

1 TASKS 2.3: RAW AND TREATED EFFLUENT CHARACTERIZATION

1.1 FOCUS REPORT TASK DESCRIPTION

Submit data regarding the complete physical and chemical characterization of NPNS' raw wastewater (i.e. influent at Point A for the Project), to support the assessment of the appropriateness of the proposed treatment technology. The influent characterization results must be compared against the proposed treatment technology specifications.

1.2 EFFLUENT CHARACTERIZATION

1.2.1 General

The basic question that will be addressed in this document is:

 What are the expected list of contaminants that may be generated specifically by the new NPNS Effluent Treatment Facility (ETF)?

Effluents are a complex combination of compounds produced during the pulp and paper making process including wastewater from debarking, pulp washing, bleaching, regeneration of cooking chemicals and products from the breakdown of carbohydrates, lignin and extractives.

The composition and environmental impact of pulp and paper mill effluent has been a focus of scientific research for decades. There has been a significant amount of scientific data (see Section 1.5 for a full list of references used in this analysis) developed to better understand the composition and potential impact of pulp and paper mill effluents, especially in support of regulatory development efforts in the 1980's and 1990's. Most of the reported compounds are either non-chlorinated or have low degrees of chlorination and are expected to be readily biodegradable.



Wood is made up of cellulose fibres (fibre) bound together by lignin. The Kraft pulping process used at Northern Pulp utilizes chemicals to separate the fibres from the lignin. Wood chips are cooked in a solution of chemicals (referred to as cooking liquor) that dissolve the lignin from the wood chip leaving wood fibre. The lignin is then suspended in the spent chemical. The lignin and chemicals are then washed out of the cooked pulp solution so that they can be recovered and recycled for reuse. A portion of that wash water ends up as effluent that needs to be treated.

Effluent quality, or composition, reflects the nature of the raw water inputs, the furnish (fibres, fillers, etc.), the various processes used to break down the wood structure and the level and type of effluent treatment in place. The total wood mass of a living tree varies seasonally because of the moisture content, which can vary between 40% and 50% of the total wood mass. The chemical constituents of dry wood species can be categorized as structural substances and non-structural substances. Structural substances tend to be high-molecular weight (HMW) compounds such as cellulose, hemicelluloses and lignin. Non-structural substances are mostly low-molecular-weight (LMW) compounds such as extractives, some water-soluble organics, and inorganics. Figure 1-1, below, further expands on this categorization:

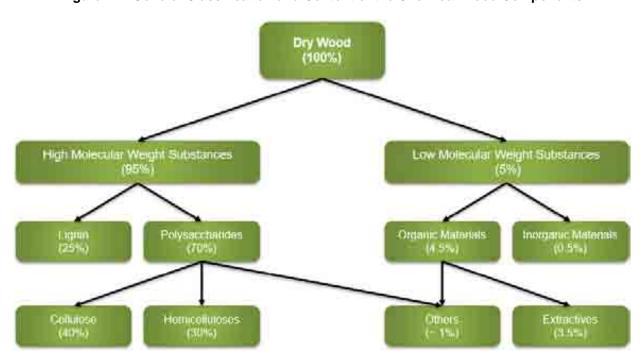


Figure 1-1: General Classification and Content of the Chemical Wood Components



The pulp fibres are naturally brown in color, the color of wood. The goal in bleaching chemical pulps is to remove essentially all of the residual lignin left after cooking, hence the process is often referred to as delignification. Chlorine was initially used to bleach the pulp in the 1970's and 1980's. Concerns about the release of organochlorine compounds into the environment prompted the development of Elemental Chlorine Free (ECF) and Totally Chlorine Free (TCF) bleaching processes in the 1990's. Chlorine dioxide (CIO₂) bleaching is referred to as ECF. NPNS converted to the ECF bleaching process in 1997. Chlorine dioxide (ECF technology) currently is the most common bleaching method worldwide. About 95% of all bleached Kraft pulp around the world is made using chlorine dioxide in ECF bleaching sequences. The bleaching, or delignification, of pulp at NPNS utilizes chlorine dioxide, sodium hydroxide, hydrogen peroxide and oxygen as the bleaching agents.

Advances in pulping technology, such as the replacement of chlorine with oxygen or chlorine dioxide, have considerably decreased the number of organic compounds and chlorinated compounds, as well as pollutant loads, that were found in pulp mill effluents 30 plus years ago.

In a bleached kraft pulp mill, the bleach plant effluent represents the majority of the pollutant load that must be treated in the secondary treatment system. These systems have been shown to biodegrade the resin and fatty acids, non-chlorinated and chlorinated phenolics and polyaromatic hydrocarbons to a level where the treated effluent is non-toxic and meets all regulated effluent discharge parameters (as discussed in Section 1.3).

1.2.2 Hardwood and Softwood Kraft Mill Effluents

The type of wood, hardwood versus softwood, that is used in the pulp production (ie. the furnish) affects the types of chemicals that are found in effluent. Typically, softwood pulp effluents have higher Chemical Oxygen Demand (COD) and colour content than those of hardwood pulp. The compounds responsible for colour are lignin fragments of high-molecular weight (HMW). In general, HMW compounds exhibit lower biodegradability than LMW compounds in the biological treatment process. Researchers have evaluated effluents from softwood and hardwood (eucalyptus) pulps by comparing typical effluent parameters such as AOX (Adsorbable Organic Halides), COD, BOD₅ (5-day Biochemical Oxygen Demand) and Colour of the different kinds of pulp production (conventional bleached pulps and oxygen delignified bleached pulps).



Traditionally, the separation between low molecular weight (LMW) and high molecular weight (HMW) is done at 1000 Daltons (grams/mole or g/mol, a unit of molecular mass). Bleached kraft mill effluents have an extended molecular weight distribution; from diverse LMW monomeric compounds to large and complex HMW molecules with molecular weights between 10,000 and 30,000 g/mol. The molecular weight distribution depends on the raw material and the bleaching process used. For example, the average molecular weight of organic matter in hardwood kraft pulp effluents is lower than the corresponding softwood effluents.

Research has shown that the HMW fraction contributed to approximately 40% of the total effluent load of COD both in softwood and hardwood ECF (elemental chlorine free) bleached pulps production (see Section 1.5). Additionally, the largest differences between softwood- and hardwood-derived effluents are in the aromatic region. The aromatic lignin-derived structures, such as syringyl and guaiacyl units, are not important structural elements in HMW effluent materials from ECF bleaching of oxygen delignified hardwood kraft pulps, but are important in softwood HMW effluents.

Similarly, research has shown that all HMW effluent fractions contained carbohydrates. The carbohydrates found in the HMW effluent materials were oligosaccharides, polysaccharides, or both, either in dissolved or colloidal form. As can be expected, the HMW hardwood kraft effluent fraction contained more carbohydrates (mainly xylan) than the corresponding samples from softwood kraft effluents. Significant levels of carboxylic acids, formed due to the oxidation of lignin structures in the bleaching process, also show up in the HMW effluent fractions.

The LMW compounds can be broadly classified into three main classes: acids, phenolic compounds and neutral compounds. The phenolic compounds and some of the acids are degradation products from lignin, while the resin acids, fatty acids, terpenes and sterols are residues of extractives present in the raw material (wood).

More than 50% of the wood used by Northern Pulp to make its products is mixed spruce (white, black and red), which are typically low in extractives (see Table 1.1) compared to other softwood species such as jack pine, balsam fir, larch and hemlock, also used at the mill. Some hardwoods, such as aspen, red maple, sugar maple and birch, are also present in the wood mix in some pulp grades, but typically consist of less than 20% of the total mix of the wood furnish.



Table 1-1 – Chemical Composition of Typical Wood Species Mix Furnish at Northern Pulp

Wood Species	Cellulose	Hemicellulose	Lignin	Total Extractives	Inorganic content
	(%)	(%)	(%)		
				(%)	(%)
Mixed Spruce	39.5	30.6	27.5	2.1	0.3
Balsam Fir	38.8	29.2	29.1	2.7	0.2
Abies balsamea					
Jack Pine	41.0	24.8	28.6	5.4	0.2
Pinus banksiana					
Maple	41.3	30.2	25.3	2.9	0.3
Acer rubrum /					
Acer saccharum					
Aspen	53.0	27.8	16.3	2.7	0.2
Populus tremuloides					
Birch	39.4	36.1	21.6	2.6	0.3
Beluta papyrifera					
Larch	43.0	22.7	28.5	5.6	0.2
Larix laricina					
Hemlock	37.7	28.2	30.5	3.4	0.2
Tsuga canadensis					
Typical Wood Furnish	40.5	29.7	26.7	2.7	0.26

1.2.3 Organochlorines

Adsorbable Organic Halides (AOX) is a term used to describe a large number of organic halogen compounds in the effluent. AOX is the sum parameter of Adsorbable Organic Chlorine (Cl), Iodine (I) and Bromine (Br). The term AOX covers a large group of organic constituents from simple volatile substances to more complex molecules, including dioxins and furans. The vast majority of AOX compounds are formed in the bleaching process particularly when chlorine is used. In effluents from bleached pulp mills, the halogen ("X") component of AOX is almost entirely chlorine. Mills that have switched to ECF using chlorine dioxide, like NPNS did in 1997, have significantly reduced the amount of AOX in their effluent.

Chlorinated organic compounds are synthesized and degraded in the environment by natural biological and chemical processes. This natural production varies, depending on the geographical location. Organisms have evolved in environments with background concentrations of natural chlorinated organic compounds. Many compounds identical, or similar to those formed during ECF bleaching of pulp, are produced by natural processes. There is evidence that these organisms possess mechanisms for effective breakdown of these types of chlorinated substances.



Because of this, chlorinated compounds formed during ECF pulp production technology will neither be recalcitrant with respect to breakdown in the environment nor resistant to biodegradation. Pulp mill AOX will ultimately be mineralized through photochemical and biological processes. During this mineralization, the chlorinated organic material will be released as chloride ions (Cl⁻) and carbon dioxide (CO₂), as can be observed by the analytical results presented in Table 1-2, where chloride levels in the untreated effluent (Point A) are notably greater than the raw water figures.

Individual substances present in effluents from current pulping and pre-bleaching processes are investigated to a lesser extent since they are recycled during chemical recovery. Numerous studies have firmly established that concentrations of PCDDs, PDCFs and polychlorophenols in effluents from ECF bleaching are close to or below the level of detection (see Section1.3.7). A large body of research, conducted after 1993, has concluded that substances identified in ECF bleaching are predicted to be readily biodegradable whereas less is known about the types of compounds in TCF bleaching effluent.

1.2.4 Physicochemical Properties of Pulping/ClO₂ Bleaching By-Products

High molecular weight, hydrophobic, chlorinated organic compounds exhibit substantially different environmental behavior and toxicological modes of action than more hydrophilic chlorinated or non-chlorinated compounds. Lower molecular weight, more soluble substances exhibit little tendency to biomagnify, and have less potential for exerting insidious or food-web mediated toxic effects at the community and ecosystem level.

Minimization of highly bioaccumulative and persistent substances in final effluent will limit effects of long-term exposure to the effluent and shift the focus of concern to possible immediate or limited duration (acute) environmental effects for organisms directly exposed, followed secondarily by ecological consequences at higher levels of biological organization. It is clear that 100% CIO₂ substitution drastically reduces the production of higher chlorinated, more bioaccumulative phenolics (3 chlorine substituents) in final effluents. Few compounds in treated ECF mill effluents exhibit a log Kow > 5.0 (the threshold for substantial biomagnification potential)¹ or have the additional property of being relatively persistent in living organisms due to their resistance to metabolic modification.

¹ The n-octanol/water partition coefficient (**Kow**) is used as a screening test for bio-accumulation test. The **log Kow** value is a very important parameter for predicting the distribution of a substance in various environmental compartments (water, soil, air, biota, etc). Substances with high log Kow values tend to adsorb more readily to organic matter in soils or sediments because of their low affinity for water. Chemicals with very high log Kow values (i.e, **>5.0**) are of greater concern because they may have the potential to bio-concentrate in living organisms. The assumption behind this is that the uptake of an organic substance is driven by its hydrophobicity. For organic substances with a **log Kow** value below 5,



Studies completed since 1993 suggest that some of the resin acids or naturally-occurring polycyclic aromatic hydrocarbons (PAHs) produced during the diagenesis of plant materials exhibit a similar environmental fate and effects as some of the compounds found in both ECF and TCF pulp mill effluents. Comparative research on the relative impact of TCF vs. ECF effluents is not readily available because of the very low volume of TCF pulps being produced (approximately 5% of the 38.0 million tonnes of pulp that was produced in 2018, according to the Confederation of European Paper Industries). The available data would indicate that both effluents, after treatment, show similar characteristics.

In general, the presently available studies on biodegradation and removal processes for constituents of pulp mill effluent emphasize the importance of effective secondary treatment in the reduction or elimination of whole effluent toxicity. Subsequent to past improvements in kraft mill effluent quality realized through CIO₂ substitution, future reductions in toxicant inputs where they are still occurring might be achieved through improvements in treatment, since (i) recent studies suggest that many bioactive compounds in final effluent are non-chlorinated compounds contributed by pulp mill processes other than bleaching, and (ii) most of the known deleterious substances in pulp mill effluent are amenable to biodegradation and/or removal through adsorption to particulates.

1.3 DATA ANALYSIS

To assess the content of the untreated and treated effluent at the mill, as well as to compare its characteristics to that of the receiving environment, samples sets of the following aqueous streams were taken on the following dates and a physical and chemical characterization performed:

- Raw water (Middle River) taken on April 24, 2018 and May 14, 2019;
- Untreated effluent (Point A) taken on May 29, 2018 and May 14, 2019;
- Treated effluent (Point C) taken on May 29, 2018, May 14, 2019 and July 17, 2019;

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it is assumed that the affinity for the lipids of an organism is insufficient to exceed the bio-accumulation criterion.



- Caribou Harbour water taken on May 24 and May 25, 2019 averaging 6 samples to account for tide changes:
 - Flooding tide, Proposed Outfall Location, at the surface (0.5 m depth)
 - Flooding tide, Proposed Outfall Location, at the bottom (20 m depth);
 - Ebbing tide, Proposed Outfall Location, at the surface (0.5 m depth);
 - ► Ebbing tide, Proposed Outfall Location, at the bottom (21 m depth); and
 - ▶ Ebbing tide, in the Harbour, at the bottom (3 m depth).
 - Ebbing tide, in the Harbour, at the surface (0.5 m)

Production data, expressed in air dried metric tonnes (ADt), for the days when the effluent was sampled are as follows:

- · Production rate:
 - May 29th, 2018: 853 ADt (948 ADUt²)
 - May 14th, 2019: 673 ADt (748 ADUt)
 - ▶ July 17th, 2019: 754 ADt (838 ADUt)
- Effluent Flow at Point C:
 - May 29th, 2018: 67,496 m³/day
 - May 14th, 2019: 62,800 m³/day
 - ▶ July 17th, 2019: 75,992 m³/day

A physical and chemical analysis was performed for a series of compounds typically found in pulp and paper mill effluents (as described earlier), which included the following categories:

- · Inorganics and other parameters;
- Metals;
- · Phenols;
- Fatty and resin acids;
- Polyaromatic hydrocarbons, volatile organics and PCB's;
- Petroleum hydrocarbons; and
- · Dioxins and furans

The results of these analyses are presented in the sections that follow.

² Air dried unbleached metric tonnes, measured before the bleach plant.



1.3.1 <u>Inorganics and Other Parameters</u>

Table 1-2, below, shows the comparative results of the chemical analysis for various inorganic compounds, as well as compounds of interest from a regulatory and eutrophication context. The effluent sample tested includes analysis of both the liquid and solids portion of the samples. The Point A and Point C numbers highlighted below represent an average of test data from a full year of testing (2018). The highlighted parameters are collected and tested either daily or weekly by an accredited third party laboratory.

Table 1-2 - Analytical Results, Inorganics and Other Parameters

Inorganics	Units	Raw water	Point A	Point C	Caribou Harbour
Regulated parameters under the Pu	lp and Pa	per Effluent Re	gulations o	r addressed	d in the RWS
Carbonaceous BOD	mg/l	ND	209	26	ND
Total Suspended Solids (TSS)	mg/l	4.4	365	29	2.5
Adsorbable Organic Halogen (AOX)	mg/l	0.05	1.2	1.02	NA
Colour	TCU	21	735	983	4.4
Total Nitrogen (N)	mg/l	0.489	3.2	4.7	0.15
рН	рН	7.23	7.7	7.6	7.7
Total Phosphorus (P)	mg/l	ND	1.4	1.5	ND
Total Chemical Oxygen Demand (COD)	mg/l	4.5	723	628	NA



The following results are based on the averages of the samples collected as described in section 1.3 above. Again all analyses were performed on the total sample that includes both the liquid and solid portions.

Inorganics	Units	Raw water	Point A	Point C	Caribou Harbour					
Parameters where Point C results are greater than Caribou Harbour										
Total Alkalinity (Total as CaCO₃)	mg/l	18.5	190	343	91					
Turbidity	NTU	15	55	28	1					
Volatile Suspended Solids	mg/l	ND	90	37	0.88					
Total Kjeldahl Nitrogen (TKN)	mg/l	0.13	2.8	4.6	0.20					
Nitrogen (Ammonia Nitrogen)	mg/l	ND	0.9	1.54	ND					
Dissolved Organic Carbon (C)	mg/l	4.4	260	15	1.9					
Total Organic Carbon (C)	mg/l	4.1	230	170	2.3					
Orthophosphate (P)	mg/l	0.007	0.62	0.39	ND					
Reactive Silica (SiO ₂)	mg/l	2.7	8.3	9.0	ND					
Dissolved Chlorite (CLO ₂ -)	mg/l	ND	ND	1.1	ND					
Sulphide	mg/l	ND	0.33	1.3	ND					
Parameters where Point C results are	lower than C	aribou Harbou	r							
Conductivity	μ S/cm	125	1,350	1,570	42,500					
Salinity	PSU	ND	ND	ND	28					
Dissolved Chloride (Cl ⁻)	mg/l	23	140	170	16,000					
Dissolved Sulphate (SO ₄)	mg/l	7.7	280	270	1,930					
Parameters where Point C results are	the same as	Caribou Harbo	our							
Nitrate + Nitrite (N)	mg/l	0.27	0.14	ND	ND					
Nitrite (N)	mg/l	ND	0.035	ND	ND					
Dissolved Chlorate (ClO ₃ -)	mg/l	ND	103	ND	ND					
Total Cyanide (CN)	mg/l	ND	ND	ND	ND					



1.3.1.1 Regulated / RWS Parameters

The impact of regulated parameters, as well as those that have served as input to the Receiving Water Study were discussed in the original EARD. It is to be noted that there is, at this time, no valid analytical method for the measurement of adsorbable organic halogens (AOX) in sea water. As noted previously, AOX is not in itself a parameter that has any direct relevance to the environment. It has been created by the industry to represent the "catch all" or sum of all chlorinated compounds. In addition, the high COD number observed in sea water (3,808 mg/l, as tested) is believed to be the result of the high level of chlorides present in sea water. The chlorides can be oxidized during standard testing and result in heavy interference with the actual test results. Both test results were dismissed because of this and shown as "NA - not available" in Table 1-2.

1.3.1.2 Parameters where Point A or Point C results are greater than Caribou Harbour's

The majority of the parameters in this "category" fall under categories that are addressed in the receiving water study (nutrients, colour and suspended solids). Three of the listed compounds are not in this category: dissolved chlorites, dissolved chlorate and reactive silica.

The end products of chlorine dioxide (CIO₂) reactions are chloride (CI-), chlorite (CIO-) and chlorate (CIO₃-) all of which were tested for in the effluent samples. Chloride is addressed in a subsequent section. Chlorite was measured in the Point C effluent, but was non-detect at Point A. Chlorite, a water-soluble ion, can combine with metal ions to form solid salts (e.g. sodium chlorite). Chlorine dioxide and sodium chlorite are effective sanitizing agents that are preferred over chlorine (Cl₂) as they do not react with organic matters in food or water to form harmful organohalogen by-products. Chlorine dioxide is approved as a disinfectant for potable water (US EPA (2000) 40 CFR, Part 141.64) and the US FDA has approved its use in poultry processing (US FDA (1995) 60 CFR, Part 173) and the sanitization of fruits and vegetables (US FDA (1998) 21 CFR, Part 173.300).

Chlorite, as well as chlorate ions have been shown to undergo reduction by bacteria under anaerobic conditions to from chloride ions that are naturally present in the ocean. Anaerobic degradation is an important process in anoxic groundwater, sediments, and some soils. It has been known for over 40 years that chlorate ions can be reduced by mixed cultures under anaerobic conditions. Chlorate-respiring bacteria are widely distributed in the environment and utilize electron acceptors (e.g., chlorate ions) in lieu of oxygen to generate energy and produce carbon-based building blocks. The reduction of chlorate ions occurs in two steps; chlorate reduction with chlorate reductase enzyme followed by chlorite disproportionation catalyzed by chlorite dismutase (a non-respiratory enzyme). Oxygen and chloride are formed as the end products.



Chlorate was measured in the Point A effluent, but was non-detect at Point C after biological treatment. Through anaerobic degradation, as noted above, chlorate is effectively converted to chlorite or chloride in the anoxic zones which precede aerobic effluent treatments. It is therefore expected, and in line with the testing results, that chlorate measured at Point A was reduced to chloride through the treatment process.

The presence of reactive silica is a result of the use of organic material (wood) in the pulping process. Silica, or silicon dioxide (SiO₂), or silicate minerals are the forms in which the earth's silicon is most likely to be encountered: these are combinations of the elements silicon and oxygen, in different balances. Ninety percent of the earth's crust is comprised of these compounds. Commonly-known examples are quartz, agate, onyx, jasper, vermiculite, talc and feldspar.

Silica is naturally present in all plants: It is what plant biologists call a "non-essential beneficial plant nutrient," meaning that you don't need to apply it to your crops like nitrogen, phosphorus, and potassium (NPK fertilizers), but doing so can provide many benefits for both monocots (grasses, onions) and dicots (leafy greens, legumes). Plant decomposition would explain the presence of reactive silica in the raw water, while the higher levels of silica in the treated and untreated effluent can be explained by the higher concentration of plant material (wood) in the mill's process.

In the chemical recovery process present in kraft pulping, silica is considered a "non-process element", and is usually purged to avoid excessive fouling and plugging in the evaporators and the recovery boiler. This is typically done by the purging of fly ash from the recovery boiler's electrostatic precipitator and bottom ash from the bark boiler. Since the bark boiler uses a wet ash handling system, some of the silica present in the ash will be present in the ash pond leachate and, ultimately, in the untreated effluent.

The increase of colour from Point A to Point C occurs at the BHETF across the primary sedimentation basin in the ASB process. The colour increases as a result of anaerobic activity of the primary sediments that build up in the sedimentation basin. This colour increase will not occur in the treated effluent once the new ETF is in operation, as no solids are left to accumulate in the AST system for any extended period of time.

1.3.1.3 Parameters where Point C results are lower than Caribou Harbour

The parameters tested at levels below Caribou Harbour levels are related to differences between sea water and streams that would be considered "fresh" water and, as such, are addressed by the results of the receiving water study.



The increase in chloride content from Point A to Point C is as expected as a result of the reduction of chlorine dioxide to dissolved chloride ions (Cl⁻). The natural concentration of chloride ion present in Caribou Harbour is 100 times greater than the chloride ion concentration of Point C effluent.

1.3.2 **Metals**

Table 1-3 below, shows the comparative results of the analysis of raw water, untreated effluent from Point A, treated effluent from Point C and water from Caribou Harbour for a full suite of metals.

Table 1-3: Analytical Results, Metals

Metals	Units	Raw water	Point A	Point C ³	Caribou Harbour					
Metals measured in higher concentrations at Point C than at Caribou Harbour										
Total Arsenic (As)	μg/l	ND	0.6	1.1	ND					
Total Cadmium (Cd)	μg/l	ND	1.40	1.03	ND*					
Total Chromium (Cr)	μg/l	0.75	3.4	2.3	ND					
Total Lead (Pb)	μg/l	ND	4.3	2.4	ND					
Total Manganese (Mn)	μg/l	38	2,600	2,500	ND					
Total Nickel (Ni)	μg/l	ND	3.3	3.2	ND					
Total Aluminum (AI)	μg/l	405	2,150	1,673	ND					
Total Barium (Ba)	μg/l	32	415	367	13					
Total Cobalt (Co)	μg/l	ND	0.78	0.51	ND					
Total Copper (Cu)	μg/l	3.8	11.5	5.8	ND					
Total Iron (Fe)	μg/l	405	1,130	465	ND					
Total Mercury (Hg)	μg/l	ND	ND	0.022	ND					
Total Phosphorus (P)	μg/l	ND	1,165	1,425	ND					
Total Silver (Ag)	μg/l	ND	0.41	0.25	ND					
Total Titanium (Ti)	μg/l	7.3	44	12	ND					
Total Vanadium (V)	μg/l	ND	3.2	3.6	ND					
Total Zinc (Zn)	μg/l	ND	255	110	ND					
* O = -	-44I ! O			-41	h al a tha 0.4/l					

^{*} Cadmium of 0.12 μg/l was detected in one Caribou Harbour sample, all others were below the 0.1 μg/l detection limit.

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³ The metals analysis data for Point C, in addition to the samples collected for this report, were also taken from test data collected during annual testing done since 2015 and averaged.



Metals	Units	Raw water	Point A	Point C	Caribou Harbour					
Metals measured in lower concentrations at Point C than at Caribou Harbour										
Total Boron (B)	μg/l	ND	58	70	3,630					
Total Calcium (Ca)	μg/l	6,300	38,000	36,000	333,000					
Total Magnesium (Mg)	μg/l	1,800	3,700	4,600	1,070,000					
Total Potassium (K)	μg/l	760	11,500	18,000	320,000					
Total Sodium (Na)	μg/l	15,500	225,000	340,000	8,700,000					
Total Strontium (Sr)	μg/l	30	155	145	6,200					
Total Uranium (U)	μg/l	ND	3.6	0.49	2.8					
Metals detected at Point A but not detected at Point C or Caribou Harbour										
Total Thallium (TI)	μg/l	ND	0.23	ND	ND					

The following metals were not detected based on their individual detection limits (which are shown in italics) in any of the samples tested:

- Antimony (Sb) (1 μg/l);
- Beryllium (Be) (1 μg/l);
- Bismuth (Bi) (2 μg/l);
- Selenium (Se) (1 μg/l);
- Tin (Sn) (2 μg/l); and
- Molybdenum (Mo) (2 μg/l)



1.3.2.1 Metals measured in higher concentrations at Point C than at Caribou Harbour

The first set of metals that need to be analyzed are those shown in italics in Table 1-3, which are arsenic, cadmium, chromium, lead, manganese and nickel. These metals are naturally present in wood and have been identified by the US EPA as being the main components in particulate matter generated by biomass boilers⁴. It is therefore natural to observe them in pulp and paper mill effluents. Two other metals shown in italics in the non-detect list above, beryllium and selenium, are also part of this group but have not been detected in any of the samples tested. Some of these metals are also present, in lesser quantities, in the raw water used by the mill and are naturally occurring in the environment.

Other metals, such as cobalt, titanium, copper, zinc and aluminum are also likely coming from the pulping process as non-process elements in the wood itself. As described earlier, these non-process elements are regularly purged from the system, either via the effluent or solid waste, in order to protect the integrity of the equipment and the process. Except for aluminum, which is used as alum (aluminum sulphate) in the treatment of raw water from Middle River, none of these metals are components of additives used in the pulping process.

It is important to note that the effluent from municipal treatment systems also contain some of these heavy metals. The most commonly encountered heavy metals in municipal wastewater include cadmium, mercury, lead and arsenic.

Table 1-3 shows that a low concentration of mercury is detected in the final Point C effluent, but is non-detect in any of the samples of Point A untreated effluent. Elements such as mercury cannot be created through the secondary treatment process if they were not present in the incoming effluent. This means that its release to the environment is likely caused by an external factor, such as, potentially the treatment of the Boat Harbour Landfill leachate in the current ASB. Implementation of the new ETF should eliminate the presence of mercury from the final effluent. Confirmation, through future testing, will be needed to confirm that mercury is non-detect in future effluent.

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https://www.federalregister.gov/documents/2015/01/21/2014-29569/national-emission-standards-for-hazardous-air-pollutants-for-major-sources-industrial-commercial-and



1.3.2.2 Metals measured in lower concentrations at Point C than at Caribou Harbour

The parameters tested at levels below Caribou Harbour levels are related to differences between sea water and streams that would be considered "fresh" water and, as such, are addressed by the results of the receiving water study.

1.3.3 PhenoIs

Table 1-4, below, shows the comparative results of the analysis of raw water, untreated effluent from Point A, treated effluent from Point C and water from Caribou Harbour for a full suite of phenols. All phenol results are based on 2019 data sets only.

Table 1-4: Analytical Results, Phenols

Phenois	Units	Raw water	Point A	Point C	Caribou Harbour				
Total P&P Phenols	µ g/l	ND	1400	6.13	ND ⁵				
Phenols measured at Point	C but not in Carib	ou Harbour	•						
2-Chlrophenol	µ g/l	ND	65	0.73	ND				
o-Cresol	µ g/l	ND	ND	0.78	ND				
p-Cresol	µ g/l	ND	ND	0.96	ND				
Guaiacol	µ g/l	ND	1300	1.2	ND				
Catechol	µ g/I	ND	8.4	2.8	ND				
6-Chlorovanillin	µ g/I	ND	4.8	0.63	ND				
2,4 Dimethylphenol	µ g/I	ND	ND	0.98	ND				
Phenols measured at Point A but not at Point C nor in Caribou Harbour									
m-Cresol	µ g/I	ND	3.1	ND	ND				
Eugebol	µ g/l	ND	12	ND	ND				
Isoeugenol	µ g/I	ND	2.6	ND	ND				

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⁵ The analysis for the Phenols in Pulp and Paper Mill effluents in the raw water and Caribou water samples indicated non-detect (below the reportable detection limit of 5 and 10 μg/l respectively)



Phenois	Units	Raw water	Point A	Point C	Caribou Harbour
Phenols not detected					
3-Chlorophenol	µ g/l	ND	ND	ND	ND
4-Chlorophenol	µ g/l	ND	ND	ND	ND
5,6-Dichlorovanillin	µ g/l	ND	ND	ND	ND
3,4,5 Trichlorosyringol	µ g/l	ND	ND	ND	ND
2,6 Dichlorophenol	µ g/l	ND	ND	ND	ND
3,5 Dichlorophenol	µ g/l	ND	ND	ND	ND
2,3 Dichlorophenol	µ g/l	ND	ND	ND	ND
3,4 Dichlorophenol	µ g/l	ND	ND	ND	ND
2,4 +2.5- Dichlorophenol	µ g/l	ND	ND	ND	ND
2-Nitrophenol	µ g/l	ND	ND	ND	ND
4-Nitrophenol	µ g/l	ND	ND	ND	ND
2,4,6-Trichlorophenol	µ g/l	ND	ND	ND	ND
2,3,5 Trichlorophenol	µ g/l	ND	ND	ND	ND
2,3,6 Trichlorophenol	µ g/l	ND	ND	ND	ND
2,4,5 Trichlorophenol	µ g/l	ND	ND	ND	ND
2,3,4 Trichlorophenol	µ g/l	ND	ND	ND	ND
3,4,5 Trichlorophenol	µ g/l	ND	ND	ND	ND
4-Chloroguaiacol	µ g/l	ND	ND	ND	ND
4,5 Dichloroguaiacol	µ g/l	ND	ND	ND	ND
4,6 Dichloroguaiacol	µ g/l	ND	ND	ND	ND
2,3,5,6 Tetrachlorophenol	µ g/l	ND	ND	ND	ND
2,3,4,6 Tetrachlorophenol	µ g/l	ND	ND	ND	ND
2,3,4,5 Tetrachlorophenol	µ g/l	ND	ND	ND	ND
4 Chlorocatechol	µ g/l	ND	ND	ND	ND
3,5 Dichlorocatechol	µ g/l	ND	ND	ND	ND
4,5 Dichlorocatechol	µ g/l	ND	ND	ND	ND



Phenois	Units	Raw water	Point A	Point C	Caribou Harbour
3,4,5 Trichloroguaiacol	µ g/l	ND	ND	ND	ND
4,5,6 Trichloroguaiacol	µ g/l	ND	ND	ND	ND
Pentachlorophenol	µ g/l	ND	ND	ND	ND
23,4,5 Trichlorocatechol	µ g/l	ND	ND	ND	ND
Tetrachlorocatechol	µ g/l	ND	ND	ND	ND
Tetrachloroguaiacol	µ g/l	ND	ND	ND	ND
4,5 Dichloroveratrol	µ g/l	ND	ND	ND	ND
3,4,5 Trichloroveratrol	µ g/l	ND	ND	ND	ND
3,4,5,6 Tetrachloroveratrol	µ g/l	ND	ND	ND	ND

Phenols are the basic structural unit in a wide variety of synthetic organic compounds. Phenol and its higher homology are aromatic molecules containing hydroxyl group attached to the benzene ring structure. The origin of phenol in the environment is both industrial and natural. Phenol pollution has been associated with pulp and paper mills, coal mines, refineries, wood preservation, plants & various chemicals industries as well as their wastewaters. Due to their high inhibitory and antibacterial activity, high levels of phenols may create problems in the operation of biological treatment plants. They also add odour to drinking and food processing water and have mutagenic and carcinogenic effects. Phenol is also a priority pollutant and is included in the EPA list (1979).

