06	Dichloroacetic acid		27.5		ug/l	1.0
07/19/06	Trichloroacetic acid		32.6		ug/l	1.0
07/08/06	Bromodichloromethane		5.03		ug/l	0.5
06/26/06	Chlorine Dose		10		mg/l	1.0
07/03/06	Chlorine Residual		2.1		mg/l	0.1
07/08/06	Chloroform		64.0		ug/l	0.5
07/08/06	Dibromochloromethane		0.637		ug/l	0.5
07/08/06	Total Potential Trihalomethane		69.7		ug/l	0.5

SUMMARY OF POSITIVE DATA ONLY.

MWH Laboratories
A Division of MWH Americas, Inc.

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: 626 386 1100
Fax: 626 386 1101
1 800 566 LABS (1 800 566 5227)

Laboratory
Data Report
#177353

SGS Environmental Services Inc.
Forest Taylor
200 W. Potter Drive
Anchorage , AK 99518

Samples Received
06/24/06

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
W-05-1 RW 1063346001 (2606240164) Sampled on 06/20/06 16:15								
				Tot Pot Trihalomethanes 5710B				
07/07/06	07/08/06 00:00	324842	(ML/EPA 551.1)	Bromoform	ND	ug/l	0.5	1
07/07/06	07/08/06 00:00	324842	(ML/EPA 551.1)	Chloroform	64.0	ug/l	0.5	1
07/07/06	06/26/06 00:00	324842	(SM2350)	Chlorine Dose	10	mg/l	1.0	1
07/07/06	07/03/06 00:00	324842	(ML/S 4500CL-G)	Chlorine Residual	2.1	mg/l	0.1	1
07/07/06	07/08/06 00:00	324842	(ML/EPA 551.1)	Dibromochloromethane	0.637	ug/l	0.5	1
07/07/06	07/08/06 00:00	324842	(ML/EPA 551.1)	Bromodichloromethane	5.03	ug/l	0.5	1
07/07/06	07/08/06 00:00	324842	(ML/EPA 551.1)	Total Potential Trihalomethane	69.7	ug/l	0.5	1
			(ML/SM 5710)	1,2-Dibromopropane(70-130)	100	% Rec		
				Total Potential Haloacetic				
07/18/06	07/07/06 00:00	326271	(ML/SM 5710B)	Chlorine Dose	10	mg/l	1.0	1
07/18/06	07/19/06 00:00	326271	(ML/SM 6251B)	Bromochloroacetic acid	2.97	ug/l	1.0	1
07/18/06	07/19/06 00:00	326271	(ML/SM 6251B)	Bromodichloroacetic acid	4.24	ug/l	1.0	1
07/18/06	07/19/06 00:00	326271	(ML/SM 6251B)	Chlorodibromomacetic acid	ND	ug/l	2.0	1
07/18/06	07/14/06 00:00	326271	(ML/SM 5710B)	Chlorine Residual	2.2	mg/l	0.1	1
07/18/06	07/19/06 00:00	326271	(ML/SM 6251B)	Dibromoacetic acid	ND	ug/l	1.0	1
07/18/06	07/19/06 00:00	326271	(ML/SM 6251B)	Dichloroacetic acid	27.5	ug/l	1.0	1
07/18/06	07/19/06 00:00	326271	(ML/SM 6251B)	Monobromoacetic acid	ND	ug/l	1.0	1
07/18/06	07/19/06 00:00	326271	(ML/SM 6251B)	Monochloroacetic acid	ND	ug/l	2.0	1
07/18/06	07/19/06 00:00	326271	(ML/SM 6251B)	Tribromoacetic acid	NA	ug/l	4.0	1
07/18/06	07/19/06 00:00	326271	(ML/SM 6251B)	Trichloroacetic acid	32.6	ug/l	1.0	1
07/18/06	07/19/06 00:00	326271	(ML/S6251B)	D/DBP Haloacetic Acids (HAA5)	60.1	ug/l	1.0	1
			(SM5710 6251B)	1,2,3-TCP(80-120)	104	% Rec		
			(SM5710 6251B)	2,3-Dibrom Acid(70-130)	94	% Rec		

SGS

CHAIN OF CUSTODY RECORD
SGS Environmental Services Inc.

1063346

rolina
51101

(1)
CLIENT: CE2 Tuluksak VSW
CONTACT: CE2 Engineers PHONE NO:(907) 349-1010
PROJECT: Tuluksak VSW SITE/PWSID#: W-05-1
REPORTS TO:
Paul Weisner FAX NO.:(907) 349-1015
INVOICE TO: QUOTE #
CE2 Engineers P.O. NUMBER

SGS Reference:

PAGE 1 OF 1

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE (C=COMP G=GRAB)	Preservatives Used	$Na_2S_2O_3$	HNO_3	NaOH			HCl		HCl					HCl	REMARKS
							Analysis Required (3)	TC	METALS 1@210nm + Ag, Al, Mg, Ca	CN	Fl, C_1, SO_4, Br, NO_2, NO_3	TDS, Alk, pH, Color	ODOR	TOC	MBAS	DOC	UV 254	TURB	Chlorine Demand	HAA5	TTHM formPCT	VOC 524.2	
(1)A-S W-05-1	~~W-05-1 RW Raw Water~~	06/20/06	9:15	W	18	G		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	W-05-1 RW																						
(2)A-C																							

HOLDING

(5)

Collected/Relinquished By:(1)	Date	Time	Received By:
Jeremy A Bowley			
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 6/22/06	Time 1306	Received By:

(4)

Shipping Carrier:	Samples Received Cold? (Circle) YES NO
Shipping Ticket No:	Temperature IC: TB 2.6 ; C 2.0
Special Deliverable Requirements:	Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT
Requested Turnaround Time and Special Instructions:	

V. Potte Anch AK 995 (907) 3 Fa 561-53(☐ 125 rler St harlest 25311)4) 346 Fax: (3 -0761
(1550) Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

White d by L
Yellow - Returned with Report

1063346

SGS

SAMPLE RECEIPT FORM

SGS WO#:

Yes	No	NA		
✓			Are samples **RUSH**, priority, or *w/n 72 hrs.* of **hold time**?	**Due Date:** 7-7-06
called			If yes have you done *e-mail notification*?	**Received Date:** 6-22-06
✓			Are samples *within 24 hrs.* of **hold time** or **due date**?	**Received Time:** 1306
		✓	If yes, have you *spoken with* Supervisor?	Is **date/time conversion** necessary? N
		✓	Archiving bottles – if req., are they properly marked?	# of hours to AK Local Time:
* ✓			Are there any **problems**? PM Notified?	**Thermometer ID:** 2D
✓			Were samples preserved correctly and pH verified?	
			* Bubbles in VOAs (DRTS) > 1cm	
?			If this is for PWS, provide **PWSID.**	
	✓		Will courier charges apply?	
			Method of payment?	
	✓		Data package required? (Level: 1 / 2 / 3 / 4)	
			Notes:	
	✓		Is this a DoD project? (USACE, Navy, AFCEE)	

Cooler ID	Temp Blank	Cooler Temp
1	2-6 °C	2.0 °C
	°C	°C
	°C	°C
	°C	°C
	°C	°C

*Temperature readings include thermometer correction factor

Delivery method (circle all that apply): Client / Alert Courier / UPS / FedEx / USPS / AA Goldstreak / NAC / ERA / PenAir / Carlile Lynden / SGS / Other:

Airbill # 1138 1462

Additional Sample Remarks: *(✓ if applicable)*

- Extra Sample Volume?
- Limited Sample Volume?
- Field preserved for volatiles?
- Field-filtered for dissolved?
- Lab-filtered for dissolved?
- ✓ Ref Lab required? ~~MA ST TLH MBAS~~
- Foreign Soil? ~~chlorine Demand~~ 524.2 325 6-22-06

This section must be filled out for DoD projects (USACE, Navy, AFCEE)

Yes	No		
		Is received temperature 4 ± 2°C?	
		Exceptions:	Samples/Analyses Affected:
		Rad Screen performed? Result:	
		Was there an airbill? *(Note # above in the right hand column)*	
		Was cooler sealed with custody seals?	
		# / where:	
		Were seal(s) intact upon arrival?	
		Was there a COC with cooler?	
		Was COC sealed in plastic bag & taped inside lid of cooler?	
		Was the COC filled out properly?	
		Did the COC indicate COE / AFCEE / Navy project?	
		Did the COC and samples correspond?	
		Were all sample packed to prevent breakage?	
		Packing material:	
		Were all samples unbroken and clearly labeled?	
		Were all samples sealed in separate plastic bags?	
		Were all VOCs free of headspace and/or MeOH preserved?	
		Were correct container / sample sizes submitted?	
		Is sample-condition good?	
		Was copy of CoC, SRF, and custody seals given to PM to fax?	

This section must be filled if problems are found.

Yes / No — ✓ Was client notified of problems?

Individual contacted: LLOYD

Via: Phone / Fax / Email (*circle one*)

Date/Time: 6/22/06 1325

Reason for contact: TC & CHLORINE DEMAND ARE PAST HT. MBAS IS CLOSE AND WILL BE 2X COST. CLIENT SAYS CANCEL MBAS, TC, & CHLORINE DEMAND. CANCEL VOC.

Change Order Required? No

SGS Contact: FAT

Notes: CANCEL TC, CHLORINE DEMAND, & MBAS

CANCEL VOC DUE TO AIR BUBBLES

Completed by (sign): _____ **(print):** Jamie Johnson

Login proof (check one): ✓ waived ____ required ____ performed by: _____

SGS

1063346

SAMPLE RECEIPT FORM (page 2)

SGS WO#:

						Container Volume									Container Type								Preservative							
#	Container ID	Matrix	Test	QC	TB	1 L	500 mL	250 mL	125 mL	60 mL	40 mL	8oz (250 mL)	4oz (125 mL)	Other	AG	CG	HDPE	Nalgene	Cubie	Coli	Septa	Other	None	HCl	HNO_3	H_2SO_4	MeOH	$Na_2S_2O_3$	NaOH	Other
1	A	O	NO2, NO3, F, Cl, SO4, Br							1								X					X							
	B		~~TC~~ JLS 6-22-06						1											X								X		
	C		UV254						1						X								X							
	D		TDS, Alk, pH, Color, turb			1											X						X							
	E		Odor			1									X								X							
	F		~~HAAS~~ JLS 6-22-06				1								X								X							
	G		~~Chlorine Demand~~			1									X								X							
	H		TOC					1							X									X						
	I		DOC					1							X									X						FF
	J		CN					1									X												X	
	K		Metals					1									X								X					
	L-M		TTHM FP			2									X								X							
	N-O		HAAS FP			2									X								X							
	P		extra							1								X					X							
	Q-S		~~524.2~~								3				X						X			X						
2	A-C	1	~~524.2~~ JLS 6-22-06		X						3				X						X			X						

Bottle Totals	1 L	500 mL	250 mL	125 mL	60 mL	40 mL	8oz (250 mL)	4oz (125 mL)	Other
	7	1	4	2	2	6			

Completed by: [signature] Date: 6-22-06

1063346

SGS Environmental

CUSTODY SEAL

Signature: Danny H Bayley CEC ENGINEERS Date/Time: 6/20/06 5:20pm

SGS Environmental

CUSTODY SEAL

Signature: Danny H Bayley CEC Date/Time: 6/20/06 5:20pm

Alert Expeditors Inc.
DBA/Petroleum Courier Service

Citywide Delivery
272-0349 • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

173686

Date [illegible]
From [illegible] Aviation Barber
To SCS

Collect ☐ | Prepay ☐ Account ☐ | Advance Charges ☐

Job # | PO#

[illegible]

Shipped Signature

Received By: [signature]

Total Charge 136

---

2. Consignee Memo

1063346

Service: (800) 634-7113

GoldStreak Airlines

www.ALASKACARGO.com
1-800-225-2752

P.O. Box 68900
Seattle, WA 98168

Airline	Origin	AIR WAYBILL Number
027-	Bet	1138 1462

Shipper: [illegible] Aviation

FROM

Phone:

State: AK

Zip Code:

Shipment does not contain any unauthorized explosives, destructive devices or hazardous materials.

Signature — PRINTED NAME [illegible] Date 6/21/06

International ☐

Declared Value For Customs

First Carrier | Airport of Destination

Quantity of Goods: [illegible] Samples

Destination:

Consignee: (Complete Consignee information required on package)
[illegible] Engineer

TO

Phone: 349-1010

State: AK

Zip Code:

Printed Name Signature (Received In Good Order Except as Noted) [signature]

Time [illegible] a.m./p.m.

Date

Total Pieces: 2

Total Weight: 47/50

Form of Payment
☐ Cash ☐ Check ☐ GBL—Attach GBL
☒ AS Account Number 2744212475 1
☐ Credit Card Number

Validata Approval 214196
(Required for all except cash and GBL)

CHECK ONE ONLY
☒ AIRPORT TO AIRPORT SERVICE
☐ PICK-UP ONLY ☐ DELIVERY ONLY ☐ DOOR TO DOOR

Executed By: Date/Time [illegible] a.m./p.m.

Carrier	Flight	Destination	E.T.A.
AS	44	ANC	

Remarks

MULTIPLE PIECES FOR AS FLIGHTS ONLY
Please ✓ If Live Animal ☐

PCS.	WT. RANGE	RATE	CHARGE
	GSX LETTER		
	1-15		
2	16-50		100
	51-70		
	71-100		

Subtotal Charges
AS COURIER CHARGES
Other Charges
1st Carrier
2nd Carrier
3rd Carrier
Tax (Offline only)
Pickup (NON AS COURIER)
Delivery (NON AS COURIER)
Special Service
Insurance
TOTAL 100

Origin | AIR WAYBILL Number 1138 1462 | GoldStreak Alaska Airlines

Laboratory Analysis Report

200 W. Potter Drive
Anchorage, AK 99518-1605
Tel: (907) 562-2343
Fax: (907) 561-5301
Web: http://www.us.sgs.com

Paul Weisner
Chuck Eggener Consulting Engr.
P.O. Box 232946
Anchorage, AK 99523

Work Order:	1063345
	Tuluksak VSW W-05-2
Client:	Chuck Eggener Consulting Engr.
Report Date:	August 02, 2006

Released by:
Forest Taylor
2006.08.03
13:44:40 -
08'00'

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by SGS. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request.

The laboratory certification numbers are AK971-05 (DW), UST-005 (CS) and AK00971 (Micro) for ADEC and 001543 for NELAP.

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP, the National Environmental Laboratory Accreditation Program and, when applicable, other regulatory authorities.

If you have any questions regarding this report or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343.

The following descriptors may be found on your report which will serve to further qualify the data.

PQL	Practical Quantitation Limit (reporting limit).
U	Indicates the analyte was analyzed for but not detected.
F	Indicates value that is greater than or equal to the MDL.
J	The quantitation is an estimation.
ND	Indicates the analyte is not detected.
B	Indicates the analyte is found in a blank associated with the sample.
*	The analyte has exceeded allowable regulatory or control limits.
GT	Greater Than
D	The analyte concentration is the result of a dilution.
LT	Less Than
!	Surrogate out of control limits.
Q	QC parameter out of acceptance range.
M	A matrix effect was present.
JL	The analyte was positively identified, but the quantitation is a low estimation.
E	The analyte result is above the calibrated range.

Note: Soil samples are reported on a dry weight basis unless otherwise specified.

SGS

SGS Ref.#	1063345001	**All Dates/Times are Alaska Standard Time**	
Client Name	Chuck Eggener Consulting Engr.	**Printed Date/Time**	08/02/2006 8:40
Project Name/#	Tuluksak VSW W-05-2	**Collected Date/Time**	06/20/2006 16:05
Client Sample ID	W-05-2RW	**Received Date/Time**	06/22/2006 13:06
Matrix	Drinking Water	**Technical Director**	**Stephen C. Ede**
PWSID	0		

Sample Remarks:

SM 5910 - %T = 81.2

HAA Formation Potential was analyzed by Montgomery Watson Harza of Monrovia, CA.

TTHM Formation Potential was analyzed by Montgomery Watson Harza of Monrovia, CA.