There are typically two types of phenols encountered in pulp and paper mill effluents: wood-based phenols, which would originate from the unbleached side of the mill, and chlorinated phenols, which would be present in bleach plant effluents. Both are considered to be of intermediate molecular weight (from 100 to 1000 Daltons.), are moderately to highly soluble in water and are readily biodegradable, as can be seen when comparing the test results between Points A and C.

These compounds, for the most part, have low log Kow values (see Section 1.2.4) and are not likely to biomagnify or bioaccummulate. Their environmental half-life, when known, is measured in days to weeks, depending on the level of chlorination of the molecule.



When considering the products of ECF bleaching of pulp, it is important to recognize that many of the chlorinated substances produced in this process are also formed in nature. Several chlorophenolic isomers with biogenic origin have been isolated. Studies in Sweden have demonstrated that 2,4,6-trichlorophenol and its methylated analogue 2,4,6-trichloroanisole are ubiquitous in humus-rich waters and are formed by the action of microorganisms. Some degradation products from natural chlorinated lignin are similar to those occurring in bleached kraft mill effluents.

The US EPA, in its effluent standards for new facilities, has set specific limits on certain chlorophenols, mainly chloroform, trichlorosyringol, 3,4,5 &6-trichlorocatechols, 3,4,5&6-trichloroguaiacols, 3,4,5&6 trichlorophenols, tetrachlorocatechol, tetrachloroguaiacol, 2,3,4,6-tetrachlorophenol and pentachlorophenol, all measured at the outlet of the bleach plant. None of these compounds have been detected in Northern Pulp's effluent, except for chloroform, which is shown in Table 1-8 to be fully biodegraded in the BHETF.

The Quebec government, in its Regulation respecting pulp and paper mills⁶, regulates the level of phenolic compounds that can be released to the environment from landfill leachates to 50 µg/l, in the premise that this level of phenolic compound discharge can readily be managed by natural means. This regulated level is far above the total level present in the treated effluent at Point C.

Catechol and guaiacol, as well as certain cresol and chorovanillin isomers, have been recognized in the literature as potentially having certain endocrine disrupting effects. Because of this, the following compounds should be further considered as compounds of potential concern (COPC) in treated effluent in future Human Health Risk Assessments:

- o-cresol (CAS #95-48-7);
- p-cresol (CAS #106-44-5);
- m-cresol(CAS #108-39-4);
- Guaiacol (CAS# 90-05-1);
- Catechol: (CAS# 120-80-9);
- 6-chlorovanillin (CAS #18268-76-3); and
- 5,6,dichlorovanillin (CAS #18268-69-4)

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⁶ Environment Quality Act (chapter Q-2, ss. 31, 46, 53.30, 70, 115.27, 115.34 and 124.1). http://legisquebec.gouv.qc.ca/en/ShowDoc/cr/Q-2,%20r.%2027#sc-nb:11



1.3.4 Fatty Acids and Resin Acids

Table 1-5 and Table 1-6, below, show the comparative results of the analysis of raw water, untreated effluent from Point A, treated effluent from Point C and water from Caribou Harbour for a comprehensive suite of fatty and resin acids. All fatty and resin acid results are based on 2019 data sets only.

Table 1-5: Analytical Results, Fatty Acids

Fatty Acids	Units	Raw water	Point A	Point C	Caribou Harbour
Total Fatty Acids	mg/l	ND	ND	0.335	ND
Fatty acids measured at Point C	but not in C	aribou Harbour	•		
9,10-Dichlorostearic acid	mg/l	ND	ND	0.008	ND
Docosanoic acid (C22)	mg/l	ND	ND	0.180	ND
Eicosanoic acid (C20)	mg/l	ND	ND	0.054	ND
Hexadecanoic acid (C16)	mg/l	ND	0.36	0.027	ND
Linoleic acid (C18:2)	mg/l	ND	2.1	0.013	ND
Octadecanoic acid (C18)	mg/l	ND	ND	0.029	ND
Oleic acid (C18:1)	mg/l	ND	0.65	0.030	ND
Fatty acids not detected					
Decanoic Acid (C10)	mg/l	ND	ND	ND	ND
Dodecanoic acid (C12)	mg/l	ND	ND	ND	ND
Linolenic acid (C18:3)	mg/l	ND	ND	ND	ND
Tetradecanoic acid (C14)	mg/l	ND	ND	ND	ND
Undecanoic acid (C11)	mg/l	ND	ND	ND	ND



Table 1-6: Analytical Results, Resin Acids

Resin Acids	Units	Raw water	Point A	Point C	Caribou Harbour
Total Resin Acids	mg/l	ND	ND	0.57	ND
Resin acids measured at Point C b	ut not in Ca	aribou Harbour			
Abietic acid	mg/l	ND	0.32	0.14	ND
Dehydroabietic acid	mg/l	ND	0.32	0.12	ND
Isopimaric acid	mg/l	ND	ND	0.19	ND
Neoabietic acid	mg/l	ND	ND	0.014	ND
Pimaric acid	mg/l	ND	ND	0.08	ND
Sandaracopimaric acid	mg/l	ND	ND	0.035	ND
Resin acids not detected					
12,14-Dichlorodehydroabietic acid	mg/l	ND	ND	ND	ND
12-Chlorodehydroabietic acid	mg/l	ND	ND	ND	ND
14-Chlorodehydroabietic acid	mg/l	ND	ND	ND	ND
Palustric acid	mg/l	ND	ND	ND	ND

Recent reviews of biochemical responses of fish in mesocosms, found that many effluents actually inhibited MFO activity (Mixed Function Oxidase, a measurement of liver enzymes), as well as activity of conjugating enzymes, at concentrations as low 0.25 mg/l, likely due to the presence of fatty and resin acids and chlorophenols. The inhibition of enzyme responses could raise the possibility that comparisons of responses to technology may be confounded by "false negatives" due to toxicity of effluent components. Despite a large number of studies involving effluents from mills using many different bleaching sequences, there is no strong evidence that bleaching was the source of toxic components in final effluent.

Resin and fatty acids are considered intermediate molecular weight compounds with extreme water insolubility properties, which means that they will preferentially be found in suspended solids and/or in sediments. Some of the resin and fatty acids present in effluent at Point A are reduced in concentration at Point C indicating removal through the BHETF treatment system. There are a significant number of resin and fatty acids that are not present in the incoming effluent at Point A, but are present in the final effluent at Point C. Resin and fatty acids are compounds found in wood and would be expected in untreated effluent, albeit in quantities close to detection limits.



1.3.5 Polyaromatic Hydrocarbons (PAHs) and Volatile Organics (VOCs)

Table 1-7 and Table 1-8, below, show the comparative results of the analysis of raw water, untreated effluent from Point A, treated effluent from Point C and water from Caribou Harbour for a comprehensive suite of polyaromatic hydrocarbons and volatile organics.

Table 1-7: Analytical Results, Polyaromatic Hydrocarbons

Polyaromatic Hydrocarbons	Units	Raw water	Point A	Point C	Caribou Harbour					
Polyaromatic hydrocarbons measured at Point C but not in Caribou Harbour										
Fluoranthene	μg/l	ND	ND	0.04	ND					
Phenanthrene	μg/l	ND	0.039	0.044	ND					
Polyaromatic hydrocarbons no	t detected									
1-Methylnaphthalene	μg/l	ND	ND	ND	ND					
2-Methylnaphthalene	μg/l	ND	ND	ND	ND					
Acenaphthene	μg/l	ND	ND	ND	ND					
Acenaphthylene	μg/l	ND	ND	ND	ND					
Anthracene	μg/l	ND	ND	ND	ND					
Benzo(a)anthracene	μg/l	ND	ND	ND	ND					
Benzo(a)pyrene	μg/l	ND	ND	ND	ND					
Benzo(b)fluoranthene	μg/l	ND	ND	ND	ND					
Benzo(b/j)fluoranthene	μg/l	ND	ND	ND	ND					
Benzo(g,h,i)perylene	μg/l	ND	ND	ND	ND					
Benzo(j)fluoranthene	μg/l	ND	ND	ND	ND					
Benzo(k)fluoranthene	μg/l	ND	ND	ND	ND					
Chrysene	μg/l	ND	ND	ND	ND					
Dibenz(a,h)anthracene	μg/l	ND	ND	ND	ND					



Polyaromatic Hydrocarbons	Units	Raw water	Point A	Point C	Caribou Harbour
Fluorene	μg/l	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	μg/l	ND	ND	ND	ND
Naphthalene	μg/l	ND	ND	ND	ND
Perylene	μg/l	ND	ND	ND	ND
Pyrene	μg/l	ND	ND	ND	ND

Table 1-8: Analytical Results, Volatile Organics

Volatile Organics	Units	Raw water	Point A	Point C	Caribou Harbour				
Volatile organics measured at Point A but not at Point C nor in Caribou Harbour									
Chloroform ⁷	μg/l	2.1	8.7	ND	ND				
Volatile organics not detected	d								
1,1-Dichloroethane	μg/l	ND	ND	ND	ND				
1,1-Dichloroethylene	μg/l	ND	ND	ND	ND				
1,1,1-Trichloroethane	μg/l	ND	ND	ND	ND				
1,1,2-Trichloroethane	μg/l	ND	ND	ND	ND				
1,1,2,2-Tetrachloroethane	μg/l	ND	ND	ND	ND				
Ethylene Dibromide	μg/l	ND	ND	ND	ND				
1,2-Dichlorobenzene	μg/l	ND	ND	ND	ND				
1,2-Dichloroethane	μg/l	ND	ND	ND	ND				
cis-1,2-Dichloroethylene	μg/l	ND	ND	ND	ND				
trans-1,2-Dichloroethylene	μg/l	ND	ND	ND	ND				
1,2-Dichloropropane	μg/l	ND	ND	ND	ND				
1,3-Dichlorobenzene	μg/l	ND	ND	ND	ND				
cis-1,3-Dichloropropene	μg/l	ND	ND	ND	ND				
trans-1,3-Dichloropropene	μg/l	ND	ND	ND	ND				
1,4-Dichlorobenzene	μg/l	ND	ND	ND	ND				
Benzene	μg/l	ND	ND	ND	ND				
Bromodichloromethane	μg/l	ND	ND	ND	ND				

⁷ Production data for days when samples were taken for chloroform testing are shown in Section 1.2.1.



Volatile Organics	Units	Raw water	Point A	Point C	Caribou Harbour
Bromoform	μg/l	ND	ND	ND	ND
Bromomethane	μg/l	ND	ND	ND	ND
Carbon Tetrachloride	μg/l	ND	ND	ND	ND
Chlorobenzene	μg/l	ND	ND	ND	ND
Chloroethane	μg/l	ND	ND	ND	ND
Chloromethane	μg/l	ND	ND	ND	ND
Dibromochloromethane	μg/l	ND	ND	ND	ND
Methylene Chloride (Dichloromethane)	μg/l	ND	ND	ND	ND
Ethylbenzene	μg/l	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	μg/l	ND	ND	ND	ND
Styrene	μg/l	ND	ND	ND	ND
Tetrachloroethylene	μg/l	ND	ND	ND	ND
Toluene	μg/l	ND	ND	ND	ND
Trichloroethylene	μg/l	ND	ND	ND	ND
Trichlorofluoromethane (FREON 11)	μg/l	ND	ND	ND	ND
Vinyl Chloride	μg/l	ND	ND	ND	ND
o-Xylene	μg/l	ND	ND	ND	ND
p+m-Xylene	μg/l	ND	ND	ND	ND
Total Xylenes	μg/l	ND	ND	ND	ND

1.3.5.1 Polyaromatic Hydrocarbons

Polyaromatic hydrocarbons (PAH) are composed of multiple aromatic rings (organic rings in which the electrons are delocalized). The simplest such chemicals are naphthalene, having two aromatic rings, and the three-ring compounds anthracene and phenanthrene. PAHs are uncharged, non-polar molecules found in coal and in tar deposits. They are also produced by the thermal decomposition of organic matter (for example, products of combustion in engines and incinerators or forest fires).

The greater majority of all polyaromatic hydrocarbons tested were not detected in any of the samples, as presented in Table 1-7. Two compounds, however, were detected in the effluent: fluoranthene and phenanthrene.



Fluoranthene, which was detected only in the treated effluent at Point C, is typically found in many combustion products, along with other PAHs. Its presence is usually an indicator of less efficient or lower-temperature combustion. Its detection only at Point C, not at Point A, would indicate that release to the environment is likely caused by an external factor, such as the treatment of Boat Harbour Landfill leachate in the current ASB. Implementation of the new ETF should eliminate the presence of this compound from the final effluent. Confirmation, through future testing, will be needed to confirm that it is non-detect in future effluent.

Phenanthrene is a polycyclic aromatic hydrocarbon composed of three fused benzene rings which takes its name from the two terms 'phenyl' and 'anthracene.' It has a role as an environmental contaminant and is naturally present as a metabolic by-product in certain rodents. It is an ortho-fused polycyclic arene, an ortho-fused tricyclic hydrocarbon and is also an indicator of less efficient or lower-temperature combustion and is typically one of the components of cigarette smoke. Its detection at Point C and Point A are in a similar range.

1.3.5.2 Volatile Organics

The health impact of volatile organics (VOCs) is felt mainly by their release to atmosphere, as they are extremely biodegradable. Short-term exposure to high levels of some VOCs have been known to cause breathing problems, headaches, irritation of the eyes, nose and throat. Some people may be more sensitive to VOC's, such as people with asthma.

Most people are not affected by short-term exposure to the low levels of VOCs typically found in homes and automobiles. For long-term exposure to low levels of VOCs, research is ongoing to better understand any health effects from these exposures. Long-term exposure to high levels of some VOCs, however, may result in health effects. For example, in industrial workers, exposure to high levels of some VOCs such as benzene and formaldehyde, has been linked with increased cancer rates.



The only volatile organic compound detected in the various samples tested has been chloroform, which is an extremely volatile but, as shown in Table 1-8 is a readily biodegradable compound generated during the bleaching of pulp with hypochlorite, chlorine, or chlorine dioxide. Hypochlorite bleaching (common in some mechanical pulping applications) results in the greatest amount of chloroform generation while chlorine dioxide bleaching, the only chlorine-based chemical used for bleaching at Northern Pulp, results in the least amount of chloroform generation. As chloroform is generated, it partitions to air and to bleach plant effluent (though, some of the chloroform remains with the pulp). Any chloroform found in bleach plant effluent that is not emitted to the air prior to reaching the wastewater treatment plant is volatilized and degraded during secondary treatment. As would be expected, chloroform is not present in the Point C final effluent.

The major effect from acute (short-term) inhalation exposure to chloroform is central nervous system depression. Chronic (long-term) exposure to chloroform by inhalation in humans has resulted in effects on the liver, including hepatitis and jaundice, and central nervous system effects, such as depression and irritability. Chloroform has been shown to be carcinogenic in animals after oral exposure, resulting in an increase in kidney and liver tumors. The US EPA has classified chloroform as a Group B2, probable human carcinogen.

Because of this air/water partitioning phenomenon, the US EPA decided to regulate chloroform in pulp and paper mill effluent at the discharge of the bleach plant⁸. For existing kraft mills, the daily chloroform discharge standard is 6.92 kg/ADt while the monthly standard is 4.14 kg/ADt, all measured on unbleached pulp production. Based on Northern Pulp effluent testing, combined with the effluent flows and production rates at the times of testing, the chloroform content at Northern Pulp was 0.00071 kg/ADt. US mills can be exempt from chloroform testing if their bleach plant operates under specified conditions and testing demonstrates that the results are consistently below the applicable limits. NPNS results are well below the US EPA limits.

Other volatile and chlorinated organics are also regulated by the US EPA along with chloroform. The other regulated compounds, with their respective limits, are shown in Table 1-9, below.

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^{8 40} CFR Part 430



Table 1-9 Regulated Limits of Various Chlorinated Organics by US EPA

Compound	Regulated Limit (Monthly testing)
2,3,7,8-TCDD	Non-detect (10 pg/l detection limit)
2,3,7,8-TCDF	31.9 pg/l
Trichlorosyringol	Non-detect (2.5 µg/l detection limit)
3,4,5-Trichlorocatechol	Non-detect (5.0 μg/l detection limit)
3,4,6-Trichlorocatechol	Non-detect (5.0 μg/l detection limit)
3,4,5-Trichloroguaiacol	Non-detect (2.5 µg/l detection limit)
3,4,6-Trichloroguaiacol	Non-detect (2.5 µg/l detection limit)
4,5,6-Trichloroguaiacol	Non-detect (2.5 µg/l detection limit)
2,4,5-Trichlorophenol	Non-detect (2.5 μg/l detection limit)
2,4,6-Trichlorophenol	Non-detect (2.5 μg/l detection limit)
Tetrachlorocatechol	Non-detect (5.0 μg/l detection limit)
Tetrachloroguaiacol	Non-detect (5.0 μg/l detection limit)
2,3,4,6-Tetrachlorophenol	Non-detect (2.5 μg/l detection limit)
Pentachlorophenol	Non-detect (5.0 μg/l detection limit)

All parameters listed in Table 1-9 have yielded non-detect results for Northern Pulp's effluent.

1.3.6 <u>Petroleum Hydrocarbons and Polychlorinated Biphenyls</u>

1.3.6.1 Petroleum Hydrocarbons

Table 1-10, below, shows the comparative results of the analysis of raw water, untreated effluent from Point A, treated effluent from Point C and water from Caribou Harbour for a comprehensive suite of petroleum hydrocarbons (PAHs).



Table 1-10: Analytical Results, Petroleum Hydrocarbons

Petroleum Hydrocarbons	Units	Raw water	w water Point A		Caribou Harbour			
Petroleum hydrocarbons measured at Point C but not in Caribou Harbour								
>C10-C16 Hydrocarbons	mg/l	ND	0.26	0.09	ND			
>C16-C21 Hydrocarbons	mg/l	ND	0.62	0.12	ND			
>C21- <c32 hydrocarbons<="" td=""><td>mg/l</td><td>ND</td><td>1.5</td><td>0.24</td><td>ND</td></c32>	mg/l	ND	1.5	0.24	ND			
Modified TPH (Tier1)	mg/l	ND	ND 2.38 0.30		ND			
Petroleum hydrocarbons meas	ured at Point	A but not at Poi	nt C nor in Cari	bou Harbour				
C6 - C10 (less BTEX)	mg/l	ND	0.12	ND	ND			
Polyaromatic hydrocarbons not detected								
Benzene	mg/l	ND	ID ND		ND			
Toluene	mg/l	ND	ND ND ND		ND			
Ethylbenzene	mg/l	ND	ND	ND	ND			
Total Xylenes	mg/l	ND	ND	ND	ND			

Testing for petroleum hydrocarbons in pulp and paper mill effluents can be misleading at times, as the presence of wood extractives in the effluent sample can cause a large bias in the results, making it appear that there are petroleum hydrocarbons present in the samples when there are not. Several precautions and laboratory procedures must be undertaken to help alleviate the bias and ensure test results obtained are a more accurate representation of the levels of petroleum hydrocarbons present in the effluent.

A survey of bioaccumulation studies carried out by ECCC⁹ has shown that bio-concentration of petroleum hydrocarbons could occur after short exposure times but that the majority of organisms also exhibit rapid depuration once the contaminant is removed. None of the studies carried out by ECCC showed any significant measured or modelled bioaccumulation of petroleum hydrocarbons in fish and clams. The installation of the spill basin, along with detailed diversion and isolation procedures in case of a spill at the mill are mitigation measures to reduce the environmental risk from petroleum hydrocarbon spills.

⁹ http://www.ec.gc.ca/ese-ees/default.asp?lang=En&n=7BF1F2C0-1#toc15



1.3.6.2 Polychlorinated Biphenyls

Analytical results for the following polychlorinated biphenyls (PCBs) showed non-detectable levels, at the same detection limit (0.05 μ g/l) for all samples tested including Middle River, Point A effluent, Point C effluent and Caribou Harbour. All test results are based on 2019 data sets only:

- Aroclor 1016;
- Aroclor 1221;
- Aroclor 1232:
- Aroclor 1248:
- Aroclor 1242:
- Aroclor 1254; and
- Aroclor 1260

1.3.7 Dioxins and Furans

Polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs), commonly known as dioxins and furans, are toxic chemicals found in very small amounts in the environment, including air, water and soil. As a result of their presence in the environment, they are also present in some foods. They have largely been created by human activity, to a great extent as the result of burning plastics, with the biggest sources in Canada coming from the burning of municipal and medical waste. Other major sources include⁷:

- The production of iron and steel;
- Backyard burning of household waste, especially plastics;
- Fuel burning, including diesel fuel and fuel for agricultural purposes and home heating;
- Wood burning, especially if the wood has been chemically treated;
- Electrical power generation; and
- Tobacco smoke.



Dioxins can also be produced from natural processes, such as forest fires and volcanic eruptions. Most dioxins are introduced to the environment through the air. The airborne chemical can attach to small particles that can travel long distances in the atmosphere, which means that Canadians may also be exposed to dioxins and furans created in other countries.

There are 210 different dioxins and furans. All dioxins have the same basic chemical "skeleton," and they all have chlorine atoms as part of their make-up. Furans are similar, but have a different "skeleton". These substances vary widely in toxicity. The one considered most toxic is referred to as 2,3,7,8tetrachlorodibenzo-p-dioxin, or simply TCDD¹⁰.

Table 1-11, below, shows the analytical results for dioxin and furan testing carried out on the various samples, expressed in toxic equivalents, as defined by the World Health Organization (WHO). All test results are based on 2019 data sets only. A Toxic equivalency factor (TEF) expresses the toxicity of dioxins, furans and PCBs in terms of the most toxic form of dioxin, 2,3,7,8-TCDD11. The toxicity of the individual congeners may vary by orders of magnitude. With the TEFs, the toxicity of a mixture of dioxins and dioxinlike compounds can be expressed in a single number - the toxic equivalency (TEQ). It is a single figure resulting from the product of the concentration and individual TEF values of each congener. The TEF/TEQ concept has been developed to facilitate risk assessment and regulatory control.

The laboratory testing for all dioxin congeners was carried out using gas chromatography with mass spectrometry detection. In this test method, samples are extracted, cleaned, and concentrated, extracts are analyzed using high resolution gas chromatography / high resolution mass spectrometry (HRGC/HRMS). An individual CDD/CDF is identified by comparing the gas chromatograph retention time and ion abundance ratio of two exact mass to charge (m/z) ratios with the corresponding retention time of an authentic standard and the theoretical or acquired ion-abundance ratio of the two exact m/z's. Quantitative analysis is performed using selected ion current profile (SICP) areas.

¹⁰https://www.canada.ca/en/health-canada/services/healthy-living/your-health/environment/dioxinsfurans.html

¹¹ Tetrachlorodibenzodioxin



Table 1-11: Analytical Results, Dioxins and Furans

Dioxins and Furans	TEF	Units	Raw water	Point A	Point C	Caribou Harbour
2,3,7,8-Tetra CDD ¹²	1.00	pg/l	ND	ND	ND	ND
1,2,3,7,8-Penta CDD	1.00	pg/l	ND	ND	ND	ND
1,2,3,4,7,8-Hexa CDD	0.10	pg/l	ND	ND	ND	ND
1,2,3,6,7,8-Hexa CDD	0.10	pg/l	ND	0.1250	ND	ND
1,2,3,7,8,9-Hexa CDD	0.10	pg/l	ND	ND	ND	ND
1,2,3,4,6,7,8-Hepta CDD	0.01	pg/l	ND	0.5460	ND	ND
Octa CDD	0.00468	pg/l	ND	0.1140	0.0012	ND
2,3,7,8-Tetra CDF ¹³	0.1	pg/l	ND	ND	ND	ND
1,2,3,7,8-Penta CDF	0.03	pg/l	ND	ND	ND	ND
2,3,4,7,8-Penta CDF	0.3	pg/l	ND	ND	ND	ND
1,2,3,4,7,8-Hexa CDF	0.1	pg/l	ND	ND	ND	ND
1,2,3,6,7,8-Hexa CDF	0.1	pg/l	ND	ND	ND	ND
2,3,4,6,7,8-Hexa CDF	0.1	pg/l	ND	ND	ND	ND
1,2,3,7,8,9-Hexa CDF	0.1	pg/l	ND	ND	ND	ND
1,2,3,4,6,7,8-Hepta CDF	0.01	pg/l	ND	ND	ND	ND
1,2,3,4,7,8,9-Hepta CDF	0.01	pg/l	ND	ND	ND	ND
Octa CDF	0.0003	pg/l	ND	0.0010	ND	ND

Laboratory testing was carried out for all dioxin congeners. The presence of any dioxin and furans congeners in the samples analyzed would indicate that, despite the non-detect analytical results for most congeners, other dioxin congeners could be present in the samples: in such a circumstance, the full detection limit is used to quantify the results. The calculated values are presented in Table 1-12, below.

¹² Chlorodibenzodioxin

¹³ Chlorodibenzofuran



Table 1-12: Analytical Results, Dioxins and Furans (with detection limit adjustments)

Dioxins and Furans	TEF	Units	Raw water	Point A	Point C ¹⁴	Caribou Harbour ¹⁶
2,3,7,8-Tetra CDD ¹⁵	1.00	pg/l	1.13	1.07	1.1400	1.0197
1,2,3,7,8-Penta CDD	1.00	pg/l	0.992	1.09	1.1275	0.9997
1,2,3,4,7,8-Hexa CDD	0.10	pg/l	0.122	0.12	0.1458	0.1119
1,2,3,6,7,8-Hexa CDD	0.10	pg/l	0.106	0.125	0.1225	0.0994
1,2,3,7,8,9-Hexa CDD	0.10	pg/l	0.103	0.102	0.1127	0.0973
1,2,3,4,6,7,8-Hepta CDD	0.01	pg/l	0.01	0.546	0.0137	0.0104
Octa CDD	0.00468	pg/l	0.0046	0.114	0.0046	0.0006
2,3,7,8-Tetra CDF ¹⁶	0.1	pg/l	0.106	0.0986	0.1450	0.1014
1,2,3,7,8-Penta CDF	0.03	pg/l	0.0322	0.034	0.0364	0.0336
2,3,4,7,8-Penta CDF	0.3	pg/l	0.324	0.342	0.3653	0.3390
1,2,3,4,7,8-Hexa CDF	0.1	pg/l	0.0872	0.112	0.1115	0.0955
1,2,3,6,7,8-Hexa CDF	0.1	pg/l	0.0728	0.0934	0.1058	0.0834
2,3,4,6,7,8-Hexa CDF	0.1	pg/l	0.0822	0.106	0.1168	0.0953
1,2,3,7,8,9-Hexa CDF	0.1	pg/l	0.0912	0.117	0.1288	0.1067
1,2,3,4,6,7,8-Hepta CDF	0.01	pg/l	0.0086	0.012	0.0105	0.0092
1,2,3,4,7,8,9-Hepta CDF	0.01	pg/l	0.0098	0.0112	0.0125	0.0110
Octa CDF	0.0003	pg/l	0.0004	0.001	0.0003	0.0004
TOTAL TOXIC EQUIVALENCY	1.00	pg/l	3.282	4.094	3.675	3.213

The results shown above indicate that the total toxic equivalency (TEQ) at Point C is in line with the TEQ of raw water or Caribou Harbour samples. The results demonstrate the effectiveness of the *Pulp and Paper Effluent Regulations* in achieving the virtual elimination of dioxins and furans in pulp and paper mill effluents including NPNS.

¹⁴ Point C data is the averaged data from regulatory test data that is required under the Pulp and Paper Effluent Regulations

¹⁵ Chlorodibenzodioxin

¹⁶ Chlorodibenzofuran



1.4 CONCLUSIONS

A chemical analysis of the raw water, the untreated and treated effluent as well at the sea water at the proposed discharge point was carried out to try to identify the source and contribution of various streams to mill-related loading in the Northumberland Strait. The purpose of this screening was also to establish whether the effluent characteristics found at Point C were representative of the future effluent characteristics with the new ETF and to identify compounds that could warrant further scrutiny within the impact assessment framework that is ongoing at the mill.

A comparison of the untreated and treated effluent components against published effluent composition data showed that the mill's effluent shows no appreciable difference from effluent characteristics from other bleached kraft mills. An analysis of the current system's performance outlined further in Section 2.4 shows that it provides effective treatment and is comparable, performance-wise, to other mills in Canada and elsewhere. Based on its design criteria, the future ETF would also be expected to provide performance that is comparable to other mills in Canada and elsewhere. It is therefore quite reasonable, since current and future systems have comparable performance that Point C can be used as an accurate representation of what the effluent from the new ETF will resemble.

The analysis does show that some components of the Point C effluent, such as mercury and some polyaromatic hydrocarbons appear to come from sources other than Northern Pulp's effluent: these compounds are readily identifiable and, as such, can be considered in that context.

The analysis shows that because of their potential impact on the receiving waters and despite no direct indication that these effects have been observed in the environment, some compounds should be considered for further scrutiny, either as part of future testing or as part of more long-term investigations, such as the Environmental Effects Monitoring (EEM) program or Human Health Risk Assessment (HHRA). These compounds are:



- Routine testing, following established testing frequency protocols and exemptions included in the US pulp and paper regulatory framework:
 - Chloroform;
 - Dioxins and furans;
 - Trichlorosyringol;
 - 3,4,5-Trichlorocatechol;
 - 3,4,6-Trichlorocatechol;
 - 3,4,5-Trichloroguaiacol;
 - 3,4,6-Trichloroguaiacol;
 - 4,5,6-Trichloroguaiacol;
 - 2,4,5-Trichlorophenol;
 - ▶ 2,4,6-Trichlorophenol;
 - Tetrachlorocatechol;
 - Tetrachloroguaiacol;
 - 2,3,4,6-Tetrachlorophenol;
 - Pentachlorophenol

Longer term impact assessment:

- o-cresol'
- p-cresol;
- m-cresol;
- Guaiacol;
- Catechol;
- 6-chlorovanillin; and
- 5,6,dichlorovanillin.



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1.6 **SIGNATURES**

Signature

Name: Ken Frei (OIQ #123617)

Title: Principal Consultant, Process & Environment

Signature

Name: Guy R. Martin (OIQ # 040521)

Title: Vice-President, Consulting Services

Fresh Water





Your P.O. #: 43013552 Your Project #: 18-7281-1000 Site Location: NORTHERN PULP

Your C.O.C. #: 656364-01-01

Attention: Penny Allen

Dillon Consulting Limited 137 Chain Lake Dr Suite 100 Halifax , NS 83S 183

Report Date: 2018/05/04

Report #: R5103280 Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B893755 Received: 2018/04/25, 09:52

Sample Matrix: Drinking Water # Samples Received: 3

Analyses	Ownerity	Date Extracted	Date Analyzed	Laboratory Method	Reference
\$2000\$70000					The state of the s
Carbonate, Bicarbonate and Hydroxide	3	N/A	2018/04/26	04042	SM 22 4500-CO2 D
Alkalinity	3	N/A		ATL SOP 00013	EPA 310.2 R1974 m
Carbonaceous BOD	2	The state of the s		ATL SOP 00041	SM 22 52108 m
Chloride	2	N/A		ATL SOP 00014	5M 22 4500-CI- E m
Chloride	1	N/A		ATL SOP 00014	5M 22 4500-CI- E m
Chemical Oxygen Demand (COD)	2	N/A		ATL SOP 00042	SM 22 52200 m
TC/EC Drinking Water CFU/100mL	3	N/A	2018/04/25	ATL SOP 00096	OMOE E3407 V5.2
Colour	3	N/A	2018/05/03	ATL SOP 00020	SM 22 2120C m
Conductance - water	3	N/A	2018/04/26	ATL SOP 00004	SM 23 2510B m
TEH in Water (PIRI)	2	2018/04/26	2018/04/26	ATL SOP 00113	Atl, RBCA v3.1 m
Fluoride	3	N/A	2018/04/26	ATL SOP 00043	SM 23 4500-F- C m
Hardness (calculated as CaCO3)	3	N/A	2018/04/27	ATL SOP 00048	SM 22 2340 B
Metals Water Total MS	3	2018/04/26	2018/04/26	ATL SOP 00058	EPA 6020A R1 m
Ion Balance (% Difference)	3	N/A	2018/05/03	N/A	Auto Calc.
Anion and Cation Sum	3	N/A	2018/05/03	N/A	Auto Calc.
Nitrogen Ammonia - water	3	N/A	2018/05/02	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	3	N/A	2018/05/03	ATL SOP 00016	USGS I-2547-I1m
Nitrogen - Nitrite	3	N/A	2018/05/02	ATL SOP 00017	SM 22 4500-NO2- B m
Nitrogen - Nitrate (as N)	3	N/A	2018/05/04	ATL SOP 00018	ASTM D3867-16
pH (1)	3	N/A	2018/04/26	ATL SOP 00003	SM 23 4500-H+ B m
Phosphorus - ortha	3	N/A	2018/05/02	ATL SOP 00021	SM 23 4500-P E m
VPH in Water (PIRI)	2	N/A	2018/05/01	ATL SOP 00118	Atl. RBCA v3.1 m
Sat. pH and Langelier Index (@ 20C)	3	N/A	2018/05/03	ATL SOP 00049	Auto Calc
Sat. pH and Langelier Index (@ 4C)	3	N/A	2018/05/03	ATL SOP 00049	Auto Calc.
Reactive Silica	3	N/A	2018/05/02	ATL SOP 00022	EPA 366.0 m
Sulphate	3	N/A	Section of Balance	ATL SOP 00023	ASTM D516-16 m
Total Dissolved Solids (TDS calc)	3	N/A	2018/05/03		Auto Calc.
Organic carbon - Total (TOC) (2)	3	N/A		ATL SOP 00203	SM 23 5310B m
ModTPH (T1) Calc. for Water	2	N/A	2018/05/02		Atl. RBCA v3 m



Your P.O. #: 43013552 Your Project #: 18-7281-1000 Site Location: NORTHERN PULP

Your C.O.C. #: 656364-01-01

Attention: Penny Allen

Dillon Consulting Limited 137 Chain Lake Dr Suite 100 Halifax , NS 83S 183

Report Date: 2018/05/04

Report #: R5103280 Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B893755 Received: 2018/04/25, 09:52

Sample Matrix: Drinking Water

Samples Received: 3

	Date	2	Date		
Analyses	Quantity Extra	acted	Analyzed	Laboratory Method	Reference
Total Suspended Solids	2 2018	8/05/01	2018/05/02	ATL SOP 00007	SM 22 2540D m
Turbidity	3 N/A		2018/04/26	ATL SOP 00011	EPA 180.1 R2 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

- * RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
- (1) The APHA Standard Method require pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.
- (2) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.



Attention: Penny Allen

Dillon Consulting Limited 137 Chain Lake Dr Suite 100 Halifax , NS 83S 183 Your P.O. #: 43013552 Your Project #: 18-7281-1000 Site Location: NORTHERN PULP Your C.O.C. #: 656364-01-01

Report Date: 2018/05/04

Report #: R5103280 Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B893755 Received: 2018/04/25, 09:52

Encryption Key



distant.

OF Many William Street, 54

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Maryann Comeau, Project Manager

Email: MComeau@maxxam.ca

Phone# (902) 420-0203

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of (SO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Dillon Consulting Limited
Client Project #: 18-7281-1000
Site Location: NORTHERN PULP

Your P.O. #: 43013552 Sampler Initials: JAM

RESULTS OF ANALYSES OF DRINKING WATER

Maxxam ID				GNN275		Ŭ.
Sampling Date				2018/04/24 14:45		
COC Number				656364-01-01		
	UNITS	мас	AO	RAW H2O DEPT. 8	RDL	QC Batch
Calculated Parameters						100
Anion Sum	me/L	_=_[-34	1.28	N/A	5500108
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	.7	- 20	19	1.0	5500104
Calculated TDS	mg/L	10	500	76	1.0	5500112
Carb. Alkalinity (calc. as CaCO3)	mg/L	i.e		ND	1.0	5500104
Cation Sum	me/L	(#		1.29	N/A	5500108
Hardness (CaCO3)	mg/L	14		26	1.0	5500106
ion Balance (% Difference)	%	12		0.390	N/A	5500107
Langelier Index (@ 20C)	N/A	- E		-1.97		5500110
Langelier Index (@ 4C)	N/A	7.5		-2.22		5500111
Nitrate (N)	mg/L	10		0.22	0.050	5500109
Saturation pH (@ 20C)	N/A	78		9.22		5500110
Saturation pH (@ 4C)	N/A	82		9,47		5500111
Inorganics						-
Total Alkalinity (Total as CaCO3)	mg/L		+	19	5.0	5511380
Carbonaceous BOD	mg/L	7.7		ND	5.0	5502249
Total Chemical Oxygen Demand	mg/L	St.		9.9	5.0	5513173
Dissolved Chloride (CI)	mg/L	3.4	250	26	1.0	5511384

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

MAC, AO: Guideline - Summary of Guidelines for Canadian Drinking Water Quality (SGCDWQ), Health Canada, Feb. 2017

MAC= Maximum Acceptable Concentration (MAC) - established for substances that are known or suspected to cause adverse effects on health.

AO= Aesthetic Objectives (AO) - apply to characteristics of drinking water that can affect its acceptance by consumers or interfere with practices for supplying good quality water.

Note 1 Turbidity guideline value of 0.3 NTU based on conventional treatment system. For slow sand or diatomaceous earth filtration 1.0 NTU and for membrane filtration 0.1 NTU. Note 2 Aluminum guideline value of 0.1 mg/L is for treatment plants using aluminum-based coagulants, 0.2 mg/L applies to other types of treatment systems.

N/A = Not Applicable

ND = Not detected



Dillon Consulting Limited
Client Project #: 18-7281-1000
Site Location: NORTHERN PULP

Your P.O. #: 43013552 Sampler Initials: JAM

RESULTS OF ANALYSES OF DRINKING WATER

Maxxam ID				GNN275	0	Ŭ.
Sampling Date				2018/04/24 14:45		
COC Number				656364-01-01		
	UNITS	MAC	AO	RAW H2O DEPT. 8	RDL	QC Batch
Colour	TCU	10	15	15	5.0	5511395
Dissolved Fluoride (F-)	mg/L	1.5		ND	0.10	5502208
Nitrate + Nitrite (N)	mg/L			0.22	0.050	5511404
Nitrite (N)	mg/L	1		ND	0.010	5511407
Nitrogen (Ammonia Nitrogen)	mg/L	12		ND	0.050	5511259
Total Organic Carbon (C)	mg/L	1.0		3.8	0.50	5502220
Orthophosphate (P)	mg/L	74		ND	0.010	5511396
рН	pH	14	7.0 : 10.5	7.25	N/A	5502206
Reactive Silica (SiO2)	mg/L	10		2.8	0.50	5511390
Total Suspended Solids	mg/L			6.4	1.0	5508910
Dissolved Sulphate (SO4)	mg/L	12	500	7.5	2.0	5511388
Turbidity	NTU	0.3		16	0.10	5502237
Conductivity	uS/cm	34	- S	140	1.0	5502207
		-			*	

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

MAC,AO: Guideline - Summary of Guidelines for Canadian Drinking Water Quality (SGCDWQ), Health Canada, Feb. 2017

MAC= Maximum Acceptable Concentration (MAC) - established for substances that are known or suspected to cause adverse effects on health.

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Note 1 Turbidity guideline value of 0.3 NTU based on conventional treatment system. For slow sand or diatomaceous earth filtration 1.0 NTU and for membrane filtration 0.1 NTU.

Note 2 Aluminum guideline value of 0.1 mg/L is for treatment plants using aluminum-based

coagulants, 0.2mg/L applies to other types of treatment systems.

ND = Not detected

N/A = Not Applicable



Dillon Consulting Limited
Client Project #: 18-7281-1000
Site Location: NORTHERN PULP

Your P.O. #: 43013552 Sampler Initials: JAM

ELEMENTS BY ICP/MS (DRINKING WATER)

Maxxam ID				GNN273	GNN274	GNN275		
Sampling Date				2018/04/24 15:00	2018/04/24 11:30	2018/04/24 14:45		
COC Number				656364-01-01	656364-01-01	656364-01-01		
	UNITS	MAC	AO	SCALEHOUSE	MILL LAB	RAW H2O DEPT. 8	RDL	QC Batch
Metals							_	
Total Aluminum (Al)	ug/L		100	ND	110	450	5.0	5502257
Total Antimony (Sb)	ug/L	6		ND	ND	ND	1.0	5502257
Total Arsenic (As)	ug/L	10		ND	ND	ND	1.0	5502257
Total Barium (Ba)	ug/t	1000		270	28	35	1.0	5502257
Total Beryllium (Be)	ug/L	14		ND	ND	ND	1.0	5502257
Total Bismuth (Bi)	ug/L	34		ND	ND	ND	2.0	5502257
Total Boron (B)	ug/L	5000		ND	ND	ND	50	5502257
Total Cadmium (Cd)	ug/L	5		0.020	ND	ND	0.010	5502257
Total Calcium (Ca)	ug/L	17		92000	6600	6800	100	5502257
Total Chromium (Cr)	ug/L	50		ND	ND	ND	1.0	5502257
Total Cobalt (Co)	ug/L	12		ND	ND	ND	0.40	5502257
Total Copper (Cu)	ug/L	34	1000	15	ND	4.0	2.0	5502257
Total Iron (Fe)	ug/L	.4	300	160	ND	450	50	5502257
Total Lead (Pb)	ug/L	10		0.88	ND	ND	0.50	5502257
Total Magnesium (Mg)	ug/L			14000	1900	2000	100	5502257
Total Manganese (Mn)	ug/L	67	50	270	10	41	2.0	5502257
Total Molybdenum (Mo)	ug/L) *		2.5	ND	ND	2.0	5502257
Total Nickel (Ni)	ug/L	34		ND	ND	ND	2.0	5502257
Total Phosphorus (P)	ug/L	34.		ND	ND	ND	100	5502257

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

MAC, AO: Guideline - Summary of Guidelines for Canadian Drinking Water Quality (SGCDWQ), Health Canada, Feb. 2017

MAC= Maximum Acceptable Concentration (MAC) - established for substances that are known or suspected to cause adverse effects on health.

AO= Aesthetic Objectives (AO) - apply to characteristics of drinking water that can affect its acceptance by consumers or interfere with practices for supplying good quality water.

Note 1 Turbidity guideline value of 0.3 NTU based on conventional treatment system. For slow sand or diatomaceous earth filtration 1.0 NTU and for membrane filtration 0.1 NTU.

Note 2 Aluminum guideline value of 0.1 mg/L is for treatment plants using aluminum-based coagulants, 0.2mg/L applies to other types of treatment systems.

ND = Not detected



Dillon Consulting Limited Client Project #: 18-7281-1000 Site Location: NORTHERN PULP

Your P.O. #: 43013552 Sampler Initials: JAM

ELEMENTS BY ICP/MS (DRINKING WATER)

Maxxam ID				GNN273	GNN274	GNN275		
Sampling Date				2018/04/24 15:00	2018/04/24 11:30	2018/04/24 14:45		
COC Number				656364-01-01	656364-01-01	656364-01-01		
	UNITS	мас	AO	SCALEHOUSE	MILL LAB	RAW H2O DEPT. 8	RDL	QC Batch
Total Potassium (K)	ug/L	17.		3100	650	780	100	5502257
Total Selenium (Se)	ug/L	50		ND	ND	ND	1.0	5502257
Total Silver (Ag)	ug/L			ND	ND	ND	0.10	5502257
Total Sodium (Na)	ug/L	14	200000	77000	23000	17000	100	5502257
Total Strontium (Sr)	ug/L	(4		460	31	33	2.0	5502257
Total Thallium (TI)	ug/t	74		ND	ND	.ND	0.10	5502257
Total Tin (Sn)	ug/L	34		ND	ND	ND .	2.0	5502257
Total Titanium (Ti)	ug/L	17		ND	ND	8.8	2.0	5502257
Total Uranium (U)	ug/L	20		3.2	ND	ND	0.10	5502257
Total Vanadium (V)	ug/L			ND	ND	ND	2.0	5502257
Total Zinc (Zn)	ug/L	14	5000	9.1	5.9	ND	5.0	5502257

RDL = Reportable Detection Limit

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ND = Not detected



Dillon Consulting Limited
Client Project #: 18-7281-1000
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ATLANTIC RBCA HYDROCARBONS (DRINKING WATER)

Maxxam ID				GNN274	GNN275		
Sampling Date				2018/04/24 11:30	2018/04/24 14:45		
COC Number				656364-01-01	656364-01-01		
	UNITS	MAC	AO	MILL LAB	RAW H2O DEPT. 8	RDL	QC Batch
Petroleum Hydrocarbons							
Benzene	mg/L	0.005		ND	ND	0.0010	5508798
Toluene	mg/L	0.06	0.024	ND	ND	0.0010	5508798
Ethylbenzene	mg/L	0.14	0.0016	ND	ND	0.0010	5508798
Total Xylenes	mg/L	0.09	0.02	ND	ND	0.0020	5508798
C6 - C10 (less BTEX)	mg/L	1+	-:	ND:	ND	0.010	5508798
>C10-C16 Hydrocarbons	mg/L	84		ND	ND	0.050	5502235
>C16-C21 Hydrocarbons	mg/L			ND	ND	0.050	5502235
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td></td><td></td><td>ND</td><td>ND</td><td>0.10</td><td>5502235</td></c32>	mg/L			ND	ND	0.10	5502235
Modified TPH (Tier1)	mg/L			ND	ND	0.10	5500167
Reached Baseline at C32	mg/L	C 5		NA	NA	N/A	5502235
Hydrocarbon Resemblance	mg/L	24		NA.	NA	N/A	5502235
Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	72	- 17	84	95		5502235
n-Dotriacontane - Extractable	%	-		104	110		5502235
Isobutylbenzene - Volatile	96	1.5	10.	89	73		5508798

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

MAC,AO: Guideline - Summary of Guidelines for Canadian Drinking Water Quality (SGCDWQ), Health Canada, Feb. 2017

MAC= Maximum Acceptable Concentration (MAC) - established for substances that are known or suspected to cause adverse effects on health.

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ND = Not detected

N/A = Not Applicable



Dillon Consulting Limited
Client Project #: 18-7281-1000
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Your P.O. #: 43013552 Sampler Initials: JAM

MICROBIOLOGY COLILERT (DRINKING WATER)

Maxxam ID			GNN273	GNN274	GNN275		
Sampling Date			2018/04/24 15:00	2018/04/24 11:30	2018/04/24 14:45		
COC Number			656364-01-01	656364-01-01	656364-01-01		
Registration #				2002-026118			
	UNITS	мас	SCALEHOUSE	MILL LAB	RAW H2O DEPT. 8	RDL	QC Batch
Microbiological		_					
Escherichia coli	CFU/100mL	1	ND	ND	ND	1.0	5500127
Total Coliforms	CFU/100mL		ND	ND	ND	1.0	5500127

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

MAC: Guideline - Summary of Guidelines for Canadian Drinking Water Quality (SGCDWQ), Health Canada, Feb. 2017

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.0°C
Package 2	3.0°C
Package 3	2.7°C
Package 4	5.3°C
Package 5	4.0°C

Results relate only to the items tested.



Dillon Consulting Limited
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QUALITY ASSURANCE REPORT

QA/QC		MADDOOS	\$500700000	SOURCESTANT	AV5721	95000000	9.55 April 1	1575 DJ-714
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
5500127	LKE	Method Blank	Escherichia coli	2018/04/25	ND, RDL=1.0		CFU/100mL	
			Total Coliforms	2018/04/25	ND, RDL=1.0		CFU/100mL	
5502206	VML	QC Standard	pH	2018/04/26		101	%	97 - 103
5502206	JMV	RPD	pH	2018/04/26	2.0		%	N/A
5502207	JMV	Spiked Blank	Conductivity	2018/04/26		102	%	80 - 120
5502207	JMV	Method Blank	Conductivity	2018/04/26	ND. RDL=1.0		u\$/cm	
5502207	MV	RPD	Conductivity	2018/04/26	0.24		96	25
5502208	JMV	Matrix Spike	Dissolved Fluoride (F-)	2018/04/26		98	%	80 - 120
5502208	JMV	Spiked Blank	Dissolved Fluoride (F-)	2018/04/26		105	%.	80 - 120
5502208	JMV	Method Blank	Dissolved Fluoride (F-)	2018/04/26	ND, RDL=0.10		mg/L	
5502208	JMV	RPD	Dissolved Fluoride (F-)	2018/04/26	0		%	25
5502209	JMV	QC Standard	рН	2018/04/26		100	N-	97 - 103
5502209	JMV	RPD	pH	2018/04/26	7.6 (1)		%.	N/A
5502210	JMV	Spiked Blank	Conductivity	2018/04/26	-D04//164	101	96	80 - 120
5502210	JMV	Method Blank	Conductivity	2018/04/26	ND, RDL=1.0		uS/cm	
5502210	JMV	RPD	Conductivity	2018/04/26	0.29		No.	25
5502211	JMV	Matrix Spike	Dissolved Fluoride (F-)	2018/04/26		100	96	80 - 120
5502211	VML	Spiked Blank	Dissolved Fluoride (F-)	2018/04/26		102	%	80 - 120
5502211	JMV	Method Blank	Dissolved Fluoride (F-)	2018/04/26	ND, RDL=0.10		mg/L	
5502211	JMV	RPD	Dissolved Fluoride (F-)	2018/04/26	NC		36	25
5502220	LMP	Matrix Spike	Total Organic Carbon (C)	2018/04/26		102	%	85 - 115
5502220	LMP	Spiked Blank	Total Organic Carbon (C)	2018/04/26		100	16	80 - 120
5502220	LMP	Method Blank	Total Organic Carbon (C)	2018/04/26	ND, RDL=0.50		mg/L	
5502220	LMP	RPD	Total Organic Carbon (C)	2018/04/26	3.5		96	15
5502224	LMP	Matrix Spike	Total Organic Carbon (C)	2018/04/26		103	%	85 - 115
5502224	LMP	Spiked Blank	Total Organic Carbon (C)	2018/04/26		99	%	80 - 120
5502224	LMP	Method Blank	Total Organic Carbon (C)	2018/04/26	ND, RDL=0.50		mg/L	
5502224	LIMP	RPD	Total Organic Carbon (C)	2018/04/26	3.7		14	15
5502235	MGN	Matrix Spike	isobutylbenzene - Extractable	2018/04/26		103	%	30 - 130
			n-Dotriacontane - Extractable	2018/04/26		116	96	30 - 130
			>C10-C16 Hydrocarbons	2018/04/26		107	%	70 - 130
			>C16-C21 Hydrocarbons	2018/04/26		101	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2018/04/26</td><td></td><td>123</td><td>16</td><td>70 - 130</td></c32>	2018/04/26		123	16	70 - 130
5502235	MGN	Spiked Blank	Isobutylbenzene - Extractable	2018/04/26		95	96	30 - 130
			n-Dotriacontane - Extractable	2018/04/26		110	%	30 - 130
			>C10-C16 Hydrocarbons	2018/04/26		102	76.	70 - 130
			>C16-C21 Hydrocarbons	2018/04/26		101	%.	70 - 130
	Pg15/exp211	LOSSA A PROPERTY	>C21- <c32 hydrocarbons<="" td=""><td>2018/04/26</td><td></td><td>121</td><td>96</td><td>70 - 130</td></c32>	2018/04/26		121	96	70 - 130
5502235	MGN	Method Blank	Isobutylbenzene - Extractable	2018/04/26		90	%	30 - 130
			n-Dotriacontane - Extractable	2018/04/26		105	%	30 - 130
			>C10-C16 Hydrocarbons	2018/04/26	ND, RDL=0.050		mg/L	



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Your P.O. #: 43013552 Sampler Initials: JAM

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			>C16-C21 Hydrocarbons	2018/04/26	ND. RDL=0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2018/04/26</td><td>ND, RDL=0.10</td><td></td><td>mg/L</td><td></td></c32>	2018/04/26	ND, RDL=0.10		mg/L	
5502235	MGN	RPD	>C10-C16 Hydrocarbons	2018/04/26	NC		%	40
			>C16-C21 Hydrocarbons	2018/04/26	NC		96	40
			>C21- <c32 hydrocarbons<="" td=""><td>2018/04/26</td><td>NC</td><td></td><td>%</td><td>40</td></c32>	2018/04/26	NC		%	40
5502237	JMV	QC Standard	Turbidity	2018/04/25		104	16	80 - 120
5502237	JMV	Spiked Blank	Turbidity	2018/04/26		93	96	80 - 120
5502237	VML	Method Blank	Turbidity	2018/04/26	NO, RDL=0.10		NTU	
5502237	JMV	RPO	Turbidity	2018/04/26	4.7		%	20
5502249	MGR	QC Standard	Carbonaceous BOD	2018/05/01		117	16	80 - 120
5502249	MGR	Spiked Blank	Carbonaceous BOD	2018/05/01		107	96	80 - 120
5502249	MGR	Method Blank	Carbonaceous 800	2018/05/01	ND, RDL=2.0		mg/L	
5502249	MGR	RPD	Carbonaceous BOD	2018/05/01	NC		%.	25
5502257	BAN	Matrix Spike	Total Aluminum (AI)	2018/04/26		100	96	80 - 120
			Total Antimony (Sb)	2018/04/26		103	26	80 - 120
			Total Arsenic (As)	2018/04/26		98	14	80 - 120
			Total Barium (Ba)	2018/04/26		98	%	80 - 120
			Total Beryllium (Be)	2018/04/26		103	96	80 - 120
			Total Bismuth (Bi)	2018/04/26		101	76	80 - 120
			Total Boron (B)	2018/04/26		102	14	80 - 120
			Total Cadmium (Cd)	2018/04/26		100	%	80 - 120
			Total Calcium (Ca)	2018/04/26		NC	36	80 - 120
			Total Chromium (Cr)	2018/04/26		99	%	80 - 120
			Total Cobalt (Co)	2018/04/26		99	96	80 - 120
			Total Copper (Cu)	2018/04/26		97	%	80 - 120
			Total Iron (Fe)	2018/04/26		104	36	80 - 120
			Total Lead (Pb)	2018/04/26		101	96	80 - 120
			Total Magnessum (Mg)	2018/04/26		103	%	80 - 120
			Total Manganese (Mn)	2018/04/26		98	%	80 - 120
			Total Molybdenum (Mo)	2018/04/26		104	76	80 - 120
			Total Nickel (Ni)	2018/04/26		102	%	80 - 120
			Total Phosphorus (P)	2018/04/26		106	94	80 - 120
			Total Potassium (K)	2018/04/26		103	96	80 - 120
			Total Selenium (Se)	2018/04/26		100	96	80 - 120
			Total Silver (Ag)	2018/04/26		103	%	80 - 120
			Total Sodium (Na)	2018/04/26		98	%	80 - 120
			Total Strontium (Sr)	2018/04/26		NC	16	80 - 120
			Total Thallium (TI)	2018/04/26		102	96	80 - 120
			Total Tin (Sn)	2018/04/26		102	76	80 - 120
			Total Titanium (Ti)	2018/04/26		100	76.	80 - 120
			Total Uranium (U)	2018/04/26		105	%.	80 - 120
			Total Vanadium (V)	2018/04/26		101	96	80 - 120
91.000.0000			Total Zinc (Zn)	2018/04/26		97	%	80 - 120
5502257	BAN	Spiked Blank	Total Aluminum (Al)	2018/04/26		102	16	80 - 120
			Total Antimony (5b)	2018/04/26		103	%	80 - 120
			Total Arsenic (As)	2018/04/26		99	%	80 - 120
			Total Barrum (Ba)	2018/04/26		99	56	80 - 120



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
- Address		no constitution	Total Beryllium (Be)	2018/04/26	I Mariana	102	%	80 - 120
			Total Bismuth (Bi)	2018/04/26		102	34	80 - 120
			Total Boron (B)	2018/04/26		104	96	80 - 120
			Total Cadmium (Cd)	2018/04/26		101	96	80 - 120
			Total Calcium (Ca)	2018/04/26		105	%	80 - 120
			Total Chromium (Cr)	2018/04/26		101	96	80 - 120
			Total Cobalt (Co)	2018/04/26		101	%	80 - 120
			Total Copper (Cu)	2018/04/26		101	94	80 - 120
			Total Iron (Fe)	2018/04/26		108	96	80 - 120
			Total Lead (Pb)	2018/04/26		101	96	80 - 120
			Total Magnesium (Mg)	2018/04/26		108	%	80 - 12
			Total Manganese (Mn)	2018/04/26		102	%	80 - 120
			Total Molybdenum (Mo)	2018/04/26		105	16	80 - 120
			Total Nickel (Ni)	2018/04/26		102	96	80 - 120
			Total Phosphorus (P)	2018/04/26		106	%	80 - 120
			Total Potassium (K)	2018/04/26		105	16.	80 - 120
			Total Selenium (Se)	2018/04/26		100	%.	80 - 120
			Total Silver (Ag)	2018/04/26		98	96	80 - 120
			Total Sodium (Na)	2018/04/26		103	76	80 - 120
			Total Strontium (Sr)	2018/04/26		102	74	80 - 12
			Total Thallium (Ti)	2018/04/26		102	16	80 - 12
			Total Tin (Sn)	2018/04/26		103	96	80 - 12
			Total Titanium (Ti)	2018/04/26		100	%	80 - 120
			Total Uranium (U)	2018/04/26		105	16	80 - 12
			Total Vanadium (V)	2018/04/26		102	76	80 - 120
			Total Zinc (Zn)	2018/04/26		100	36	80 - 120
502257	BAN	Method Blank	Total Aluminum (Al)	2018/04/26	ND,	100	ug/L	00 - 120
1502231	BMM	MELDOU DIANK			RDL=5.0			
			Total Antimony (Sb)	2018/04/26	ND, RDL=1.0		ug/L	
			Total Arsenic (As)	2018/04/26	ND, ROL=1.0		ug/t	
			Total Barium (Ba)	2018/04/26	ND, RDL=1.0		ug/L	
			Total Beryllium (Be)	2018/04/26	ND, RDL=1.0		ug/L	
			Total Bismuth (Bi)	2018/04/26	ND, RDL=2.0		ug/L	
			Total Boron (B)	2018/04/26	ND, RDL=50		ug/L	
			Total Cadmium (Cd)	2018/04/26	ND, RDL=0.010		ug/L	
		Total Calcium (Ca)	2018/04/26	ND, RDL=100		ug/L		
			Total Chromium (Cr)	2018/04/26	ND, RDL=1.0		ug/L	
			Total Cobalt (Co)	2018/04/26	ND, RDL=0.40		ug/L	
			Total Copper (Cu)	2015/04/26	ND, RDL=2.0		ug/L	



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Parameter Total Iron (Fe)	2018/04/26	Value ND.	Recovery	UNITS	QC Limits
		RDL=50		ug/L	
Total Lead (Pb)	2018/04/26	ND, RDL=0.50		ug/L	
Total Magnesium (Mg)	2018/04/26	ND,		ug/L	
Total Manganese (Mn)	2018/04/26	NO,		ug/L	
Total Molybdenum (Mo)	2018/04/26	ND,		ug/L	
Total Nickel (Ni)	2018/04/26	ND,		ug/L	
Total Phosphorus (P)	2018/04/26	ND,		ug/L	
Total Potassium (K)	2018/04/26	ND,		ug/L	
Total Selenium (Se)	2018/04/26	ND,		ug/L	
Total Silver (Ag)	2018/04/26	ND,		ug/L	
Total Sodium (Na)	2018/04/26	ND,		ug/L	
Total Strontium (Sr)	2018/04/26	ND,		ug/L	
Total Thallium (TI)	2018/04/26	ND,		ug/L	
Total Tin (Sn)	2018/04/26	ND,		ug/L	
Total Titanium (Ti)	2018/04/26	ND,		ug/L	
Total Uranium (U)	2018/04/26	ND,		ug/L	
Total Vanadium (V)	2018/04/26	ND,		ug/L	
Total Zinc (Zn)	2018/04/26	ND, RDL=5.0		ug/L	
Total Aluminum (Al)	2018/04/26	NC		160	20
					20
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The state of the s					20
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	Total Manganese (Mn) Total Molybdenum (Mo) Total Nickel (Ni) Total Phosphorus (P) Total Potassium (K) Total Selenium (Se) Total Silver (Ag) Total Sodium (Na) Total Strontium (Sr) Total Thallium (Ti) Total Titanium (Ti) Total Uranium (U) Total Vanadium (V)	Total Manganese (Mn) 2018/04/26 Total Molybdenum (Mo) 2018/04/26 Total Nickel (Ni) 2018/04/26 Total Phosphorus (P) 2018/04/26 Total Potassium (K) 2018/04/26 Total Selenium (Se) 2018/04/26 Total Silver (Ag) 2018/04/26 Total Sodium (Na) 2018/04/26 Total Strontium (Sr) 2018/04/26 Total Thallium (Ti) 2018/04/26 Total Titarium (Ti) 2018/04/26 Total Titarium (U) 2018/04/26 Total Vanadium (V) 2018/04/26 Total Aluminum (Al) 2018/04/26 Total Asenic (As) 2018/04/26 Total Barium (Ba) 2018/04/26 Total Barium (Ba) 2018/04/26 Total Bismuth (Bi) 2018/04/26 Total Calcium (Cd) 2018/04/26 Total Calcium (Cd) 2018/04/26 Total Calcium (Cd) 2018/04/26 Total Cobalt (Co) 2018/04/26 Total Cobalt (Co) 2018/04/26 Total Copper (Cu) 2018/04/26 Total Lead (Pb) 2018/04/26 Total Lead (Pb) 2018/04/26	Total Manganese (Mn) 2018/04/26 ND, RDL=2.0	ROL-100 ROL-2.0 ND, ROL-100 ND, ROL-1.0 ND, ROL-1.0 ND, ROL-1.0 ND, ROL-1.0 ND, ROL-2.0 ND, ROL-	RoL=100