Parameter	Results		PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Calcium	34.3		0.100	mg/L	SM20 2340B	K		06/27/06	07/07/06	TK
Hardness as CaCO3	104		5.00	mg/L	SM20 2340B	K		06/27/06	07/07/06	TK
Magnesium	4.54		0.100	mg/L	SM20 2340B	K		06/27/06	07/07/06	TK
Metals by ICP/MS										
Aluminum	ND		20.0	ug/L	EP200.8	K		06/27/06	06/30/06	MH
Calcium	29900		500	ug/L	EP200.8	K		06/27/06	06/30/06	MH
Magnesium	5080		50.0	ug/L	EP200.8	K		06/27/06	06/30/06	MH
Silver	ND		1.00	ug/L	EP200.8	K		06/27/06	06/30/06	MH
Waters Department										
Nitrite-N	ND		0.100	mg/L	EPA 353.2	A			06/22/06	ALR
Nitrate-N	ND		0.100	mg/L	EPA 353.2	A			06/22/06	ALR
Bromide	ND		0.100	mg/L	EPA 300.0	A		06/23/06	06/23/06	DSH
Total Organic Carbon	48.0		0.500	mg/L	EPA 415.1	H			06/29/06	TSN
Total Organic Carbon,Dissolved	45.7		0.500	mg/L	EPA 415.1	I			06/29/06	TSN
UV-254	0.0900		0.0200	cm-1	SM20 5910B	C			06/22/06	CAW
Inorganic Contaminants										
Antimony	ND		1.00	ug/L	EP200.8	K	(<6)	06/27/06	06/30/06	MH
Arsenic	49.9	*	5.00	ug/L	EP200.8	K	(<10)	06/27/06	06/30/06	MH
Barium	184		3.00	ug/L	EP200.8	K	(<2000)	06/27/06	06/30/06	MH
Beryllium	ND		0.400	ug/L	EP200.8	K	(<4)	06/27/06	06/30/06	MH
Cadmium	ND		0.500	ug/L	EP200.8	K	(<5)	06/27/06	06/30/06	MH
Chromium	ND		1.00	ug/L	EP200.8	K	(<100)	06/27/06	06/30/06	MH
Cyanide	ND		0.0050	mg/L	SM20 4500-CN C,E	J	(<0.2)	06/26/06	06/27/06	KP

SGS

SGS Ref.#	1063345001	**All Dates/Times are Alaska Standard Time**	
Client Name	Chuck Eggener Consulting Engr.	**Printed Date/Time**	08/02/2006 8:40
Project Name/#	Tuluksak VSW W-05-2	**Collected Date/Time**	06/20/2006 16:05
Client Sample ID	W-05-2RW	**Received Date/Time**	06/22/2006 13:06
Matrix	Drinking Water	**Technical Director**	**Stephen C. Ede**
PWSID	0		

Parameter	Results		PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Inorganic Contaminants										
Fluoride	ND		0.100	mg/L	EPA 300.0	A	(<2)	06/23/06	06/23/06	DSH
Mercury by Cold Vapor	ND		0.200	ug/L	EP245.1	K	(<0.2)	07/03/06	07/05/06	HKG
Nickel	ND		2.00	ug/L	EP200.8	K	(<100)	06/27/06	06/30/06	MH
Selenium	ND		5.00	ug/L	EP200.8	K	(<50)	06/27/06	06/30/06	MH
Thallium	ND		1.00	ug/L	EP200.8	K	(<2)	06/27/06	06/30/06	MH
Secondary Contaminants										
Calcium	34.3		0.200	mg/L	EP200.7	K		06/27/06	07/07/06	TK
Chloride	1.96		0.100	mg/L	EPA 300.0	A	(<250)	06/23/06	06/23/06	DSH
Color	55.0	*	5.00	PCU	SM20 2120B	D	(<15)		06/22/06	CRY
Copper	ND		1.00	ug/L	EP200.8	K	(<1000)	06/27/06	06/30/06	MH
Fluoride	ND		0.100	mg/L	EPA 300.0	A	(<2)	06/23/06	06/23/06	DSH
Langlier Index @ 40 degree F	-1.2797				SM2330B	A			07/10/06	PLW
Alkalinity	108		40.0	mg/L	SM20 2320B	D			06/27/06	PLW
Langlier Index @ 140 degree F	-0.1997				SM2330B	A			07/10/06	PLW
CO3 Alkalinity	ND		40.0	mg/L	SM20 2320B	D			06/27/06	PLW
Iron	8.41	*	0.0400	mg/L	EP200.7	K	(<0.3)	06/27/06	07/07/06	TK
HCO3 Alkalinity	108		40.0	mg/L	SM20 2320B	D			06/27/06	PLW
OH Alkalinity	ND		40.0	mg/L	SM20 2320B	D			06/27/06	PLW
Manganese	326	*	1.00	ug/L	EP200.8	K	(<50)	06/27/06	06/30/06	MH
Odor (TON)	2.00		1.00	T.O.N.	SM20 2150B	E	(<3)		06/22/06	CRY
pH	6.98		0.100	pH units	EPA 150.1	D	(6.5-8.5)		06/22/06	CRY
Magnesium	4.54		0.200	mg/L	EP200.7	K		06/27/06	07/07/06	TK
Sodium	2.47		2.00	mg/L	EP200.7	K	(<250)	06/27/06	07/07/06	TK
Sulfate	ND		0.100	mg/L	EPA 300.0	A	(<250)	06/23/06	06/23/06	DSH
Total Dissolved Solids	185		10.0	mg/L	SM20 2540C	D	(<500)		06/27/06	KP
Zinc	ND		5.00	ug/L	EP200.8	K	(<5000)	06/27/06	06/30/06	MH

MWH Laboratories
A Division of MWH Americas, Inc.

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: 626 386 1100
Fax: 626 386 1101
1 800 566 LABS (1 800 566 5227)

Laboratory Report

for

SGS Environmental Services Inc.
200 W. Potter Drive

Anchorage , AK 99518

Attention: Forest Taylor
Fax: (907) 561-5301

REVISED
7/31/06

D/DBP Haloacetic acids (HAA5) changed from ND to 147ug/L

DATE OF ISSUE
JUL 31 2006
MWH LABORATORIES

YOM Yolanda Martin
Project Manager

ACCREDITED IN ACCORDANCE WITH nelac 01114CA

Report#: 177352
DRINKING

Laboratory certifies that the test results meet all **NELAC** requirements unless noted in the Comments section or the Case Narrative. Following the cover page are QC Report,QC Summary,Data Report,Hits Report, totaling 5 page[s].

MWH Laboratories
A Division of MWH Americas, Inc.

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: 626 386 1100
Fax: 626 386 1101
1 800 566 LABS (1 800 566 5227)

Laboratory
Hits Report
#177352

SGS Environmental Services Inc.
Forest Taylor
200 W. Potter Drive
Anchorage , AK 99518

Samples Received
24-jun-2006 09:16:05

Analyzed	Sample#	Sample ID	Result	Federal MCL	UNITS	MRL
	2606240163	W-05-2 RW 1063345001				
07/19/06	Bromochloroacetic acid		3.55		ug/l	1.0
07/19/06	Bromodichloroacetic acid		5.19		ug/l	1.0
07/07/06	Chlorine Dose		20		mg/l	1.0
07/14/06	Chlorine Residual		4.6		mg/l	0.1
07/19/06	Chlorodibromomacetic acid		2.13		ug/l	2.0
07/19/06	D/DBP Haloacetic Acids (HAA5)		147	60	ug/l	1.0
07/19/06	Dichloroacetic acid		65.3		ug/l	5.0
07/19/06	Tribromoacetic acid		147		ug/l	4.0
07/19/06	Trichloroacetic acid		82.1		ug/l	5.0
07/08/06	Bromodichloromethane		4.57		ug/l	0.5
06/26/06	Chlorine Dose		20		mg/l	1.0
07/03/06	Chlorine Residual		5.0		mg/l	0.1
07/10/06	Chloroform		135		ug/l	2.5
07/10/06	Total Potential Trihalomethane		140		ug/l	0.5

SUMMARY OF POSITIVE DATA ONLY.

MWH Laboratories
A Division of MWH Americas, Inc.

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: 626 386 1100
Fax: 626 386 1101
1 800 566 LABS (1 800 566 5227)

Laboratory
Data Report
#177352

SGS Environmental Services Inc.
Forest Taylor
200 W. Potter Drive
Anchorage , AK 99518

Samples Received
06/24/06

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
W-05-2 RW 1063345001 (2606240163) Sampled on 06/20/06 16:05								
				Tot Pot Trihalomethanes 5710B				
07/07/06	07/08/06 00:00	324842	(ML/EPA 551.1)	Bromoform	ND	ug/l	0.5	1
07/07/06	07/10/06 00:00	324842	(ML/EPA 551.1)	Chloroform	135	ug/l	2.5	5
07/07/06	06/26/06 00:00	324642	(SM2350)	Chlorine Dose	20	mg/l	1.0	1
07/07/06	07/03/06 00:00	324842	(ML/S 4500CL-G)	Chlorine Residual	5.0	mg/l	0.1	1
07/07/06	07/08/06 00:00	324842	(ML/EPA 551.1)	Dibromochloromethane	ND	ug/l	0.5	1
07/07/06	07/08/06 00:00	324842	(ML/EPA 551.1)	Bromodichloromethane	4.57	ug/l	0.5	1
07/07/06	07/10/06 00:00	324842	(ML/EPA 551.1)	Total Potential Trihalomethane	140	ug/l	0.5	1
			(ML/SM 5710)	1,2-Dibromopropane(70-130)	96	% Rec		
				Total Potential Haloacetic				
07/18/06	07/07/06 00:00	326271	(ML/SM 5710B)	Chlorine Dose	20	mg/l	1.0	1
07/18/06	07/19/06 00:00	326271	(ML/SM 6251B)	Bromochloroacetic acid	3.55	ug/l	1.0	1
07/18/06	07/19/06 00:00	326271	(ML/SM 6251B)	Bromodichloroacetic acid	5.19	ug/l	1.0	1
07/18/06	07/19/06 00:00	326271	(ML/SM 6251B)	Chlorodibromomacetic acid	2.13	ug/l	2.0	1
07/18/06	07/14/06 00:00	326271	(ML/SM 5710B)	Chlorine Residual	4.6	mg/l	0.1	1
07/18/06	07/19/06 00:00	326271	(ML/SM 6251B)	Dibromoacetic acid	ND	ug/l	1.0	1
07/18/06	07/19/06 00:00	326271	(ML/SM 6251B)	Dichloroacetic acid	65.3	ug/l	5.0	5
07/18/06	07/19/06 00:00	326271	(ML/SM 6251B)	Monobromoacetic acid	ND	ug/l	1.0	1
07/18/06	07/19/06 00:00	326271	(ML/SM 6251B)	Monochloroacetic acid	ND	ug/l	2.0	1
07/18/06	07/19/06 00:00	326271	(ML/SM 6251B)	Tribromoacetic acid	147	ug/l	4.0	1
07/18/06	07/19/06 00:00	326271	(ML/SM 6251B)	Trichloroacetic acid	82.1	ug/l	5.0	5
07/18/06	07/19/06 00:00	326271	(ML/S6251B)	D/DBP Haloacetic Acids (HAA5)	147	ug/l	1.0	1
			(SM5710 6251B)	1,2,3-TCP(80-120)	107	% Rec		
			(SM5710 6251B)	2,3-Dibrom Acid(70-130)	99	% Rec		

SGS

CHAIN OF CUSTODY RECORD
SGS Environmental Services Inc.

1063345

waii
ryland
th Carolina

051099

1

CLIENT: Tuluksak VSW

CONTACT: CE2 Engineers PHONE NO: (907) 349-1010

PROJECT: Tuluksak VSW SITE/PWSID#: W-05-2

REPORTS TO: Paul Weisner FAX NO.: (907) 349-1015

INVOICE TO: CE2 Engineers QUOTE #

P.O. NUMBER

SGS Reference:

PAGE 1 OF 1

2 **3**

Preservatives Used: $Na_2S_2O_3$ (TColi); HNO_3 (metals); NaOH (CN); HCl (DOC (Field Filter)); HCl (UV 254); HCl (VOC 524.2)

Analysis Required: TColi; metals: 10d20 (inorg) + Ag, Al, Mg, Ca; CN; Fl, Cl, SO_4, Br, NO_2, NO_3; TDS, Alk, pH, Color; ODOR; MBAS; TOC; DOC (Field Filter); UV 254; Turb; Chlorine Demand; HAA5 Form Pot; TTHm Form Pot; VOC 524.2

SAMPLE TYPE: C= COMP, G= GRAB

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE	TColi	metals	CN	Fl, Cl, SO4, Br, NO2, NO3	TDS, Alk, pH, Color	ODOR	MBAS	TOC	DOC (Field Filter)	UV 254	Turb	Chlorine Demand	HAA5 Form Pot	TTHm Form Pot	VOC 524.2	REMARKS
1 A-S	W-05-2 RW	6/20/06	405	W	18	G	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
2 A-C																						

5

Collected/Relinquished By: (1)	Date	Time	Received By:
Gary A. Barnes			[illegible]
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 6/22/06	Time 1306	Received By: [illegible]

4

Shipping Carrier:

Shipping Ticket No:

Samples Received Cold? (Circle) YES NO

Temperature °C: TB=2.5 ; C=3.3

Special Deliverable Requirements:

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Requested Turnaround Time and Special Instructions:

1063345

SGS

SAMPLE RECEIPT FORM

SGS WO#: _____

Yes	No	NA		
✓			Are samples **RUSH**, priority, or *w/n 72 hrs.* of **hold time**?	**Due Date:** 7-7-06
	called		If yes have you done *e-mail notification*?	**Received Date:** 6-22-06
✓			Are samples *within 24 hrs.* of **hold time** or **due date**?	**Received Time:** 1306
		✓	If yes, have you *spoken with* Supervisor?	Is **date/time conversion** necessary? N
		✓	Archiving bottles – if req., are they properly marked?	# of hours to AK Local Time: _____
* ✓			Are there any **problems**? PM Notified? _____	**Thermometer ID:** 5D
✓			Were samples preserved correctly and pH verified?	

* Bubbles in VOAs (1) R=6mm S>1cm

Cooler ID	Temp Blank	Cooler Temp
1	2.5 °C	3.3 °C
	°C	°C
	°C	°C
	°C	°C
	°C	°C

*Temperature readings include thermometer correction factor

? | | | If this is for PWS, provide **PWSID.** _____

✓ | | | Will courier charges apply?

Method of payment? _____

	✓		Data package required? (Level: 1 / 2 / 3 / 4)

Notes: _____

	✓		Is this a DoD project? (USACE, Navy, AFCEE)

Delivery method (circle all that apply): Client / (Alert Courier) / UPS / FedEx / USPS / (AA Goldstreak) / NAC / ERA / PenAir / Carli / Lynden / SGS / Other: _____

Airbill # 1138 1462

Additional Sample Remarks: *(√ if applicable)*

- ✓ Extra Sample Volume?
- _____ Limited Sample Volume?
- _____ Field preserved for volatiles?
- _____ Field-filtered for dissolved? _____
- _____ Lab-filtered for dissolved? _____
- ✓ Ref Lab required? MBAS chlorine
- _____ Foreign Soil? TTHM HAA5 F

This section must be filled out for DoD projects (USACE, Navy, AFCEE)

Yes	No		
		Is received temperature 4 ± 2°C?	
		Exceptions:	Samples/Analyses Affected:
		Rad Screen performed? Result:	
		Was there an airbill? *(Note # above in the right hand column)*	
		Was cooler sealed with custody seals? # / where:	
		Were seal(s) intact upon arrival?	
		Was there a COC with cooler?	
		Was COC sealed in plastic bag & taped inside lid of cooler?	
		Was the COC filled out properly?	
		Did the COC indicate COE / AFCEE / Navy project?	
		Did the COC and samples correspond?	
		Were all sample packed to prevent breakage? Packing material:	
		Were all samples unbroken and clearly labeled?	
		Were all samples sealed in separate plastic bags?	
		Were all VOCs free of headspace and/or MeOH preserved?	
		Were correct container / sample sizes submitted?	
		Is sample condition good?	
		Was copy of CoC, SRF, and custody seals given to PM to fax?	

This section must be filled if problems are found.

Yes / No: ✓ / _____ Was client notified of problems?

Individual contacted: _____

Via: (Phone) / Fax / Email *(circle one)*

Date/Time: 6/22/06 1325

Reason for contact: MBAS IS SHORT HOLD AND CLIENT WERE NEED TO PAY 2X PRICE. CANCEL MBAS. TC AND CHLORINE DEMAND ARE PAST HT. CANCEL

Change Order Required? No

SGS Contact: FAT

Notes: CANCEL TC, CHLORINE DEMAND, & MBAS. FAT 6/22/06

CANCEL VOC DUE TO BUBBLES.

Completed by (sign): _____ (print): James Johnson

Login proof (check one): waived ✓ required _____ performed by: _____

SGS

1063345

SAMPLE RECEIPT FORM (page 2)

SGS WO#.

#	Container ID	Matrix	Test	QC	TB	Container Volume: 1 L	500 mL	250 mL	125 mL	60 mL	40 mL	8oz (250 mL)	4oz (125 mL)	Other	Container Type: AG	CG	HDPE	Nalgene	Cubie	Coli	Septa	Other	Preservative: None	HCl	HNO_3	H_2SO_4	MeOH	$Na_2S_2O_3$	NaOH	Other
			NO_3, NO_2																											
1	A	O	F, Cl, SO_4, Br, I							1								X					X							
	B		← 524.2						1											X								X		
	C		UV254						1						X															
	D		TDS, Alk, pH, Color, turb			1											X						X							
	E		Odor			1									X								X							
	F		MBAS 524.2				1								X								X							
	G		Chlorine Demand			1									X								X							
	H		TOC					1							X									X						
	I		DOC					1							X									X						FF
	J		CN					1									X											X		
	K		Metals					1									X								X					
	L-M		TTHM FP			2									X								X							
	N-O		HAA5 FP			2									X								X							
	P		extra							1								X					X							
	Q-S		524.2								3				X						X			X						
2	A-C	1	524.2		X						3				X						X			X						

Bottle Totals	7	1	4	2	2	6			

Completed by: _____ Date: 6-22-06

SP-Analytica, Inc.-Anchorage
4307 Arctic Blvd.
Anchorage, AK 99503
907-258-2155
Fax: 907-258-6634

7/16/2008

CE2
P.O. Box 232946
Anchorage, AK 99523
Attn: Lloyd Persson

Work Order #: A0806189
Date: 7/16/2008
Work ID: Tuluksak Water and Sewer Project - 05 South Well
Date Received: 6/16/2008

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A0806189-01	Tuluksak, AK		

Enclosed are the analytical results for the submitted sample(s). Please review the CASE NARRATIVE for a discussion of any data and/or quality control issues. Listings of data qualifiers, analytical codes, key dates, and QC relationships are provided at the end of the report.

Sincerely,

Marty Waters
Project Manager

"The Science of Analysis, The Art of Service"

Case Narrative

Analytica Alaska Inc.
Work Order: A0806189

Narrative Generated on 7/16/2008 7:17:43 PM
Samples were prepared and analyzed according to EPA or equivalent methods outlined in the following references:

SAMPLE RECEIPT:
There were 1 samples received on 6/16/2008 10:30:00 AM.
Samples were receivedin cooler 1 at Analytica-Anchorage.
Comments:Samples were received in good condition and in order per chain of custody

REVIEW FOR COMPLIANCE WITH ANALYTICA QA PLAN
A summary of our review is shown below.

All analytical results contained in this report have been reviewed under Analytica's internal quality assurance and quality control program. Any deviations in quality control parameters for specific analyses are noted in the following text. A complete quality assurance report, including laboratory control, matrix spike, and sample duplicate recoveries is kept on file in our office and is available upon request.