Dillon Consulting Limited
Client Project #: 18-7281-1000
Site Location: NORTHERN PULP

Your P.O. #: 43013552 Sampler Initials: JAM

QA/QC Batch	init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Manganese (Mn)	2018/04/26	0.36		%	20
			Total Molybdenum (Mo)	2018/04/26	NC		34	20
			Total Nickel (Ni)	2018/04/26	NC		96	20
			Total Phosphorus (P)	2018/04/26	NC		%	20
			Total Potassium (K)	2018/04/26	2.8		%	20
			Total Selenium (Se)	2018/04/26	NC		94	20
			Total Silver (Ag)	2018/04/26	NC		%	20
			Total Sodium (Na)	2018/04/25	1.5		14	20
			Total Strontium (Sr)	2018/04/26	2.1		96	20
			Total Thallium (TI)	2018/04/26	NC		96	20
			Total Tin (Sn)	2018/04/26	NC.		%	20
			Total Titanium (Ti)	2018/04/26	NC		%.	20
			Total Uranium (U)	2018/04/26	5.7		16	20
			Total Vanadium (V)	2018/04/26	NC		96	20
			Total Zinc (Zn)	2018/04/25	NC		%	20
5508798	MS3	Matrix Spike [GNN275-09]	Isobutylbenzene - Volatile	2018/05/01		86	N.	70 - 130
			Benzene	2018/05/01		106	.96	70 - 130
			Toluene	2018/05/01		108	26	70 - 130
			Ethylbenzene	2018/05/01		103	14	70 - 130
			Total Xylenes	2018/05/01		101	16	70 - 130
5508798	M53	Spiked Blank	Isobutylbenzene - Volatile	2018/05/01		78	96	70 - 130
			Benzene	2018/05/01		115	%	70 - 130
			Toluene	2018/05/01		111	16	70 - 130
			Ethylbenzene	2018/05/01		100	16	70 - 130
			Total Xylenes	2018/05/01		97	96	70 - 130
5508798	MS3	Method Blank	isobutylbenzene - Volatile	2018/05/02		98	%	70 - 130
			Benzene	2018/05/02	ND, RDL=0.0010		mg/L	
			Toluene	2018/05/02	ND, RDL=0.0010		mg/L	
			Ethylbenzene	2018/05/02	ND, RDL=0.0010		mg/L	
			Total Xylenes	2018/05/02	ND. RDL=0.0020		mg/L	
			C6 - C10 (less BTEX)	2018/05/02	ND, RDL=0.010		mg/L	
5508798	MS3	RPD [GNN274-09]	Benzene	2018/05/01	NC		96	40
			Toluene	2018/05/01	NC		96	40
			Ethylbenzene	2018/05/01	NC		%	40
			Total Xylenes	2018/05/01	NC		16	40
			C6 - C10 (less 8TEX)	2018/05/01	NC		96	40
5508910	AM6	QC Standard	Total Suspended Solids	2018/05/02		101	%	80 - 120
5508910	AM6	Method Blank	Total Suspended Solids	2018/05/02	ND, RDL=1.0		mg/L	
5508910	AM6	RPD	Total Suspended Solids	2018/05/02	2.4		.96	20
5511259	MCN	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2018/05/02		100	%	80 - 120
5511259	MCN	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2018/05/02		97	16	80 - 120
5511259	MCN	Method Blank	Nitrogen (Ammonia Nitrogen)	2018/05/02	ND, RDL=0.050		mg/L	
5511259	MCN	RPD	Nitrogen (Ammonia Nitrogen)	2018/05/02	18		56	20



Dillon Consulting Limited
Client Project #: 18-7281-1000
Site Location: NORTHERN PULP

Your P.O. #: 43013552 Sampler Initials: JAM

QA/QC		MARGINES				95000000	W.S. Anderson	9223 DE-744
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
5511380	MCN	Matrix Spike	Total Alkalinity (Total as CaCO3)	2018/05/02		NC	%	80 - 120
5511380	MCN	Spiked Blank	Total Alkalinity (Total as CaCO3)	2018/05/02		102	94	80 - 120
5511380	MCN	Method Blank	Total Alkalinity (Total as CaCO3)	2018/05/02	ND, ROL=5.0		mg/L	
5511380	MCN	RPD	Total Alkalinity (Total as CaCO3)	2018/05/02	0.35 (2)		%	25
5511384	MCN	Matrix Spike	Dissolved Chloride (CI)	2018/05/03		NC	16	80 - 120
5511384	MCN	QC Standard	Dissolved Chloride (CI)	2018/05/03		107	%	80 - 120
5511384	MCN	Spiked Blank	Dissolved Chloride (CI)	2018/05/02		98	74	80 - 120
5511384	MCN	Method Blank	Dissolved Chloride (CI)	2018/05/02	ND, RDL=1.0		mg/L	
5511384	MCN	RPD	Dissolved Chloride (CI)	2018/05/03	0.41		36	25
5511388	MCN	Matrix Spike	Dissolved Sulphate (5O4)	2018/05/03	140041	NC	%.	80 - 120
5511388	MCN	Spiked Blank	Dissolved Sulphate (SO4)	2018/05/03		96	26	80 - 120
5511388	MCN	Method Blank	Dissolved Sulphate (SO4)	2018/05/03	ND, RDL=2.0		mg/L	55455
5511388	MCN	RPO	Dissolved Sulphate (SO4)	2018/05/03	1.6 (2)		14.	25
5511390	MCN	Matrix Spike	Reactive Silica (SiO2)	2018/05/02	0000000	86	%.	80 - 120
5511390	MCN	Spiked Blank	Reactive Silica (SiO2)	2018/05/02		95	96	80 - 120
5511390	MCN	Method Blank	Reactive Silica (SiO2)	2018/05/02	ND, RDL=0.50		mg/L	
5511390	MCN	RPD	Reactive Silica (SiO2)	2018/05/02	19		%	25
5511395	MCN	Spiked Blank	Colour	2018/05/03	-	98	96	80 - 120
5511395	MCN	Method Blank	Colour	2018/05/03	ND, RDL=5.0		TCU	
5511395	MCN	RPD	Colour	2018/05/03	2.6		%	20
5511396	MCN	Matrix Spike	Orthophosphate (P)	2018/05/02	1000	89	36	80 - 120
5511396	MCN	Spiked Blank	Orthophosphate (P)	2018/05/02		96	%	80 - 120
5511396	MCN	Method Blank	Orthophosphate (P)	2018/05/02	ND, RDL=0.010		mg/L	00 100
5511396	MCN	RPD	Orthophosphate (P)	2018/05/02	NC		36	25
5511404	MCN	Matrix Spike	Nitrate + Nitrite (N)	2018/05/03		93	96	80 - 120
5511404	MCN	Spiked Blank	Nitrate + Nitrite (N)	2018/05/03		97	95	80 - 120
5511404	MCN	Method Blank	Nitrate + Nitrite (N)	2018/05/03	ND. RDL=0.050	1.50	mg/L	SELVERY
5511404	MCN	RPD	Nitrate + Nitrite (N)	2018/05/03	1.6		%	25
5511407	MCN	Matrix Spike	Nitrite (N)	2018/05/02	(*C.C.)	88	96	80 - 120
5511407	MCN	Spiked Blank	Nitrite (N)	2018/05/02		99	%	80 - 120
5511407		Method Blank	Nitrite (N)	2018/05/02	NO, RDL=0.010		mg/L	100,000
5511407	MCN	RPO	Nitrite (N)	2018/05/02	NC		%	25
5513173	ZZH	Matrix Spike	Total Chemical Oxygen Demand	2018/05/03	1555-	102	16	80 - 120
5513173	ZZH	QC Standard	Total Chemical Oxygen Demand	2018/05/03		103	36	80 - 120
5513173	ZZH	Spiked Blank	Total Chemical Oxygen Demand	2018/05/03		103	%	80 - 120
5513173	ZZH	Method Blank	Total Chemical Oxygen Demand	2018/05/03	ND, RDL=5.0	-867	mg/L	00-120



Dillon Consulting Limited
Client Project #: 18-7281-1000
Site Location: NORTHERN PULP

Your P.O. #: 43013552 Sampler Initials: JAM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	toit	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5513173	ZZH	RPD	Total Chemical Oxygen Demand	2018/05/03	NC	100000000000000000000000000000000000000	%	25

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference

QC Standard; A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination:

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

- (1) Poor duplicate results due to sample matrix, results confirmed by repeat analysis.
- (2) Elevated reporting limit due to sample matrix.



Dillon Consulting Limited
Client Project #: 18-7281-1000
Site Location: NORTHERN PULP

Your P.O. #: 43013552 Sampler Initials: JAM

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Jason Wang, Bedford Micro

Revn A. Maz Domold

Kevin MacDonald, Inorganics Supervisor

Kotimaria MacDonald

Rosemarie MacDonald, Scientific Specialist (Organics)

Maxim has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Dillon Consulting Limited
Client Project #: 18-7281-1000
Site Location: NORTHERN PULP

Your P.O. #: 43013552 Sampler Initials: JAM

RESULTS OF ANALYSES OF DRINKING WATER

Maxxam ID				GNN273			GNN274		
Sampling Date				2018/04/24 15:00			2018/04/24 11:30		
COC Number				656364-01-01			656364-01-01		
	UNITS	MAC	AO	SCALEHOUSE	RDL	QC Batch	MILL LAB	RDL	QC Batch
Calculated Parameters									
Anion Sum	me/L	- 1	**	9.48	N/A	5500108	1.57	N/A	5500108
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	×	£	230	1.0	5500104	16	1.0	5500104
Calculated TDS	mg/L	~	500	520	1.0	5500112	95	1.0	5500112
Carb. Alkalinity (calc. as CaCO3)	mg/L	1.0		ND	1.0	5500104	ND	1.0	5500104
Cation Sum	me/L	- 12		9.24	N/A	5500108	1.51	N/A	5500108
Hardness (CaCO3)	mg/L			290	1.0	5500106	24	1.0	5500106
Ion Balance (% Difference)	96			1.28	N/A	5500107	1.95	N/A	5500107
Langelier Index (@ 20C)	N/A	-		0.481		5500110	-2.20		5500110
Langelier Index (@ 4C)	N/A	~		0.233	1	5500111	-2.45		5500111
Nitrate (N)	mg/L	10		ND:	0.050	5500109	0.22	0.050	5500109
Saturation pH (@ 20C)	N/A	2		7.15		5500110	9.32		5500110
Saturation pH (@ 4C)	N/A			7.40		5500111	9.57		5500111
Inorganics									
Total Alkalinity (Total as CaCO3)	mg/L	11	- 6	230 (1)	25	5511380	16	5.0	5511380
Carbonaceous BOD	mg/L	1-1					ND	5.0	5502249
Total Chemical Oxygen Demand	mg/L	~					ND	5.0	5513173
Dissolved Chloride (CI)	mg/L	- 1	250	160	1.0	5511384	27	1.0	5511384
Colour	TCU		15	ND	5.0	5511395	ND	5.0	5511395

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

MAC, AO: Guideline - Summary of Guidelines for Canadian Drinking Water Quality (SGCDWQ), Health Canada, Feb. 2017

MAC= Maximum Acceptable Concentration (MAC) - established for substances that are known or suspected to cause adverse effects on health.

AO= Aesthetic Objectives (AO) - apply to characteristics of drinking water that can affect its acceptance by consumers or interfere with practices for supplying good quality water.

Note 1 Turbidity guideline value of 0.3 NTU based on conventional treatment system. For slow sand or diatomaceous earth filtration 1.0 NTU and for membrane filtration 0.1 NTU.

Note 2 Aluminum guideline value of 0.1 mg/L is for treatment plants using aluminum-based coagulants, 0.2mg/L applies to other types of treatment systems.

N/A = Not Applicable

ND = Not detected

(1) Elevated reporting limit due to sample matrix.

Page 1 of 1

Committee Accounts Payable N.S. Accounts Payable Pro Goo Sels Station Main New Grappow NS 8294 868 Pro Pro Tab 1776 a. The APRICONTheripulp cern APRICONTHERIPUL Cern The Committee Committee Cern The					Riport Selectories	Į			_		Project	Project information		Laboratory Use Only	Only
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Assessed Analytics between all Despisations and Macross Analytics



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant

Your C.O.C. #: 715991-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/06/05

Report #: R5739943 Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89C9662 Received: 2019/05/15, 13:12

Sample Matrix: Water # Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Carbonate, Bicarbonate and Hydroxide	1	N/A	2019/05/22		SM 23 4500-CO2 D
Alkalinity	Ŷ	N/A		ATL SOP 00013	EPA 310.2 R1974 m
Benzo(b/j)fluoranthene Sum (water)	i	N/A	2019/05/17	1000000	Auto Calc.
Carbonaceous BOD	1			ATL SOP 00041	SM 23 5210B m
Chloride	1	N/A	2019/05/17	ATL SOP 00014	SM 23 4500-CI- E m
Chemical Oxygen Demand (COD)	1	N/A		ATL SOP 00042	SM 23 5220D m
Colour	1	N/A	2019/05/16	ATL SOP 00020	SM 23 2120C m
Total Cyanide (1)	1		2019/05/16	CAM SOP-00457	OMOE E3015 5 m
Dioxins/Furans in Water (EPS 1/RM/23) (1, 6)	1	the same of the sa		BRL SOP-00406 (mod)	EPS 1/RM/23 m
Organic carbon - Diss (DOC) (7)	1	N/A	2019/05/16	ATL SOP 00203	SM 23 53108 m
Conductance - water	1	N/A	2019/05/22	ATL SOP 00004	SM 23 2510B m
TEH in Water (PIRI)	1	2019/05/16	2019/05/16	ATL SOP 00113	Atl. RBCA v3.1 m
Sulphide as H2S (1)	1	N/A	2019/05/17		
Hardness (calculated as CaCO3)	1	N/A	2019/05/17	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	1	2019/05/17	2019/05/17	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total MS	1	2019/05/16	2019/05/16	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	1	N/A	2019/05/22	N/A	Auto Calc.
Anion and Cation Sum	1	N/A	2019/05/22	N/A	Auto Calc.
Organic Halogen (Adsorbable) (2)	1	2019/05/16	2019/05/16	PTC SOP-00056	Coulometric - Titr.
Chlorate and Chlorite by IC (3)	1	N/A	2019/05/16	CAL SOP-00040	SM 23 4110D m
Nitrogen (Total) (4)	1	N/A	2019/05/22	BBY6SOP-00016	SM 22 4500-N C m
Resin and Fatty Acids (3)	1	2019/05/17	2019/05/22	CAL SOP-00099	AE129.0
Nitrogen Ammonia - water	1	N/A	2019/05/16	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2019/05/17	ATL SOP 00016	USGS 1-2547-11m
Nitrogen - Nitrite	1	N/A	2019/05/17	ATL SOP 00017	SM 23 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2019/05/21	ATL SOP 00018	ASTM D3867-16
PAH in Water by GC/MS (SIM)	1	2019/05/16	2019/05/16	ATL SOP 00103	EPA 8270E R6 m
PCBs in water by GC/ECD	1	2019/05/16	2019/05/17	ATL SOP 00107	EPA 8082A m
PCB Aroclor sum (water)	1	N/A	2019/05/17	N/A	Auto Calc.
Phenois in Pulp and Paper Mill Effluents (5)	ī	2019/05/16	2019/05/21		
(8) Hq	1	N/A	2019/05/22	ATL SOP 00003	SM 23 4500-H+ B m



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant

Your C.O.C. #: 715991-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/06/05

Report #: R5739943 Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89C9662 Received: 2019/05/15, 13:12

Sample Matrix: Water # Samples Received: 1

a samples neceived. 2		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Reference
Phosphorus - ortho	1	N/A	2019/05/20	ATL SOP 00021	SM 23 4500-P E m
VPH in Water (PIRI)	1	N/A	2019/05/21	ATL SOP 00118	Atl. RBCA v3.1 m
Salinity (9)	1	N/A	2019/05/21		SM 22 2520B
Sat. pH and Langelier Index (@ 20C)	1	N/A	2019/05/22	ATL SQP 00049	Auto Calc
Sat. pH and Langelier Index (@ 4C)	1	N/A	2019/05/22	ATL SOP 00049	Auto Calc
Reactive Silica	1	N/A	2019/05/17	ATL SOP 00022	EPA 366.0 m
Sulphate	1	N/A	2019/05/17	ATL SOP 00023	ASTM D516-16 m
Sulphide (1)	1	N/A	2019/05/17	CAM SOP-00455	SM 23 4500-5 G m
Total Dissolved Solids (TDS calc)	1	N/A	2019/05/21	N/A	Auto Calc.
Total Kjeldahl Nitrogen in Water (1)	1	2019/05/16	2019/05/17	CAM SOP-00938	OMOE E3516 m
Organic carbon - Total (TOC) (7)	1	N/A	2019/05/16	ATL SOP 00203	SM 23 5310B m
ModTPH (T1) Calc. for Water	1	N/A	2019/05/21	N/A	Atl, RBCA v3 m
Phosphorus Total Colourimetry	1	2019/05/16	2019/05/17	ATL SOP 00057	EPA 365.1 R2 m
Total Suspended Solids	1	2019/05/16	2019/05/21	ATL SOP 00007	SM 23 2540D m
Turbidity	1	N/A	2019/05/22	ATL SOP 00011	EPA 180.1 R2 m
Volatile Organic Compounds in Water	1	N/A	2019/05/16	ATL SOP 00133	EPA 8260D R4 m
Volatile Suspended Solids	1	N/A	2019/05/22	ATL SOP 00008	EPA 160.4 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

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Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant

Your C.O.C. #: 715991-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/06/05

Report #: R5739943 Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89C9662 Received: 2019/05/15, 13:12

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

- * RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
- (1) This test was performed by Bureau Veritas Laboratories Mississauga
- (2) This test was performed by Bedford to Edm Petrol Offsite
- (3) This test was performed by Bedford to Calgary Offsite
- (4) This test was performed by Bedford to Burnaby Offsite
- (5) This test was performed by Bedford to Montreal Subcontrac
- (6) Confirmatory runs for 2,3,7,8-TCDF are performed only if the primary result is greater than the RDL.
- (7) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.
- (8) The APHA Standard Method require pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.
- (9) Non-accredited test method

Encryption Key

Hoyonta Chanlevanos Project Sanades Assistant

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Maryann Comeau, Project Manager Email: Maryann COMEAU@bvlabs.com Phone# (902)420-0203 Ext: 298

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

RESULTS OF ANALYSES OF WATER

BV Labs ID		J\$1550			
Sampling Date		2019/05/14 13:00			
COC Number		715991-01-01			
	UNITS	Raw Water	RDL	MDL	QC Batch
Calculated Parameters				71100000	
Anion Sum	me/L	1.11	N/A	N/A	6122693
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	18	1.0	0.20	6122686
Calculated TDS	mg/L	65	1.0	0.20	6122701
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND	1.0	0.20	6122686
Cation Sum	me/L	1.05	N/A	N/A	6122693
Hardness (CaCO3)	mg/L	21	1.0	1.0	6122689
lon Balance (% Difference)	96	2.78	N/A	N/A	6122691
Langelier Index (@ 20C)	N/A	-2.08	1		6122697
Langelier Index (@ 4C)	N/A	-2.33			6122699
Nitrate (N)	mg/L	0.32	0.050	N/A	6122695
Saturation pH (@ 20C)	N/A	9.31			6122697
Saturation pH (@ 4C)	N/A	9.56			6122699
Sulphide (as H2S)	mg/L	ND	0.021	0.011	6122964
Inorganics	•				•
Total Alkalinity (Total as CaCO3)	mg/L	18	5.0	N/A	6124604
Carbonaceous BOD	mg/L	ND	5.0	N/A	6122932
Total Chemical Oxygen Demand	mg/L	ND	20	N/A	6127139
Dissolved Chlorate (ClO3-)	mg/L	ND	0.10	N/A	6134118
Dissolved Chloride (Ci-)	mg/L	20	1.0	N/A	6124605
Dissolved Chlorite (CLO2-)	mg/L	ND	0.10	N/A	6134118
Colour	TCU	26	5.0	N/A	6124568
Total Kjeldahl Nitrogen (TKN)	mg/L	0.13	0.10	0.060	6125745
Nitrate + Nitrite (N)	mg/L	0.32	0.050	N/A	6124610
Nitrite (N)	mg/L	ND	0.010	N/A	6124611
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	N/A	6125246
Dissolved Organic Carbon (C)	mg/L	4.4	0.50	N/A	6124868
Total Organic Carbon (C)	mg/L	4.3	0.50	N/A	6124855
Orthophosphate (P)	mg/L	0.013	0.010	N/A	6124609
рН	рH	7.22	N/A	N/A	6132815
Total Phosphorus	mg/L	ND	0.020	N/A	6124631
Salinity	N/A	ND	2.0	N/A	6130613
Reactive Silica (SiO2)	mg/L	2.7	0.50	N/A	6124608
Total Suspended Solids	mg/L	2.4	1.0	N/A	6124744

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected



RESULTS OF ANALYSES OF WATER

BV Labs ID		J\$1550			
Sampling Date		2019/05/14 13:00			
COC Number		715991-01-01			
	UNITS	Raw Water	RDL	MDL	QC Batch
Dissolved Sulphate (SO4)	mg/L	7.8	2.0	N/A	6124607
Sulphide	mg/L	ND	0.020	0.010	6127439
Total Cyanide (CN)	mg/L	ND	0.0050	0.00010	6125117
Turbidity	NTU	14	0.10	0.10	6132843
Volatile Suspended Solids	mg/L	ND	2.0	N/A	6133009
Conductivity	uS/cm	110	1.0	N/A	6132816
Nutritional Parameters					
Total Nitrogen (N)	mg/L	0.489	0.020	N/A	6135156
Organic Halogens		V. 17.			
Adsorbable Organic Halogen	mg/L	0.05	0.01	N/A	6126539
Subcontracted Analysis					
Subcontract Parameter	N/A	ATTACHED	N/A	N/A	6125980
RDL = Reportable Detection Lim QC Batch = Quality Control Batc N/A = Not Applicable ND = Not detected					



MERCURY BY COLD VAPOUR AA (WATER)

BV Labs ID		JSI550			
Sampling Date		2019/05/14 13:00			
COC Number		715991-01-01			[]
Ţ	UNITS	Raw Water	RDL	MDL	QC Batch
Metals					
Total Mercury (Hg)	ug/i.	ND	0.013	N/A	6127107
RDL = Reportable Detect QC Batch = Quality Cont ND = Not detected N/A = Not Applicable					

ELEMENTS BY ICP/MS (WATER)

BV Labs ID		JSI550			
Sampling Date		2019/05/14 13:00			
COC Number		715991-01-01			
	UNITS	Raw Water	RDL	MDL	QC Batch
Metals		11-41-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-			
Total Aluminum (Al)	ug/L	360	5.0	N/A	6124570
Total Antimony (Sb)	ug/t	ND	1.0	N/A	6124570
Total Arsenic (As)	ug/L	ND	1.0	N/A	6124570
Total Barium (Ba)	ug/L	30	1.0	N/A	6124570
Total Beryllium (Be)	ug/L	ND	1.0	N/A	6124570
Total Bismuth (Bi)	ug/L	ND	2.0	N/A	6124570
Total Boron (B)	ug/L	ND	50	N/A	6124570
Total Cadmium (Cd)	ug/L	ND	0.010	N/A	6124570
Total Calcium (Ca)	ug/L	5800	100	N/A	6124570
Total Chromium (Cr)	ug/L	1.5	1.0	N/A	6124570
Total Cobalt (Co)	ug/L	ND	0.40	N/A	6124570
Total Copper (Cu)	ug/L	3.5	0.50	N/A	6124570
Total Iron (Fe)	ug/L	360	50	N/A	6124570
Total Lead (Pb)	ug/t	ND	0.50	N/A	6124570
Total Magnesium (Mg)	ug/L	1600	100	N/A	6124570
Total Manganese (Mn)	ug/L	34	2.0	N/A	6124570
Total Molybdenum (Mo)	ug/L	ND	2.0	N/A	6124570
Total Nickel (Ni)	ug/L	ND	2.0	N/A	6124570
Total Phosphorus (P)	ug/L	ND	100	N/A	6124570
Total Potassium (K)	ug/L	740	100	N/A	6124570
Total Selenium (Se)	ug/L	ND	1.0	N/A	6124570
Total Silver (Ag)	ug/L	ND	0.10	N/A	6124570
Total Sodium (Na)	ug/L	14000	100	N/A	6124570
Total Strontium (Sr)	ug/L	27	2.0	N/A	6124570
Total Thallium (TI)	ug/L	ND	0.10	N/A	6124570
Total Tin (Sn)	ug/L	ND	2.0	N/A	6124570
Total Titanium (Ti)	ug/L	5.7	2.0	N/A	6124570
Total Uranium (U)	ug/L	ND	0.10	N/A	6124570
Total Vanadium (V)	ug/t.	ND	2.0	N/A	6124570
Total Zinc (Zn)	ug/L	ND	5.0	N/A	6124570

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		JSI550			
Sampling Date		2019/05/14 13:00			
COC Number		715991-01-01			
	UNITS	Raw Water	RDL	MDL	QC Batch
Polyaromatic Hydrocarbor	ns				
1-Methylnaphthalene	ug/L	ND	0.050	N/A	6124966
2-Methylnaphthalene	ug/t	ND	0.050	N/A	6124966
Acenaphthene	ug/L	ND	0.010	N/A	6124966
Acenaphthylene	ug/L	ND	0.010	N/A	6124966
Anthracene	ug/L	ND	0.010	N/A	6124966
Benzo(a)anthracene	ug/L	ND	0.010	N/A	6124966
Benzo(a)pyrene	ug/L	ND	0.010	N/A	6124966
Benzo(b)fluoranthene	ug/L	ND	0.010	N/A	6124966
Benzo(b/j)fluoranthene	ug/L	ND	0.020	N/A	6123000
Benzo(g,h,i)perylene	ug/L	ND	0.010	N/A	6124966
Benzo(j)fluoranthene	ug/L	ND	0.010	N/A	6124966
Benzo(k)fluoranthene	ug/L	ND	0.010	N/A	6124966
Chrysene	ug/L	ND	0.010	N/A	6124966
Dibenz(a,h)anthracene	ug/t.	ND	0.010	N/A	6124966
Fluoranthene	ug/L	ND	0.010	N/A	6124966
Fluorene	ug/L	ND	0.010	N/A	6124966
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.010	N/A	6124966
Naphthalene	ug/L	ND	0.20	N/A	6124966
Perylene	ug/L	ND	0.010	N/A	6124966
Phenanthrene	ug/L	ND	0.010	N/A	6124966
Pyrene	ug/L	ND	0.010	N/A	6124966
Surrogate Recovery (%)			-		
D10-Anthracene	%	89			6124966
D14-Terphenyl	%	90			6124966
D8-Acenaphthylene	%	86			6124966
RDL = Reportable Detectio QC Batch = Quality Control ND = Not detected N/A = Not Applicable					

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		JSI550			
Sampling Date		2019/05/14 13:00			
COC Number		715991-01-01			
	UNITS	Raw Water	RDL	MOL	QC Batch
Volatile Organics					
1,1-Dichloroethane	ug/L	ND	2.0	N/A	6124567
1,1-Dichloroethylene	ug/L	ND	0.50	1.0	6124567
1,1,1-Trichloroethane	ug/L	ND	1.0	N/A	6124567
1,1,2-Trichloroethane	ug/L	ND	1.0	N/A	6124567
1,1,2,2-Tetrachloroethane	ug/L	ND:	0.50	N/A	6124567
Ethylene Dibromide	ug/L	ND	0.20	0.50	6124567
1,2-Dichlorobenzene	ug/L	ND:	0.50	N/A	6124567
1,2-Dichloroethane	ug/L	ND	1.0	N/A	6124567
cis-1,2-Dichloroethylene	ug/L	ND	0.50	N/A	6124567
trans-1,2-Dichloroethylene	ug/L	ND	0.50	N/A	6124567
1,2-Dichloropropane	ug/L	ND	0.50	-	6124567
1,3-Dichlorobenzene	ug/L	ND	1.0	N/A	6124567
cis-1,3-Dichloropropene	ug/L	ND	0.50	N/A	6124567
trans-1,3-Dichloropropene	ug/L	ND	0.50	N/A	6124567
1,4-Dichlorobenzene	ug/L	ND	1.0	N/A	6124567
Benzene	ug/L	ND	1.0	N/A	6124567
Bromodichloromethane	ug/L	ND:	1.0	0.20	6124567
Bromoform	ug/L	ND	1.0	0.20	6124567
Bromomethane	ug/L	ND:	0.50	N/A	6124567
Carbon Tetrachloride	ug/L	ND	0.50	N/A	6124567
Chlorobenzene	ug/L	ND	1.0	N/A	6124567
Chloroethane	ug/L	ND	8.0	N/A	6124567
Chloraform	ug/L	2.1	1.0	0.20	6124567
Chloromethane	ug/L	ND	8.0	N/A	6124567
Dibromochloromethane	ug/L	ND	1.0	0.20	6124567
Methylene Chloride(Dichloromethane)	ug/L	ND	3.0	N/A	6124567
Ethylbenzene	ug/L	ND	1.0	N/A	6124567
Methyl t-butyl ether (MTBE)	ug/L	ND	2.0	N/A	6124567
Styrene	ug/L	ND	1.0	N/A	6124567
Tetrachioroethylene	ug/L	ND:	1.0	N/A	6124567
Toluene	ug/L	ND:	1.0	N/A	6124567
Trichloroethylene	ug/L	ND:	1.0	N/A	6124567
Trichlorofluoromethane (FREON 11)	ug/L	ND	8.0	N/A	6124567

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable



VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		JSI550			
Sampling Date		2019/05/14 13:00			
COC Number		715991-01-01			
	UNITS	Raw Water	RDL	MDL	QC Batch
Vinyl Chloride	ug/L	ND	0.50	2.0	6124567
o-Xylene	ug/L	ND	1.0	N/A	6124567
p+m-Xylene	ug/L	ND:	2.0	N/A	6124567
Total Xylenes	ug/L	ND	1.0	1.0	6124567
Total Trihalomethanes	ug/L	2.1	1.0	N/A	6124567
Surrogate Recovery (%)					
4-Bromofluorobenzene	-96	97			6124567
D4-1,2-Dichloroethane	96	110			6124567
D8-Toluene	96	100			6124567
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					
ND = Not detected					
N/A = Not Applicable					

ATLANTIC RBCA HYDROCARBONS (WATER)

BV Labs ID		JSI550			
Sampling Date		2019/05/14 13:00			
COC Number		715991-01-01			
	UNITS	Raw Water	RDL	MDL	QC Batch
Petroleum Hydrocarbons					
Benzene	mg/L	ND.	0.0010	N/A	6122979
Toluene	mg/L	ND.	0.0010	N/A	6122979
Ethylbenzene	mg/L	ND	0.0010	N/A	6122979
Total Xylenes	mg/L	ND:	0.0020	N/A	6122979
C6 - C10 (less BTEX)	mg/L	ND	0.010	N/A	6122979
>C10-C16 Hydrocarbons	mg/L	ND	0.050	N/A	6124752
>C16-C21 Hydrocarbons	mg/L	ND	0.050	N/A	6124752
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>ND</td><td>0.10</td><td>N/A</td><td>6124752</td></c32>	mg/L	ND	0.10	N/A	6124752
Modified TPH (Tier1)	mg/L	ND	0.10	N/A	6122285
Reached Baseline at C32	mg/L	NA	N/A	N/A	6124752
Hydrocarbon Resemblance	mg/L	NA.	N/A	N/A	6124752
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	96	97			6124752
n-Dotriacontane - Extractable	%	98			6124752
Isobutylbenzene – Volatile	96	106			6122979
RDL = Reportable Detection Lin QC Batch = Quality Control Bate ND = Not detected N/A = Not Applicable					

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

BV Labs ID		JSI550			
Sampling Date		2019/05/14 13:00			
COC Number		715991-01-01			ji
	UNITS	Raw Water	RDL	MDL	QC Batch
PCBs					
Araclar 1016	ug/L	ND	0.050	N/A	6124907
Arodor 1221	ug/L	ND	0.050	N/A	6124907
Aroclor 1232	ug/L	ND	0.050	N/A	6124907
Araciar 1248	ug/L	ND	0.050	N/A	6124907
Aroclor 1242	ug/L	ND	0.050	N/A	6124907
Aracior 1254	ug/L	ND	0.050	N/A	6124907
Arocior 1260	ug/t	ND	0.050	N/A	6124907
Calculated Total PCB	ug/L	ND	0.050	N/A	6123002
Surrogate Recovery (%)			-		_
Decachlorobiphenyl	%	90			6124907

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

RESIN AND FATTY ACIDS BY GC-MS (WATER)

				_	
BV Labs ID		JSI550			
Sampling Date		2019/05/14 13:00			
COC Number		715991-01-01			
	UNITS	Raw Water	RDL	MDL	QC Batch
Calculated Parameters					
Total Fatty Acids	mg/L	ND	0.072	N/A	6134119
Total Resin Acids	mg/L	ND	0.060	N/A	6134119
Fatty Acids					
9,10-Dichlorostearic acid	mg/L	ND	0.0060	N/A	6134119
Decanoic Acid (C10)	mg/L	ND:	0.0060	N/A	6134119
Docosanoic acid (C22)	mg/L	ND	0.0060	N/A	6134119
Dodecanoic acid (C12)	mg/L	ND	0.0060	N/A	6134119
Eicosanoic acid (C20)	mg/L	ND	0.0060	N/A	6134119
Hexadecanoic acid (C16)	mg/L	ND	0.0060	N/A	6134119
Linoleic acid (C18:2)	mg/L	ND	0.0060	N/A	6134119
Linolenic acid (C18:3)	mg/L	ND	0.0060	N/A	6134119
Octadecanoic acid (C18)	mg/L	ND	0.0060	N/A	6134119
Oleic acid (C18:1)	mg/L	ND	0.0060	N/A	6134119
Tetradecanoic acid (C14)	mg/L	ND	0.0060	N/A	6134119
Undecanoic acid (C11)	mg/L	ND	0.0060	N/A	6134119
Resin Acids					
12,14-Dichlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6134119
12-Chlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6134119
14-Chlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6134119
Abietic acid	mg/L	ND	0.0060	N/A	6134119
Dehydroabietic acid	mg/L	ND	0.0060	N/A	6134119
Isopimaric acid	mg/L	ND	0.0060	N/A	6134119
Neoabietic acid	mg/L	ND (1)	0.0060	N/A	6134119
Palustric acid	mg/L	ND (1)	0.0060	N/A	6134119
Pimaric acid	mg/L	ND	0.0060	N/A	6134119
Sandaracopimaric acid	mg/L	ND	0.0060	N/A	6134119

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

(1) Matrix spike exceeds acceptance limits due to matrix interference.



DIOXINS AND FURANS BY HRMS (WATER)

BV Labs ID		JSI550							
Sampling Date		2019/05/14 13:00							
COC Number	ĺ .	715991-01-01				TOXIC EQUIV	VALENCY	# of	
	UNITS	Raw Water	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Dioxins & Furans									
2,3,7,8-Tetra CDD *	pg/L	ND	1.13	9.76	N/A	1.00	1.13		6151976
1,2,3,7,8-Penta CDD *	pg/L	ND	0.992	9.76	N/A	1.00	0.992		6151976
1,2,3,4,7,8-Hexa CDD *	pg/L	ND	1.22	9.76	N/A	0.100	0.122		6151976
1,2,3,6,7,8-Hexa CDD *	pg/L	ND	1.06	9,76	N/A	0.100	0.106		6151976
1,2,3,7,8,9-Hexa CDD *	pg/L	ND.	1.03	9.76	N/A	0.100	0.103		6151976
1,2,3,4,6,7,8-Hepta CDD *	pg/L	ND	1.00	9.76	N/A	0.0100	0.0100		6151976
Octa CDD *	pg/L	15.6	1.03	97.6	N/A	0.000300	0.00468		6151976
Total Tetra CDD *	pg/L	ND	1.13	9.76	N/A			0	6151976
Total Penta CDD *	pg/L	ND	0.992	9.76	N/A			0	6151976
Total Hexa CDD *	pg/L	ND (1)	1.98	9.76	N/A			0	6151976
Total Hepta CDD *	pg/L	1.17	1.00	9.76	N/A			1	6151976
2,3,7,8-Tetra CDF **	pg/L	ND	1.06	9.76	N/A	0.100	0.106		6151976
1,2,3,7,8-Penta CDF **	pg/L	ND	1.07	9.76	N/A	0.0300	0.0321		6151976
2,3,4,7,8-Penta CDF **	pg/L	ND	1.08	9.76	N/A	0.300	0.324		6151976
1,2,3,4,7,8-Hexa CDF **	pg/L	ND	0.872	9.76	N/A	0.100	0.0872		6151976
1,2,3,6,7,8-Hexa CDF **	pg/L	ND	0.727	9,76	N/A	0.100	0.0727		6151976
2,3,4,6,7,8-Hexa CDF **	pg/L	ND:	0.822	9.76	N/A	0.100	0.0822		6151976
1,2,3,7,8,9-Hexa CDF.**	pg/L	ND:	0.911	9.76	N/A	0.100	0.0911		6151976
1,2,3,4,6,7,8-Hepta CDF **	pg/L	ND	0.867	9.76	N/A	0.0100	0.00867		6151976
1,2,3,4,7,8,9-Hepta CDF **	pg/L	ND	0.986	9.76	N/A	0.0100	0.00986		6151976
Octa CDF **	pg/L	ND	1.05	97.6	N/A	0.000300	0.000315		6151976
Total Tetra CDF **	pg/L	ND	1.06	9.76	N/A			0	6151976
Total Penta CDF **	pg/L	ND	1.08	9.76	N/A			0	6151976
Total Hexa CDF **	pg/L	ND	0.827	9.76	N/A			0	6151976
Total Hepta CDF **	pg/L	ND	0.923	9.76	N/A			0	6151976

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,

The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

* CDD = Chloro Dibenzo-p-Dioxin

ND = Not detected

N/A = Not Applicable

** CDF = Chloro Dibenzo-p-Furan

(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.



DIOXINS AND FURANS BY HRMS (WATER)

BV Labs ID		JSI550							
Sampling Date		2019/05/14 13:00							
COC Number		715991-01-01				TOXIC EQUIV	/ALENCY	# of	
	UNITS	Raw Water	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg/L			Γ			3.28	1	
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	107						7	6151976
C13-1234678 HeptaCDF **	%	105							6151976
C13-123678 HexaCDD *	96	129							6151976
C13-123678 HexaCDF **	%	92							6151976
C13-12378 PentaCDD *	- 36	91							6151976
C13-12378 PentaCDF **	96	73							6151976
C13-2378 TetraCDD *	%	107							6151976
C13-2378 TetraCDF **	96	94							6151976
C13-OCDD *	%	107							6151976

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,

The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

CDD = Chloro Dibenzo-p-Dioxin

** CDF = Chloro Dibenzo-p-Furan



BV Labs Job #: 89C9662 Northern Pulp N.S.
Report Date: 2019/06/05 Client Project #: Effluent Treatment Plant
Your P.O. #: 43013552

GENERAL COMMENTS

Each t	emperature is the	average of up to t	ree cooler temperatures taken at receipt
	Package 1	15.3°C	
8 9	20 20 35	09	r.
Result	s relate only to th	e items tested.	



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6122932	MLW	QC Standard	Carbonaceous BOD	2019/05/21	TARRE	105	%	80 - 120
5122932	MLW	Spiked Blank	Carbonaceous BOD	2019/05/21		110	%	80 - 120
6122932	MLW	Method Blank	Carbonaceous BOD	2019/05/21	ND,		mg/L	
		THE CHOICE CONTIN		4040,000	RDL=2.0			
5122932	MLW	RPO	Carbonaceous BOD	2019/05/21	4.6		%	25
	100000	11.57575	Carbonaceous BOD	2019/05/21	5.4		96	25
5122979	THE	Matrix Spike	Isobutylbenzene - Volatile	2019/05/21		110	36	70 - 130
			Benzene	2019/05/21		132 (1)	%	70 - 130
			Toluene	2019/05/21		136(1)	16.	70 - 130
			Ethylbenzene	2019/05/21		138 (1)	26	70 - 130
			Total Xylenes	2019/05/21		133 (1)	96	70 - 130
122979	THE	Spiked Blank	Isobutylbenzene - Volatile	2019/05/21		106	96	70 - 130
		C42877-70-41-13-10-41-80-41	Benzene	2019/05/21		99	%	70 - 130
			Toluene	2019/05/21		101	%	70 - 130
			Ethylbenzene	2019/05/21		102	76	70 - 130
			Total Xylenes	2019/05/21		101	%	70 - 130
122979	THE	Method Blank	Isobutylbenzene - Volatile	2019/05/21		106	%	70 - 130
			Benzene	2019/05/21	ND, RDL=0.0010		mg/L	
			Toluene	2019/05/21	ND, RDL=0.0010		mg/L	
			Ethylbenzene	2019/05/21	ND, RDL=0.0010		mg/L	
			Total Xylenes	2019/05/21	ND, RDL=0.0020		mg/L	
			C6 - C10 (less BTEX)	2019/05/21	ND, RDL=0.010		mg/L	
6122979	THE	RPD	Benzene	2019/05/21	NC		%.	40
			Toluene	2019/05/21	NC		%	40
			Ethylbenzene	2019/05/21	NC		%	40
			Total Xylenes	2019/05/21	NC		16	40
			C6 - C10 (less BTEX)	2019/05/21	NC		96	40
124567	ASL	Matrix Spike	4-Bromoflugrobenzene	2019/05/16		102	76	70 - 130
			D4-1,2-Dichloroethane	2019/05/16		114	%	70 - 130
			08-Toluene	2019/05/16		96	16	70 - 130
			1,1-Dichloroethane	2019/05/16		104	94	70 - 130
			1,1-Dichloroethylene	2019/05/16		107	76	70 - 130
			1,1,1-Trichloroethane	2019/05/16		106	. %	70 - 130
			1,1,2-Trichloroethane	2019/05/16		104	16	70 - 130
			1,1,2,2-Tetrachloroethane	2019/05/16		108	. %	70 - 130
			Ethylene Dibromide	2019/05/16		106	76	70 - 130
			1,2-Dichlorobenzene	2019/05/16		91	%	70 - 130
			1,2-Dichloroethane	2019/05/16		107	76	70 - 130
			cis-1,2-Dichloroethylene	2019/05/16		97	%	70 - 130
			trans-1,2-Dichloroethylene	2019/05/16		103	%	70 - 130
			1,2-Dichloropropane	2019/05/16		102	14	70 - 130
			1,3-Dichlorobenzene	2019/05/16		88	%	70 - 130
			cis-1,3-Dichloropropene	2019/05/16		101	36	70 - 130
			trans-1,3-Dichloropropene	2019/05/16		108	96	70 - 136
			1,4-Dichlorobenzene	2019/05/16		86	N	70 - 130
			Benzene	2019/05/16		92	%	70 - 130
			Bromodichloromethane	2019/05/16		98	94	70 - 130
			Bromaform	2019/05/16		101	%	70 - 130
			Bromomethane	2019/05/16		99	56	60 - 140



QA/QC	****	067	š	Sec. Section 6	VI-S		**********	0011-0
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Carbon Tetrachloride	2019/05/16		101	74	70 - 13
			Chlorobenzene	2019/05/16		97	%	70 - 130
			Chloroethane	2019/05/16		90	36	60 - 140
			Chloroform	2019/05/16		97	%	70 - 130
			Chloromethane	2019/05/16		101	76	60 - 140
			Dibromochloromethane	2019/05/16		103	%	70 - 130
			Methylene Chloride(Dichloromethane)	2019/05/16		100	%	70 - 130
			Ethylbenzene	2019/05/16		99	%	70 - 130
			Methyl t-butyl ether (MTBE)	2019/05/16		99	%	70 - 130
			Styrene	2019/05/16		101	%	70 - 130
			Tetrachloroethylene	2019/05/16		93	96	70 - 130
			Toluene	2019/05/16		97	%	70 - 130
			Trichloroethylene	2019/05/16		96	76	70 - 130
			Trichlorofluoromethane (FREON 11)	2019/05/16		92	56	60 - 140
			Vinyl Chloride	2019/05/16		95	96	60 - 140
			o-Xylene	2019/05/16		97	%	70 - 130
			p+m-Xylene	2019/05/15		95	YL.	70 - 130
6124567	ASL	Spiked Blank	4-Bromofluorobenzene	2019/05/16		100	96.	70 - 130
			D4-1,2-Dichloroethane	2019/05/16		106	96	70 - 130
			D8-Toluene	2019/05/16		98	%	70 - 130
			1,1-Dichloroethane	2019/05/16		103	76	70 - 130
			1,1-Dichloroethylene	2019/05/16		109	%	70 - 130
			1,1,1-Trichloroethane	2019/05/16		106	%	70 - 130
			1,1,2-Trichloroethane	2019/05/16		99	76.	70 - 130
			1,1,2,2-Tetrachloroethane	2019/05/16		99	74	70 - 130
			Ethylene Dibromide	2019/05/16		100	%	70 - 130
			1,2-Dichlorobenzene	2019/05/16		92	36.	70 - 130
			1.2-Dichloroethane	2019/05/16		100	76	70 - 130
			cis-1,2-Dichloroethylene	2019/05/16		95	%	70 - 130
			trans-1,2-Dichloroethylene	2019/05/16		105	%	70 - 130
			1,2-Dichloropropane	2019/05/16		101	36	70 - 130
			1.3-Dichlorobenzene	2019/05/16		90	%	70 - 130
			cis-1,3-Dichlaropropene	2019/05/16		100	%	70 - 130
			trans-1,3-Dichloropropene	2019/05/16		104	%	70 - 130
			1,4-Dichlorobenzene	2019/05/16		89	96	70 - 130
			Benzene	2019/05/16		91	%	70 - 130
			Bromodichloromethane	2019/05/16		96	%	70 - 130
			Bromoform	2019/05/16		94	96	70 - 130
			Bromomethane	2019/05/16		95	96	60 - 140
			Carbon Tetrachloride	2019/05/16		102		
							%	70 - 130
			Chlorobenzene	2019/05/16		94	%	70 - 130
			Chloroethane	2019/05/16		89	36	60 - 140
			Chloroform	2019/05/16		95	%	70 - 130
			Chloromethane	2019/05/16		99	76	60 - 140
			Dibromochloromethane	2019/05/16		99	%.	70 - 130
			Methylene Chloride(Dichloromethane)	2019/05/16		96	96.	70 - 130
			Ethylbenzene	2019/05/16		98	36	70 - 130
			Methyl t-butyl ether (MT8E)	2019/05/16		97	76	70 - 130
			Styrene	2019/05/16		103	76.	70 - 130
			Tetrachloroethylene	2019/05/16		98	%.	70 - 130
			Toluene	2019/05/16		98	36	70 - 130
			Trichloroethylene	2019/05/16		98	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2019/05/16		94	76.	60 - 140
			Vinyl Chloride	2019/05/16		95	%	60 - 140



Report Date: 2019/06/05

Northern Pulp N.S. Client Project #: Effluent Treatment Plant Your P.O. #: 43013552

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
enset.	21166		o-Xylene	2019/05/16	of one most	98	76	70 - 13
			p+m-Xylene	2019/05/16		96	%	70 - 13
124567	ASL	Method Blank	4-Bromofluorobenzene	2019/05/16		98	36	70 - 13
			D4-1,2-Dichloroethane	2019/05/16		108	%	70 - 13
			D8-Toluene	2019/05/16		100	%	70 - 13
			1,1-Dichloroethane	2019/05/16	ND.		ug/L	
			PSS 25-116-53-66-66-115-11	WO SPANGEMEN	RDL=2.0		3.25	
			1,1-Dichloroethylene	2019/05/16	ND, RDL=0.50		ug/t	
			1.1.1-Trichloroethane	2019/05/16	ND, RDL=1.0		ug/L	
			1,1,2-Trichlorgethane	2019/05/16	ND, RDL=1.0		ug/L	
		1,1,2,2-Tetrachioroethane	2019/05/16	ND, RDL=0.50		ug/L		
		Ethylene Dibromide	2019/05/16	ND, RDL=0.20		ug/L		
			1,2-Dichlorobenzene	2019/05/16	ND, RDL=0.50		ug/t	
			1,2-Dichloroethane	2019/05/16	ND, RDL=1.0		ug/L	
			cis-1,2-Dichloroethylene	2019/05/16	ND, RDL=0.50		ug/L	
			trans-1,2-Dichloroethylene	2019/05/16	ND, RDL=0.50		ug/L	
			1,2-Dichloropropane	2019/05/16	ND, RDL=0.50		ug/L	
			1,3-Dichlorobenzene 2019/05/16 ND, RDL=1.0		ug/t			
			cis-1,3-Dichloropropene	2019/05/16	ND, RDL=0.50		ug/L	
			trans-1,3-Dichloropropene	2019/05/16	ND, RDL=0.50		ug/L	
			1,4-Dichlorobenzene	2019/05/16	ND, RDL=1.0		ug/L	
			Benzene	2019/05/16	ND, RDL=1.0		ug/L	
			Bromodichloromethane	2019/05/16	ND, RDL=1.0		ug/t	
			Bromoform	2019/05/16	ND, RDL=1.0		ug/L	
			Bromomethane	2019/05/16	ND, RDL=0.50		ug/L	
			Carbon Tetrachloride	2019/05/16	ND, RDL=0.50		ug/t	
			Chlorobenzene	2019/05/16	ND, RDL=1.0		ug/L	
			Chloroethane	2019/05/16	ND, RDL=8.0		ug/L	
			Chloroform	2019/05/16	ND, RDL=1.0		ug/t	
			Chloromethane	2019/05/16	ND, RDL=8.0		ug/L	
			Dibromochloromethane	2019/05/16	ND, RDL=1.0		ug/L	



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Methylene Chloride(Dichloromethane)	2019/05/16	ND, RDL=3.0		ug/L	
			Ethylbenzene	2019/05/16	ND, RDL=1.0		ug/L	
			Methyl t-butyl ether (MTBE)	2019/05/16	ND, RDL=2.0		ug/L	
			Styrene	2019/05/16	ND, RDL=1.0		ug/L	
			Tetrachloroethylene	2019/05/16	ND, RDL=1.0		ug/L	
			Toluene	2019/05/16	ND, RDL=1.0		ug/L	
			Trichloroethylene	2019/05/16	ND, RDL=1.0		ug/L	
			Trichlorofluoromethane (FREON 11)	2019/05/16	ND, RDL=8.0		ug/L	
			Vinyl Chloride	2019/05/16	ND, RDL=0.50		ug/t	
			o-Xylene	2019/05/16	ND, RDL=1.0		ug/L	
			p+m-Xylene	2019/05/16	ND, RDL=2.0		ug/L	
			Total Xylenes	2019/05/16	ND, RDL=1.0		ug/L	
			Total Tribalomethanes	2019/05/16	ND, RDL=1.0		ug/L	
124567	ASL	RPD [JSI550-10]	1,1-Dichloroethane	2019/05/16	NC		%	40
		DATE OF THE PARTY OF	1,1-Dichloroethylene	2019/05/16	NC		14.	40
			1.1.1-Trichlorgethane	2019/05/16	NC		%.	40
			1,1,2-Trichloroethane	2019/05/16	NC		96	40
			1,1,2,2-Tetrachloroethane	2019/05/16	NC		%	40
			Ethylene Dibromide	2019/05/16	NC		%	40
			1,2-Dichlorobenzene	2019/05/16	NC		96.	40
			1,2-Dichloroethane	2019/05/16	NC		96	40
			cis-1,2-Dichloroethylene	2019/05/16	NC		%	40
			trans-1,2-Dichloroethylene	2019/05/16	NC		%	40
			1,2-Dichloropropane	2019/05/16	NC		26	40
			1.3-Dichlorobenzene	2019/05/16	NC		76	40
			cis-1,3-Dichloropropene	2019/05/16	NC		%	40
			trans-1,3-Dichloropropene	2019/05/16	NC		%	40
			1,4-Dichlorobenzene	2019/05/16	NC		%	40
			Benzene	2019/05/16	NC		76	40
			Bromodichloromethane	2019/05/16	NC		16	40
			Bromoform	2019/05/16	NC		16	40
			Bromomethane	2019/05/16	NC		96	40
			Carbon Tetrachloride	2019/05/16	NC		%	40
			Chlorobenzene	2019/05/16	NC		16	40
			Chloroethane	2019/05/16	NC		76	40
			Chloroform	2019/05/16	1.4		96	40
			Chloromethane	2019/05/16	NC.		96	40
			Dibromochloromethane	2019/05/16	NC		16	40
			Methylene Chloride(Dichloromethane)	2019/05/16	NC		56	40
			Ethylbenzene	2019/05/16	NC		36	40
			Methyl t-butyl ether (MTBE)	2019/05/16	NC		20	40



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
project.	mile:	PROCEEDING.	Styrene	2019/05/16	NC	Hermadia	%	40
			Tetrachloroethylene	2019/05/16	NC		%	40
			Toluene	2019/05/16	NC		34	40
			Trichloroethylene	2019/05/16	NC.		%	40
			Trichlorofluoromethane (FREON 11)	2019/05/16	NC		35	40
			Vinyl Chloride	2019/05/16	NC		%	40
			o-Xylene	2019/05/16	NC		36	40
			1.00		NC			40
			p+m-Xylene	2019/05/16			%	
			Total Xylenes	2019/05/16	NC		96	40
	. No.	and other and the second	Total Trihalomethanes	2019/05/16	1.4		%	40
5124568	NRG	Spiked Blank	Colour	2019/05/16	500	105	96	80 - 12
5124568	NRG	Method Blank	Colour	2019/05/16	ND, RDL=5.0		TCU	
124568	NRG	RPD	Colour	2019/05/16	NC		N.	20
5124570	BAN	Matrix Spike	Total Aluminum (AI)	2019/05/16		98	76	80 - 12
			Total Antimony (Sb)	2019/05/16		101	%	80 - 12
			Total Arsenic (As)	2019/05/16		98	76	80 - 12
			Total Barium (8a)	2019/05/16		97	%	80 - 12
			Total Beryllium (Be)	2019/05/16		98	76	80 - 12
			Total Bismuth (Bi)	2019/05/16		96	14	80 - 12
			Total Boron (B)	2019/05/16		99	%	80 - 12
			Total Cadmium (Cd)	2019/05/16		97	%	80 - 12
			Total Calcium (Ca)	2019/05/16		101	96	80 - 12
			Total Chromium (Cr)	2019/05/16		99	36	80 - 12
			Total Cobalt (Co)	2019/05/16		103	%	80 - 12
			Total Copper (Cu)	2019/05/16		96	16	80 - 12
			Total Iron (Fe)	2019/05/16		104	96	80 - 12
			Total Lead (Pb)	2019/05/16		99	%	80 - 12
			Total Magnesium (Mg)	2019/05/16		102	%	80 - 12
			Total Manganese (Mn)	2019/05/16		98	N.	80 - 12
			Total Molybdenum (Mo)	2019/05/16		99	%	80 - 12
			Total Nickel (Ni)	2019/05/16		100	%	80 - 17
			Total Phosphorus (P)	2019/05/16		103	Y.	80 - 12
			Total Potassium (K)	2019/05/16		103	36	80 - 12
			Total Selenium (Se)	2019/05/16		98	36	80 - 12
			Total Silver (Ag)	2019/05/16		98	36	80 - 12
			Total Sodium (Na)	2019/05/16		98	76	80 - 12
			Total Strontium (Sr)	2019/05/16		98	26	80 - 12
			Total Thallium (TI)	2019/05/16		100	%	80 - 12
			Total Tin (Sn)	2019/05/16		101	*	80 - 12
			Total Titanium (Ti)	2019/05/16		100	%	80 - 12
			Total Uranium (U)	2019/05/16		103	%	80 - 12
			Total Variadium (V)	2019/05/16		98	76	80 - 12
	1 0 000	ISTWO NAMES OF	Total Zinc (Zn)	2019/05/16		97	%	80 - 12
124570	BAN	Spiked Blank	Total Aluminum (AI)	2019/05/16		99	76	80 - 12
			Total Antimony (Sb)	2019/05/16		100	%	80 - 12
			Total Arsenic (As)	2019/05/16		97	76	80 - 12
			Total Barium (Ba)	2019/05/16		98	14	80 - 12
			Total Beryllium (Be)	2019/05/16		99	76	80 - 12
			Total Bismuth (Bi)	2019/05/16		98	96	80 - 12
			Total Boron (B)	2019/05/16		99	76	80 - 12
			Total Cadmium (Cd)	2019/05/16		96	14	80 - 12
			Total Calcium (Ca)	2019/05/16		104	%	80 - 12
			Total Chromium (Cr)	2019/05/16		100	36.	80 - 12



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
Paren	mit	Mertha	Total Cobalt (Co)	2019/05/16	Ading	104	%	80 - 120
			Total Copper (Cu)	2019/05/16		100	%	80 - 120
			Total iron (Fe)	2019/05/16		104	34	80 - 120
			Total Lead (Pb)	2019/05/16		99	%	80 - 120
			Total Magnesium (Mg)	2019/05/16		104	%	80 - 120
			Total Manganese (Mn)	2019/05/16		100	%	80 - 120
			Total Molybdenum (Mo)	2019/05/16		100	96	80 - 120
			Total Nickel (Ni)	2019/05/16		101	%	80 - 120
			Total Phosphorus (P)	2019/05/16		103	96	80 - 120
			Total Potassium (K)	2019/05/16		102	%	80 - 120
			Total Selenium (Se)	2019/05/16		97	96	80 - 120
			Total Silver (Ag)	2019/05/16		96	%	80 - 120
			Total Sodium (Na)	2019/05/16		100	%	80 - 120
			Total Strontium (Sr)	2019/05/16		101	%	80 - 120
			Total Thallium (TI)	2019/05/16		100	96	80 - 120
			Total Tin (Sn)	2019/05/16		98	%	80 - 120
			Total Titanium (Ti)	2019/05/16		101	%	80 - 120
			Total Uranium (U)	2019/05/16		103	96.	80 - 120
			Total Vanadium (V)	2019/05/16		99	96	80 - 120
			Total Zinc (Zn)	2019/05/16		98	76	80 - 120
124570	BAN	Method Blank	Total Aluminum (Al)	2019/05/16	ND,		ug/L	
124370 BAN	HICKING DISIN	production on president and the Production		RDL=5.0				
			Total Antimony (Sb)	2019/05/16	ND, RDL=1.0		ug/L	
			Total Arsenic (As)	2019/05/16	ND, RDL=1.0		ug/L	
			Total Barium (Ba)	2019/05/16	ND, RDL=1.0		ug/L	
			Total Beryllium (Be)	2019/05/16	ND, RDL=1.0		ug/L	
			Total Bismuth (Bi)	2019/05/16	ND, RDL=2.0		ug/L	
			Total Boron (B)	2019/05/16	ND, RDL=50		ug/t	
			Total Cadmium (Cd)	2019/05/16	ND. RDL=0.010		ug/L	
			Total Calcium (Ca)	2019/05/16	ND, RDL=100		ug/L	
			Total Chromium (Cr)	2019/05/16	ND, RDL=1.0		ug/L	
			Total Cobalt (Co)	2019/05/16	ND, RDL=0.40		ug/L	
			Total Copper (Cu)	2019/05/16	ND, RDL=0.50		ug/L	
			Total tron (Fe)	2019/05/16	ND, RDL=50		ug/L	
		Total Lead (Pb)	Total Lead (Pb)	2019/05/16	ND, RDL=0.50		ug/L	
	Total Magnesium (Mg)	Total Magnesium (Mg)	2019/05/16	ND, RDL=100		ug/L		
			Total Manganese (Mn)	2019/05/16	ND, RDL=2.0		ug/L	
			Total Molybdenum (Mo)	2019/05/16	ND, RDL=2.0		ug/L	



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Total Nickel (NI)	2019/05/16	ND, RDL=2.0		ug/L	
			Total Phosphorus (P)	2019/05/16	ND, RDL=100		ug/L	
			Total Potassium (K)	2019/05/16	ND, RDL=100		ug/L	
			Total Selenium (Se)	2019/05/16	ND, RDL=1.0		ug/L	
			Total Silver (Ag)	2019/05/16	ND, RDL=0.10		ug/L	
			Total Sodium (Na)	2019/05/16	ND, RDL=100		ug/L	
			Total Strontium (Sr)	2019/05/16	ND, RDL=2.0		ug/L	
			Total Thallium (TI)	2019/05/16	ND, RDL=0.10		ug/L	
			Total Tin (Sn)	2019/05/16	ND, RDL=2.0		ug/t	
			Total Titanium (Ti)	2019/05/16	ND, RDL=2.0		ug/L	
			Total Uranium (U)	2019/05/16	ND, RDL=0.10		ug/L	
			Total Vanadium (V)	2019/05/16	ND, RDL=2.0		ug/L	
			Total Zinc (Zn)	2019/05/16	ND, RDL=5.0		ug/L	
124570	BAN	RPD	Total Aluminum (AI) 2019/05/16 NC %	20				
			Total Antimony (Sb)	2019/05/16	NC		14.	20
			Total Arsenic (As)	2019/05/16	NC		%.	20
			Total Barium (8a)	2019/05/16	2.3		96	20
			Total Beryllium (Be)	2019/05/16	NC		%	20
			Total Bismuth (Bi)	2019/05/16	NC		%	20
			Total Boron (B)	2019/05/16	NC		96.	20
			Total Cadmium (Cd)	2019/05/16	NC		96	20
			Total Calcium (Ca)	2019/05/16	3.3		%	20
			Total Chromium (Cr)	2019/05/16	NC		%	20
			Total Cobalt (Co)	2019/05/16	1.7		56	20
			Total Copper (Cu)	2019/05/16	3.0		76	20
			Total fron (Fe)	2019/05/16	2.0		96	20
			Total Lead (Pb)	2019/05/16	NC		%	20
			Total Magnesium (Mg)	2019/05/16	4.2		%	20
			Total Manganese (Mn)	2019/05/16	2.7		76	20
			Total Molybdenum (Mo)	2019/05/16	NC		N	20
			Total Nickel (Ni)	2019/05/16	NC		16	20
			Total Phosphorus (P)	2019/05/16	10		96	20
			Total Potassium (K)	2019/05/16	7.2		%	20
			Total Selenium (Se)	2019/05/16	NC		N	20
			Total Silver (Ag)	2019/05/16	NC		*	20
			Total Sodium (Na)	2019/05/16	2.1		96	20
			Total Strontium (Sr)		3.3			20
				2019/05/16			96	
			Total Thallium (TI)	2019/05/16	NC		14	20
			Total Tin (Sn)	2019/05/16	NC		%	20
			Total Titanium (Ti)	2019/05/16	NC		96	20
			Total Uranium (U)	2019/05/16	NC		%	20