All method specifications were met for the following tests, unless otherwise noted:

The following are subcontracted tests and have been represented to us as having met criteria:

Test Method: SM5310B - DOC-SC - Aqueous
Test Method: SM5310B - TOC (SC) - Aqueous

SP-Analytica, Inc.-Anchorage
4307 Arctic Blvd.
Anchorage, AK 99503
Phone: 907-258-2155
Fax: 907-258-6634

CE2
Attn: Lloyd Persson
P.O. Box 232946
Anchorage, AK 99523
907-349-1010
Fax: 907-349-1015

Report Date: 7/16/2008
Receipt Date: 6/16/2008
Sample Date: 6/10/2008
Sample Time: 9:30:00AM
Collected By: LAP

Client Sample ID: **Tuluksak, AK**
Sampling Location: **05-1 South Well**
Client Project: Tuluksak Water and Sewer Project - 05 South Well
Sample Matrix: Aqueous
COC #: 63474
PWS#:
Residual Chlorine:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
H = Exceeds Regulatory Limit
M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected
TNC = Too Numerous to Count - result rejected
CF = Confluent Growth - result rejected
TCNG = Turbid Culture No Growth - rejected

Lab#: A0806189-01A

Analysis Method / Parameter	Result	Units	Flags	MRL	Prep Method	Prep Date	Analysis Date	Analyst
5310B (Aqueous) - TOC and DOC					*Test was conducted by: SGS Environmental Services Inc.*			
See Subcontractor Report						7/5/2008		

Analytica Chain of Custody Form

12189 Pennsylvania St.
Thornton, CO 80241
(303) 469-8868
(303) 469-5254 fax

4307 Arctic Boulevard
Anchorage, AK 99503
(907) 258-2155
(907) 258-6634 fax

475 Hall St.
Fairbanks, AK 99701
(907) 456 - 3116
(907) 456-3125 Fax

5438 Shaune Drive
Juneau, AK 99801
(907) 780-6668
(907) 780-6670 fax

Page _____ of _____

Chain of Custody No: 63474

Client Name & Address:
CE2 Engineers, Inc
P.O. Box 232946
Anchorage, AK 99523

Public Water System (PWS) ID#: N/A

Project Name: Tuluksak Water & Sewer Project - 05 South Well

Section To be Completed by Analytica
Quote ID:
LGN: A0806188
Account #:
Cust:

Report to: Lloyd Peesson
Phone No: (907) 349-1010
Fax No: (907) 349-1015
E-mail: Lloyd@ce2engineers.com

Turnaround Time for Results (TAT)
✓ Standard ___ Expedited (< 10 days, prior authorization required) (please specify due date below; add'l charges may apply)
Requested Due Date for Results: 6/22/08

Invoice to Name & Address: A0806189

Special Instructions/Comments:
Please Email Results To

P.O. or Contract No:

Requested Analysis/Method

Kit Prep/Shipping Charge: $

Client Sample Identification / Location	Date Sampled	Time Sampled	Matrix (S-DW-WW-Other)	No. of Containers	Lot # Pres.	Lot # Pres.	Lot # Pres.	Lot # Pres.	Lot # Pres.	Lot # Pres.	Lot # Pres.	Field Preserved	Field Filtered	MS/MSD ?
Tuluksak 05-1 South Well, Tuluksak, AK	6/10/08	9:30AM		3										
Nr & Ma, DOC & TOC														

Relinquished by:	Date	Time	Received by:	Date	Time
LA Peesson	6/11/08	05:00	[signature]	6/16/08	10:30
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Name of Sampler: (printed)					

Section To Be Completed by Analytica

	THO	ANC	JNU
Condition of Custody Seal?:			
Initialed By:		[signature]	
Temp/Loc:			
Thermo ID#:			
Shipped Via:			

Version 2.0

Laboratory Analysis Report

200 W. Potter Drive
Anchorage, AK 99518-1605
Tel: (907) 562-2343
Fax: (907) 561-5301
Web: http://www.us.sgs.com

Dan Compton
Analytica Group
4307 Artic Blvd
Anchorage, AK 99503

Work Order:	1082931
	A0806189
Client:	Analytica Group
Report Date:	July 11, 2008

Released by:
Forest Taylor
Alaska Division Project Manager
2008.07.11
08:35:28 -08'00'

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by SGS. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request.

The laboratory certification numbers are AK971-05 (DW), UST-005 (CS) and AK00971 (Micro) for ADEC and 001992 for NELAP (RCRA methods: 1020A, 1311, 6010B, 7470A, 7471A, 9040B, 9045C, 9056, 9060, 9065, 8015B, 8021B, 8081A/8082, 8260B, 8270C).

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP, the National Environmental Laboratory Accreditation Program and, when applicable, other regulatory authorities.

If you have any questions regarding this report or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343.

The following descriptors may be found on your report which will serve to further qualify the data.

PQL	Practical Quantitation Limit (reporting limit).
U	Indicates the analyte was analyzed for but not detected.
F	Indicates value that is greater than or equal to the MDL.
J	The quantitation is an estimation.
ND	Indicates the analyte is not detected.
B	Indicates the analyte is found in a blank associated with the sample.
*	The analyte has exceeded allowable regulatory or control limits.
GT	Greater Than
D	The analyte concentration is the result of a dilution.
LT	Less Than
!	Surrogate out of control limits.
Q	QC parameter out of acceptance range.
M	A matrix effect was present.
JL	The analyte was positively identified, but the quantitation is a low estimation.
E	The analyte result is above the calibrated range.
R	Rejected

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content.

SGS

SGS Ref.#	1082931001
Client Name	Analytica Group
Project Name/#	A0806189
Client Sample ID	A0806189-01A
Matrix	Drinking Water

All Dates/Times are Alaska Standard Time

Printed Date/Time	07/11/2008 8:27
Collected Date/Time	06/10/2008 9:30
Received Date/Time	06/23/2008 16:25
Technical Director	**Stephen C. Ede**

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Waters Department									
Total Organic Carbon	2.70	0.500	mg/L	SM 5310B	A			07/05/08	JDH

SGS

SGS Ref.#	1082931002	**All Dates/Times are Alaska Standard Time**	
Client Name	Analytica Group	**Printed Date/Time**	07/11/2008 8:27
Project Name/#	A0806189	**Collected Date/Time**	06/10/2008 9:30
Client Sample ID	A0806189-01B	**Received Date/Time**	06/23/2008 16:25
Matrix	Drinking Water	**Technical Director**	**Stephen C. Ede**

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Waters Department									
Total Organic Carbon,Dissolved	3.10	0.500	mg/L	SM 5310B	A			07/05/08	JDH

ANALYTICA GROUP

Analytica Chain of Custody Form

1082931

12189 Pennsylvania St. Thornton, CO 80241 (303) 469-8868 (303) 469-5254 fax

5438 Shaune Drive Juneau, AK 99801 (907) 780-6668 (907) 780-6670 fax

4307 Arctic Blvd. Anchorage, AK 99503 (907) 258-2155 (907) 258-6634 fax

475 Hall Street Fairbanks, AK 99701 (907) 456-3116 (907) 456-3125 fax

63474

Client Name & Address: Analytica International, 4307 Arctic Blvd, Anchorage, AK 99503		**LGN: A0806189**	**To be Completed by Analytica**
			Quote ID No: **LGN: A0806189**
		Results to STATE: YES NO	
Contact Person:	Dan Compton	Data Deliverables: Level I Level II Level III Level IV	**Report to: Dan Compton**
Phone No:	907-258-2155 x224	EDD: YES NO Type of EDD:	
Fax No:	907-258-3364	Requested TAT: **Standard** **Rush (authorization required)**	**Invoice to:** Analytica International
E-mail:	dcompton@analyticagrou	Results Due Date:	
Special Instructions:			PO: ANC 986

****DO NOT REPORT TO STATE****

Lab Bottle Order No: / Sample Location	Date Sampled	Time Sampled	Matrix (S-DW-WW-Other)	5310B TOC	5310B DOC	Requested Analysis/Method										
A0806189-01A ① A	6/10/2008	9:30 AM	DW	x												
A0806189-01B ② A	6/10/2008	9:30 AM	DW		x											

Collected/Relinquished by:	Date	Time	Received by:	Date	Time
Joe Byrd					
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
				6/23/08	1625
Name of Sampler: (printed)					

To be Completed by Analytica

Chain-of-Custody Seal: Intact Broken Absent

Location Rcvd/Temp on Arrival:

THO ____C JUN ____C ANC ____C FAI ____C PB ____C

Thermometer ID # ____ Measurement Method: Temp. Blank Other

CF D T B = 7.7

Shipping Method/Tracking Number: C = 7.7

SGS

1082931

SAMPLE RECEIPT FORM

SGS WO#:

Yes	No	NA	
___	✓	___	Are samples **RUSH**, priority or *w/in 72 hrs* of hold time?
___	___	✓	If yes, have you done *e-mail ALERT notification*?
___	✓	___	Are samples *within 24 hrs.* of hold time or due date?
___	___	✓	If yes, have you also *spoken with* supervisor?
___	___	✓	Archiving bottles (if req'd): Are they properly marked?
___	✓	___	Are there any **problems**? PM Notified? ___
___	___	✓	Were samples preserved correctly and pH verified?
			___
			___
			___
___	✓	___	If this is for PWS, provide PWSID. ___
___	✓	___	Will courier charges apply?
			Method of payment? ___
___	✓	___	Data package required? (Level: 1 / 2 / 3 / 4)
			Notes: ___
___	✓	___	Is this a DoD project? (USACE, Navy, AFCEE)

TAT (circle one): Standard -or- Rush

Received Date: 6/23/08

Received Time: 1625

Is date/time conversion necessary? No

# of hours to AK Local Time: ___

Thermometer ID: 69D

Cooler ID	Temp Blank	Cooler Temp
1	7.7 °C	7.7 °C
	°C	°C
	°C	°C
	°C	°C
	°C	°C

Note: Temperature readings include thermometer correction factors

Delivery method (circle all that apply): Client / Alert Courier / UPS / FedEx / USPS / DHL / AA Goldstreak / NAC / ERA / PenAir / Carlile/ Lynden / SGS / Other: ___

Airbill # ___

Additional Sample Remarks: *(√if applicable)*

___ Extra Sample Volume?
___ Limited Sample Volume?
___ MeOH field preserved for volatiles?
___ Field-filtered for dissolved ___
___ Lab-filtered for dissolved ___
___ Ref Lab required? ___
___ Foreign Soil?

This section must be filled out for DoD projects (USACE, Navy, AFCEE)

Yes	No	
___	___	Is received temperature 4 ± 2°C?
		Exceptions: Samples/Analyses Affected:
___	___	If temperature(s) <0°C, were containers ice-free? N/A
		Notify PM immediately of any ice in samples.
___	___	Was there an airbill? *(Note # above in the right hand column)*
___	___	Was cooler sealed with custody seals?
		# / where:
___	___	Were seal(s) intact upon arrival?
___	___	Was there a COC with cooler?
___	___	Was COC sealed in plastic bag & taped inside lid of cooler?
___	___	Was the COC filled out properly?
___	___	Did the COC indicate USACE / Navy / AFCEE project?
___	___	Did the COC and samples correspond?
___	___	Were all sample packed to prevent breakage?
		Packing material:
___	___	Were all samples unbroken and clearly labeled?
___	___	Were all samples sealed in separate plastic bags?
___	___	Were all VOCs free of headspace and/or MeOH preserved?
___	___	Were correct container / sample sizes submitted?
___	___	Is sample condition good?
___	___	Was copy of CoC, SRF, and custody seals given to PM to fax?

This section must be filled if problems are found.

Yes	No	
___	___	Was client notified of problems?

Individual contacted: ___

Via: Phone / Fax / Email *(circle one)*

Date/Time: ___

Reason for contact: ___

Change Order Required? ___

SGS Contact: ___

Notes: ___

Completed by (sign): ___ (print): Joe Rudi

Login proof (check one): waived ___ required ___ performed by: ___

1082931

SGS

SAMPLE RECEIPT FORM (page 2)

SGS WO:

#	Container ID	Matrix	Test	QC	TB	Container Volume: 1 L	500 mL	250 mL	125 mL	60 mL	40 mL	8oz (250 mL)	4oz (125 mL)	Other	Container Type: AG	CG	HDPE	Nalgene	Cubie	Coli	Septa	Other	Preservative: None	HCl	HNO_3	H_2SO_4	MeOH	$Na_2S_2O_3$	NaOH	Other
1	A	O	TOC						1						✓									✓						
2	A	O	DOC						1						✓									✓						

Bottle Totals				2						

Completed by: _____ Date: 6/23/08

Form # F004r16 revised 03/10/08

ANALYTICA GROUP

Date 6/23/08

Signature

CUSTODY SEAL

1082931

SP-Analytica, Inc.-Anchorage
4307 Arctic Blvd.
Anchorage, AK 99503
907-258-2155
Fax: 907-258-6634

12/31/2008
CE2
P.O. Box 232946
Anchorage, AK 99523
Attn: Lloyd Persson

Work Order #: A0812101
Date: 12/31/2008
Work ID: Treatment Design Package-Tuluksak
Date Received: 12/11/2008

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A0812101-01	Well 05 - South		

Enclosed are the analytical results for the submitted sample(s). Please review the CASE NARRATIVE for a discussion of any data and/or quality control issues. Listings of data qualifiers, analytical codes, key dates, and QC relationships are provided at the end of the report.

Sincerely,

Claire Toon
Project Manager

"The Science of Analysis, The Art of Service"

Case Narrative

Analytica Alaska Inc.
Work Order: A0812101

Samples were prepared and analyzed according to EPA or equivalent methods outlined in the following references:

Methods for the Determination of Metals in Environmental Samples, EPA/600/R-94/111, May 1994.

Pfaff, J. D., C. A. Brockhoff and J. W. O'Dell. 1994. The Determination of Inorganic Anions in Water by Ion Chromatography. Method 300.0A. U. S. Environmental Protection Agency. Environmental Monitoring Systems Lab.

Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998.

SAMPLE RECEIPT:
One (1) sample was received on 12/11/2008 10:35:00 AM, at a temperature of 7.0°C, at Analytica-Anchorage. The sample was received in good condition and in order per chain of custody.

Comments: The sample was received at a temperature greater than 6.0°C. The TTHM/HLAA Formation Potential analysis was subcontracted and will be reported separately.

The sample was transferred for various analyses to Analytica Environmental Laboratories (AEL), 12189 Pennsylvania St., Thornton, Colorado 80241, where they were received at a temperature of 2.0°C, in good condition and in order per chain of custody on 12/17/2008.

The sample was transferred for anions analysis to Analytica Alaska SE (AAI-SE); 5438 Shaune Drive, Juneau, AK 99801, where it was received at a temperature of 2.0°C, in good condition and in order per chain of custody on 12/17/2008.

REVIEW FOR COMPLIANCE WITH ANALYTICA QA PLAN
A summary of our review is shown below.

All analytical results contained in this report have been reviewed under Analytica's internal quality assurance and quality control program. Any deviations in quality control parameters for specific analyses are noted in the following text. A complete quality assurance report, including laboratory control, matrix spike, and sample duplicate recoveries is kept on file in our office and is available upon request.

All method specifications were met for the following tests, unless otherwise noted:

Test Method: 200.8 - Metals by ICP/MS - Treatment Design - Aqueous
Test Method: Calcium Carbonate Saturation - Langelier Index - Aqueous
Test Method: Hardness, Hardness by Calculation - Total Hardness - Aqueous
Test Method: Inorganic Anions by Ion Chromatography - Anions by IC - Aqueous
Test Method: SM 2320B - Total Alkalinity - Aqueous
Test Method: SM2120B - Color, Visual Comparison Method - Apparent Color - Aqueous
Test Method: SM2120B - Color, Visual Comparison Method - True Color - Aqueous
Test Method: SM2130B - Turbidity, Nephelometric Method - Turbidity - Aqueous
Test Method: SM2540C - Total Dissolved Solids dried at 180°C - TDS - Aqueous
Test Method: SM4500-N02-B Colorimetric Method - Nitrite - Aqueous
Test Method: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - Nitrate+Nitrite

Case Narrative

Analytica Alaska Inc.
Work Order: A0812101
(continued)

pres - Aqueous
Test Method: SM5910B Ultraviolet Absorption Method - UV254-UVA - Aqueous

Test Method: 200.7 - Metals by ICP - Treatment Design - Aqueous

MS/MSD and DUP OUTLIERS:
Iron was recovered outside the acceptance limits in the MS/MSD, as shown below. The sample had an iron concentration greater than four times the spike amount. In these cases it is not appropriate to calculate recoveries, and the results should be used as replicates.

Type	Client Sample	LabSample	Analyte	Recovery	LCL	UCL	Parent	Spike
MS		A0812101-01K	Iron	60.6	70	130	8.32	1.00
MSD		A0812101-01K	Iron	62.5	70	130	8.32	1.00

Test Method: SM4500-H-B Electrometric pH Method - pH - Aqueous

HOLDING TIMES:
pH is a field test requiring immediate analysis. This analysis was performed as soon as possible upon laboratory receipt.

Test Method: SM5310B - DOC - Aqueous

ANALYTICAL OBSERVATIONS:
The laboratory noted that the DOC result for this sample far exceeded the TOC result. The sample containers were examined for possible mis-labeling. The laboratory labels matched the field labels. Fine sediment and a darker color were noted in the DOC container.

METHOD BLANK OUTLIERS:
The target was detected above the PQL in the method blank, as shown below. Any detections of this target in associated samples are flagged with a B to indicate that they are due to laboratory background, unless the sample result is 5X or more the method blank level.

MB Batch	Analyte	Result	PQL	MDL
A081218024	Dissolved Organic Ca	1.14	1	0.3

Test Method: SM5310B - TOC - Aqueous

ANALYTICAL OBSERVATIONS:
The laboratory noted that the DOC result for this sample far exceeded the TOC result. The sample containers were examined for possible mis-labeling. The laboratory labels matched the field labels. Fine sediment and a darker color were noted in the DOC container.