QA/QC Batch	tini	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Vanadium (V)	2019/05/16	NC		74	20
			Total Zinc (Zn)	2019/05/16	0.77		%	20
6124604	SRM	Matrix Spike	Total Alkalinity (Total as CaCO3)	2019/05/17		NC	36	80 - 120
6124604	SRM	Spiked Blank	Total Alkalinity (Total as CaCO3)	2019/05/17		104	%	80 - 120
6124604	SRM	Method Blank	Total Alkalinity (Total as CaCO3)	2019/05/17	ND,		mg/L	
					RDL=5.0			
6124604	SRM	RPD	Total Alkalinity (Total as CaCO3)	2019/05/17	4.0		36	25
6124605	SRM	Matrix Spike	Dissolved Chloride (CI-)	2019/05/17		NC	%	80 - 120
6124605	SRM	Spiked Blank	Dissolved Chloride (CI-)	2019/05/17		99	76.	80 - 120
6124605	SRM	Method Blank	Dissolved Chloride (CI-)	2019/05/17	ND, RDL=1.0		mg/L	
6124605	SRM	RPD	Dissolved Chloride (CI-)	2019/05/17	0.69		96	25
6124607	SRM	Matrix Spike	Dissolved Sulphate (SO4)	2019/05/17		98	%	80 - 120
6124607	SRM	Spiked Blank	Dissolved Sulphate (\$O4)	2019/05/17		99	96	80 - 120
6124607	SRM	Method Blank	Dissolved Sulphate (SO4)	2019/05/17	ND, RDL=2.0		mg/L	
6124607	SRM	RPD	Dissolved Sulphate (SO4)	2019/05/17	0.29		36	25
6124608	SRM	Matrix Spike	Reactive Silica (SiO2)	2019/05/17		88	76	80 - 120
6124608	SRM	Spiked Blank	Reactive Silica (SiO2)	2019/05/17		95	%	80 - 120
6124608	SRM	Method Blank	Reactive Silica (SiO2)	2019/05/17	ND, RDL=0.50		mg/L	1000 MAIN
6124608	SRM	RPD	Reactive-Silica (SiO2):	2019/05/17	0.090		36	25
5124609	SRM	Matrix Spike	Orthophosphate (P)	2019/05/20		82	%	80 - 120
6124609	SRM	Spiked Blank	Orthophosphate (P)	2019/05/20		97	16.	80 - 120
6124609	SRM	Method Blank	Orthophosphate (P)	2019/05/20	0.011, RDL=0.010	1,45	mg/L	024C=35
6124609	SRM	RPD	Orthophosphate (P)	2019/05/20	9.4		%	25
6124610	SRM	Matrix Spike	Nitrate + Nitrite (N)	2019/05/17	10000	94	%	80 - 120
6124610	SRM	Spiked Blank	Nitrate + Nitrite (N)	2019/05/17		96	96	80 - 120
6124610	SRM	Method Blank	Nitrate + Nitrite (N)	2019/05/17	ND, RDL=0.050		mg/L	
6124610	SRM	RPD	Nitrate + Nitrite (N)	2019/05/17	5.8		96.	25
6124611	SRM	Matrix Spike	Nitrite (N)	2019/05/17	0.2	96	76	80 - 120
6124611	SRM	Spiked Blank	Nitrite (N)	2019/05/17		94	%	80 - 120
6124611	SRM	Method Blank	Nitrite (N)	2019/05/17	ND, RDL=0.010		mg/L	SCHOLES
6124611	SRM	RPD	Nitrite (N)	2019/05/17	NC		96	20
6124631	MCN	Matrix Spike	Total Phosphorus	2019/05/17	1000	118	95	80 - 120
6124631	MCN	Spiked Blank	Total Phosphorus	2019/05/17		100	%	80 - 120
6124631	MCN	Method Blank	Total Phosphorus	2019/05/17	ND, RDL≈0.020		mg/L	
6124631	MCN	RPD	Total Phosphorus	2019/05/17	13		76	25
6124744	AM6	QC Standard	Total Suspended Solids	2019/05/21		97	%	80 - 120
6124744	AM6	Method Blank	Total Suspended Solids	2019/05/21	ND, RDL=1.0		mg/L	
6124744	AM6	RPD	Total Suspended Solids	2019/05/21	19		%	20
6124752	MGN	Matrix Spike	Isobutylbenzene - Extractable	2019/05/16	20	96	96	70 - 130
			n-Dotriacontane - Extractable	2019/05/16		102	%	70 - 130
			>C10-C16 Hydrocarbons	2019/05/16		96	14	70 - 130
			>C16-C21 Hydrocarbons	2019/05/16		84	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/16</td><td></td><td>96</td><td>96</td><td>70 - 130</td></c32>	2019/05/16		96	96	70 - 130
6124752	MGN	Spiked Blank	Isobutylbenzene - Extractable	2019/05/16		94	%	70 - 130
		es es to transfer establish	n-Dotriacontane - Extractable	2019/05/16		101	%	70 - 130
			>C10-C16 Hydrocarbons	2019/05/16		92	16	70 - 130



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			>C16-C21 Hydrocarbons	2019/05/16		84	- %	70 - 13
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/16</td><td></td><td>95</td><td>%</td><td>70 - 13</td></c32>	2019/05/16		95	%	70 - 13
6124752	MGN	Method Blank	Isobutylbenzene - Extractable	2019/05/16		98	36	70 - 130
			n-Dotriacontane - Extractable	2019/05/16		99	%	70 - 130
			>C10-C16 Hydrocarbons	2019/05/16	ND,	1189	mg/L	
				0.0000000000	RDL×0.050		11.00	
			>C16-C21 Hydrocarbons	2019/05/16	ND, RDL=0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/16</td><td>ND, RDL=0.10</td><td></td><td>mg/L</td><td></td></c32>	2019/05/16	ND, RDL=0.10		mg/L	
6124752	MGN	RPD	>C10-C16 Hydrocarbons	2019/05/16	NC		%	40
	(4)	1000	>C16-C21 Hydrocarbons	2019/05/16	2.0		16	40
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/16</td><td>13</td><td></td><td>%</td><td>40</td></c32>	2019/05/16	13		%	40
6124855	SSI	Matrix Spike		2019/05/16	1.3	96	%	85 - 11
			Total Organic Carbon (C)					
6124855	SSI	Spiked Blank	Total Organic Carbon (C)	2019/05/16	4100	100	%	80 - 120
6124855	SSI	Method Blank	Total Organic Carbon (C)	2019/05/16	ND, RDL=0.50		mg/L	
6124855	SSI	RPD	Total Organic Carbon (C)	2019/05/16	NC (2)		%	15
6124868	SSI	Matrix Spike	Dissolved Organic Carbon (C)	2019/05/16		100	%	85 - 115
6124868	551	Spiked Blank	Dissolved Organic Carbon (C)	2019/05/16		103	%	80 - 120
6124868	SSI	Method Blank	Dissolved Organic Carbon (C)	2019/05/16	ND, RDL=0.50		mg/L	
6124868	SSI	RPO	Dissolved Organic Carbon (C)	2019/05/16	2.7		16	15
6124907	RGE	Matrix Spike [JSISSO-09]	Decachlorobiphenyl	2019/05/17		84	%	30 - 130
	0.1	THE PROPERTY OF STREET	Aroclor 1254	2019/05/17		105	36	70 - 130
6124907	RGE	Spiked Blank	Decachlorobiphenyl	2019/05/17		89	%	30 - 130
		No. Browner Transaction	Aroclor 1254	2019/05/17		99	96	70 - 130
6124907	RGE	Method Blank	Decachlorobiphenyl	2019/05/17		96	%	30 - 130
	7771	LAD TANDES OF THE STATE OF THE	Aroclor 1016	2019/05/17	ND, RDL=0.050		ug/L	
			Aroclar 1221	2019/05/17	ND, RDL=0.050		ug/L	
			Aroclor 1232	2019/05/17	ND, RDL=0.050		ug/L	
			Aroclor 1248	2019/05/17	ND, RDL=0.050		ug/L	
			Aroclor 1242	2019/05/17	ND, RDL=0.050		ug/L	
			Aroclor 1254	2019/05/17	ND, RDL=0.050		ug/L	
			Aroclor 1260	2019/05/17	ND, RDL=0.050		ug/L	
6124907	RGE	RPD	Aroclor 1016	2019/05/17	NC.		%	40
	1000	in the second	Aroclor 1221	2019/05/17	NC		N.	40
			Aroclor 1232	2019/05/17	NC		96.	40
			Aroclor 1248	2019/05/17	NC		36	40
			Aroclor 1248 Aroclor 1242	2019/05/17	NC			40
			Aroclor 1254				*	
				2019/05/17	NC NC		76.	40
		Market Rolling	Aroclor 1260	2019/05/17	NC		%.	40
6124966	KKE	Matrix Spike	D10-Anthracene	2019/05/16		97	%	50 - 130
			D14-Terphenyl	2019/05/16		98	%	50 - 130
			D8-Acenaphthylene	2019/05/16		93	76.	50 - 130
			I-Methylnaphthalene	2019/05/16		82	%	50 - 130
			2-Methylnaphthalene	2019/05/16		84	76	50 - 130



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acenaphthene	2019/05/16		95	- %	50 - 130
			Acenaphthylene	2019/05/16		95	%	50 - 130
			Anthracene	2019/05/16		95	34	50 - 130
			Benzo(a)anthracene	2019/05/16		90	%	50 - 130
			Benzo(a)pyrene	2019/05/16		81	96	50 - 130
			Benzo(b)fluoranthene	2019/05/16		89	%	50 - 130
			Benzo(g,h,i)perylene	2019/05/16		86	%	50 - 130
			Benzo(j)fluoranthene	2019/05/16		79	%	50 - 130
			Benzo(k)fluoranthene	2019/05/16		77	%	50 - 130
			Chrysene	2019/05/16		108	%	50 - 130
			Dibenz(a,h)anthracene	2019/05/16		80	96	50 - 130
			Fluoranthene	2019/05/16		98	%	50 - 130
			Fluorene	2019/05/16		99	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/05/16		81	%	50 - 130
			Naphthalene	2019/05/16		86	36	50 - 130
			Perylene	2019/05/16		76	%	50 - 130
			Phenanthrene	2019/05/15		101	%	50 - 130
			Pyrene	2019/05/16		96	56.	50 - 130
5124966	KKE	Spiked Blank	D10-Anthracene	2019/05/16		103	36	50 - 130
			D14-Terphenyl	2019/05/16		102	%	50 - 130
			D8-Acenaphthylene	2019/05/16		101	N	50 - 130
			1-Methylnaphthalene	2019/05/16		88	%	50 - 130
			2-Methylnaphthalene	2019/05/16		90	%	50 - 130
			Acenaphthene	2019/05/16		102	76.	50 - 130
			Acenaphthylene	2019/05/16		103	14	50 - 130
			Anthracene	2019/05/16		100	%	50 - 130
			Benzo(a)anthracene	2019/05/16		92	96	50 - 130
			Benzo(a)pyrene	2019/05/16		84	76	50 - 130
			Benzo(b)fluoranthene	2019/05/16		90	*	50 - 130
			Benzo(g,h,i)perylene	2019/05/16		89	%	50 - 130
			Benzo(j)fluoranthene	2019/05/16		83	34	50 - 130
			Benzo(k)fluoranthene	2019/05/16		84	%	50 - 130
			Chrysene	2019/05/16		107	96	50 - 130
			Dibenz(a,h)anthracene	2019/05/16		82	%	50 - 130
			Fluoranthene	2019/05/16		103	96	50 - 130
			Fluorene	2019/05/16		108	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/05/16		85	%	50 - 130
			Naphthalene	2019/05/16		92	96	50 - 130
			Perylene	2019/05/16		79	96	50 - 130
			Phenanthrene	2019/05/16		107	%	50 - 130
			Pyrene	2019/05/16		101	%	50 - 130
5124966	KKE	Method Blank	D10-Anthracene	2019/05/16		103	%	50 - 130
			D14-Terphenyl	2019/05/16		103	36	50 - 130
			D8-Acenaphthylene	2019/05/16		99	%	50 - 130
			1-Methylnaphthalene	2019/05/16	ND.		ug/L	
			SCOOL DEVELOPMENT SOURCE STATE OF		RDL=0.050		1119501	
			2-Methylnaphthalene	2019/05/16	ND, RDL=0.050		ug/L	
			Acenaphthene	2019/05/16	ND, RDL=0.010		ug/L	
			Acenaphthylene	2019/05/16	ND, RDL=0.010		ug/L	
			Anthracene	2019/05/16	ND, RDL=0.010		ug/L	

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzo(a)anthracene	2019/05/16	ND, RDL=0.010	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	ug/L	
			Benzo(a)pyrene	2019/05/16	ND, RDL=0.010		ug/L	
			Benzo(b)fluoranthene	2019/05/16	ND, RDL=0.010		ug/L	
			Benzo(g,h,i)perylene	2019/05/16	ND, RDL=0.010		ug/L	
			Benzo(j)fluoranthene	2019/05/16	ND, RDL=0.010		ug/L	
			Benzo(k)fluoranthene	2019/05/16	ND, RDL=0.010		ug/L	
			Chrysene	2019/05/16	ND, RDL=0.010		ug/L	
			Dibenz(a,h)anthracene	2019/05/16	ND, RDL=0.010		ug/L	
			Fluoranthene	2019/05/16	ND, RDL=0.010		ug/t	
			Fluorene	2019/05/16	ND, RDL=0.010		ug/L	
			Indeno(1,2,3-cd)pyrene	2019/05/16	ND, RDL=0.010		ug/L	
			Naphthalene	2019/05/16	ND, RDL=0.20		ug/L	
			Perylene	2019/05/16	ND, RDL=0.010		ug/L	
			Phenanthrene	2019/05/16	ND, RDL=0.010		ug/L	
			Pyrene	2019/05/16	ND, RDL=0.010		ug/L	
124966	KKE	RPO	1-Methylnaphthalene	2019/05/16	NC		%	40
77.500.50	0,000	124.00	2-Methylnaphthalene	2019/05/16	NC		16	40
			Acenaphthene	2019/05/16	NC		36	40
			A	2019/05/16				
			Acenaphthylene		NC		76	40
			Anthracene	2019/05/16	NC		76.	40
			Benzo(a)anthracene	2019/05/16	NC		%.	40
			Benzo(a)pyrene	2019/05/16	NC		96	40
			Benzo(b)fluoranthene	2019/05/16	NC		%	40
			Benzo(g,h,i)perylene	2019/05/16	NC		76	40
			Benzolj)fluoranthene	2019/05/16	NC		%	40
			Benzo(k)fluoranthene	2019/05/16	NC		76	40
			Chrysene	2019/05/16	NC		%	40
			Dibenz(a,h)anthracene	2019/05/16	NC		16	40
			Fluoranthène	2019/05/16	NC		34	40
			Fluorene	2019/05/16	NC		76	40
			Indeno(1,2,3-cd)pyrene	2019/05/16	NC		%	40
			Naphthalene	2019/05/16	NC		16	40
			Perylene	2019/05/16	NC		%	40
			Phenanthrene	2019/05/16	NC		76	40
			Pyrene	2019/05/16	NC		94	40
125117	BKE	Matrix Spike	Total Cyanide (CN)	2019/05/16		39 (3)	76	80 - 120
125117	BKE	Spiked Blank	Total Cyanide (CN)	2019/05/16		109	. %	80 - 120
125117	BKE	Method Blank	Total Cyanide (CN)	2019/05/16	ND, RDL=0.0050		mg/L	
5125117	BKE	RPD	Total Cyanide (CN)	2019/05/16	NC		16	20



QA/QC	1078	067	Documents.	Date Sankard	Mellon	Observance.	TIMETO	OCTION
Batch 6125246	MCN	QC Type Matrix Spike [JSISSO-15]	Parameter Nitrogen (Ammonia Nitrogen)	Date Analyzed 2019/05/16	Value	Recovery 98	UNITS	QC Limit 80 - 120
6125246	MCN	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2019/05/16		102	%	80 - 12
6125246	MCN	Method Blank	Nitrogen (Ammonia Nitrogen)	2019/05/16	ND,	102	mg/L	00-12
0123240	. Persone	WELFIELD BROKEN	Mittogen (Annionia Mittogen)	2019/03/10	RDL+0.050		mg/ c	
6125246	MCN	RPO [JSI550-15]	Nitrogen (Ammonia Nitrogen)	2019/05/16	NC		YL.	20
6125745	SSV	Matrix Spike [JSI550-05]	Total Kjeldahl Nitrogen (TKN)	2019/05/17	100	99	96	80 - 120
6125745	SSV	QC Standard	Total Kjeldahl Nitrogen (TKN)	2019/05/17		95	36	80 - 120
6125745	SSV	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2019/05/17		98	36	80 - 120
6125745	ssv	Method Blank	Total Kjeldahl Nitrogen (TKN)	2019/05/17	ND.	2707	mg/L	2.50-1500
	55.0	A DAMES OF PORTY OF	the common tenter and in the common tenter and tenter and tenter and tenter and tenter and tenter and tenter a		RDL=0.10		11000	
6125745	SSV	RPD [JSI550-05]	Total Kjeldahl Nitrogen (TKN)	2019/05/17	8.0		%	.20
6126539	éB3	QC Standard	Adsorbable Organic Halogen			97	96	84 - 111
6126539	éB3	Method Blank	Adsorbable Organic Halogen		ND.		mg/L	
					RD1=0.5		10000	
6127107	CCR	Matrix Spike	Total Mercury (Hg)	2019/05/17		97	%	80 - 120
6127107	CCR	Spiked Blank	Total Mercury (Hg)	2019/05/17		105	16	80 - 120
6127107	CCR	Method Blank	Total Mercury (Hg)	2019/05/17	ND,		ug/L	
			760-76		RDL=0.013		0.00	
6127107	CCR	RPD	Total Mercury (Hg)	2019/05/17	NC		%	20
6127139	ZZH	Matrix Spike	Total Chemical Oxygen Demand	2019/05/17		102	%	80 - 120
6127139	ZZH	QC Standard	Total Chemical Oxygen Demand	2019/05/17		99	16	80 - 120
6127139	ZZH	Spiked Blank	Total Chemical Oxygen Demand	2019/05/17		101	96	80 - 120
6127139	ZZH	Method Blank	Total Chemical Oxygen Demand	2019/05/17	ND,		mg/L	
					RDL=20			
6127139	ZZH	RPD	Total Chemical Oxygen Demand	2019/05/17	4.2		36	25
6127439	GTO	Matrix Spike	Sulphide	2019/05/17		95	%	80 - 120
6127439	GTO	Spiked Blank	Sulphide	2019/05/17		92	%	80 - 120
6127439	GTO	Method Blank	Sulphide	2019/05/17	ND. RDL=0.020		mg/L	
6127439	GTO	RPD	Sulphide	2019/05/17	NC		%	20
6130613	BBD	QC Standard	Salinity	2019/05/21		101	%	80 - 120
6130613	BBD	Method Blank	Salinity	2019/05/21	ND, RDL=2.0		N/A	
6130613	BBD	RPD [JSI550-06]	Salinity	2019/05/21	NC		96	25
6132815	EMT	QC Standard	pH	2019/05/22		101	%	97 - 103
6132815	EMT	RPD	pH	2019/05/22	0.46		94	N/A
6132816	EMT	Spiked Blank	Conductivity	2019/05/22		103	96	80 - 120
6132816	EMT	Method Blank	Conductivity	2019/05/22	1.2, RDL=1.0		uS/cm	
6132816	EMT	RPD	Conductivity	2019/05/22	0.53		76	10
6132843	EMT	QC Standard	Turbidity	2019/05/22	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	109	%	80 - 120
6132843	EMT	Spiked Blank	Turbidity	2019/05/22		98	%	80 - 120
6132843	EMT	Method Blank	Turbidity	2019/05/22	ND, RDL=0.10	1.000	NTU	77 378
6132843	EMT	RPD	Turbidity	2019/05/22	11		96	20
6133009	AM6	QC Standard	Volatile Suspended Solids	2019/05/22	7.77	95	%	80 - 120
6133009	AM6	Method Blank	Volatile Suspended Solids	2019/05/22	ND, RDL=2.0	1.5%	mg/L	WAST
6133009	AM6	RPD	Volatile Suspended Solids	2019/05/22	0		16	25
6134118	KD9	Matrix Spike	Dissolved Chlorate (ClO3-)	2019/05/16	· ·	103	34	80 - 120
0134110	KD3	THE IN SPIKE	Dissolved Chlorite (CLO2-)	2019/05/16		100	16	80 - 120
6134118	KD9	Spiked Blank	Dissolved Chlorate (ClO3-)	2019/05/16		98	96	80 - 120
2134110	1.03	Spined dialia	Dissolved Chlorite (CLO2-)	2019/05/16		95	%	80 - 120
			mississed could be [prog.]	2013/03/10		. 93	790	00-42



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
6134118	KD9	Method Blank	Dissolved Chlorate (ClO3-)	2019/05/16	ND, RDL=0.10		mg/L	
			Dissolved Chlorite (CLO2-)	2019/05/16	ND, RDL=0.10		mg/L	
6134119	SJI	Matrix Spike [JSISS0-21]	9,10-Dichlorostearic acid	2019/05/22	1000	93	16	50 - 130
	-	Maria Sine (1915)	Decanoic Acid (C10)	2019/05/22		90	36	50 - 130
			Docosanoic acid (C22)	2019/05/22		91	76	50 - 130
			Dodecanoic acid (C12)	2019/05/22		89	16	50 - 13
			Eicosanoic acid (C20)	2019/05/22		98	%	50 - 13
			Hexadecanoic acid (C16)	2019/05/22		94	34	50 - 13
			Linoleic acid (C18:2)	2019/05/22		88	%	50 - 13
			Linolenic acid (C18:3)	2019/05/22		84	96	50 - 13
			Octadecanoic acid (C18)	2019/05/22		103	%	50 - 13
			Oleic acid (C18:1)	2019/05/22		100	96	50 - 13
			Tetradecanoic acid (C14)	2019/05/22		88	%	50 - 13
			Undecanoic acid (C11)	2019/05/22		99	96	50 - 13
			12,14 Dichlorodehydrosbietic acid	2019/05/22		84	%	50 - 13
			12-Chlorodehydroabietic acid	2019/05/22		81	96	50 - 13
			14-Chlorodehydroabietic acid	2019/05/22		84	%	50 - 13
			Abietic acid	2019/05/22		62	%	50 - 13
			Dehydroabletic acid	2019/05/22		99	16	50 - 13
			Isopimaric acid	2019/05/22		86	94	50 - 13
			Neoabietic acid	2019/05/22		22 (3)	76	50 - 13
			Palustric acid	2019/05/22		11 (3)	%	50 - 13
			Pimaric acid	2019/05/22		89	%	50 - 13
			Sandaracopimaric acid	2019/05/22		87	%	50 - 13
5134119	SJI	Spiked Blank	9,10-Dichlorostearic acid	2019/05/22		98	76	50 - 13
eres and	944	Spinco otalii.	Decanoic Acid (C10)	2019/05/22		90	96	50 - 13
			Docosanoic acid (C22)	2019/05/22		96	%	50 - 13
			Dodecanoic acid (C12)	2019/05/22		90	%	50 - 13
			Eicosanoic acid (C20)	2019/05/22		101	76.	50 - 13
			Hexadecanoic acid (C16)	2019/05/22		96	16	50 - 13
			Linoleic acid (C18:2)	2019/05/22		92	%	50 - 13
			Linolenic acid (C18:3)	2019/05/22		88	36	50 - 13
			Octadecanoic acid (C18)	2019/05/22		106	%	50 - 13
			Oleic acid (C18:1)	2019/05/22		103	×	50 - 13
			Tetradecanoic acid (C14)	2019/05/22		89	%	50 - 13
			Undecanoic acid (C11)	2019/05/22		98	34	50 - 13
			12,14-Dichlorodehydroabietic acid	2019/05/22		86	%	50 - 13
			12-Chlorodehydroabietic acid	2019/05/22		81	35	50 - 13
			14-Chlorodehydroabletic acid	2019/05/22		85	%	50 - 13
			Abietic acid	2019/05/22		69	96	50 - 13
			Dehydroabietic acid	2019/05/22		95	%	50 - 13
			Isopimaric acid	2019/05/22		87	36	50 - 13
			Neoabietic acid	2019/05/22		57	%	50 - 13
			Palustric acid	2019/05/22		62	96	50 - 13
			Pimaric acid	2019/05/22		91	%	50 - 13
			Sandaracopimaric acid	2019/05/22		88	%	50 - 13
5134119	SJ1	Method Blank	Total Fatty Acids	2019/05/22	ND, RDL=0.072	04	mg/L	24.34
			Total Resin Acids	2019/05/22	ND, RDL=0.060		mg/L	
			9,10-Dichlorostearic acid	2019/05/22	ND, RDL=0.0060		mg/L	

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Decanoic Acid (C10)	2019/05/22	ND, RDL=0.0060		mg/L	
			Docosanoic acid (C22)	2019/05/22	ND, RDL=0.0060		mg/L	
			Dodecanoic acid (C12)	2019/05/22	ND, RDL=0.0060		mg/L	
			Eicosanoic acid (C20)	2019/05/22	ND, RDL=0.0060		mg/L	
			Hexadecanoic acid (C16)	2019/05/22	ND, RDL=0.0060		mg/L	
			Linoleic acid (C18:2)	2019/05/22	ND, RDL=0.0060		mg/L	
			Linolenic acid (C18:3)	2019/05/22	ND, RDL=0.0060		mg/L	
			Octadecanoic acid (C18)	2019/05/22	ND, RDL=0.0060		mg/L	
			Oleic acid (C18:1)	2019/05/22	ND, RDL=0.0060		mg/L	
			Tetradecanoic acid (C14)	2019/05/22	ND, RDL=0.0060		mg/L	
			Undecanoic acid (C11)	2019/05/22	ND, RDL=0.0060		mg/L	
			12,14-Dichlorodehydroabietic acid	2019/05/22	ND, RDL=0.0060		mg/L	
			12-Chlorodehydroabletic acid	2019/05/22	ND. RDL=0.0060		mg/L	
			14-Chlorodehydroabletic acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Abietic acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Dehydroabietic acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Isopimaric acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Neoabietic acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Palustric acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Pimaric acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Sandaracopimaric acid	2019/05/22	ND, RDL=0.0060		mg/L	
134119	5/1	RPD [JSI550-21]	Total Fatty Acids	2019/05/22	NC		%	30
			Total Resin Acids	2019/05/22	NC		%	30
			9,10-Dichlorostearic acid	2019/05/22	NC		56	30
			Decanoic Acid (C10)	2019/05/22	NC		96	30
			Docusanoic acid (C22)	2019/05/22	NC		%	30
			Dodecanoic acid (C12)	2019/05/22	NC		76	30
			Eicosanoic acid (C20)	2019/05/22	NC		96	30
			Hexadecanoic acid (C16)	2019/05/22	NC		96	30
			Linoleic acid (C18:2)	2019/05/22	NC		*	30
			Linolenic acid (C18:3)	2019/05/22	NC		%	30
			Octadecanoic acid (C18)	2019/05/22	NC		%	30
			A COLUMN TO THE PARTY OF THE PA					
			Oleic acid (C18:1)	2019/05/22	NC		96	30 30
			Tetradecandic acid (C14)	2019/05/22	NC		36	3



QA/QC	10.75	007	ž	Burn Francis	NAT .		TAXABLE	00.0
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Undecanoic acid (C11)	2019/05/22	NC		74	30
			12,14-Dichlorodehydroabietic acid	2019/05/22	NC		%	30
			12-Chlorodehydroabietic acid	2019/05/22	NC		34	30
			14-Chlorodehydroabietic acid	2019/05/22	NC		%	30
			Abietic acid	2019/05/22	NC		%	30
			Dehydroabietic acid	2019/05/22	NC		%	30
			Isopimaric acid	2019/05/22	NC		%	30
			Nepabietic acid	2019/05/22	NC		%	30
			Palustric acid	2019/05/22	NC		%	30
			Pimaric acid	2019/05/22	NC		%	30
			Sandaracopimaric acid	2019/05/22	NC		%	30
6135156	1C4	Matrix Spike	Total Nitrogen (N)	2019/05/22		92	%	80 - 120
6135156	IC4	Spiked Blank	Total Nitrogen (N)	2019/05/22		98	%	80 - 120
6135156	IC4	Method Blank	Total Nitrogen (N)	2019/05/22	ND,		mg/L	
					RDL=0.020			
6151976	OBC	Spiked Blank	C13-1234678 HeptaCDD	2019/06/02		93	N	30 - 130
			C13-1234678 HeptaCDF	2019/06/02		94	76	30 - 130
			C13-123678 HexaCDD	2019/06/02		116	96	30 - 130
			C13-123678 HexaCDF	2019/06/02		89	76	30 - 130
			C13-12378 PentaCDD	2019/06/02		83	14	30 - 130
			C13-12378 PentaCDF	2019/06/02		65	76	30 - 130
			C13-2378 TetraCDD	2019/06/02		95	%	30 - 130
			C13-2378 TetraCDF	2019/06/02		97	96	30 - 130
			C13-OCOD	2019/06/02		102	36	30 - 130
			2,3,7,8-Tetra CDD	2019/06/02		93	96	80 - 140
			1.2.3,7.8-Penta CDO	2019/06/02		112	16	80 - 140
			1,2,3,4,7,8-Hexa CDD	2019/06/02		92	96	80 - 140
			1,2,3,6,7,8-Hexa CDO	2019/06/02		107	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2019/06/02		99	96	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2019/06/02		110	%.	80 - 140
			Octa CDD	2019/06/02		81	96	80 - 140
			Z,3,7,8-Tetra CDF	2019/06/02		103	%	80 - 140
			1,2,3,7,8-Penta CDF	2019/06/02		136	N-	80 - 140
			2.3.4.7.8-Penta CDF	2019/06/02		113	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2019/06/02		122	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2019/06/02		137	36	80 - 140
						132	16	80 - 140
			2,3,4,6,7,8-Hexa CDF	2019/06/02		132	26	80 - 140
			1,2,3,7,8,9-Hexa CDF	2019/06/02				
			1,2,3,4,6,7,8-Hepta CDF	2019/06/02		109	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2019/06/02		96	%	80 - 140
CANA AND	1000	T ANNOUNT	Octa CDF	2019/06/02	14.4	88	76.	80 - 140
6151976	OBC	RPD.	2,3,7,8-Tetra CDD	2019/06/02	11		%	35
			1,2,3,7,8-Penta CDD	2019/06/02	16		76	35
			1,2,3,4,7,8-Hexa CDD	2019/06/02	10		N	35
			1,2,3,6,7,8-Hexa CDD	2019/06/02	7.8		76	35
			1,2,3,7,8,9-Hexa CDD	2019/06/02	11		%	35
			1,2,3,4,6,7,8-Hepta CDD	2019/06/02	29		76.	35
			Octa CDD	2019/06/02	0		79	35
			2,3,7,8-Tetra COF	2019/06/02	17		36	35
			1,2,3,7,8-Penta CDF	2019/06/02	33		96	35
			2,3,4,7,8-Penta CDF	2019/06/02	20		76	35
			1,2,3,4,7,8-Hexa CDF	2019/06/02	31		14	35
			1,2,3,6,7,8-Hexa CDF	2019/06/02	37 (3)		%	35
			2,3,4,6,7,8-Hexa CDF	2019/06/02	28		36	35



QA/QC		244	2	31.5131.0	3.500			
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			1,2,3,7,8,9-Hexa CDF	2019/06/02	36 (3)		*	35
			1,2,3,4,6,7,8-Hepta CDF	2019/06/02	21		%	35
			1,2,3,4,7,8,9-Hepta CDF	2019/06/02	16		34	35
eraerasa.	1929-01	POSTNOVA DESPRES	Octa CDF	2019/06/02	0	17265.1	%	35
5151976	OBC	Method Blank	C13-1234678 HeptaCDD	2019/06/02		97	%	30 - 13
			C13-1234678 HeptaCDF	2019/06/02		99	%	30 - 13
			C13-123678 HexaCDD	2019/06/02		114	96	30 - 13
			C13-123678 HexaCDF	2019/06/02		87	%	30 - 13
			C13-12378 PentaCDD	2019/06/02		70	96	30 - 13
			C13-12378 PentaCDF	2019/06/02		58	%	30 - 13
			C13-2378 TetraCDD	2019/06/02		99	%	30 - 13
			C13-2378 TetraCDF	2019/06/02		81	%	30 - 13
			C13-OC00	2019/06/02	1975	97	%	30 - 13
			2,3,7,8-Tetra COO	2019/06/02	ND, EDL=1.02		pg/L	
			1,2,3,7,8-Penta CDD	2019/06/02	ND,		pg/L	
			The state of the s	3.5523423433	EDL=1.13		1,00	
			1,2,3,4,7,8-Hexa CDD	2019/06/02	ND, ED(=1.19		pg/L	
			1,2.3,6,7,8-Hexa CDD	2019/06/02	ND, EDL=1.03		pg/L	
			1,2,3,7,8,9-Hexa CDD	2019/06/02	ND, EDL=1.00		pg/L	
			1,2,3,4,6,7,8-Hepta CDD	2019/06/02	ND, EDL=1.05		pg/L	
			Octa CDO	2019/06/02	1.21, EDL=1.07		pg/t	
			Total Tetra CDD	2019/06/02	ND, EDL=1.02		pg/L	
			Total Penta CDD	2019/06/02	ND, EDL=1.13		pg/L	
			Total Hexa CDD	2019/06/02	ND, EDL=2.15 (4)		pg/L	
			Total Hepta CDD	2019/06/02	ND, EDL=1.05		pg/L	
			2,3,7,8-Tetra CDF	2019/06/02	ND, EDL=1.10		pg/t	
			1,2,3,7,8-Penta CDF	2019/06/02	ND, EDC=1.04		pg/L	
			2,3,4,7,8-Penta CDF	2019/06/02	ND, EDL=1.05		pg/L	
			1,2,3,4,7,8-Hexa CDF	2019/06/02	ND, EDL=0.836		pg/L	
			1,2,3,6,7,8-Hexa CDF	2019/06/02	ND, EDL=0.697		pg/L	
			2,3,4,6,7,8-Hexa CDF	2019/06/02	ND, EDL=0.789		pg/L	
			1,2,3,7,8,9-Hexa CDF	2019/06/02	ND, EDL=0.874		pg/L	
			1,2,3,4,6,7,8-Hepta CDF	2019/06/02	ND, EDL=0.996		pg/L	
			1,2,3,4,7,8,9-Hepta CDF	2019/06/02	ND, EDL=1.13		pg/L	
			Octa CDF	2019/06/02	ND, EDL=1.06		pg/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Tetra CDF	2019/06/02	ND, EDL=1.10		pg/L	
			Total Penta CDF	2019/06/02	ND, EDL=1.05		pg/t	
			Total Hexa CDF	2019/06/02	ND, EDL=0.793		pg/L	
			Total Hepta CDF	2019/06/02	ND, EDL=1.06		pg/L	

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency,

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

- (1) Matrix Spike exceeds acceptance limits, probable matrix interference.
- (2) Elevated reporting limit due to turbidity.
- (3) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.
- (4) EMPC / NDR Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.