METHOD BLANK OUTLIERS:
The target was detected above the PQL in the method blank, as shown below. Any detections of this target in associated samples are flagged with a B to indicate that they are due to

of this target in associated samples are flagged with a B to indicate that they are due to laboratory background, unless the sample result is 5X or more the method blank level.

MB Batch	Analyte	Result	PQL	MDL
A081218025	Total Organic Carbon	1.07	1	0.3

SP-Analytica, Inc.-Anchorage
4307 Arctic Blvd.
Anchorage, AK 99503
Phone: 907-258-2155
Fax: 907-258-6634

CE2
Attn: Lloyd Persson
P.O. Box 232946
Anchorage, AK 99523
907-349-1010
Fax: 907-349-1015

Report Date: 12/31/2008
Receipt Date: 12/11/2008
Sample Date: 12/10/2008
Sample Time: 2:15:00PM
Collected By: LP

Client Sample ID: Well 05 - South
Sampling Location: **Well 05 - South**
Client Project: Treatment Design Package-Tuluksak
Sample Matrix: Aqueous
COC #: 66474
PWS#:
Residual Chlorine:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
H = Exceeds Regulatory Limit
M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected
TNC = Too Numerous to Count - result rejected
CF = Confluent Growth - result rejected
TCNG = Turbid Culture No Growth - rejected

Lab#: A0812101-01C

Sample Comment: Tuluksak

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
300.0/300.0 (Aqueous) - Anions by IC					*Test was conducted by: Analytica - Juneau*				
Bromide	<MRL	mg/L		0.20		300.0	12/16/2008	12/16/2008	BD
Chloride	3.87	mg/L		0.50	*250*	300.0	12/16/2008	12/16/2008	BD
Fluoride	0.217	mg/L		0.050	*4.0*	300.0	12/16/2008	12/16/2008	BD
Sulfate	2.01	mg/L		0.10	*250*	300.0	12/16/2008	12/16/2008	BD

Lab#: A0812101-01D

Sample Comment: Tuluksak

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
4500-NO2-B (Aqueous) - Nitrite					*Test was conducted by: Analytica - Anchorage*				
Nitrite as N	<MRL	mg/L		0.020	*1*			12/11/2008	12/11/2008	JQ
2330B (Aqueous) - Langelier Index					*Test was conducted by: Analytica - Anchorage*				
Langelier Index/Corrosivity	-0.99	C Units		-1.0				12/22/2008	12/22/2008	JQ
2320B/2320B (Aqueous) - Total Alkalinity					*Test was conducted by: Analytica - Anchorage*				

SP-Analytica, Inc.-Anchorage
4307 Arctic Blvd.
Anchorage, AK 99503
Phone: 907-258-2155
Fax: 907-258-6634

CE2
Attn: Lloyd Persson
P.O. Box 232946
Anchorage, AK 99523
907-349-1010
Fax: 907-349-1015

Report Date: 12/31/2008
Receipt Date: 12/11/2008
Sample Date: 12/10/2008
Sample Time: 2:15:00PM
Collected By: LP

Client Sample ID: Well 05 - South
Sampling Location: **Well 05 - South**
Client Project: Treatment Design Package-Tuluksak
Sample Matrix: Aqueous
COC #: 66474
PWS#:
Residual Chlorine:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
H = Exceeds Regulatory Limit
M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected
TNC = Too Numerous to Count - result rejected
CF = Confluent Growth - result rejected
TCNG = Turbid Culture No Growth - rejected

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
2320B/2320B (Aqueous) - Total Alkalinity					*Test was conducted by: Analytica - Anchorage*				
Alkalinity, Total	105	mg/L CaCO3		4.0		2320B	12/17/2008	12/17/2008	JQ
4500-H-B/4500-H-B (Aqueous) - pH					*Test was conducted by: Analytica - Anchorage*				
pH	7.0	pH		0.0		4500-H-B	12/11/2008	12/11/2008	JQ
2540C/2540C (Aqueous) - TDS					*Test was conducted by: Analytica - Anchorage*				
Total Dissolved Solids	126	mg/L		20	*500*	2540C	12/11/2008	12/11/2008	JQ
2130B/2130B (Aqueous) - Turbidity					*Test was conducted by: Analytica - Anchorage*				
Turbidity	28.0	NTU	H	0.20	*1*	2130B	12/12/2008	12/12/2008	JQ

Lab#: A0812101-01E

Sample Comment: Tuluksak

Analysis Method / Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
5310B/5310B (Aqueous) - TOC					*Test was conducted by: Analytica - Anchorage*				
Total Organic Carbon	3.2	mg/L	B	1.0		5310B	12/18/2008	12/18/2008	JQ

Lab#: A0812101-01F

ANALYTICA GROUP

SP-Analytica, Inc.-Anchorage
4307 Arctic Blvd.
Anchorage, AK 99503
Phone: 907-258-2155
Fax: 907-258-6634

CE2
Attn: Lloyd Persson
P.O. Box 232946
Anchorage, AK 99523
907-349-1010
Fax: 907-349-1015

Report Date: 12/31/2008
Receipt Date: 12/11/2008
Sample Date: 12/10/2008
Sample Time: 2:15:00PM
Collected By: LP

Client Sample ID: Well 05 - South
Sampling Location: **Well 05 - South**
Client Project: Treatment Design Package-Tuluksak
Sample Matrix: Aqueous
COC #: 66474
PWS#:
Residual Chlorine:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
H = Exceeds Regulatory Limit
M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected
TNC = Too Numerous to Count - result rejected
CF = Confluent Growth - result rejected
TCNG = Turbid Culture No Growth - rejected

Sample Comment: Tuluksak

Analysis Method Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
2120B/2120B (Aqueous) - True Color					*Test was conducted by: Analytica - Anchorage*				
Color, true	45	Color Unit	H	5.0	*15*	2120B	12/11/2008	12/11/2008	DL

Lab#: A0812101-01G

Sample Comment: Tuluksak

Analysis Method Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
2120B/2120B (Aqueous) - Apparent Color					*Test was conducted by: Analytica - Anchorage*				
Color, apparent	55	Color Unit		5.0		2120B	12/11/2008	12/11/2008	DL

Lab#: A0812101-01H

Sample Comment: Tuluksak

Analysis Method Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
5310B/5310B (Aqueous) - DOC					*Test was conducted by: Analytica - Anchorage*				
Dissolved Organic Carbon	28	mg/L		1.0		5310B	12/18/2008	12/18/2008	SQ

SP-Analytica, Inc.-Anchorage
4307 Arctic Blvd.
Anchorage, AK 99503
Phone: 907-258-2155
Fax: 907-258-6634

CE2
Attn: Lloyd Persson
P.O. Box 232946
Anchorage, AK 99523
907-349-1010
Fax: 907-349-1015

Report Date: 12/31/2008
Receipt Date: 12/11/2008
Sample Date: 12/10/2008
Sample Time: 2:15:00PM
Collected By: LP

Client Sample ID: Well 05 - South
Sampling Location: **Well 05 - South**
Client Project: Treatment Design Package-Tuluksak
Sample Matrix: Aqueous
COC #: 66474
PWS#:
Residual Chlorine:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
H = Exceeds Regulatory Limit
M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected
TNC = Too Numerous to Count - result rejected
CF = Confluent Growth - result rejected
TCNG = Turbid Culture No Growth - rejected

Lab#: A0812101-01I

Sample Comment: Tuluksak

Analysis Method Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
5910B/5910B (Aqueous) - UV254-UVA					*Test was conducted by: Analytica - Anchorage*				
UV 254 Ultraviolet Absorption	0.263	cm-1		0.020		5910B	12/11/2008	12/11/2008	SQ

Lab#: A0812101-01J

Sample Comment: Tuluksak

Analysis Method Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
4500-NO3E (Aqueous) - Nitrate+Nitrite pres					*Test was conducted by: Analytica - Anchorage*				
Nitrate-Nitrite as Nitrogen	<MRL	mg/L		0.10	*10*		12/15/2008	12/15/2008	SQ

Lab#: A0812101-01K

Sample Comment: Tuluksak

Analysis Method Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst

SP-Analytica, Inc.-Anchorage
4307 Arctic Blvd.
Anchorage, AK 99503
Phone: 907-258-2155
Fax: 907-258-6634

CE2
Attn: Lloyd Persson
P.O. Box 232946
Anchorage, AK 99523
907-349-1010
Fax: 907-349-1015

Report Date: 12/31/2008
Receipt Date: 12/11/2008
Sample Date: 12/10/2008
Sample Time: 2:15:00PM
Collected By: LP

Client Sample ID: Well 05 - South
Sampling Location: **Well 05 - South**
Client Project: Treatment Design Package-Tuluksak
Sample Matrix: Aqueous
COC #: 66474
PWS#:
Residual Chlorine:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
H = Exceeds Regulatory Limit
M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected
TNC = Too Numerous to Count - result rejected
CF = Confluent Growth - result rejected
TCNG = Turbid Culture No Growth - rejected

Analysis Method Parameter	Result	Units	Flags	MRL	MCL	Prep Method	Prep Date	Analysis Date	Analyst
2340B/2340B (Aqueous) - Total Hardness					*Test was conducted by: Analytica - Thornton*				
Hardness, Total	100	mg/L		1.0		2340B	12/19/2008	12/22/2008	RM
200.7/200.7 (Aqueous) - Treatment Design					*Test was conducted by: Analytica - Thornton*				
Aluminum	<MRL	mg/L		0.050	*0.2*	200.7	12/18/2008	12/20/2008	RM
Calcium	32.2	mg/L		0.10		200.7	12/18/2008	12/20/2008	RM
Iron	8.32	mg/L	H	0.050	*0.3*	200.7	12/18/2008	12/20/2008	RM
Magnesium	5.23	mg/L		0.10		200.7	12/18/2008	12/20/2008	RM
Manganese	0.343	mg/L	H	0.0100	*0.05*	200.7	12/18/2008	12/20/2008	RM
Sodium	<MRL	mg/L		3.0		200.7	12/18/2008	12/20/2008	RM
Zinc	<MRL	mg/L		0.0050	*5*	200.7	12/18/2008	12/20/2008	RM
200.8/200.8 (Aqueous) - Treatment Design					*Test was conducted by: Analytica - Thornton*				
Arsenic	55.7	ug/L	H	0.15	*10*	200.8	12/22/2008	12/22/2008	GY
Lead	<MRL	ug/L		0.10	*15*	200.8	12/22/2008	12/23/2008	GY

Analytica Chain of Custody Form

ANALYTICA GROUP

Page ____ of ____

12189 Pennsylvania St. Thornton, CO 80241 (303) 469-8868 (303) 469-5254 fax
4307 Arctic Boulevard Anchorage, AK 99503 (907) 258-2155 (907) 258-6634 fax
475 Hall St. Fairbanks, AK 99701 (907) 456-3116 (907) 456-3125 Fax
5438 Shaune Drive Juneau, AK 99801 (907) 780-6668 (907) 780-6670 fax

Chain of Custody No: 66474

Client Name & Address: CE2 Engineers

Public Water System (PWS) ID#:

Project Name: TULUKSAK W&S WELL 05-SOUTH

Section To be Completed by Analytica: A0812101

Report to: Josh / Lloyd

Phone No: (907) 349-1010

Fax No: (907) 349-1015

E-mail: LLOYD@CE2ENGINEERS.COM

Turnaround Time for Results (TAT)

X Standard   ___ Expedited (please specify due date below; add'l charges may apply)

Requested Due Date for Results: 12/28/08

Invoice to Name & Address: Lloyd Persson, CE2 Engineers, P.O. Box 233094, Anchorage, AK 99523

P.O. or Contract No:

Special Instructions/Comments: EMAIL RESULTS TO LLOYD PERSSON AS SOON AS POSSIBLE

Kit Prep/Shipping Charge: $

Requested Analysis/Method

Client Sample Identification / Location	Date Sampled	Time Sampled	Matrix (S-DW-WW-Other)	No. of Containers	[illegible]	HAAS	[illegible]	TOC	[illegible]	[illegible]	UV 254	NO3	[illegible]	Field Preserved	Field Filtered	MS/MSD ?
WELL 05-SOUTH / TULUKSAK	12/10/08	2:15PM			✓	✓	✓	✓	✓	✓	✓	✓	✓			

CUSTODY SEAL

ANALYTICA GROUP

Date 12/11/2008 10:00 AM

Signature [signature] , Lloyd Persson

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	12/11/08	10:00 Am	[signature]		
[signature]	12/11/08	1035	[signature]	12/11/08	1035
[signature]	12/15/08	1300			

Name of Sampler: (printed)

Section To Be Completed by Analytica: Custody Seal: Intact; Temp: 3.5°C; [illegible]

Version 2.0

10 Gel Packs Thawed completely [initials]

SP-Analytica, Inc.-Anchorage
4307 Arctic Blvd.
Anchorage, AK 99503
Phone: 907-258-2155
Fax: 907-258-6634

ANALYTICA
Environmental Laboratories

1/23/2009

CE2
P.O. Box 232946
Anchorage, AK 99523
Attn: Lloyd Persson

Work Order #: A0812102
Date: 1/23/2009
Work ID: Treatment Design Package-Tuluksak
Date Received: 12/11/2008
Proj #: none

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A0812102-01			

Enclosed are the analytical results for the submitted sample(s). Please review the CASE NARRATIVE for a discussion of any data and/or quality control issues. Listings of data qualifiers, analytical codes, key dates, and QC relationships are provided at the end of the report.

Sincerely,

Claire Toon
Project Manager

"The Science of Analysis, The Art of Service"

Case Narrative

Analytica Alaska Inc.

Work Order: A0812102

Samples were prepared and analyzed according to EPA or equivalent methods outlined in the following references:

Methods for the Determination of Organic Compounds in Drinking Water, EPA-600/4-88/039, December 1988, Revised July 1991.

SAMPLE RECEIPT:
One (1) sample was received on 12/11/2008 10:35:00 AM, at a temperature of 7.0°C, at Analytica-Anchorage. The sample was received in good condition and in order per chain of custody.

Comments: The sample was received at a temperature greater than 6.0°C. This report contains Formation Potential results only. The balance of the data was reported previously as Analytica Work Order A0812101.

SUBBED ANALYSIS
The following are subcontracted tests. Please refer to the attached subcontractor's report for results and discussion:

Test Method: 524.2 - TTHM Form Potential - Aqueous
Test Method: 552.2 Haloacetic Acids in Drinking Water - HAA5 Form Potential - Aqueous

Analytica Chain of Custody Form

ANALYTICA GROUP

12189 Pennsylvania St. Thornton, CO 80241 (303) 469-8868 (303) 469-5254 fax
4307 Arctic Boulevard Anchorage, AK 99503 (907) 258-2155 (907) 258-6634 fax
475 Hall St. Fairbanks, AK 99701 (907) 456-3116 (907) 456-3125 Fax
5438 Shaune Drive Juneau, AK 99801 (907) 780-6668 (907) 780-6670 fax

Page ____ of ____

Chain of Custody No: 66474

Client Name & Address: CE2 Engineers

Public Water System (PWS) ID#:

Project Name: TULUKSAK WAS WELL 05 - SOUTH

Section To be Completed by Analytica: ~~A0812101~~

Report to: Lloyd

Phone No: (907) 349-1010

Fax No: (907) 349-1015

E-mail: LLOYD@CE2ENGINEERS.COM

Turnaround Time for Results (TAT)

X Standard ___ Expedited (please specify due date below, add'l charges may apply)

Requested Due Date for Results: 12/28/08

Invoice to Name & Address: LLOYD PERSSON CE2 ENGINEERS P.O. BOX 232946 ANCHORAGE, AK 99523

P.O. or Contract No:

Special Instructions/Comments: EMAIL RESULTS TO LLOYD PERSSON AS SOON AS POSSIBLE

Kit Prep/Shipping Charge: $

Requested Analysis/Method

Client Sample Identification / Location	Date Sampled	Time Sampled	Matrix (S-DW-WW-Other)	No. of Containers	Chlorine Demand / TTHM	Hardness	Bound Anions	Nitrate/Nitrite/TDS	TOC	True Color	Alk	Turbidity	NO3	TDS/SO4/pH	Field Preserved	Field Filtered	MS/MSD ?
WELL 05-SOUTH / TULUKSAK	12/10/08	2:15PM			✓	✓	✓		✓	✓	✓			✓			

CUSTODY SEAL

ANALYTICA GROUP

Date 12/11/2008 10:00 AM

Signature [signature] LLOYD PERSSON

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	12/11/08	10:00 Am	[signature]		
[signature]	12/11/08	1035	[signature]	12/11/08	1035
[signature]	12/15/08	1300			

Name of Sampler: (printed)

Section To Be Completed by Analytica

Condition of Custody Seals: Intact
Iced: Y
Temp: 20 °C
Thermo ID: IR-4
Shipped via: Client

Version 2.0

10 Gel Packs Thawed completely

MWH Laboratories
A Division of MWH Americas, Inc.

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: 626 386 1100
Fax: 626 386 1101
1 800 566 LABS (1 800 566 5227)

Laboratory Report

for

Analytica International, Inc.
4307 Arctic Blvd.

Anchorage , AK 99503

Attention: Dan Compton
Fax: 907 258-3364

DATE OF ISSUE
Jan 20 2009
MWH LABORATORIES

YOM Yolanda Martin
Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
01114CA

Report#: 261460
Project: SUBCONTRACT
PO#: ANC 1035

Laboratory certifies that the test results meet all **NELAC** requirements unless noted in the Comments section or the Case Narrative. Following the cover page are QC Report,QC Summary,Data Report,Hits Report, totaling 6 page[s].

6° on ice 2614.60

Analytica Chain of Custody Form

1215a Pennsylvania St, Thornton, CO 80241, (303) 469-8868, (303) 469-5254 fax
5436 Shaune Drive, Juneau, AK 99801, (907) 780-6868, (907) 780-6670 fax
4307 Arctic Blvd, Anchorage, AK 99503, (907) 258-2155, (907) 258-6634 fax
475 Hall Street, Fairbanks, AK 99701, (907) 456-3116, (907) 456-3125 fax

Chain of Custody No: _____

Client Name & Address: Analytica International, 4307 Arctic Blvd, Anchorage, AK 99503		LGN: A0812102	To be Completed by Analytica
		PWS I.D.# N/A	Quote ID No: LGN: A0812102
		Results to STATE: YES NO x	
Contact Person:	Dan Compton	Data Deliverables: Level I Level II Level III Level IV	Report to: Dan Compton
Phone No:	907-258-2155 x231	EDD: YES NO Type of EDD:	
Fax No:	907-258-3364	Requested TAT: Standard Rush (authorization required)	Invoice to: Analytica International
E-mail:	dcompton@analyticagrou	Results Due Date:	
Special Instructions:			PO: ANC 1035

Lab Bottle Order No: / Sample Location	Date Sampled	Time Sampled	Matrix (S-DW-WW-Other)	2350B Chlorine Demand	Requested Analysis/Method: 524.2/5710B TTHM-FP	552.2/5710B HAA5-FP									
Well 05 - South A0812102-01A	12/10/2008	2:15 PM	Aqueous	x	x										
Well 05 - South A0812102-01B	12/10/2008	2:15 PM	Aqueous			x									

Collected/Relinquished by:	Date	Time	Received by:	Date	Time
Joe Byrd.	12/15/2008	13:00	[signature]	12/16	10:00 am
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Name of Sampler: (printed)					

To be Completed by Analytica

Chain-of-Custody Seal: Intact Broken Absent

Location Rcvd/Temp on Arrival:

THO ____C JUN ____C ANC ____C FAI ____C PB ____C

Thermometer ID # _____ Measurement Method: Temp. Blank Other

Shipping Method/Tracking Number:

MWH Laboratories
750 Royal Oaks Drive, Monrovia, CA 91016
PHONE: 626-386-1100/FAX: 626-386-1101

ACKNOWLEDGMENT OF SAMPLES RECEIVED

Analytica International, Inc.
4307 Arctic Blvd.
Anchorage, AK 99503
Attn: Dan Compton
Phone: 907 258-2155

Customer Code: ANALYTICA
PO#: ANC 1035
Group#: 261460
Project#: SUBCONTRACT
Proj Mgr: Yolanda Martin
Phone: (626) 386-1104

The following samples were received from you on 12/16/08. They have been scheduled for the tests listed beside each sample. If this information is incorrect, please contact your service representative. Thank you for using MWH Laboratories.

Sample#	Sample Id	Matrix	Sample Date
	Tests Scheduled		
2812170164	WELL 05-SOUTH A0812102-01A	Water	10-dec-2008 14:15:00
	@CLDEMAN TPTHM		
2812170165	WELL 05-SOUTH A0812102-01B	Water	10-dec-2008 14:15:00
	TPHAA		

Test Acronym Description

Test Acronym	Description
@CLDEMAN	Chlorine Demand
TPHAA	TPHAA Dose Date
TPTHM	TPTHM dose date

MWH Laboratories
A Division of MWH Americas, Inc.

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel 626 386 1100
Fax 626 386 1101
1 800 566 LABS (1 800 566 5227)

Laboratory
Hits Report
#261460

Analytica International, Inc.
Dan Compton
4307 Arctic Blvd.
Anchorage , AK 99503

Samples Received
16-dec-2008 10:00:00

Analyzed	Sample#	Sample ID	Result	Federal MCL	UNITS	MRL
	2812170164	WELL 05-SOUTH A0812102-01A				
12/30/08		Chlorine Demand	11		mg/l	0.50
12/30/08		Chlorine Demand Incubation Tim	7		Days	1.0
12/23/08		Chlorine Dose	15		mg/l	0.5
12/30/08		Chlorine Residual for CLDemand	3.8		mg/l	1.0
12/30/08		Sample Temperature	22		Degrees C	
12/30/08		pH	7		Units	0.1
01/07/09		Bromodichloromethane	3.75		ug/l	0.5
12/23/08		Chlorine Dose	15		mg/l	1.0
01/14/09		Chloroform	101		ug/l	1.0
12/30/08		Free Chlorine Residual	3.8		mg/l	0.2
01/07/09		Total Potential Trihalomethane	105		ug/l	0.5
	2812170165	WELL 05-SOUTH A0812102-01B				
01/09/09		Bromochloroacetic acid	3.05		ug/l	1.0
01/09/09		Bromodichloroacetic acid	4.38		ug/l	1.0
12/23/08		Chlorine Dose	15		mg/l	1.0
01/09/09		D/DBP Haloacetic Acids (HAA5)	139	60	ug/l	1.0
01/09/09		Dichloroacetic acid	62.0		ug/l	5.0
12/30/08		Free Chlorine Residual	3.8		mg/l	0.2
01/09/09		Monochloroacetic acid	3.28		ug/l	2.0
01/09/09		Trichloroacetic acid	73.8		ug/l	5.0

SUMMARY OF POSITIVE DATA ONLY.

MWH Laboratories
A Division of MWH Americas, Inc.

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: 626 386 1100
Fax: 626 386 1101
1 800 566 LABS (1 800 566 5227)

Laboratory
Data Report
#261460

Analytica International, Inc.
Dan Compton
4307 Arctic Blvd.
Anchorage , AK 99503

Samples Received
12/16/08

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
WELL 05-SOUTH A0812102-01A (2812170164) Sampled on 12/10/08 14:15								
				Chlorine Demand				
	12/30/08 00:00		(SM 2350)	Chlorine Demand	11	mg/l	0.50	1
	12/23/08 00:00		(SM 2350)	Chlorine Dose	15	mg/l	0.5	1
	12/30/08 00:00		(SM 2350)	Chlorine Demand Incubation Tim	7	Days	1.0	1
	12/30/08 00:00		(SM 2350)	Chlorine Residual for CLDemand	3.8	mg/l	1.0	2
	12/30/08 00:00		(SM 2350)	pH	7	Units	0.1	1
	12/30/08 00:00		(SM 2350)	Sample Temperature	22	DEGC	0	1
				Tot Pot Trihalomethanes 5710B				
01/07/09	01/07/09 00:00	467737	(SM 5710)	Bromoform	ND	ug/l	0.5	1
01/07/09	01/14/09 00:00	467737	(SM 5710)	Chloroform	101	ug/l	1.0	2
12/23/08	12/23/08 00:00	467737	(SM 5710)	Chlorine Dose	15	mg/l	1.0	1
12/30/08	12/30/08 00:00	467737	(SM 5710)	Free Chlorine Residual	3.8	mg/l	0.2	2
01/07/09	01/07/09 00:00	467737	(SM 5710)	Dibromochloromethane	ND	ug/l	0.5	1
01/07/09	01/07/09 00:00	467737	(SM 5710)	Bromodichloromethane	3.75	ug/l	0.5	1
01/07/09	01/07/09 00:00	467737	(SM 5710)	Total Potential Trihalomethane	105	ug/l	0.5	1
			(SM 5710)	1,2-Dibromopropane(70-130)	85	% Rec		
WELL 05-SOUTH A0812102-01B (2812170165) Sampled on 12/10/08 14:15								
				Total Potential Haloacetic				
12/23/08	12/23/08 00:00	467358	(SM5710 6251B)	Chlorine Dose	15	mg/l	1.0	1
12/30/08	01/09/09 00:00	467358	(SM5710 6251B)	Bromochloroacetic acid	3.05	ug/l	1.0	1
12/30/08	01/09/09 00:00	467358	(SM5710 6251B)	Bromodichloroacetic acid	4.38	ug/l	1.0	1
12/30/08	01/09/09 00:00	467358	(SM5710 6251B)	Chlorodibromoacetic acid	ND	ug/l	2.0	1
12/30/08	12/30/08 00:00	467358	(SM5710 6251B)	Free Chlorine Residual	3.8	mg/l	0.2	2
12/30/08	01/09/09 00:00	467358	(SM5710 6251B)	Dibromoacetic acid	ND	ug/l	1.0	1
12/30/08	01/09/09 00:00	467358	(SM5710 6251B)	Dichloroacetic acid	62.0	ug/l	5.0	5
12/30/08	01/09/09 00:00	467358	(SM5710 6251B)	Monobromoacetic acid	ND	ug/l	1.0	1
12/30/08	01/09/09 00:00	467358	(SM5710 6251B)	Monochloroacetic acid	3.25	ug/l	2.0	1
12/30/08	01/09/09 00:00	467358	(SM5710 6251B)	Tribromoacetic Acid	ND	ug/l	4.0	1

MWH Laboratories
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Fax: 626 386 1101
1 800 566 LABS (1 800 566 5227)

Laboratory
Data Report
#261460

Analytica International, Inc.
(continued)

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
12/30/08	01/09/09 00:00	467358	(SM5710 6251B)	Trichloroacetic acid	73.8	ug/l	5.0	5
12/30/08	01/09/09 00:00	467358	(SM5710 6251B)	D/DBP Haloacetic Acids (HAA5)	139	ug/l	1.0	1
			(SM5710 6251B)	1,2,3-TCP(80-120)	99	% Rec		
			(SM5710 6251B)	2,3-Dibrom Acid(70-130)	116	% Rec		

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Laboratory
QC Summary
#261460

Analytica International, Inc.

QC Ref #467358 - Total Potential Haloacetic Analysis Date: 12/23/2008

2812170165	WELL 05-SOUTH A0812102-01	Analyzed by: dym
2812170165	WELL 05-SOUTH A0812102-01	Analyzed by: dym
2812170165	WELL 05-SOUTH A0812102-01	Analyzed by: dym

QC Ref #467737 - Tot Pot Trihalomethanes 5710B Analysis Date: 12/23/2008

2812170164	WELL 05-SOUTH A0812102-01	Analyzed by: jzd
2812170164	WELL 05-SOUTH A0812102-01	Analyzed by: jzd
2812170164	WELL 05-SOUTH A0812102-01	Analyzed by: jzd
2812170164	WELL 05-SOUTH A0812102-01	Analyzed by: jzd

MWH Laboratories
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Monrovia, California 91016-3629
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Fax: 626 386 1101
1 800 566 LABS (1 800 566 5227)

Laboratory
QC Report
#261460

Analytica International, Inc.

QC Ref #467358 Total Potential Haloacetic

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Bromochloroacetic acid	1.0	1.30	UGL	130.0	(50-150)	
LCS2	Bromochloroacetic acid	20	20.4	UGL	102.0	(85-115)	
LCS3	Bromochloroacetic acid	32	32.2	UGL	100.6	(85-115)	
MBLK	Bromochloroacetic acid	ND	<1.0	UGL			
LCS1	Bromodichloroacetic acid	1.0	0.787	UGL	78.7	(50-150)	
LCS2	Bromodichloroacetic acid	20	19.7	UGL	98.5	(85-115)	
LCS3	Bromodichloroacetic acid	32	31.7	UGL	99.1	(85-115)	
MBLK	Bromodichloroacetic acid	ND	<1.0	UGL			
LCS1	Chlorodibromoacetic acid	2.0	1.37	UGL	68.5	(50-150)	
LCS2	Chlorodibromoacetic acid	20	19.5	UGL	97.5	(85-115)	
LCS3	Chlorodibromoacetic acid	32	31.6	UGL	98.8	(85-115)	
MBLK	Chlorodibromoacetic acid	ND	<2.0	UGL			
LCS1	Dibromoacetic acid	1.0	1.23	UGL	123.0	(50-150)	
LCS2	Dibromoacetic acid	20	19.9	UGL	99.5	(85-115)	
LCS3	Dibromoacetic acid	32	32.1	UGL	100.3	(85-115)	
MBLK	Dibromoacetic acid	ND	<1.0	UGL			
LCS1	Dichloroacetic acid	1.0	1.38	UGL	138.0	(50-150)	
LCS2	Dichloroacetic acid	20	20.6	UGL	103.0	(85-115)	
LCS3	Dichloroacetic acid	32	32.2	UGL	100.6	(85-115)	
MBLK	Dichloroacetic acid	ND	<1.0	UGL			
LCS1	Monobromoacetic acid	1.0	1.29	UGL	129.0	(50-150)	
LCS2	Monobromoacetic acid	20	20.3	UGL	101.5	(85-115)	
LCS3	Monobromoacetic acid	32	32.1	UGL	100.3	(85-115)	
MBLK	Monobromoacetic acid	ND	<1.0	UGL			
LCS1	Monochloroacetic acid	2.0	1.82	UGL	91.0	(50-150)	
LCS2	Monochloroacetic acid	20	20.3	UGL	101.5	(85-115)	
LCS3	Monochloroacetic acid	32	31.2	UGL	97.5	(85-115)	
MBLK	Monochloroacetic acid	ND	<2.0	UGL			
LCS1	Tribromoacetic acid	4.0	4.21	UGL	105.2	(50-150)	
LCS2	Tribromoacetic acid	20	20.2	UGL	101.0	(85-115)	
LCS3	Tribromoacetic acid	32	30.9	UGL	96.6	(85-115)	
MBLK	Tribromoacetic acid	ND	<4.0	UGL			
LCS1	Trichloroacetic acid	1.0	0.970	UGL	97.0	(50-150)	

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining. Criteria for MS and DUP are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.

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1 800 566 LABS (1 800 566 5227)

Laboratory
QC Report
#261460

Analytica International, Inc.
(continued)

LCS2	Trichloroacetic acid	20	20.5	UGL	102.5	(85-115)
LCS3	Trichloroacetic acid	32	32.3	UGL	100.9	(85-115)
MBLK	Trichloroacetic acid	ND	<1.0	UGL		
LCS1	2,3-Dibromopropionic acid	100	100	%R	100.0	(70-130)
LCS2	2,3-Dibromopropionic acid	100	106	%R	106.0	(70-130)
LCS3	2,3-Dibromopropionic acid	100	108	%R	108.0	(70-130)
MBLK	2,3-Dibromopropionic acid	100	101	%R	101.0	

QC Ref #467737 Tot Pot Trihalomethanes 5710B

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Bromoform	20.0	21.5	UGL	107.5	(80-120)	
LCS2	Bromoform	40.0	41.0	UGL	102.5	(80-120)	
MBLK	Bromoform	ND	<0.5	UGL			
LCS1	Chloroform	20.0	18.3	UGL	91.5	(80-120)	
LCS2	Chloroform	40.0	38.4	UGL	96.0	(80-120)	
MBLK	Chloroform	ND	<0.5	UGL			
LCS1	Dibromochloromethane	20.0	19.2	UGL	96.0	(80-120)	
LCS2	Dibromochloromethane	40.0	38.9	UGL	97.2	(80-120)	
MBLK	Dibromochloromethane	ND	<0.5	UGL			
LCS1	Bromodichloromethane	20.0	19.1	UGL	95.5	(80-120)	
LCS2	Bromodichloromethane	40.0	38.9	UGL	97.2	(80-120)	
MBLK	Bromodichloromethane	ND	<0.5	UGL			
LCS1	1,2-Dibromopropane (surr)	100	101	%R	101.0	(80-120)	
LCS2	1,2-Dibromopropane (surr)	100	89.1	%R	89.1	(80-120)	
MBLK	1,2-Dibromopropane (surr)	100	100	%R	100.0		
MBLK	Total Potential Trihalomethane	ND	<0.5	UGL			

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining. Criteria for MS and DUP are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.

SGS

SGS Ref.#	1063346001
Client Name	Chuck Eggener Consulting Engr.
Project Name/#	Tuluksak VSW W-05-1
Client Sample ID	W-05-1RW
Matrix	Drinking Water

All Dates/Times are Alaska Standard Time

Printed Date/Time	07/31/2006 13:48
Collected Date/Time	06/20/2006 16:15
Received Date/Time	06/22/2006 13:06
Technical Director	**Stephen C. Ede**

Sample Remarks:

SM 5910 - %T = 88.0

HAA Formation Potential was analyzed by Montgomery Watson Harza of Monrovia, CA.

TTHM Formation Potential was analyzed by Montgomery Watson Harza of Monrovia, CA.