Report Date: 2019/06/05

Northern Pulp N.S. Client Project #: Effluent Treatment Plant Your P.O. #: 43013552

VALIDATION SIGNATURE PAGE

d and validated by the following individual(s).

The analytical data and all QC contained in this report were review
-50
Brad Newman, Scientific Service Specialist
At y
David Huang, BBY Scientific Specialist
Teny Wany
Harry (Peng) Liang, Senior Analyst
Mercica felk
Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics
fr
Gayle Simpson, Senior Analyst
ablaina
Eric Dearman, Scientific Specialist
- Mike Mee Galley
Mike MacGillivray, Scientific Specialist (Inorganics)



VALIDATION SIGNATURE PAGE(CONT'D)

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Owen Cosby, BSc.C.Chem, Supervisor, HRMS Services

Rosemarie MacDonald

Rosemarie MacDonald, Scientific Specialist (Organics)

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Your Project #: B9C9662 Your C.O.C. #: n-a

Attention: BEDFORD CUSTOMER SERVICE

Maxxam Analytics 200 Bluewater road Bedford, NS CANADA B4B 1G9

Report Date: 2019/05/22

Report #: R2441444 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B917289 Received: 2019/05/16, 08:45

Sample Matrix: Water # Samples Received: 1

	Date	Date		
Analyses	Quantity Extra	cted Analy	zed Laboratory Method	Primary Reference
Phenols in Pulp & Paper mill effluents	1 2019,	/05/21 2019	/05/22 STL SOP-00121	MA.400–Phé 1.0 R3 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing. Maxxam is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

 $Note: All\ parameters\ included\ in\ the\ present\ certificate\ are\ accredited\ by\ the\ MELCC\ unless\ stated\ otherwise.$



Your Project #: B9C9662 Your C.O.C. #: n-a

Attention: BEDFORD CUSTOMER SERVICE

Maxxam Analytics 200 Bluewater road Bedford, NS CANADA B4B 1G9

Report Date: 2019/05/22

Report #: R2441444

Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B917289 Received: 2019/05/16, 08:45

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Sophie Retailleau, Project Manager

Email: SRetailleau@maxxam.ca Phone# (514)448-9001 Ext:7066232

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Maxxam Analytics Client Project #: B9C9662

PHENOLS BY GCMS (WATER)

Maxxam ID		GK8447							
		2019/05/14							
Sampling Date		13:00							
	Units	JS1550-13R/RAW WATER	RDL	QC Batch					
PHENOLS	•								
Total of Regl. P&P Phenols †	ug/L	<5.0	5.0	1990581					
Phenol	ug/L	<0.50	0.50	1990581					
2-Chlorophenol	ug/L	<0.50	0.50	1990581					
3-Chlorophenol	ug/L	<0.50	0.50	1990581					
4-Chlorophenol	ug/L	<0.50	0.50	1990581					
o-Cresol	ug/L	<0.50	0.50	1990581					
m-Cresol	ug/L	<0.50	0.50	1990581					
p-Cresol	ug/L	<0.50	0.50	1990581					
Guaiacol	ug/L	<0.50	0.50	1990581					
Catechol	ug/L	<0.50	0.50	1990581					
Eugenol	ug/L	<0.50	0.50	1990581					
Isoeugenol	ug/L	<0.50	0.50	1990581					
6-Chlorovanillin	ug/L	<0.50	0.50	1990581					
5,6-Dichlorovanillin	ug/L	<0.50	0.50	1990581					
3,4,5-Trichlorosyringol	ug/L	<0.50	0.50	1990581					
2,4-Dimethylphenol	ug/L	<0.50	0.50	1990581					
2,6-Dichlorophenol	ug/L	<0.50	0.50	1990581					
3,5-Dichlorophenol	ug/L	<0.50	0.50	1990581					
2,3-Dichlorophenol	ug/L	<0.50	0.50	1990581					
3,4-Dichlorophenol	ug/L	<0.50	0.50	1990581					
2,4 + 2,5-Dichlorophenol	ug/L	<0.50	0.50	1990581					
2-Nitrophenol	ug/L	<1.0	1.0	1990581					
4-Nitrophenol	ug/L	<5.0	5.0	1990581					
2,4,6-Trichlorophenol	ug/L	<0.50	0.50	1990581					
2,3,5-Trichlorophenol	ug/L	<0.50	0.50	1990581					
2,3,6-Trichlorophenol	ug/L	<0.50	0.50	1990581					
2,4,5-Trichlorophenol	ug/L	<0.50	0.50	1990581					
2,3,4-Trichlorophenol	ug/L	<0.50	0.50	1990581					
3,4,5-Trichlorophenol	ug/L	<0.50	0.50	1990581					
4-Chloroguaiacol	ug/L	<0.50	0.50	1990581					
4,5-Dichloroguaiacol	ug/L	<0.50	0.50	1990581					
4,6-Dichloroguaiacol	ug/L	<0.50	0.50	1990581					
2,3,5,6-Tetrachlorophenol	ug/L	<0.50	0.50	1990581					
2,3,4,6-Tetrachlorophenol	ug/L	<0.50	0.50	1990581					
2,3,4,5-Tetrachlorophenol	ug/L	<0.50	0.50	1990581					
RDL = Reportable Detection L	imit								
QC Batch = Quality Control Batch									
† Parameter is not accreditab	le								



Maxxam Analytics Client Project #: B9C9662

PHENOLS BY GCMS (WATER)

Maxxam ID		GK8447		
Sampling Date		2019/05/14		
Sampling Date		13:00		
	Units	JS1550-13R/RAW WATER	RDL	QC Batch
4-Chlorocatechol	ug/L	<0.50	0.50	1990581
3,5-Dichlorocatechol	ug/L	<0.50	0.50	1990581
4,5-Dichlorocatechol	ug/L	<0.50	0.50	1990581
3,4,5-Trichloroguaiacol	ug/L	<0.50	0.50	1990581
4,5,6-Trichloroguaiacol	ug/L	<0.50	0.50	1990581
Pentachlorophenol	ug/L	<0.50	0.50	1990581
3,4,5-Trichlorocatechol	ug/L	<0.50	0.50	1990581
Tetrachlorocatechol	ug/L	<0.50	0.50	1990581
Tetrachloroguaiacol	ug/L	<0.50	0.50	1990581
4,5-Dichloroveratrol	ug/L	<0.50	0.50	1990581
3,4,5-Trichloroveratrol	ug/L	<0.50	0.50	1990581
3,4,5,6-Tetrachloroveratrol	ug/L	<0.50	0.50	1990581
Surrogate Recovery (%)		•	•	•
D6-Phenol	%	106	N/A	1990581
Tribromophenol-2,4,6	%	86	N/A	1990581
Trifluoro-m-cresol	%	104	N/A	1990581
RDL = Reportable Detection I	imit			

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable



Maxxam Analytics Client Project #: B9C9662

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.7°C
-----------	-------

PHENOLS BY GCMS (WATER)

Un-rounded results are used in the total Regl. P&P Phenols calculation. This total result is then rounded to two significant figures.

The total indicated is calculated only for the requested parameters.

Results relate only to the items tested.

Page 5 of 10 2019/05/22 15:57



Maxxam Analytics Client Project #: B9C9662

QUALITY ASSURANCE REPORT

QA/QC		007					001: "
Batch	Init	QC Type	Parameter	Date Analyzed Value	Recovery	Units	QC Limits
1990581	MA1	Spiked Blank	D6-Phenol	2019/05/22	116	%	50 - 130
			Tribromophenol-2,4,6	2019/05/22	95	%	50 - 130
			Trifluoro-m-cresol	2019/05/22	116	%	50 - 130
			Phenol	2019/05/22	117	%	50 - 130
			2-Chlorophenol	2019/05/22	111	%	50 - 130
			3-Chlorophenol	2019/05/22	114	%	50 - 130
			4-Chlorophenol	2019/05/22	111	%	50 - 130
			o-Cresol	2019/05/22	120	%	50 - 130
			m-Cresol	2019/05/22	120	%	50 - 130
			p-Cresol	2019/05/22	117	%	50 - 130
			2,4-Dimethylphenol	2019/05/22	108	%	50 - 130
			2,6-Dichlorophenol	2019/05/22	116	%	50 - 130
			3,5-Dichlorophenol	2019/05/22	105	%	50 - 130
			2,3-Dichlorophenol	2019/05/22	109	%	50 - 130
			3,4-Dichlorophenol	2019/05/22	110	%	50 - 130
			2,4 + 2,5-Dichlorophenol	2019/05/22	111	%	50 - 130
			2-Nitrophenol	2019/05/22	109	%	50 - 130
			4-Nitrophenol	2019/05/22	107	%	50 - 130
			2,4,6-Trichlorophenol	2019/05/22	110	%	50 - 130
			2,3,5-Trichlorophenol	2019/05/22	102	%	50 - 130
			2,3,6-Trichlorophenol	2019/05/22	117	%	50 - 130
			2,4,5-Trichlorophenol	2019/05/22	113	%	50 - 130
			2,3,4-Trichlorophenol	2019/05/22	110	%	50 - 130
			3,4,5-Trichlorophenol	2019/05/22	108	%	50 - 130
			2,3,5,6-Tetrachlorophenol	2019/05/22	103	%	50 - 130
			2,3,4,6-Tetrachlorophenol	2019/05/22	110	%	50 - 130
			2,3,4,5-Tetrachlorophenol	2019/05/22	102	%	50 - 130
			Pentachlorophenol	2019/05/22	94	%	50 - 130
1990581	MA1	Spiked Blank DUP	D6-Phenol	2019/05/22	112	%	50 - 130
			Tribromophenol-2,4,6	2019/05/22	92	%	50 - 130
			Trifluoro-m-cresol	2019/05/22	110	%	50 - 130
			Phenol	2019/05/22	115	%	50 - 130
			2-Chlorophenol	2019/05/22	108	%	50 - 130
			3-Chlorophenol	2019/05/22	111	%	50 - 130
			4-Chlorophenol	2019/05/22	108	%	50 - 130
			o-Cresol	2019/05/22	119	%	50 - 130
			m-Cresol	2019/05/22	119	%	50 - 130
			p-Cresol	2019/05/22	113	%	50 - 130
			2,4-Dimethylphenol	2019/05/22	106	%	50 - 130
			2,6-Dichlorophenol	2019/05/22	113	%	50 - 130
			3,5-Dichlorophenol	2019/05/22	104	%	50 - 130
			2,3-Dichlorophenol	2019/05/22	108	%	50 - 130
			3,4-Dichlorophenol	2019/05/22	109	%	50 - 130
			2,4 + 2,5-Dichlorophenol	2019/05/22	108	%	50 - 130
			2-Nitrophenol	2019/05/22	108	%	50 - 130
			4-Nitrophenol	2019/05/22	106	%	50 - 130
			2,4,6-Trichlorophenol	2019/05/22	109	%	50 - 130
			2,3,5-Trichlorophenol	2019/05/22	101	%	50 - 130
			2,3,6-Trichlorophenol	2019/05/22	115	%	50 - 130
			2,4,5-Trichlorophenol	2019/05/22	113	%	50 - 130
			2,3,4-Trichlorophenol	2019/05/22	109	%	50 - 130
			3,4,5-Trichlorophenol	2019/05/22	108	%	50 - 130
			2,3,5,6-Tetrachlorophenol	2019/05/22	102	%	50 - 130



Maxxam Analytics Client Project #: B9C9662

QA/QC			_			_		
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			2,3,4,6-Tetrachlorophenol	2019/05/22		109	%	50 - 130
			2,3,4,5-Tetrachlorophenol	2019/05/22		102	%	50 - 130
			Pentachlorophenol	2019/05/22		92	%	50 - 130
1990581	MA1	Method Blank	D6-Phenol	2019/05/22		108	%	50 - 130
			Total of Regl. P&P Phenols	2019/05/22	<5.0		ug/L	
			Tribromophenol-2,4,6	2019/05/22		89	%	50 - 130
			Trifluoro-m-cresol	2019/05/22		105	%	50 - 130
			Phenol	2019/05/22	<0.50		ug/L	
			2-Chlorophenol	2019/05/22	<0.50		ug/L	
			3-Chlorophenol	2019/05/22	<0.50		ug/L	
			4-Chlorophenol	2019/05/22	<0.50		ug/L	
			o-Cresol	2019/05/22	<0.50		ug/L	
			m-Cresol	2019/05/22	<0.50		ug/L	
			p-Cresol	2019/05/22	<0.50		ug/L	
			Guaiacol	2019/05/22	<0.50		ug/L	
			Catechol	2019/05/22	<0.50		ug/L	
			Eugenol	2019/05/22	<0.50		ug/L	
			Isoeugenol	2019/05/22	<0.50		ug/L	
			6-Chlorovanillin	2019/05/22	<0.50		ug/L	
			5,6-Dichlorovanillin	2019/05/22	<0.50		ug/L	
			3,4,5-Trichlorosyringol	2019/05/22	<0.50		ug/L	
			2,4-Dimethylphenol	2019/05/22	<0.50		ug/L	
			2,6-Dichlorophenol	2019/05/22	<0.50		ug/L	
			3,5-Dichlorophenol	2019/05/22	<0.50		ug/L	
			2,3-Dichlorophenol	2019/05/22	<0.50		ug/L	
			3,4-Dichlorophenol	2019/05/22	<0.50		ug/L	
			2,4 + 2,5-Dichlorophenol	2019/05/22	<0.50		ug/L	
			2-Nitrophenol	2019/05/22	<1.0		ug/L	
			4-Nitrophenol	2019/05/22	<5.0		ug/L	
			2,4,6-Trichlorophenol	2019/05/22	<0.50		ug/L	
			2,3,5-Trichlorophenol	2019/05/22	<0.50		ug/L	
			2,3,6-Trichlorophenol	2019/05/22	<0.50		ug/L	
			2,4,5-Trichlorophenol	2019/05/22	<0.50		ug/L	
			2,3,4-Trichlorophenol	2019/05/22	<0.50		ug/L	
			3,4,5-Trichlorophenol	2019/05/22	<0.50			
			•				ug/L	
			4-Chloroguaiacol	2019/05/22	<0.50		ug/L	
			4,5-Dichloroguaiacol	2019/05/22	<0.50		ug/L	
			4,6-Dichloroguaiacol	2019/05/22	<0.50		ug/L	
			2,3,5,6-Tetrachlorophenol	2019/05/22	<0.50		ug/L	
			2,3,4,6-Tetrachlorophenol	2019/05/22	<0.50		ug/L	
			2,3,4,5-Tetrachlorophenol	2019/05/22	<0.50		ug/L	
			4-Chlorocatechol	2019/05/22	<0.50		ug/L	
			3,5-Dichlorocatechol	2019/05/22	<0.50		ug/L	
			4,5-Dichlorocatechol	2019/05/22	<0.50		ug/L	
			3,4,5-Trichloroguaiacol	2019/05/22	<0.50		ug/L	
			4,5,6-Trichloroguaiacol	2019/05/22	<0.50		ug/L	
			Pentachlorophenol	2019/05/22	<0.50		ug/L	
			3,4,5-Trichlorocatechol	2019/05/22	<0.50		ug/L	
			Tetrachlorocatechol	2019/05/22	<0.50		ug/L	
			Tetrachloroguaiacol	2019/05/22	<0.50		ug/L	
			4,5-Dichloroveratrol	2019/05/22	<0.50		ug/L	
			3,4,5-Trichloroveratrol	2019/05/22	<0.50		ug/L	



Maxxam Analytics Client Project #: B9C9662

QUALITY ASSURANCE REPORT(CONT'D)

QA	/QC								
Ва	tch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
				3,4,5,6-Tetrachloroveratrol	2019/05/22	<0.50		ug/L	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

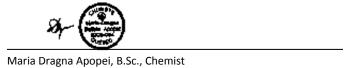
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



Maxxam Analytics Client Project #: B9C9662

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



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MAXXAM ANALYTICS

200 Bluewater Road Bedford, Nova Scotia, B4B 1G9 (902) 420-0203 (902) 420-8612



Northern Pulp N.S. Maxxam PM : Maryann Comeau

SUBCONTRACTING REQUEST FORM

To: Be				ubcontrac (if yes, add copy of Movement	Cert., heat treat i	RUSH is required prior to		B9C9662
Sample ID			Matrix	Test(s) Required		Container	Date Sampled	Date Required
JSI550-13R\Rav	w Water		w	Phenois in Pulp and Pape	r Mill Effluents	2-DPHE	2019/05/14 13	:00 2019/05/22
	Temp. 1	Temp. 2	Temp. 3	Mary 27		- 53		
Cooler #1				Custody Seal Present	YES	(NO)		
and the same		2	(Custody Seal Intact	YES	910		
	12	~	1	ce Present Upon Receipt	(YES)	NO		
Cooler #2	+		2 - 3	Custody Seal Present	YES	NO		
COOK! AL			1	Custody Seal Intact	YES	NO		
			100	Ice Present Upon Receipt	YES	NO		
Cooler #3	+	+-	150.7	Custody Seal Present	YES	NO		
Looier #5			183	Custody Seal Intact	YES	NO		
			X 53	ice Present Upon Receipt	YES	NO		
	all us if due o	date cannol		Please reference Sample ID o	[[[하다 보다 나를 보다 하는] [[[[[]	*************		08:45
				perform the requested anal				
			form, Clier	nt COC & signed final report	to BClientsvcsi	ubContr@max		
	au@maxxar			manage sales	ASSESSMENT BOTH	AT	16-May-19	
Reporting Re	equirements	£.		W. Carlo			ophie Retailleau	
National: N0	001			235 (0.21) 25	EXPERIES.	1111		AL EIL
Regional:					PARTMEN	41	B917289	
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	ediately (high		v) [Ship Cold	Shipping Depart	tment Checklis	st	
Requires 9				Ship Room Temp	Correct Sample I			
=/	Sat. Delivery			Ship Frozen			ice, Tape-custody sea	
Regular Shi Sender (Print	nip next avail.				Date Shipped // Shipper (Print)	lay 1/1	9 Number of egol	ers

A Purpos	Xam	, 200 Bluewater Road, Bedford, N	lova Scotia Canadi	a 848 109 Tel	(902) 420-0203 Tel	I-free:800-56	3-6266	Fax(90	02) 420-8512	www.maxxam	ca									Page 1 of 2
		INVOICE TO:				Report In	ormatic	on.						Project k	dermation				Laboratory Use 0	Only
pany Name	#22435 North	ern Pulp N.S.		Company Nar	ne #11067 No	orthern Pu	Ip N.S	S.			Que	ation if	- 1	B86064					Maxxam Job #	Bottle Order #:
tect Name	Accounts Paya			Contact Name							P.O.								0000112	180000000
ress	PO Box 549 St			Address	340 Simpson Lane			Pitt					1	Effluent '	Treatme	nt Plant			B9C9662	715991
	New Glasgow		-		Pictou NS E						Proje	ct Name						_	Chain Of Custody Record	Project Manager
10	(902) 755-7178 AP@northerns	700		Phone	(902) 755-7		h	Fac.			Site						_	_		Maryann Comeau
		up.com		Email	boat.harbou	reginowe	b.ca	_				pled By	_		-	_	_	_	C#715991-01-01	
igulatory Cr	nteria:			Specia	Instructions		-	\vdash		ANA	YSIS REC	UESTED (PLEASE	BE SPECIF	(C)				Turnaround Time (TAT) Rec	
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							ы			8		36	~	1				Regular (Standard) TAT:	_
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Court II			7-1	131			9			l E	(Adsorbable)		90		Water		ъ		ste: Standard TAT for certain tests such as BOI stact your Project Manager for details,	D and Dioxins/Furans are
*Specify Matrix: Surface/Ground/Tapwater/Sewage/Effluent/Sewater Potable/Nonpotable/Tissue/Soli/Studge/Matal		-1010	Mino	gen	1/	8	8	8	Cartonaceous BOD Chemical Oxygen D	3	Nitrogen	8		8		Water	leb fire	cific Rush TAT (if applies to entire submiss	de-sh	
			1-00	23050 0	e Corbon v) gen rganic Co	20 01A	& Pre	ğ	9	8	Halogen		Total		8	m	.6	Date Regu		
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	SAMPLES MUST BE	CEPT COOL (< 10°C) FROM TIME C	F SAMPLING UN	TIL DELIVERY	TO MAXXAM	MIGS	8	g g	38 38	3	9	3	9	>	23)	Die I		Ma	4 22 2019 No	ON X
Fiftheres			BANDAME.	THE REAL PROPERTY.	4.18 TH-3-1	National Co.	8	Leb Fi	TSSNSS	Chemical Oxygen Demand (COD)	Organ	Total	Phospi	Salinity	Dioxins/Fi 1/RM/23)	PAH	Atlantic	# of Bottles	Comments / Hazards / Other R	lequired Analysis
	Barcode Label	Sample (Location) Identification		Sampled	Time Sampled	Matrix	Œ											00000		
	ID#442675	Raw Water	Ma	114/19	3:00pm	W		.	X X	×	×	X	X	×	X	×	×			
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i RELIM	ousreger (syrun		Date (YYMMOD)	-		Nece	NED BY	f: (Signa	ature/Print)	_	D	de: (YY/MM	100)	Time		s used and submitted	Time Se	native .	Lab Use Only emperature (*C) on Receipt Custody	y Seal Intact on Cooler?

2819 MAY 15 13:12

Maxxam Analytics International Corporation ola Maxxam Analytics

1a	xxam	Maxxam Analytics International Co. 200 Bluewater Road, Bedford, Nov.			0203 Toll-free 800	-563-629	56 Fax	c(902) 42	0-8612 ww	и,таккат,	a							Chair	Of Custody Record		Page :	2012
		INVOICE TO:			Repor	Informa	rition							Project le	dormation				Labora	tory Use O		2 00 2
eny Nan	e #22435 North	ern Pulp N.S.	Compa	y Name #110	067 Northern	Pulp N	LS.				Our	Quotation # B86064							Maxxam Job #		Bettle Order	r B:
ct Name	4	ble	Contact	1.65-4	ael Pidgeon						P.O.						0000110				1000000	111
98	PO Box 549 St	ation Main	Address	340	Simpson Lane	1					Proje			Effluent 1	reatme	nt.Plant			B9C9662		715991	
	New Glasgow				ou NS BOK 1X	2						ct Name							Chain Of Custody Reco	rd	Project Mana	ager
	(902) 755-7178	1 0.0	Phone	_	755-7178	- 2		DC			Site									1111111	Maryann Com	
	AP@northemp	ulp.com	Email	boat	.harbour@tno	web.ca	1		_		Sam	oled Dy						_	C#715991-01-02		Maryani Con	-
gulatory	Criteria:			ipecial Instructio	ns		П			ANAL	YSIS REQ	UESTED (PLEASE	BE SPECIF	IC)				Turnaround Tim	e (TAT) Requ	ired:	
										6									Please provide advanc	e notice for rust	h projects	
						10				Sodium)							Г	Regular (S	tandard) TAT:			
							П	5	3	8							- 1	(will be app	eed if Rush TAT is not specifie	o:		Г
							ш	Water		96	3		2			1 1	- 1	Standard T	AT = 5-7 Working days for mor	of doubs		_
						2		É	Paper	3	A.		6	1 1			- 1	Please not	s: Standard TAT for certain tea	ts such an BOD	and Dioxins/Furance	S are
Specify		apwater/Sewage/Effluent/Seawater				5	8	8	pue	5.	3		ē		Acids		- 1	days - cont	act your Project Manager for di	nterts.		_
	Potable/Nonpotable/ I	issue/Soil/SludgeMetal				_ 8	duit	ě	e d	RCAp-MS (Includes	Total (CVAA,LL	~	Chlorite				- 1	Job Spec	ific Rush TAT (if applies to e			
						105	8	00	Pulp	8	8	(H2S)	2	- 8	Fathy		- 1	Date Requi		Time Requi	red:	
0.640	51 SECT 2015 O		- 6 Lo To VI (9)			ž.	9	B	£		100	de ()	- 6	Cyani	gue	1 1	- 1	May	22 2019	NOON	/	\triangleright
	SAMPLES MUST BE	CEPT COOL (< 10°C) FROM TIME OF	SAMPLING UNTIL DELI	VERY TO MAXX	W	E C	200	5	nots	8	oury		ra ta	0	6		- 1	E of		aards / Other Red		$\overline{\mathcal{L}}$
Sam	ple Barcode Label	Sample (Location) Identification	Date Samples	Time Sa	mpled Must	Fleg	3	RBCA	88	Atlantic	Mer	Sulph	*	Total	Resin			Bottles	Comeanna	sands / Coner Pub	quired Analysis	
HIII	SID4442675	Raw Water	May 14/19	13:0	on W			Х	×	х	Х	х	x	х	x							
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19/	n follich	/5	105/14/13	sign	1	-	1	/-			+		-		-		Time Serv	1,10	reperature (°C) on Receipt		Seal littact on Cool	MET.
44	year Kuddick																\Box		TERMS WHICH ARE AVAILABLE		Yes No	

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Maxxam Analytics International Corporation ola Maxxam Analytics

Point A





Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant Site Location: POINT A, EFFLUENT SAMPLING

Your C.O.C. #: 715285-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report #: R5748921

Version: 4 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89C9866 Received: 2019/05/15, 12:49

Sample Matrix: Water # Samples Received: 1

activities well-service continues		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Reference
Carbonate, Bicarbonate and Hydroxide	1	N/A	2019/05/23	N/A	SM 23 4500-CO2 D
Alkalinity	1	N/A	2019/05/21	ATL SOP 00013	EPA 310.2 R1974 m
Benzo(b/j)fluoranthene Sum (water)	1	N/A	2019/05/17	N/A	Auto Calc.
Carbonaceous BOD	1	2019/05/16	2019/05/21	ATL SOP 00041	SM 23 52108 m
Chloride	1	N/A	2019/05/21	ATL SOP 00014	SM 23 4500-CI- E m
Chemical Oxygen Demand (COD)	1	N/A	2019/05/17	ATL SOP 00042	SM 23 5220D m
Colour	1	N/A	2019/05/21	ATL SOP 00020	SM 23 2120C m
Total Cyanide (1)	1	2019/05/23	2019/05/23	CAM SOP-00457	OMOE E3015 5 m
Dioxins/Furans in Water (EPS 1/RM/23) (1, 6)	1	2019/06/03	2019/06/09	BRL SOP-00406 (mod)	EPS 1/RM/23 m
Organic carbon - Diss (DOC) (7)	1	N/A	2019/05/17	ATL SOP 00203	SM 23 53108 m
Conductance - water	1	N/A	2019/05/23	ATL SOP 00004	SM 23 2510B m
TEH in Water (PIRI)	1	2019/06/05	2019/06/05	ATL SOP 00113	Atl. RBCA v3.1 m
Sulphide as H2S (1)	1	N/A	2019/05/21		
Hardness (calculated as CaCO3)	1	N/A	2019/05/21	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	1	2019/05/23	2019/05/23	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total MS	1	2019/05/16	2019/05/17	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	1	N/A	2019/05/23	N/A	Auto Calc
Anion and Cation Sum	1	N/A	2019/05/23	N/A	Auto Calc.
Organic Halogen (Adsorbable) (2)	1	2019/05/23	2019/05/23	PTC SOP-00056	Coulometric - Titr.
Chlorate and Chlorite by IC (3)	1	N/A	2019/05/19	CAL SOP-00040	SM 23 41100 m
Nitrogen (Total) (4)	1	N/A	2019/05/22	BBY6SOP-00016	SM 22 4500-N C m
Resin and Fatty Acids (3)	1	2019/05/21	2019/05/23	CAL SOP-00099	AE129.0
Nitrogen Ammonia - water	1	N/A	2019/05/21	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2019/05/21	ATL SOP 00016	USGS 1-2547-11m
Nitrogen - Nitrite	1	N/A	2019/05/21	ATL SOP 00017	SM 23 4500-NO2- B n
Nitrogen - Nitrate (as N)	1	N/A	2019/05/22	ATL SOP 00018	ASTM D3867-16
PAH in Water by GC/MS (SIM)	1	2019/05/16		ATL SOP 00103	EPA 8270E R6 m
PCBs in water by GC/ECD	1	2019/05/17	2019/05/21	ATL SOP 00107	EPA 8082A m
PCB Aroclor sum (water)	1	N/A	2019/05/21		Auto Calc.
Phenois in Pulp and Paper Mill Effluents (5)	1	2019/05/16	2019/05/23		
(8) Hq	1	N/A		ATL SOP 00003	SM 23 4500-H+ B m