Parameter	Results		PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Calcium	36.1		0.100	mg/L	SM20 2340B	K		06/28/06	07/12/06	TK
Hardness as CaCO3	106		5.00	mg/L	SM20 2340B	K		06/28/06	07/12/06	TK
Magnesium	3.84		0.100	mg/L	SM20 2340B	K		06/28/06	07/12/06	TK
Metals by ICP/MS										
Aluminum	ND		20.0	ug/L	EP200.8	K		06/28/06	06/30/06	MH
Calcium	32400		500	ug/L	EP200.8	K		06/28/06	06/30/06	MH
Magnesium	3850		50.0	ug/L	EP200.8	K		06/28/06	06/30/06	MH
Silver	ND		1.00	ug/L	EP200.8	K		06/28/06	06/30/06	MH
Waters Department										
Nitrite-N	ND		0.100	mg/L	EPA 353.2	A			06/22/06	ALR
Nitrate-N	ND		0.100	mg/L	EPA 353.2	A			06/22/06	ALR
Bromide	ND		0.100	mg/L	EPA 300.0	A		06/26/06	06/26/06	DSH
Total Organic Carbon	47.1		0.500	mg/L	EPA 415.1	H			06/29/06	TSN
Total Organic Carbon,Dissolved	44.8		0.500	mg/L	EPA 415.1	I			06/30/06	TSN
UV-254	0.0540		0.0200	cm-1	SM20 5910B	C			06/22/06	CAW
Inorganic Contaminants										
Antimony	ND		1.00	ug/L	EP200.8	K	(<6)	06/28/06	06/30/06	MH
Arsenic	36.3	*	5.00	ug/L	EP200.8	K	(<10)	06/28/06	06/30/06	MH
Barium	146		3.00	ug/L	EP200.8	K	(<2000)	06/28/06	06/30/06	MH
Beryllium	ND		0.400	ug/L	EP200.8	K	(<4)	06/28/06	06/30/06	MH
Cadmium	ND		0.500	ug/L	EP200.8	K	(<5)	06/28/06	06/30/06	MH
Chromium	ND		1.00	ug/L	EP200.8	K	(<100)	06/28/06	06/30/06	MH
Cyanide	ND		0.0050	mg/L	SM20 4500-CN C,E	J	(<0.2)	06/26/06	06/27/06	KP

SGS

SGS Ref.#	1063346001	**All Dates/Times are Alaska Standard Time**	
Client Name	Chuck Eggener Consulting Engr.	**Printed Date/Time**	07/31/2006 13:48
Project Name/#	Tuluksak VSW W-05-1	**Collected Date/Time**	06/20/2006 16:15
Client Sample ID	W-05-1RW	**Received Date/Time**	06/22/2006 13:06
Matrix	Drinking Water	**Technical Director**	**Stephen C. Ede**

Parameter	Results		PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Inorganic Contaminants										
Fluoride	ND		0.100	mg/L	EPA 300.0	A	(<2)	06/26/06	06/26/06	DSH
Mercury by Cold Vapor	ND		0.200	ug/L	EP245.1	K	(<0.2)	07/03/06	07/05/06	HKG
Nickel	ND		2.00	ug/L	EP200.8	K	(<100)	06/28/06	06/30/06	MH
Selenium	ND		5.00	ug/L	EP200.8	K	(<50)	06/28/06	06/30/06	MH
Thallium	ND		1.00	ug/L	EP200.8	K	(<2)	06/28/06	06/30/06	MH
Secondary Contaminants										
Calcium	36.1		2.00	mg/L	EP200.7	K		06/28/06	07/12/06	TK
Chloride	3.09		0.100	mg/L	EPA 300.0	A	(<250)	06/26/06	06/26/06	DSH
Color	65.0	*	5.00	PCU	SM20 2120B	D	(<15)		06/22/06	CRY
Copper	ND		1.00	ug/L	EP200.8	K	(<1000)	06/28/06	06/30/06	MH
Fluoride	ND		0.100	mg/L	EPA 300.0	A	(<2)	06/26/06	06/26/06	DSH
Langlier Index @ 40 degree F	-1.15				SM2330B	A			07/13/06	PLW
Alkalinity	108		40.0	mg/L	SM20 2320B	D			06/27/06	PLW
Langlier Index @ 140 degree F	-0.07				SM2330B	A			07/13/06	PLW
CO3 Alkalinity	ND		40.0	mg/L	SM20 2320B	D			06/27/06	PLW
Iron	6.99	*	0.0400	mg/L	EP200.7	K	(<0.3)	06/28/06	07/12/06	TK
HCO3 Alkalinity	108		40.0	mg/L	SM20 2320B	D			06/27/06	PLW
OH Alkalinity	ND		40.0	mg/L	SM20 2320B	D			06/27/06	PLW
Manganese	331	*	1.00	ug/L	EP200.8	K	(<50)	06/28/06	06/30/06	MH
Odor (TON)	ND		1.00	T.O.N.	SM20 2150B	E	(<3)		06/22/06	CRY
pH	7.06		0.100	pH units	EPA 150.1	D	(6.5-8.5)		06/22/06	CRY
Magnesium	3.84		0.200	mg/L	EP200.7	K		06/28/06	07/12/06	TK
Sodium	2.65		2.00	mg/L	EP200.7	K	(<250)	06/28/06	07/12/06	TK
Sulfate	2.18		0.100	mg/L	EPA 300.0	A	(<250)	06/26/06	06/26/06	DSH
Total Dissolved Solids	176		10.0	mg/L	SM20 2540C	D	(<500)		06/27/06	KP
Zinc	ND		5.00	ug/L	EP200.8	K	(<5000)	06/28/06	06/30/06	MH

SP-Analytica, Inc.-Anchorage
4307 Arctic Blvd.
Anchorage, AK 99503
907-258-2155
Fax: 907-258-6634

7/16/2008
CE2
P.O. Box 232946
Anchorage, AK 99523
Attn: Lloyd Persson

Work Order #: A0806189
Date: 7/16/2008
Work ID: Tuluksak Water and Sewer Project - 05 South Well
Date Received: 6/16/2008

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A0806189-01	Tuluksak, AK		

Enclosed are the analytical results for the submitted sample(s). Please review the CASE NARRATIVE for a discussion of any data and/or quality control issues. Listings of data qualifiers, analytical codes, key dates, and QC relationships are provided at the end of the report.

Sincerely,

Marty Waters
Project Manager

"The Science of Analysis, The Art of Service"

Case Narrative

Analytica Alaska Inc.
Work Order: A0806189

Narrative Generated on 7/16/2008 7:17:43 PM
Samples were prepared and analyzed according to EPA or equivalent methods outlined in the following references:

SAMPLE RECEIPT:
There were 1 samples received on 6/16/2008 10:30:00 AM.
Samples were receivedin cooler 1 at Analytica-Anchorage.
Comments:Samples were received in good condition and in order per chain of custody

REVIEW FOR COMPLIANCE WITH ANALYTICA QA PLAN
A summary of our review is shown below.

All analytical results contained in this report have been reviewed under Analytica's internal quality assurance and quality control program. Any deviations in quality control parameters for specific analyses are noted in the following text. A complete quality assurance report, including laboratory control, matrix spike, and sample duplicate recoveries is kept on file in our office and is available upon request.

All method specifications were met for the following tests, unless otherwise noted:

The following are subcontracted tests and have been represented to us as having met criteria:

Test Method: SM5310B - DOC-SC - Aqueous
Test Method: SM5310B - TOC (SC) - Aqueous

SP-Analytica, Inc.-Anchorage
4307 Arctic Blvd.
Anchorage, AK 99503
Phone: 907-258-2155
Fax: 907-258-6634

CE2
Attn: Lloyd Persson
P.O. Box 232946
Anchorage, AK 99523
907-349-1010
Fax: 907-349-1015

Report Date: 7/16/2008
Receipt Date: 6/16/2008
Sample Date: 6/10/2008
Sample Time: 9:30:00AM
Collected By: LAP

Client Sample ID: **Tuluksak, AK**
Sampling Location: **05-1 South Well**
Client Project: Tuluksak Water and Sewer Project - 05 South Well
Sample Matrix: Aqueous
COC #: 63474
PWS#:
Residual Chlorine:
Comments:

Flag Definitions:
MRL = Method Reporting Limit
MCL = Maximum Contaminant Limit
B = Present also in Method Blank
H = Exceeds Regulatory Limit
M = Matrix Interference
J = Estimated Value
D = Lost to Dilution
** = RL higher than MCL; target not detected
TNC = Too Numerous to Count - result rejected
CF = Confluent Growth - result rejected
TCNG = Turbid Culture No Growth - rejected

Lab#: A0806189-01A

Analysis Method / Parameter	Result	Units	Flags	MRL	Prep Method	Prep Date	Analysis Date	Analyst
5310B (Aqueous) - TOC and DOC					*Test was conducted by: SGS Environmental Services Inc.*			
See Subcontractor Report							7/5/2008	

Analytica Chain of Custody Form

12189 Pennsylvania St.
Thornton, CO 80241
(303) 469-8868
(303) 469-5254 fax

4307 Arctic Boulevard
Anchorage, AK 99503
(907) 258-2155
(907) 258-6634 fax

475 Hall St.
Fairbanks, AK 99701
(907) 456 - 3116
(907) 456-3125 Fax

5438 Shaune Drive
Juneau, AK 99801
(907) 780-6668
(907) 780-6670 fax

Page _____ of _____

Chain of Custody No: 63474

Client Name & Address:
CE2 Engineers, Inc
P.O. Box 232946
Anchorage, AK 99523

Public Water System (PWS) ID#: N/A

Project Name: Tuluksak Water & Sewer Project - 05 South Well

Section To be Completed by Analytica
Quote ID:
LGN: A0806188
Account #:
Cust:

Report to: Lloyd Peresson
Phone No: (907) 349-1010
Fax No: (907) 349-1015
E-mail: Lloyd@CE2Engineers.com

Turnaround Time for Results (TAT)
✓ Standard ___ Expedited (< 10 days; prior authorization required)
(please specify due date below; add'l charges may apply)
Requested Due Date for Results: 6/22/08

Invoice to Name & Address: A0806189

Special Instructions/Comments:
Please Email Results to

P.O. or Contract No:

Requested Analysis/Method

Kit Prep/Shipping Charge: $

Client Sample Identification / Location	Date Sampled	Time Sampled	Matrix (S-DW-WW-Other)	No. of Containers	Lot # Pres	Lot # Pres	Lot # Pres	Lot # Pres	Lot # Pres	Lot # Pres	Lot # Pres	Field Preserved	Field Filtered	MS/MSD ?
Tuluksak 05-1 South Well, Tuluksak, AK	6/10/08	9:30AM		3										
N & Ma, DOC & TOC														

Relinquished by:	Date	Time	Received by:	Date	Time
LA Peresson	6/11/08	05:00	[signature]	6/16/08	10:30
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Name of Sampler: (printed)					

Section To Be Completed by Analytica

	THO	ANC	JNS
Condition of Custody Seal?:			
Initialed By:		[signature]	
Temp/Loc:			
Thermo ID#:			
Shipped Via:			

Version 2.0

Laboratory Analysis Report

200 W. Potter Drive
Anchorage, AK 99518-1605
Tel: (907) 562-2343
Fax: (907) 561-5301
Web: http://www.us.sgs.com

Dan Compton
Analytica Group
4307 Artic Blvd
Anchorage, AK 99503

Work Order:	1082931
	A0806189
Client:	Analytica Group
Report Date:	July 11, 2008

Released by:
Forest Taylor
Alaska Division Project Manager
2008.07.11
08:35:28 -08'00'

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by SGS. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request.

The laboratory certification numbers are AK971-05 (DW), UST-005 (CS) and AK00971 (Micro) for ADEC and 001992 for NELAP (RCRA methods: 1020A, 1311, 6010B, 7470A, 7471A, 9040B, 9045C, 9056, 9060, 9065, 8015B, 8021B, 8081A/8082, 8260B, 8270C).

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP, the National Environmental Laboratory Accreditation Program and, when applicable, other regulatory authorities.

If you have any questions regarding this report or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343.

The following descriptors may be found on your report which will serve to further qualify the data.

PQL	Practical Quantitation Limit (reporting limit).
U	Indicates the analyte was analyzed for but not detected.
F	Indicates value that is greater than or equal to the MDL.
J	The quantitation is an estimation.
ND	Indicates the analyte is not detected.
B	Indicates the analyte is found in a blank associated with the sample.
*	The analyte has exceeded allowable regulatory or control limits.
GT	Greater Than
D	The analyte concentration is the result of a dilution.
LT	Less Than
!	Surrogate out of control limits.
Q	QC parameter out of acceptance range.
M	A matrix effect was present.
JL	The analyte was positively identified, but the quantitation is a low estimation.
E	The analyte result is above the calibrated range.
R	Rejected

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content.

SGS

SGS Ref.#	1082931001
Client Name	Analytica Group
Project Name/#	A0806189
Client Sample ID	A0806189-01A
Matrix	Drinking Water

All Dates/Times are Alaska Standard Time

Printed Date/Time	07/11/2008 8:27
Collected Date/Time	06/10/2008 9:30
Received Date/Time	06/23/2008 16:25
Technical Director	**Stephen C. Ede**

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Waters Department									
Total Organic Carbon	2.70	0.500	mg/L	SM 5310B	A			07/05/08	JDH

SGS

SGS Ref.#	1082931002
Client Name	Analytica Group
Project Name/#	A0806189
Client Sample ID	A0806189-01B
Matrix	Drinking Water

All Dates/Times are Alaska Standard Time

Printed Date/Time	07/11/2008 8:27
Collected Date/Time	06/10/2008 9:30
Received Date/Time	06/23/2008 16:25
Technical Director	**Stephen C. Ede**

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Waters Department									
Total Organic Carbon,Dissolved	3.10	0.500	mg/L	SM 5310B	A			07/05/08	JDH

Analytica Chain of Custody Form

1082931

Page 1 of 1

63474

ANALYTICA GROUP

12189 Pennsylvania St. Thornton, CO 80241 (303) 469-8868 (303) 469-5254 fax

5438 Shaune Drive Juneau, AK 99801 (907) 780-6668 (907) 780-6670 fax

4307 Arctic Blvd. Anchorage, AK 99503 (907) 258-2155 (907) 258-6634 fax

475 Hall Street Fairbanks, AK 99701 (907) 456-3116 (907) 456-3125 fax

Client Name & Address: Analytica International, 4307 Arctic Blvd, Anchorage, AK 99503		**LGN: A0806189**	*To be Completed by Analytica*
			Quote ID No: **LGN: A0806189**
		Results to STATE: YES NO	
Contact Person:	Dan Compton	Data Deliverables: Level I Level II Level III Level IV	**Report to: Dan Compton**
Phone No:	907-258-2155 x224	EDD: YES NO Type of EDD:	
Fax No:	907-258-3364	Requested TAT: **Standard** **Rush (authorization required)**	**Invoice to:** Analytica International
E-mail:	dcompton@analyticagrou	Results Due Date:	
Special Instructions:			PO: ANC 986
****DO NOT REPORT TO STATE****			

Lab Bottle Order No: / Sample Location	Date Sampled	Time Sampled	Matrix (S-DW-WW-Other)	5310B TOC	5310B DOC	Requested Analysis/Method									
A0806189-01A ① A	6/10/2008	9:30 AM	DW	x											
A0806189-01B ② A	6/10/2008	9:30 AM	DW		x										

Collected/Relinquished by:	Date	Time	Received by:	Date	Time
Joe Byrd					
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
				6/23/08	1625
Name of Sampler: (printed)					

To be Completed by Analytica

Chain-of-Custody Seal: Intact Broken Absent

Location Rcvd/Temp on Arrival:

THO ____C JUN ____C ANC ____C FAI ____C PB ____C

Thermometer ID # ____ Measurement Method: Temp. Blank Other

GPD T B= 7.7

Shipping Method/Tracking Number: C= 7.7

SGS

SAMPLE RECEIPT FORM

SGS WO#: 1082931

Yes	No	NA	
	✓		Are samples RUSH, priority or *w/in 72 hrs* of hold time?
		✓	If yes, have you done *e-mail ALERT notification*?
	✓		Are samples *within 24 hrs.* of hold time or due date?
		✓	If yes, have you also *spoken with* supervisor?
		✓	Archiving bottles (if req'd): Are they properly marked?
	✓		Are there any **problems**? PM Notified? _____
		✓	Were samples preserved correctly and pH verified?
	✓		If this is for PWS, provide **PWSID.** _____
	✓		Will courier charges apply?
			Method of payment? _____
	✓		Data package required? (Level: 1 / 2 / 3 / 4)
			Notes: _____
	✓		Is this a DoD project? (USACE, Navy, AFCEE)

TAT (circle one): (Standard) -or- Rush
Received Date: 6/23/08
Received Time: 1625
Is date/time conversion necessary? No
# of hours to AK Local Time: —
Thermometer ID: 69D

Cooler ID	Temp Blank	Cooler Temp
1	7.7 °C	7.7 °C
	°C	°C
	°C	°C
	°C	°C
	°C	°C

Note: Temperature readings include thermometer correction factors

Delivery method (circle all that apply): Client / (Alert Courier) / UPS / FedEx / USPS / DHL / AA Goldstreak / NAC / ERA / PenAir / Carlile/ Lynden / SGS / Other: _____

Airbill # _____

Additional Sample Remarks: *(√if applicable)*
_____ Extra Sample Volume?
_____ Limited Sample Volume?
_____ MeOH field preserved for volatiles?
_____ Field-filtered for dissolved _____
_____ Lab-filtered for dissolved _____
_____ Ref Lab required? _____
_____ Foreign Soil?

This section must be filled out for DoD projects (USACE, Navy, AFCEE)

Yes	No	
		Is received temperature 4 ± 2°C?
		Exceptions: Samples/Analyses Affected:
		If temperature(s) <0°C, were containers ice-free? N/A
		Notify PM immediately of any ice in samples
		Was there an airbill? *(Note # above in the right hand column)*
		Was cooler sealed with custody seals?
		#'s/where:
		Were seal(s) intact upon arrival?
		Was there a COC with cooler?
		Was COC sealed in plastic bag & taped inside lid of cooler?
		Was the COC filled out properly?
		Did the COC indicate USACE / Navy / AFCEE project?
		Did the COC and samples correspond?
		Were all sample packed to prevent breakage?
		Packing material:
		Were all samples unbroken and clearly labeled?
		Were all samples sealed in separate plastic bags?
		Were all VOCs free of headspace and/or MeOH preserved?
		Were correct container / sample sizes submitted?
		Is sample condition good?
		Was copy of CoC, SRF, and custody seals given to PM to fax?

This section must be filled if problems are found.

Yes	No	
		Was client notified of problems?

Individual contacted: _____
Via: Phone / Fax / Email (*circle one*)
Date/Time: _____
Reason for contact: _____

Change Order Required? _____
SGS Contact: _____

Notes: _____

Completed by (sign): _____ **(print):** Joe Rudi

Login proof (check one): waived ____ required ____ performed by: _____

SGS

1082931

SAMPLE RECEIPT FORM (page 2)

SGS WO:

#	Container ID	Matrix	Test	QC	TB	Container Volume								Container Type								Preservative							
						1 L	500 mL	250 mL	125 mL	60 mL	40 mL	8oz (250 mL)	4oz (125 mL)	Other	AG	CG	HDPE	Nalgene	Cubie	Coli	Septa	Other	None	HCl	HNO_3	H_2SO_4	MeOH	$Na_2S_2O_3$	NaOH	Other
1	A	O	Toc						1						✓								✓						
2	A	O	Doc						1						✓								✓						

Bottle Totals				2					

Completed by: _____ Date: 6/23/08

Form # F004r16 revised 03/10/08

ANALYTICA GROUP

CUSTODY SEAL

Date 6/23/08

Signature

1082931

Lloyd Persson

From: Claire Toon [ctoon@analyticagroup.com]
Sent: Tuesday, January 13, 2009 9:40 AM
To: lloyd@ce2engineers.com
Subject: Tuluksak TOC Re-analysis - A0812101
Attachments: A0812101TOCRerun.xls

Hi Lloyd,

I was not happy with the TOC results for your Tuluksak project. There appeared to be contamination of some sort in the Method Blank. I asked the analyst to re-analyze the samples with a passing blank. The results confirmed the original data, so it appears the contamination was in the blank and not in the samples themselves. I have attached a spreadsheet comparing the data. Since the re-analysis was performed outside the method specified holding time, I will not be re-issuing the report. I just wanted to confirm that the reported results were accurate.

Please feel free to contact me if you should have any questions or concerns. Thank you!

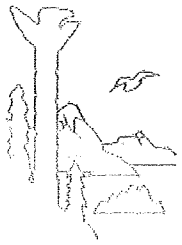
Claire Toon
Project Manager
ctoon@analyticagroup.com
303-469-8868 Ext. 137
303-642-0753 Home Office

TOC/DOC Results

		Date Sampled	Initial Result 12/12/2008 & 12/18/2008	Rerun Result 1/9/2009	RPD %	
TOC	**A0812101-01E**	12/10/2008	3.205	3.102	3%	Well 05 S
DOC	**A0812101-01H**	12/10/2008	27.521	29.694	8%	Well 05 S

Divison of Environmental Health

Drinking Water Program



Public Source Water Executive Summary

Derived Executive Summary Information

Source Water Assessment Report Executive Summary Data
The public water system for Tuluksak Water System is a Class A water system consisting of 1 source intake(s). The water system is located in Tuluksak and the intake for this PWSID is a groundwater well. The wellhead received a susceptibility of "very high" and the aquifer received received a susceptibility rating of "medium". Combining these scores produces a natural susceptibility of "high" for the source. In addition, this water system has received a vulnerability rating of "very high" for bacteria/viruses, "very high" for nitrates/nitrites, "very high" for volatile organic chemicals, "very high" for heavy metals, "very high" for other organic chemicals, and "very high" for synthetic organic chemicals.
DISCLAIMER: Information provided on this page is automatically generated from a database of Source Water Assessment information. For additional details, please view the actual Executive Summary contained in the Source Water Assessment Report.

Raw Database Information

Information from "SourceTable"							
PWSID	Name	Location	Class	Source Type	Number of Sources		
270223.001	Tuluksak Water System	Tuluksak	A	groundwater well	1		
Information from "VA Totals"							
Wellhead	Aquifer	Bacteria/Viruses	Nitrates/Nitrites	VOC	Inorganic	SOC	OOC
20	14	75	75	85	85	55	85
Information from "Ground Water Rule"							
Aquifer Type	Formation	Hydrogeologic Barrier	Barrier Desc.	Static Water Level	Well Depth	Grouted	Screened
Unconfined	sand and gravel	N/A	NA	10.5	49	yes	Yes, 34-49

Laboratory Analysis Report

- PRELIMINARY -

Chuck Eggener
Chuck Eggener Consulting Engr.
PO Box 232946
Anchorage, AK 99523

Work Order:	1106250
	Tuluksak Water Source Study
Client:	Chuck Eggener Consulting Engr.
Report Date:	December 14, 2010

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<http://www.sgs.com/terms_and_conditions.htm>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and AK100001 for NELAP (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6010B, 6020, 7470A, 7471B, 8021B, 8081B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, the National Environmental Laboratory Accreditation Program and other regulatory authorities. The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 2xDL)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content.
All DRO/RRO analyses are integrated per SOP.

SGS

- PRELIMINARY -

SGS Ref.#	1106250002		
Client Name	Chuck Eggener Consulting Engr.	**Printed Date/Time**	12/14/2010 15:35
Project Name/#	Tuluksak Water Source Study	**Collected Date/Time**	11/17/2010 16:05
Client Sample ID	Tuluksak River	**Received Date/Time**	11/18/2010 15:51
Matrix	Drinking Water	**Technical Director**	**Stephen C. Ede**

Sample Remarks:

5440C - MBAS (Surfactants) was analyzed by Analytica International of Anchorage, AK.
SM 5910B - UV254 was analyzed at Analytica International of Anchorage, AK.
2130B - Turbidity - Sample result may be biased low due to debris and/or coarse sediment.
2120B - Color - Sample analyzed past hold time due to lab error.

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Metals by ICP/MS									
Hardness as CaCO3	43.0	5.00	mg/L	SM20 2340B	D		11/23/10	11/24/10	NR
Waters Department									
Cyanide	ND	0.0050	mg/L	SM20 4500-CN C,E	C	(<0.2)	11/22/10	11/22/10	ACF
Total Nitrate/Nitrite-N	0.194	0.100	mg/L	SM20 4500NO3-F	B	(<10)		11/23/10	AY
Total Organic Carbon	16.4	0.500	mg/L	SM 5310B	K			11/22/10	CD
Turbidity	13.1	0.100	NTU	SM20 2130B	F			11/19/10	LP
Microbiology Laboratory									
E. Coli	Negative	1	100mL	SM20 9223B	A			11/18/10	DL
Total Coliform	Positive	1	100mL	SM20 9223B	A			11/18/10	DLC
Volatile Gas Chromatography/Mass Spectroscopy									
1,1,1,2-Tetrachloroethane	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JD
1,1,1-Trichloroethane	ND	0.500	ug/L	EPA 524.2	H	(<200)	11/23/10	11/23/10	JDB
1,1,2,2-Tetrachloroethane	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JD
1,1,2-Trichloroethane	ND	0.500	ug/L	EPA 524.2	H	(<5)	11/23/10	11/23/10	JD
1,1-Dichloroethane	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
1,1-Dichloroethene	ND	0.500	ug/L	EPA 524.2	H	(<7)	11/23/10	11/23/10	JD
1,1-Dichloropropene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JD
1,2,3-Trichlorobenzene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
1,2,3-Trichloropropane	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JD

SGS

- PRELIMINARY -

SGS Ref.#	1106250002		
Client Name	Chuck Eggener Consulting Engr.	**Printed Date/Time**	12/14/2010 15:35
Project Name/#	Tuluksak Water Source Study	**Collected Date/Time**	11/17/2010 16:05
Client Sample ID	Tuluksak River	**Received Date/Time**	11/18/2010 15:51
Matrix	Drinking Water	**Technical Director**	**Stephen C. Ede**

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy									
1,2,4-Trichlorobenzene	ND	0.500	ug/L	EPA 524.2	H	(<70)	11/23/10	11/23/10	JDB
1,2,4-Trimethylbenzene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
1,2-Dibromo-3-chloropropane	ND	2.00	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
1,2-Dibromoethane	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
1,2-Dichlorobenzene	ND	0.500	ug/L	EPA 524.2	H	(<600)	11/23/10	11/23/10	JDB
1,2-Dichloroethane	ND	0.500	ug/L	EPA 524.2	H	(<5)	11/23/10	11/23/10	JDB
1,2-Dichloropropane	ND	0.500	ug/L	EPA 524.2	H	(<5)	11/23/10	11/23/10	JDB
1,3,5-Trimethylbenzene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
1,3-Dichlorobenzene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
1,3-Dichloropropane	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
1,4-Dichlorobenzene	ND	0.500	ug/L	EPA 524.2	H	(<75)	11/23/10	11/23/10	JDB
2,2-Dichloropropane	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
2-Chlorotoluene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
4-Chlorotoluene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
4-Isopropyltoluene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
Benzene	ND	0.500	ug/L	EPA 524.2	H	(<5)	11/23/10	11/23/10	JDB
Bromobenzene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
Bromochloromethane	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
Bromodichloromethane	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
Bromoform	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
Bromomethane	ND	2.00	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
Carbon tetrachloride	ND	0.500	ug/L	EPA 524.2	H	(<5)	11/23/10	11/23/10	JDB
Chlorobenzene	ND	0.500	ug/L	EPA 524.2	H	(<100)	11/23/10	11/23/10	JDB
Chloroethane	ND	1.00	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
Chloroform	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
Chloromethane	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
cis-1,2-Dichloroethene	ND	0.500	ug/L	EPA 524.2	H	(<70)	11/23/10	11/23/10	JDB
cis-1,3-Dichloropropene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
Dibromochloromethane	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
Dibromomethane	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB

SGS

- PRELIMINARY -

SGS Ref.#	1106250002		
Client Name	Chuck Eggener Consulting Engr.	**Printed Date/Time**	12/14/2010 15:35
Project Name/#	Tuluksak Water Source Study	**Collected Date/Time**	11/17/2010 16:05
Client Sample ID	Tuluksak River	**Received Date/Time**	11/18/2010 15:51
Matrix	Drinking Water	**Technical Director**	**Stephen C. Ede**

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Ini
Volatile Gas Chromatography/Mass Spectroscopy									
Dichlorodifluoromethane	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JI
Ethylbenzene	ND	0.500	ug/L	EPA 524.2	H	(<700)	11/23/10	11/23/10	JDB
Hexachlorobutadiene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JI
Isopropylbenzene (Cumene)	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
Methylene chloride	ND	0.500	ug/L	EPA 524.2	H	(<5)	11/23/10	11/23/10	JDB
Methyl-t-butyl ether	ND	1.00	ug/L	EPA 524.2	H		11/23/10	11/23/10	JI
Naphthalene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
n-Butylbenzene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JI
n-Propylbenzene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JI
o-Xylene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
P & M -Xylene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JI
sec-Butylbenzene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JI
Styrene	ND	0.500	ug/L	EPA 524.2	H	(<100)	11/23/10	11/23/10	JDB
tert-Butylbenzene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JI
Tetrachloroethene	ND	0.500	ug/L	EPA 524.2	H	(<5)	11/23/10	11/23/10	JDB
Toluene	ND	0.500	ug/L	EPA 524.2	H	(<1000)	11/23/10	11/23/10	JDB
Total Trihalomethanes	ND	2.00	ug/L	EPA 524.2	H	(<80)	11/23/10	11/23/10	JI
trans-1,2-Dichloroethene	ND	0.500	ug/L	EPA 524.2	H	(<100)	11/23/10	11/23/10	JDB
trans-1,3-Dichloropropene	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JI
Trichloroethene	ND	0.500	ug/L	EPA 524.2	H	(<5)	11/23/10	11/23/10	JI
Trichlorofluoromethane	ND	0.500	ug/L	EPA 524.2	H		11/23/10	11/23/10	JDB
Vinyl chloride	ND	0.400	ug/L	EPA 524.2	H	(<2)	11/23/10	11/23/10	JI
Xylenes (total)	ND	1.00	ug/L	EPA 524.2	H	(<10000)	11/23/10	11/23/10	JDB
Surrogates									
1,2-Dichloroethane-D4 <surr>	103		%	EPA 524.2	H	70-130	11/23/10	11/23/10	JDB
4-Bromofluorobenzene <surr>	102		%	EPA 524.2	H	70-130	11/23/10	11/23/10	JI
Toluene-d8 <surr>	98.3		%	EPA 524.2	H	70-130	11/23/10	11/23/10	JI

Inorganic Contaminants

SGS

- PRELIMINARY -

SGS Ref.#	1106250002		
Client Name	Chuck Eggener Consulting Engr.	**Printed Date/Time**	12/14/2010 15:35
Project Name/#	Tuluksak Water Source Study	**Collected Date/Time**	11/17/2010 16:05
Client Sample ID	Tuluksak River	**Received Date/Time**	11/18/2010 15:51
Matrix	Drinking Water	**Technical Director**	**Stephen C. Ede**

Parameter	Results		LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Inorganic Contaminants										
Antimony	ND		1.00	ug/L	EP200.8	D	(<6)	11/23/10	11/24/10	NRB
Arsenic	ND		5.00	ug/L	EP200.8	D	(<10)	11/23/10	11/24/10	NRB
Barium	29.7		3.00	ug/L	EP200.8	D	(<2000)	11/23/10	11/24/10	NRB
Beryllium	ND		0.400	ug/L	EP200.8	D	(<4)	11/23/10	11/24/10	NRB
Cadmium	ND		0.500	ug/L	EP200.8	D	(<5)	11/23/10	11/24/10	NRB
Chromium	ND		2.00	ug/L	EP200.8	D	(<100)	11/23/10	11/24/10	NRB
Fluoride	ND		0.100	mg/L	EPA 300.0	F	(<2)	11/30/10	11/30/10	SDP
Mercury	ND		0.200	ug/L	EP245.1	D	(<2)	11/30/10	11/30/10	CDE
Nickel	ND		2.00	ug/L	EP200.8	D	(<100)	11/23/10	11/24/10	NRB
Selenium	ND		5.00	ug/L	EP200.8	D	(<50)	11/23/10	11/24/10	NRB
Thallium	ND		1.00	ug/L	EP200.8	D	(<2)	11/23/10	11/24/10	NRB
Secondary Contaminants										
Alkalinity	45.2		10.0	mg/L	SM20 2320B	F			11/19/10	LP
Aluminum	ND		20.0	ug/L	EP200.8	D	(<200)	11/23/10	11/24/10	NRB
Calcium	11200		500	ug/L	EP200.8	D		11/23/10	11/24/10	NRB
Chloride	1.66		0.100	mg/L	EPA 300.0	F	(<250)	11/30/10	11/30/10	SDP
CO3 Alkalinity	ND		10.0	mg/L	SM20 2320B	F			11/19/10	LP
Color, True	20.0	*	5.00	PCU	SM20 2120B	F	(<15)		11/23/10	LP
Copper	ND		1.00	ug/L	EP200.8	D	(<1000)	11/23/10	11/24/10	NRB
Fluoride	ND		0.100	mg/L	EPA 300.0	F	(<2)	11/30/10	11/30/10	SDP
HCO3 Alkalinity	45.2		10.0	mg/L	SM20 2320B	F			11/19/10	LP
Iron	2280	*	250	ug/L	EP200.8	D	(<300)	11/23/10	11/24/10	NRB
Langlier Index @ 140 degree F	-1.100042				SM2330B	F			12/02/10	SDP
Langlier Index @ 40 degree F	-2.180042				SM2330B	F			12/02/10	SDP
Magnesium	3670		50.0	ug/L	EP200.8	D		11/23/10	11/24/10	NRB
Manganese	300	*	1.00	ug/L	EP200.8	D	(<50)	11/23/10	11/24/10	NRB
Odor (TON)	ND		1.00	T.O.N.	SM20 2150B	G	(<3)		11/19/10	LP
OH Alkalinity	ND		10.0	mg/L	SM20 2320B	F			11/19/10	LP
pH	6.80		0.100	pH units	SM20 4500-H B	F	(6.5-8.5)		11/19/10	LP

SGS

- PRELIMINARY -

SGS Ref.#	1106250002		
Client Name	Chuck Eggener Consulting Engr.	**Printed Date/Time**	12/14/2010 15:35
Project Name/#	Tuluksak Water Source Study	**Collected Date/Time**	11/17/2010 16:05
Client Sample ID	Tuluksak River	**Received Date/Time**	11/18/2010 15:51
Matrix	Drinking Water	**Technical Director**	**Stephen C. Ede**

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Ini
Secondary Contaminants									
Silver	ND	1.00	ug/L	EP200.8	D	(<100)	11/23/10	11/24/10	NI
Sodium	3770	500	ug/L	EP200.8	D	(<250000)	11/23/10	11/24/10	NRB
Sulfate	6.37	0.100	mg/L	EPA 300.0	F	(<250)	11/30/10	11/30/10	SI
Total Dissolved Solids	77.0	10.0	mg/L	SM20 2540C	F	(<500)		11/22/10	J
Zinc	ND	5.00	ug/L	EP200.8	D	(<5000)	11/23/10	11/24/10	NRB

SGS

- PRELIMINARY -

SGS Ref.#	1106250003		
Client Name	Chuck Eggener Consulting Engr.	**Printed Date/Time**	12/14/2010 15:35
Project Name/#	Tuluksak Water Source Study	**Collected Date/Time**	11/17/2010 16:05
Client Sample ID	Tuluksak River	**Received Date/Time**	11/18/2010 15:51
Matrix	Drinking Water	**Technical Director**	**Stephen C. Ede**

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Waters Department									
Total Organic Carbon,Dissolved	2.51	0.500	mg/L	SM 5310B	B			11/22/10	CDE

SGS

- PRELIMINARY -

SGS Ref.#	1106250004		
Client Name	Chuck Eggener Consulting Engr.	**Printed Date/Time**	12/14/2010 15:35
Project Name/#	Tuluksak Water Source Study	**Collected Date/Time**	11/17/2010 16:05
Client Sample ID	TRIP BLANK	**Received Date/Time**	11/18/2010 15:51
Matrix	Drinking Water	**Technical Director**	**Stephen C. Ede**

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy									
1,1,1,2-Tetrachloroethane	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JD
1,1,1-Trichloroethane	ND	0.500	ug/L	EPA 524.2	A	(<200)	11/23/10	11/23/10	JDB
1,1,2,2-Tetrachloroethane	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JD
1,1,2-Trichloroethane	ND	0.500	ug/L	EPA 524.2	A	(<5)	11/23/10	11/23/10	JD
1,1-Dichloroethane	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
1,1-Dichloroethene	ND	0.500	ug/L	EPA 524.2	A	(<7)	11/23/10	11/23/10	JD
1,1-Dichloropropene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JD
1,2,3-Trichlorobenzene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
1,2,3-Trichloropropane	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JD
1,2,4-Trichlorobenzene	ND	0.500	ug/L	EPA 524.2	A	(<70)	11/23/10	11/23/10	JDB
1,2,4-Trimethylbenzene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
1,2-Dibromo-3-chloropropane	ND	2.00	ug/L	EPA 524.2	A		11/23/10	11/23/10	JD
1,2-Dibromoethane	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
1,2-Dichlorobenzene	ND	0.500	ug/L	EPA 524.2	A	(<600)	11/23/10	11/23/10	JD
1,2-Dichloroethane	ND	0.500	ug/L	EPA 524.2	A	(<5)	11/23/10	11/23/10	JD
1,2-Dichloropropane	ND	0.500	ug/L	EPA 524.2	A	(<5)	11/23/10	11/23/10	JDB
1,3,5-Trimethylbenzene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JD
1,3-Dichlorobenzene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
1,3-Dichloropropane	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
1,4-Dichlorobenzene	ND	0.500	ug/L	EPA 524.2	A	(<75)	11/23/10	11/23/10	JD
2,2-Dichloropropane	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
2-Chlorotoluene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JD
4-Chlorotoluene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JD
4-Isopropyltoluene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
Benzene	ND	0.500	ug/L	EPA 524.2	A	(<5)	11/23/10	11/23/10	JD
Bromobenzene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JD
Bromochloromethane	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
Bromodichloromethane	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JD

SGS

- PRELIMINARY -

SGS Ref.#	1106250004		
Client Name	Chuck Eggener Consulting Engr.	**Printed Date/Time**	12/14/2010 15:35
Project Name/#	Tuluksak Water Source Study	**Collected Date/Time**	11/17/2010 16:05
Client Sample ID	TRIP BLANK	**Received Date/Time**	11/18/2010 15:51
Matrix	Drinking Water	**Technical Director**	**Stephen C. Ede**

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy									
Bromoform	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
Bromomethane	ND	2.00	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
Carbon tetrachloride	ND	0.500	ug/L	EPA 524.2	A	(<5)	11/23/10	11/23/10	JDB
Chlorobenzene	ND	0.500	ug/L	EPA 524.2	A	(<100)	11/23/10	11/23/10	JDB
Chloroethane	ND	1.00	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
Chloroform	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
Chloromethane	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
cis-1,2-Dichloroethene	ND	0.500	ug/L	EPA 524.2	A	(<70)	11/23/10	11/23/10	JDB
cis-1,3-Dichloropropene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
Dibromochloromethane	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
Dibromomethane	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
Dichlorodifluoromethane	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
Ethylbenzene	ND	0.500	ug/L	EPA 524.2	A	(<700)	11/23/10	11/23/10	JDB
Hexachlorobutadiene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
Isopropylbenzene (Cumene)	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
Methylene chloride	ND	0.500	ug/L	EPA 524.2	A	(<5)	11/23/10	11/23/10	JDB
Methyl-t-butyl ether	ND	1.00	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
Naphthalene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
n-Butylbenzene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
n-Propylbenzene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
o-Xylene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
P & M -Xylene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
sec-Butylbenzene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
Styrene	ND	0.500	ug/L	EPA 524.2	A	(<100)	11/23/10	11/23/10	JDB
tert-Butylbenzene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
Tetrachloroethene	ND	0.500	ug/L	EPA 524.2	A	(<5)	11/23/10	11/23/10	JDB
Toluene	ND	0.500	ug/L	EPA 524.2	A	(<1000)	11/23/10	11/23/10	JDB
Total Trihalomethanes	ND	2.00	ug/L	EPA 524.2	A	(<80)	11/23/10	11/23/10	JDB
trans-1,2-Dichloroethene	ND	0.500	ug/L	EPA 524.2	A	(<100)	11/23/10	11/23/10	JDB
trans-1,3-Dichloropropene	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB

SGS

- PRELIMINARY -

SGS Ref.#	1106250004		
Client Name	Chuck Eggener Consulting Engr.	**Printed Date/Time**	12/14/2010 15:35
Project Name/#	Tuluksak Water Source Study	**Collected Date/Time**	11/17/2010 16:05
Client Sample ID	TRIP BLANK	**Received Date/Time**	11/18/2010 15:51
Matrix	Drinking Water	**Technical Director**	**Stephen C. Ede**

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy									
Trichloroethene	ND	0.500	ug/L	EPA 524.2	A	(<5)	11/23/10	11/23/10	JD
Trichlorofluoromethane	ND	0.500	ug/L	EPA 524.2	A		11/23/10	11/23/10	JDB
Vinyl chloride	ND	0.400	ug/L	EPA 524.2	A	(<2)	11/23/10	11/23/10	JD
Xylenes (total)	ND	1.00	ug/L	EPA 524.2	A	(<10000)	11/23/10	11/23/10	JD
Surrogates									
1,2-Dichloroethane-D4 <surr>	106		%	EPA 524.2	A	70-130	11/23/10	11/23/10	JDB
4-Bromofluorobenzene <surr>	103		%	EPA 524.2	A	70-130	11/23/10	11/23/10	JDB
Toluene-d8 <surr>	98.2		%	EPA 524.2	A	70-130	11/23/10	11/23/10	JD

SGS North America Inc.
CHAIN OF CUSTODY RECORD

1106250

...nwide
- Maryland
- New York
- Indiana
- Kentucky

gs.com

1

CLIENT: CEZ ENGINEERS

CONTACT: MIKE ERDMAN PHONE NO: 349-1010

PROJECT NAME: TULUKSAK WATER SOURCE STUDY PROJECT/ PWSID/ PERMIT# :

REPORTS TO: EMAIL:

INVOICE TO: QUOTE #:

P.O. #:

SGS Reference #:

page 1 of 1

2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX/ MATRIX CODE	# CONTAINERS	SAMPLE TYPE C= COMP G= GRAB MI= Multi Incremental Samples	Preservatives Used	Analysis Required (3) Primary + Secondary Inorg	Turb, TDS, Alk	TOC	DOC	UV254	VOC 524.2	TC	THM FP	HAA FP	REMARKS/ LOC ID
(1) A-D	TULUKSAK RIVER	11/17/10	1605	H_2O		G		X	X	X	X	X	X	X	X	X	
(2) A-M																	
(3) A-B																	
(4) A-C (TB)																	

5

Collected/Relinquished By:(1)	Date	Time	Received By:
	11/18/10	1551	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date NOV 18, 2010	Time 15:51	Received For Laboratory By: AHJ

4

DOD Project? YES NO

Cooler ID _____

Data Deliverable Requirements:

Requested Turnaround Time and-or Special Instructions:

Temperature Blank °C: 3.0 #201

or Ambient [ ]

(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle)

INTACT BROKEN (ABSENT)

(See attached Sample Receipt Form)

SGS North America Inc.
200 W. POTTER DRIVE
ANCHORAGE, ALASKA 99518
Tel: 907-562-2343; Fax: 907-561-5301

Chain of Custody for Total Coliform Bacteria Samples

1106250

READ INSTRUCTIONS ON REVERSE SIDE BEFORE COLLECTING SAMPLE

MUST BE COMPLETED BY WATER SUPPLIER

☐ PUBLIC WATER SYSTEM ID# ____ ____ ____ ____ ____ ____

☐ PRIVATE WATER SYSTEM
☐ Send Results ☐ Send Invoice

Water System Name/Company Name	Contact Name
CE2 Engineers	Mike Erdman
Phone Number: 349-1010	Fax Number
Mailing Address	
City	State / Zip Code

☐ Send Results ☐ Send Invoice

Water System Name/Company Name	Contact Name
Phone Number	Fax Number
Mailing Address	
City	State / Zip Code

SAMPLE COLLECTION:

NOTE: **Unless otherwise requested, all samples will be analyzed by Presence/Absence method SM9223B.**

* NOTE: For valid results, analysis must begin within 30 hrs of sample collection.

Date: 11 (Month) 17 (Day) 2010 (Year)

Time: 4:05 AM (PM) (circle one)

Location: Tuluksak River

Collector: _____ (Signature)

METHOD REQUESTED:
☐ **Presence/Absence (SM9223B)**
☐ Membrane Filtration (SM9222B)

SAMPLE TYPE:
☐ **Routine** ☐ **Treated Water**
☐ **Repeat Sample** ☐ **Untreated Water**
(refer to lab no._____)
☐ **Special Purpose**

Transported to Lab By: ☐ Same as collector Other: _____ (Signature)

Note: SGS analyzes bacteria samples in ADEC's 30 hour hold time unless prior arrangements have been made.
Surcharges will be applied for samples received <2 hours before expiration.
Business hours are Monday–Friday, 8 am–5 pm. Please contact your Project Manager at (907) 562-2343 with any questions.

TO BE COMPLETED BY LABORATORY

Sample Receiving:

Date: 11/18/10

Time: 15:51

Temp: Ambient ☐ or 3.0

Delivery Method: Client ☐ Commercial ☐

Received by: _____ (Signature) SMH 11/18/10 15:57

☐ *Sample over 30 hours old. Results may be unreliable.*

☐ *48 Hour Waiver for Remote Locations*

☐ ***Sample Receiving notified Analyst of Short Hold Time***

Comments: Client did not fill out coliform COC, so this was filled in by lab upon receiving. SMH 11/18/10

This section used by analyst for immediate notification of UNSATISFACTORY results only:

Bacteriological Water Analysis Record:

Analysis Began: _____

Analyst: _____

Analytical Method:
☐ MMO-MUG (P/A) SM9223B
☐ Membrane Filter SM9222B

Result:
Total Coliform: _____
E. coli/Fecal Coliform _____
Other Bacteria: _____

Reported to: _____ By: ☐ Fax ☐ Phone ☐ E-mail

Reported to: _____ By: ☐ Fax ☐ Phone ☐ E-mail

Analyst's _____ Date/Time: _____

SGS

1106250

SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were **custody seals** intact? Note # & location, if applicable.	Yes No (N/A)	
COC accompanied samples?	(Yes) No N/A	
Temperature blank compliant* (i.e., 0-6°C after correction factor)?	(Yes) No N/A	
* *Note: Exemption permitted for chilled samples collected less than 8 hours ago.*		
Cooler ID: 1 @ 3.0 w/ Therm.ID: 201		
Cooler ID: _____ @ _____ w/ Therm.ID: _____		
Cooler ID: _____ @ _____ w/ Therm.ID: _____		
Cooler ID: _____ @ _____ w/ Therm.ID: _____		
Cooler ID: _____ @ _____ w/ Therm.ID: _____		
Note: If non-compliant, use form FS-0029 to document affected samples/analyses.		
If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled."		
If temperature(s) <0°C, were all sample containers ice free?	Yes No (N/A)	
Delivery method (specify all that apply): (Client)	Note airbill/tracking #	
USPS Alert Courier Road Runner AK Air	See Attached	
Lynden Carlile ERA PenAir		
FedEx UPS NAC Other:	(or N/A)	
→ For samples received with payment, note amount ($) and cash / check / CC (circle one).		(N/A)
→ For samples received in FBKS, ANCH staff will verify all criteria are reviewed.		SRF Initiated by: (N/A)
Do samples **match COC*** (i.e., sample IDs, dates/times collected)?	(Yes) No N/A	trip blanks not written on COC by client. Added as (4) A-C.
* *Note: Exemption permitted if collection times differ by less than an hour; in which case, the times on the COC will be used.*		
Are analyses requested unambiguous?	Yes No N/A	
Were samples in **good condition** (no leaks/cracks/breakage)?	(Yes) No N/A	
Packing material used (specify all that apply): (Bubble Wrap)		
Separate plastic bags Vermiculite Other:		
Were all VOA vials **free of headspace** (i.e., bubbles ≤6 mm)?	(Yes) No N/A	
Were all soil VOAs **field extracted** with MeOH+BFB?	SAH 7/8/10 (Yes) No (N/A)	
Were the bottles provided by SGS? (Note apparent exceptions.)		
Were **proper containers** (type/mass/volume/preservative*) used?	Yes (No) N/A	Sample for NO3 analysis poured off from (2) L per PM Forest Taylor
* *Note: Exemption permitted for waters to be analyzed for metals.*		
Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples?	(Yes) No N/A	
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was **pH verified and compliant**?	(Yes) No N/A	
If pH was adjusted, were bottles flagged (i.e., stickers)?	Yes No (N/A)	
Refer to attached bottle sheet (form F066) for documentation.		
For **RUSH** or **SHORT HOLD TIME** samples, were the COC & this SRF flagged, bottles flagged (e.g., stickers) and lab notified?	(Yes) No N/A	
For client requested, **site-specific QC** (e.g., MS/MSD/DUP), were bottles flagged (e.g., stickers) and numbered accordingly?	Yes No (N/A)	
For **special handling** (e.g., "MI" or foreign soils, lab filter, limited volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)?	Yes No (N/A)	
Was the WO# recorded in Front Counter/Sample Receiving log?	(Yes) No N/A	SRF Completed by:
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	(Yes) No N/A	Bottle Sheet by:
		PM = N/A
Was **PEER REVIEW** of sample numbering completed (i.e., compare WO# on containers to COC, container ID on containers to COC, unique lab ID on each container?)	(Yes) No N/A	Peer Reviewed by: (JT)
		Metrics: 1731
Additional notes (if applicable):		

WO# (7 digits)	Sample # - Sample #	Container ID - Container ID	Matrix	QC	Preservative (CHECKED)	TEST GROUP	PRINT LABELS	Notes: ANOMALIES - *e.g., preservative added* or SPECIAL HANDLING - *e.g., Multi-Incremental (MI), Field Filter (FF), Lab Filter (LF), use "same jar as" (SJA) for QC, 2xMeOH, bubbles, etc.*
SAMPLE ID			TYPE		CONTAINERS	ANALYSIS		Type comments below:
1106250	001 001	A B	1 Water		N/A	W_REF_LAB		
1106250	001 001	C D	1 Water		N/A	W_REF_LAB		HAA FP
1106250	002 002	A A	1 Water		Na2S2O3 *	W_Micro		
1106250	002 002	B B	1 Water		H2SO4 (pH <2)	W_Waters_Dept		
1106250	002 002	C C	1 Water		NaOH (pH >12)	W_Waters_Dept		
1106250	002 002	D D	1 Water		HNO3 (pH <2)	W_Metals_Total/Diss.		
1106250	002 002	E E	1 Water		N/A	W_REF_LAB		
1106250	002 002	F F	1 Water		N/A	W_Waters_Dept		
1106250	002 002	G G	1 Water		N/A	W_Waters_Dept		Odor
1106250	002 002	H J	1 Water		HCl * VOA or LL-Hg *	W_GRO/VOA		
1106250	002 002	K K	1 Water		HCl (pH <2)	W_TOC/DOC		
1106250	002 002	L L	1 Water		N/A	W_Waters_Dept		
1106250	005 005	M M	1 Water		N/A	W_REF_LAB		UV 254
1106250	003 003	A A	1 Water		N/A	W_TOC/DOC		
1106250	003 003	B B	1 Water		HCl (pH <2)	W_TOC/DOC		Filtered from 3A
1106250	004 004	A C	1 Water	Trip Blank	HCl * VOA or LL-Hg *	W_GRO/VOA		

SHORT HOLDS

1106250

SGS

SGS North America Inc.
200 W. Potter Dr., Anchorage, AK 99518
3180 Peger Rd., Fairbanks, AK 99701

P: 907-562-2343, F: 907-561-5301
P: 907-474-8656, F: 907-474-9685

Sample Kit Request

☑ Client pickup Date: 10/29/2010 Time: 1200
☐ Deliver to client:
☐ Shipment Method:
Airline Carrier:
Airbill Number:
Date to ship by:
Notes:

Kit request taken by: FAT Date: 10/28/2010
Kit prepared by: Date:
Kit checked by: Date:
Kit shipped by: Date:

Estimated date for samples returning to the lab:

Client Name: CE2 Engineers
Ordered By: Mike Erdman
Phone/Fax:
Project Name:
Quote #:
Delivery:

1106250

PM Reminders:
☐ DOD project ☐ SOW/QAPP
☐ Quote # ☐ Project Notice ( )

Total # Containers includes bottles for % Solids
☐ Regulatory/Special Requirements

☐ DQOs
☐ Problem Matrices

Notes:

No. Samples	Matrix	Analysis	Container Size & Type		Pres.	Bottle Lot #	Pres. Lot #	Hold Time	# QC Bottles	Total Bottles
2	Water	Primary & Secondary Inorg								
		Metals + Ca, Mg	1 x 250mL	HDPE	HNO3			6 M		2
		Waters + Br	1 x 1L	HDPE	None			48 H		2
		CN	1 x 250mL	HDPE	NaOH			14 D		2
		Odor	1 x 1L	Amber	None			48 H		2
		MBAS	1 x 500mL	Amber	None			48 H		2
		Turb, TDS, Alk	1 x 1L	HDPE	None			48 H		2
		TOC	1 x 125mL	Amber	HCl			14 D		2
		DOC	1 x 125mL	Amber	None			48 H		2
		UV254	1 x 125mL	Amber	None			48 H		2

☐ Pack for Shipping
☑ 125mL Temperature Blank
☐ 500mL Temperature Blank
☐ Soil VOA Trip Blank (ID:)
☐ Water VOA Trip Blank (ID:)
☑ 524 VOA Trip Blank (ID:)
☑ Gel Ice ☑ SGS COCs
☑ Labels ☑ Custody Seals
☑ Bubble Wrap ☑ Coolers
☐ Send Instructions
☐ Foreign Soil Permit

Other Notes/Reminders:

Attention Client/Sampler: ***Please remember the following sampling guidelines:***

1. Do not rinse container before filling and be aware of any acid preservative in container.
2. Fill container to top, but do not overfill (except volatiles which should be headspace free).
3. Label the container with your sample/site ID, as well as the date & time of collection.
4. Fill in the Chain of Custody.
5. Add frozen gel packs or ice to your cooler & pack to prevent breakage.

Note: Charges may be invoiced for bottles which are unused or improperly used.
If you have any questions concerning this sample kit, please contact your Project Manager for assistance. ***Thank you.***

SGS

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1106250

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PM Reminders:
☐ DOD project ☐ SOW/QAPP ☐ Total # Containers includes bottles for % Solids ☐ DQOs
☐ Quote # ☐ Project Notice ( ) ☐ Regulatory/Special Requirements ☐ Problem Matrices

Notes:

No. Samples	Matrix	Analysis	Container Size & Type		Pres.	Bottle Lot #	Pres. Lot #	Hold Time	# QC Bottles	Total Bottles
2	Water	VOC 524.2	3 x 40 mL	VOA vials	HCl			14 D		6
		TC	120mL sterile	Plastic	Na2S2O3			30 H		2
		THM Formation Potential	2 x 1L	VOA vials	None			9 D		4
		HAA Formation Potential	2 x 1L	VOA vials	None			9 D		4

☐ Pack for Shipping
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☐ 500mL Temperature Blank
☐ Soil VOA Trip Blank (ID:)
☐ Water VOA Trip Blank (ID:)
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