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant Site Location: POINT A, EFFLUENT SAMPLING

Your C.O.C. #: 715285-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report #: R5748921

Version: 4 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9C9866 Received: 2019/05/15, 12:49

Sample Matrix: Water # Samples Received: 1

# Samples Received: 1					
Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Phosphorus - ortho	1	N/A	2019/05/22	ATL SOP 00021	SM 23 4500-P E m
VPH in Water (PIRI)	1	N/A	2019/05/17	ATL SOP 00118	Atl. RBCA v3.1 m
Salinity (9)	1	N/A	2019/05/21		SM 22 2520B
Sat. pH and Langelier Index (@ 20C)	1	N/A	2019/05/23	ATL SQP 00049	Auto Calc
Sat. pH and Langelier Index (@ 4C)	1	N/A	2019/05/23	ATL SOP 00049	Auto Calc.
Reactive Silica	1	N/A	2019/05/21	ATL SOP 00022	EPA 366.0 m
Sulphate	1	N/A	2019/05/21	ATL SOP 00023	ASTM D516-16 m
Sulphide (1)	1	N/A	2019/05/21	CAM SOP-00455	SM 23 4500-S G m
Total Dissolved Solids (TDS calc)	1	N/A	2019/05/22	N/A	Auto Calc.
Total Kjeldahl Nitrogen in Water (1)	1	2019/05/17	2019/05/21	CAM SOP-00938	OMOE E3516 m
Organic carbon - Total (TOC) (7)	1	N/A	2019/05/17	ATL SOP 00203	SM 23 5310B m
ModTPH (T1) Calc. for Water	1	N/A	2019/06/05	N/A	Atl. RBCA v3 m
Phosphorus Total Colourimetry	1	2019/05/16	2019/05/17	ATL SOP 00057	EPA 365.1 R2 m
Total Suspended Solids	1	2019/05/16	2019/05/21	ATL SOP 00007	SM 23 2540D m
Turbidity	1	N/A	2019/05/23	ATL SOP 00011	EPA 180.1 R2 m
Volatile Organic Compounds in Water	1	N/A	2019/05/16	ATL SOP 00133	EPA 8260D R4 m
Volatile Suspended Solids	1	N/A	2019/05/22	ATL SOP 00008	EPA 160.4 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant Site Location: POINT A, EFFLUENT SAMPLING

Your C.O.C. #: 715285-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report #: R5748921

Version: 4 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89C9866 Received: 2019/05/15, 12:49

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

- * RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
- (1) This test was performed by Bureau Veritas Laboratories Mississauga
- (2) This test was performed by Bedford to Edm Petrol Offsite
- (3) This test was performed by Bedford to Calgary Offsite
- (4) This test was performed by Bedford to Burnaby Offsite
- (5) This test was performed by Bedford to Montreal Subcontrac
- (6) Confirmatory runs for 2,3,7,8-TCDF are performed only if the primary result is greater than the RDL.
- (7) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.
- (8) The APHA Standard Method require pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.
- (9) Non-accredited test method

Encryption Key

Stoyenska Slanizevanski Project Manauer Assistant

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Maryann Comeau, Project Manager Email: Maryann COMEAU@bvlabs.com Phone# (902)420-0203 Ext: 298

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of i50/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

RESULTS OF ANALYSES OF WATER

BV Labs ID		JSK186			
Sampling Date		2019/05/14 13:15			
COC Number		715285-01-01			
	UNITS	POINT A 14-MAY	RDL	MDL	QC Batch
Calculated Parameters					
Anion Sum	me/L	12.2	N/A	N/A	6122693
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	190	1.0	0.20	6122686
Calculated TDS	mg/L	760	1.0	0.20	6122701
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND	1.0	0.20	6122686
Cation Sum	me/L	12.2	N/A	N/A	6122693
Hardness (CaCO3)	mg/L	110	1.0	1.0	6122689
Ion Balance (% Difference)	%	0.0800	N/A	N/A	6122691
Langelier Index (@ 20C)	N/A	-0.568			6122697
Langelier Index (@ 4C)	N/A	-0.814			6122699
Nitrate (N)	mg/L	0.20	0.050	N/A	6122695
Saturation pH (@ 20C)	N/A	7.67			6122697
Saturation pH (@ 4C)	N/A	7.91			6122699
Sulphide (as H2S)	mg/L	0.34	0.021	0.011	6122964
Inorganics	-				
Total Alkalinity (Total as CaCO3)	mg/L	190 (1)	50	N/A	6130645
Carbonaceous BOD	mg/L	190	43	N/A	6122932
Total Chemical Oxygen Demand	mg/L	820	20	N/A	6127143
Dissolved Chlorate (CIO3-)	mg/L	53 (2)	1.0	N/A	6154325
Dissolved Chloride (CI-)	mg/L	130	5.0	N/A	6130647
Dissolved Chlorite (CLO2-)	mg/L	ND (2)	1.0	N/A	6154325
Colour	TCU	590	100	N/A	6130899
Total Kjeldahl Nitrogen (TKN)	mg/L	3.8	1.0	0.60	6128661
Nitrate + Nitrite (N)	mg/L	0.28	0.050	N/A	6130657
Nitrite (N)	mg/L	0.071	0.010	N/A	6130658
Nitrogen (Ammonia Nitrogen)	mg/L	1.7	0.050	N/A	6130801
Dissolved Organic Carbon (C)	mg/L	260 (3)	5.0	N/A	6127728
Total Organic Carbon (C)	mg/L	290 (3)	5.0	N/A	6127724
Orthophosphate (P)	mg/L	1.2	0.050	N/A	6130656

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected

- (1) Elevated reporting limit due to method blank performance.
- (2) Detection limits raised due to sample matrix.
- (3) Elevated reporting limit due to turbidity.



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

RESULTS OF ANALYSES OF WATER

BV Labs ID		JSK186		1	
Sampling Date		2019/05/14 13:15			
COC Number		715285-01-01			
	UNITS	POINT A 14-MAY	RDL	MDL	QC Batch
рН	pH	7.10	N/A	N/A	6133108
Total Phosphorus	mg/L	1.9	0.040	N/A	6124637
Salinity	N/A	ND	2.0	N/A	6130613
Reactive Silica (SiO2)	mg/L	10	0.50	N/A	6130655
Total Suspended Solids	mg/L	120	5.0	N/A	6124744
Dissolved Sulphate (SO4)	mg/L	230	10	N/A	6130654
Sulphide	mg/L	0.32	0.020	0.010	6130992
Total Cyanide (CN)	mg/L	ND	0.0050	0.00010	6137355
Turbidity	NTU	56	0.10	0.10	6135407
Volatile Suspended Solids	mg/L	90	20	N/A	6133009
Conductivity	uS/cm	1200	1.0	N/A	6133115
Nutritional Parameters					
Total Nitrogen (N)	mg/L	3.06 (1)	0.20	N/A	6136917
Organic Halogens	-				
Adsorbable Organic Halogen	mg/L	0.81	0.25	N/A	6136366
Subcontracted Analysis			-		
Subcontract Parameter	N/A	ATTACHED	N/A	N/A	6125984

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected

(1) RDL raised due to sample matrix interference.



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

MERCURY BY COLD VAPOUR AA (WATER)

BV Labs ID		JSK186			
Sampling Date		2019/05/14 13:15			
COC Number		715285-01-01			
	UNITS	POINT A 14-MAY	RDL	MDL	QC Batch
Metals	200 200			_	
Total Mercury (Hg)	ug/L	ND	0.013	N/A	6131192
RDL = Reportable Detect	tion Limit				
QC Batch = Quality Cont	rol Batch				
ND = Not detected					
N/A = Not Applicable					



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

ELEMENTS BY ICP/MS (WATER)

BV Labs ID		JSK186			
Sampling Date		2019/05/14 13:15			
COC Number		715285-01-01			
	UNITS	POINT A 14-MAY	RDL	MDL	QC Batch
Metals					
Total Aluminum (AI)	ug/L	2300	5.0	N/A	6124570
Total Antimony (Sb)	ug/L	ND	1.0	N/A	6124570
Total Arsenic (As)	ug/L	ND	1.0	N/A	6124570
Total Barium (Ba)	ug/L	480	1.0	N/A	6124570
Total Beryllium (Be)	ug/L	ND	1.0	N/A	6124570
Total Bismuth (Bij	ug/L	ND	2.0	N/A	6124570
Total Boron (B)	ug/L	60	50	N/A	6124570
Total Cadmium (Cd)	ug/L	1.4	0.010	N/A	6124570
Total Calcium (Ca)	ug/L	38000	100	N/A	6124570
Total Chromium (Cr)	ug/L	4.4	1.0	N/A	6124570
Total Cobalt (Co)	ug/L	1.0	0.40	N/A	6124570
Total Copper (Cu)	ug/L	10	0.50	N/A	6124570
Total Iron (Fe)	ug/L	1400	50	N/A	6124570
Total Lead (Pb)	ug/L	3.7	0.50	N/A	6124570
Total Magnesium (Mg)	ug/L	4900	100	N/A	6124570
Total Manganese (Mn)	ug/L	2700	2.0	N/A	6124570
Total Molybdenum (Mo)	ug/L	ND	2.0	N/A	6124570
Total Nickel (Ni)	ug/L	3.4	2.0	N/A	6124570
Total Phosphorus (P)	ug/L	1500	100	N/A	6124570
Total Potassium (K)	ug/L	9000	100	N/A	6124570
Total Selenium (Se)	ug/L	ND:	1.0	N/A	6124570
Total Silver (Ag)	ug/L	0.32	0.10	N/A	6124570
Total Sodium (Na)	ug/L	220000	100	N/A	6124570
Total Strontium (Sr)	ug/L	170	2.0	N/A	6124570
Total Thallium (TI)	ug/L	0.26	0.10	N/A	6124570
Total Tin (Sn)	ug/L	ND	2.0	N/A	6124570
Total Titanium (Ti)	ug/L	65	2.0	N/A	6124570
Total Uranium (U)	ug/L	0.43	0.10	N/A	6124570
Total Vanadium (V)	ug/L	4.0	2.0	N/A	6124570
Total Zinc (Zn)	ug/L	190	5.0	N/A	6124570

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		JSK186			
Sampling Date		2019/05/14 13:15			
COC Number		715285-01-01			
	UNITS	POINT A 14-MAY	RDL	MDL	QC Batch
Polyaromatic Hydrocarbor	15				
1-Methylnaphthalene	ug/L	ND	0.050	N/A	6124966
2-Methylnaphthalene	ug/L	ND	0.050	N/A	6124966
Acenaphthene	ug/L	ND	0.010	N/A	6124966
Acenaphthylene	ug/L	ND (1)	0.030	N/A	6124966
Anthracene	ug/L	ND (1)	0.020	N/A	6124966
Benzo(a)anthracene	ug/L	ND	0.010	N/A	6124966
Benzo(a)pyrene	ug/L	ND	0.010	N/A	6124966
Benzo(b)fluoranthene	ug/L	ND	0.010	N/A	6124966
Benzo(b/j)fluoranthene	ug/L	ND	0.020	N/A	6123000
Benzo(g,h,i)perylene	ug/L	ND	0.010	N/A	6124966
Benzo(j)fluoranthene	ug/L	ND	0.010	N/A	6124966
Benzo(k)fluoranthene	ug/L	ND	0.010	N/A	6124966
Chrysene	ug/L	ND	0.010	N/A	6124966
Dibenz(a,h)anthracene	ug/L	ND	0.010	N/A	6124966
Fluoranthene	ug/L	ND (1)	0.40	N/A	6124966
Fluorene	ug/L	ND (1)	0.090	N/A	6124966
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.010	N/A	6124966
Naphthalene	ug/L	ND	0.20	N/A	6124966
Perylene	ug/L	ND	0.010	N/A	6124966
Phenanthrene	ug/L	0.019	0.010	N/A	6124966
Pyrene	ug/L	ND (1)	0.050	N/A	6124966
Surrogate Recovery (%)	-11				
D10-Anthracene	%	114			6124966
D14-Terphenyl	%	95			6124966
D8-Acenaphthylene	96	-93			6124966

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		JSK186			
Sampling Date		2019/05/14 13:15			
COC Number		715285-01-01			n
	UNITS	POINT A 14-MAY	RDL	MDL	QC Batch
Volatile Organics					
1,1-Dichloroethane	ug/L	ND	2.0	N/A	6124567
1,1-Dichloroethylene	ug/L	ND (1)	11	.22	6124567
1,1,1-Trichloroethane	ug/L	ND	1.0	N/A	6124567
1,1,2-Trichloroethane	ug/L	ND	1.0	N/A	6124567
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	N/A	6124567
Ethylene Dibromide	ug/L	ND	0.20	0.50	6124567
1,2-Dichlorobenzene	ug/L	ND	0.50	N/A	6124567
1,2-Dichloroethane	ug/L	ND:	1.0	N/A	6124567
cis-1,2-Dichloroethylene	ug/L	ND	0.50	N/A	6124567
trans-1,2-Dichloroethylene	ug/L	ND:	0.50	N/A	6124567
1,2-Dichloropropane	ug/L	ND:	0.50	N/A	6124567
1,3-Dichlorobenzene	ug/L	ND:	1.0	N/A	6124567
cis-1,3-Dichloropropene	ug/L	ND	0.50	N/A	6124567
trans-1,3-Dichloropropene	ug/L	ND	0.50	N/A	6124567
1,4-Dichlorobenzene	ug/L	ND	1.0	N/A	6124567
Benzene	ug/L	ND	1.0	N/A	6124567
Bromodichloromethane	ug/L	ND	1.0	0.20	6124567
Bromoform	ug/L	ND	1.0	0.20	6124567
Bromomethane	ug/L	ND	0.50	N/A	6124567
Carbon Tetrachloride	ug/L	ND:	0.50	N/A	6124567
Chlorobenzene	ug/L	ND	1.0	N/A	6124567
Chloroethane	ug/L	ND:	8.0	N/A	6124567
Chloroform	ug/L	13	1.0	0.20	6124567
Chloromethane	ug/L	ND:	8.0	N/A	6124567
Dibromochloromethane	ug/L	ND	1.0	0.20	6124567
Methylene Chloride(Dichloromethane)	ug/L	ND	3.0	N/A	6124567
Ethylbenzene	ug/L	ND	1.0	N/A	6124567
Methyl t-butyl ether (MTBE)	ug/L	ND	2.0	N/A	6124567
Styrene	ug/L	ND	1.0	N/A	6124567
Tetrachloroethylene	ug/L	ND	1.0	N/A	6124567

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

(1) Elevated VOC RDL(s) due to matrix interference.



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		JSK186			
Sampling Date		2019/05/14 13:15			
COC Number		715285-01-01			m
	UNITS	POINT A 14-MAY	RDL	MDL	QC Batch
Toluene	ug/L	ND:	1.0	N/A	6124567
Trichloroethylene	ug/L	ND	1.0	N/A	6124567
Trichlorofluoromethane (FREON 11)	ug/L	ND	8.0	N/A	6124567
Vinyl Chloride	ug/L	ND	0.50	2.0	6124567
o-Xylene	ug/L	ND	1.0	N/A	6124567
p+m-Xylene	ug/L	ND	2.0	N/A	6124567
Total Xylenes	ug/L	ND	1.0	1.0	6124567
Total Trihalomethanes	ug/L	13	1.0	N/A	6124567
Surrogate Recovery (%)			1		
4-Bromofluorobenzene	96	98			6124567
D4-1,2-Dichloroethane	%	111			6124567
D8-Toluene	.%	100			6124567
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not detected N/A = Not Applicable			******		

N/A = Not Applicable



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

ATLANTIC RBCA HYDROCARBONS (WATER)

BV Labs ID		JSK186			
Sampling Date		2019/05/14 13:15			
COC Number		715285-01-01	in i		
	UNITS	POINT A 14-MAY	RDL	MDL	QC Batch
Petroleum Hydrocarbons					
Benzene	mg/L	ND	0.0010	N/A	6127651
Toluene	mg/L	ND:	0.0010	N/A	6127651
Ethylbenzene	mg/L	ND	0.0010	N/A	6127651
Total Xylenes	mg/L	ND	0.0020	N/A	6127651
C6 - C10 (less BTEX)	mg/L	0.14(1)	0.010	N/A	6127651
>C10-C16 Hydrocarbons	mg/L	0.17	0.050	N/A	6158877
>C16-C21 Hydrocarbons	mg/L	0.23	0.050	N/A	6158877
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>0.68</td><td>0.10</td><td>N/A</td><td>6158877</td></c32>	mg/L	0.68	0.10	N/A	6158877
Modified TPH (Tier1)	mg/L	1.2	0.10	N/A	6156528
Reached Baseline at C32	mg/L	Yes	N/A	N/A	6158877
Hydrocarbon Resemblance	mg/L	COMMENT (2)	N/A	N/A	6158877
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	90			6158877
n-Dotriacontane - Extractable	%	83 (3)			6158877
Isobutylbenzene - Volatile	96	73			6127651

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

- (1) Interference from Volatile Organic Compounds (VOCs) in the gasoline range.
- (2) Unidentified compound(s) in fuel / lube range. One product in lube oil range.
- (3) TEH Analysis: Silica gel clean-up performed prior to analysis as per client request.



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

BV Labs ID		JSK186			
Sampling Date		2019/05/14 13:15			
COC Number		715285-01-01			
	UNITS	POINT A 14-MAY	ROL	MDL	QC Batch
PCBs			Y 1	-	
Aroclar 1016	ug/L	ND	0.050	N/A	6127147
Aroclor 1221	ug/L	ND	0.050	N/A	6127147
Aroclar 1232	ug/L	ND	0.050	N/A	6127147
Aroclar 1248	ug/L	ND	0.050	N/A	6127147
Aroclor 1242	ug/L	ND	0.050	N/A	6127147
Aroclor 1254	ug/L	ND	0.050	N/A	6127147
Aroclor 1260	ug/L	ND	0.050	N/A	6127147
Calculated Total PCB	ug/L	ND	0.050	N/A	6123002
Surrogate Recovery (%)	10 10				
Decachlorobiphenyl	.96	29 (1)			6127147

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

(1) PCB surrogate not within acceptance limits. Analysis was repeated with similar results.



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

RESIN AND FATTY ACIDS BY GC-MS (WATER)

BV Labs ID		JSK186			
Sampling Date		2019/05/14 13:15			
COC Number		715285-01-01	m i		
	UNITS	POINT A 14-MAY	RDL	MDL	QC Batch
Calculated Parameters					
Total Fatty Acids	mg/L	ND	3.6	N/A	6154327
Total Resin Acids	mg/L	ND	3.0	N/A	6154327
Fatty Acids			- Lander	No.	
9,10-Dichlorostearic acid	mg/L	ND (1)	0.30	N/A	6154327
Decanoic Acid (C10)	mg/L	ND (1)	0.30	N/A	6154327
Docosanoic acid (C22)	mg/L	ND (1)	0.30	N/A	6154327
Dodecanoic acid (C12)	mg/L	ND (1)	0.30	N/A	6154327
Eicosanoic acid (C20)	mg/L	ND (1)	0.30	N/A	6154327
Hexadecanoic acid (C16)	mg/L	0.36 (1)	0.30	N/A	6154327
Linoleic acid (C18:2)	mg/L	2.1(1)	0.30	N/A	6154327
Linolenic acid (C18:3)	mg/L	ND (1)	0.30	N/A	6154327
Octadecanoic acid (C18)	mg/L	ND (1)	0.30	N/A	6154327
Oleic acid (C18:1)	mg/L	0.65 (1)	0.30	N/A	6154327
Tetradecanoic acid (C14)	mg/L	ND (1)	0.30	N/A	6154327
Undecanoic acid (C11)	mg/L	ND (1)	0.30	N/A	6154327
Resin Acids					
12,14-Dichlorodehydroabietic acid	mg/L	ND (1)	0.30	N/A	6154327
12-Chlorodehydroabietic acid	mg/L	ND (1)	0.30	N/A	6154327
14-Chlorodehydroabietic acid	mg/L	ND (1)	0.30	N/A	6154327
Abietic acid	mg/L	0.32(1)	0.30	N/A	6154327
Dehydroabietic acid	mg/L	0.32 (1)	0.30	N/A	6154327
Isopimaric acid	mg/L	ND (1)	0.30	N/A	6154327
Neoabietic acid	mg/L	ND (1)	0.30	N/A	6154327
Palustric acid	mg/L	ND (1)	0.30	N/A	6154327
Pimaric acid	mg/L	ND (1)	0.30	N/A	6154327
Sandaracopimaric acid	mg/L	ND (1)	0.30	N/A	6154327

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

(1) Detection limits raised due to dilution as a result of sample matrix interference.



Client Project #: Effluent Treatment Plant Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

DIOXINS AND FURANS BY HRMS (WATER)

BV Labs ID		JSK186							
Sampling Date		2019/05/14 13:15							
COC Number		715285-01-01				TOXIC EQUIV	VALENCY	# of	
	UNITS	POINT A 14-MAY	EDL.	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Dioxins & Furans	-					100			
2,3,7,8-Tetra CDD *	pg/L	ND	1.07	9.66	N/A	1.00	1.07		6164383
1,2,3,7,8-Penta CDD *	pg/L	ND	1.09	9.66	N/A	1.00	1.09		6164383
1,2,3,4,7,8-Hexa CDD *	pg/L	ND	1.20	9.66	N/A	0.100	0.120		6164383
1,2,3,6,7,8-Hexa CDD *	pg/L	1.25	1.05	9.66	N/A	0.100	0.125		6164383
1,2,3,7,8,9-Hexa CDD *	pg/L	ND	1,02	9.66	N/A	0.100	0.102		6164383
1,2,3,4,6,7,8-Hepta CDD *	pg/L	54.6	1.05	9.66	N/A	0.0100	0.546		6164383
Octa CDD *	pg/L	380	0.994	96.6	N/A	0.000300	0.114		6164383
Total Tetra CDD *	pg/L	ND	1.07	9.66	N/A			0	6164383
Total Penta CDD *	pg/L	ND	1.09	9.66	N/A			0	6164383
Total Hexa CDD *	pg/L	14.5	1,08	9.66	N/A			2	6164383
Total Hepta CDD *	pg/L	114	1.05	9.66	N/A			2	6164383
2,3,7,8-Tetra CDF **	pg/L	ND	0.985	9.66	N/A	0.100	0.0985		6164383
1,2,3,7,8-Penta CDF **	pg/L	ND	1.13	9.66	N/A	0.0300	0.0339		6164383
2,3,4,7,8-Penta CDF **	pg/L	ND:	1.14	9.66	N/A	0.300	0.342		6164383
1,2,3,4,7,8-Hexa CDF **	pg/L	ND	1.12	9.66	N/A	0.100	0.112		6164383
1,2,3,6,7,8-Hexa CDF **	pg/L	ND	0.934	9.66	N/A	0.100	0.0934		6164383
2,3,4,6,7,8-Hexa CDF **	pg/L	ND.	1,06	9.66	N/A	0.100	0.106		6164383
1,2,3,7,8,9-Hexa CDF **	pg/L	ND	1.17	9.66	N/A	0.100	0.117		6164383
1,2,3,4,6,7,8-Hepta CDF **	pg/L	ND (1)	1.20	9.66	N/A	0.0100	0.0120		6164383
1,2,3,4,7,8,9-Hepta CDF **	pg/L	ND	1.12	9.66	N/A	0.0100	0.0112		6164383
Octa CDF **	pg/L	3.33	1.06	96.6	N/A	0.000300	0.000999		6164383
Total Tetra CDF **	pg/L	ND:	0.985	9.66	N/A			0	6164383
Total Penta CDF **	pg/L	ND	1:13	9.66	N/A			0	6164383

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,

The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

* CDD = Chloro Dibenza-p-Dioxin

ND = Not detected

N/A = Not Applicable

** CDF = Chloro Dibenzo-p-Furan

EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.



Client Project #: Effluent Treatment Plant Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

DIOXINS AND FURANS BY HRMS (WATER)

BV Labs ID		JSK186							
Sampling Date		2019/05/14 13:15							
COC Number		715285-01-01				TOXIC EQUIV	ALENCY	# of	
	UNITS	POINT A 14-MAY	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Hexa CDF **	pg/L	ND	1.06	9.66	N/A			0	6164383
Total Hepta CDF **	pg/L	ND (1)	1.80	9.65	N/A			0	6164383
TOTAL TOXIC EQUIVALENCY	pg/L					1	4.09		
Surrogate Recovery (%)			_						
C13-1234678 HeptaCDD *	%	82							6164383
C13-1234678 HeptaCDF **	%	77							6164383
C13-123678 HexaCDD *	%	113							6164383
C13-123678 HexaCDF **	.%	83							6164383
C13-12378 PentaCDD *	%	82							6164383
C13-12378 PentaCDF **	%	65							6164383
C13-2378 TetraCDD *	%	101						i i	6164383
C13-2378 TetraCDF **	%	77							6164383
C13-OCDD *	96	80							6164383

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,

The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

** CDF = Chloro Dibenzo-p-Furan

ND = Not detected

N/A = Not Applicable

* CDD = Chloro Dibenzo-p-Dioxin

(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

GENERAL COMMENTS

Each t	emperature is the	average of up to	nree cooler ten	peratures tal	ken at receip	t		
	Package 1	8.3°C	1					
B1-11-11		-/a/1000 to 4000 to	= :					
Result	s relate only to th	e items tested.						



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QCLimit
6122932	MLW	QC Standard	Carbonaceous BOD	2019/05/21	varue	105	W.	80 - 120
5122932	MLW	Spiked Blank	Carbonaceous BOD	2019/05/21		110	26	80 - 12
5122932		The state of the s	Carbonaceous BOD	2019/05/21	ND,	110	mg/L	00-12
346234	THE SE	Wiethon Brank	Carbonaceous aco	2013/03/21	RDL=2.0		ngre	
5122932	MLW	RPD	Carbonaceous 800	2019/05/21	4.6		%	25
3166336	inc.	N. C.	Carbonaceous 800	2019/05/21	5.4		96	25
124567	ASL	Matrix Spike	4-Bromofluorobenzene	2019/05/16	5504	102	%	70 - 13
2427307	Contract of the Contract of th	Briancia, Spring	D4-1.2-Dichloroethane	2019/05/16		114	96	70 - 13
			D8-Toluene	2019/05/16		96	96	70 - 1
			1,1-Dichloroethane	2019/05/16		104	96	70 - 13
			1.1-Dichloroethylene	2019/05/16		107	%	70 - 1
			1.1.1-Trichloroethane	2019/05/16		106	%	70 - 13
			1.1.2-Trichloroethane	2019/05/16		104	96	70 - 1
			1,1,2,7-Tetrachloroethane	2019/05/16		108	36	70 - 13
			Ethylene Dibromide	2019/05/16		106	%	70 - 13
			1.2-Dichlorobenzene	2019/05/16		91	N.	70 - 13
			1,2-Dichloroethane	2019/05/16		107	26.	70 - 13
			cis-1,2-Dichloroethylene	2019/05/16		97	36	70 - 1
			trans-1,2-Dichloroethylene	2019/05/16		103	%	70 - 13
			1,2-Dichloropropane	2019/05/16		102	×	70 - 1
			1,3-Dichlorobenzene	2019/05/16		88	16	70 - 1
			cis-1,3-Dichloropropene	2019/05/16		101	%	70 - 13
			trans-1,3-Dichloropropene	2019/05/16		108	76	70 - 13
			1,4-Dichlorobenzene	2019/05/16		86		70 - 1
			Benzene			92	% %	70 - 1
			Bromodichloromethane	2019/05/16		98	96.	70 - 13
			Bromoform	2019/05/16		101		70 - 13
			Bromomethane			99	% %	60 - 14
			Carbon Tetrachloride	2019/05/16				
			Chlorobenzene Chlorobenzene	2019/05/16		101	% 34	70 - 13
			A. O.	2019/05/16		97		70 - 13
			Chloroform	2019/05/16		90	%	60 - 14
			Chloromethane	2019/05/16		97	%	70 - 13
			7.11.74.77.17.55.79.15	2019/05/16		101		60 - 14
			Dibromochloromethane	2019/05/16		103	%	70 - 13
			Methylene Chloride(Dichloromethane)	2019/05/16		100	%	70 - 1
			Ethylbenzene	2019/05/16		99	96	70 - 13
			Methyl t-butyl ether (MTBE)	2019/05/16		99	%	70 - 13
			Styrene	2019/05/16		101	96	70 - 13
			Tetrachloroethylene	2019/05/16		93	%	70 - 13
			Toluene	2019/05/16		97	96	70 - 13
			Trichloroethylene	2019/05/16		96	56	70 - 13
			Trichlorofluoromethane (FREON 11)	2019/05/16		92	96	60 - 1/
			Vinyl Chloride	2019/05/16		95	76	60 - 14
			o-Xylene	2019/05/16		97	76.	70 - 1
			p+m-Xylene	2019/05/16		95	96.	70 - 13
124567	ASL	Spiked Blank	4-Bromofluorobenzene	2019/05/16		100	36	70 - 1
			D4-1,2-Dichloroethane	2019/05/16		106	*	70 - 13
			D8-Toluene	2019/05/16		98	76.	70 - 1
			1,1-Dichloroethane	2019/05/16		103	%.	70 - 1
			1,1-Dichloroethylene	2019/05/16		109	36	70 - 13
			1,1,1-Trichloroethane	2019/05/16		106	%	70 - 13
			1.1.2-Trichloroethane	2019/05/16		99	76.	70 - 13
			1,1,2,2-Tetrachloroethane	2019/05/16		99	%	70 - 13



Client Project #: Effluent Treatment Plant Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
0.131.0111		ation of the l	Ethylene Dibromide	2019/05/16		100	16	70 - 130
			1,2-Dichlorobenzene	2019/05/16		92	94	70 - 130
			1,2-Dichloroethane	2019/05/16		100	96	70 - 130
			cis-1,2-Dichloroethylene	2019/05/16		95	. %	70 - 130
			trans-1,2-Dichloroethylene	2019/05/16		105	76	70 - 130
			1,2-Dichloropropane	2019/05/16		101	%	70 - 130
			1,3-Dichlorobenzene	2019/05/16		90	76	70 - 130
			cis-1,3-Dichloropropene	2019/05/16		100	%	70 - 130
			trans-1,3-Dichloropropene	2019/05/16		104	16	70 - 130
			1,4-Dichlorobenzene	2019/05/16		89	96	70 - 130
			Benzene	2019/05/16		91	76	70 - 130
			Bromodichloromethane	2019/05/16		96	16	70 - 130
			Bromafarm	2019/05/16		94	16	70 - 130
			Bromomethane	2019/05/16		95	96	60 - 140
			Carbon Tetrachloride	2019/05/16		102	76	70 - 130
			Chlorobenzene	2019/05/16		94	16	70 - 130
			Chloroethane	2019/05/16		89	%	60 - 140
			Chloroform	2019/05/16		95	36	70 - 130
			Chloromethane	2019/05/16		99	%	60 - 140
			Dibromochloromethane	2019/05/16		99	%	70 - 130
			Methylene Chloride(Dichloromethane)	2019/05/16		96	%	70 - 130
			Ethylbenzene	2019/05/16		98	%.	70 - 130
			Methyl t-butyl ether (MTBE)	2019/05/16		.97	96	70 - 130
			Styrene	2019/05/16		103	%	70 - 130
			Tetrachloroethylene	2019/05/15		98	Y4.	70 - 130
			Toluene	2019/05/16		98	96.	70 - 130
			Trichloroethylene	2019/05/16		98	36	70 - 130
			Trichlorofluoromethane (FREON 11)	2019/05/16		94	%	60 - 140
			Vinyl Chloride	2019/05/16		95	14.	60 - 140
			o-Xylene	2019/05/16		98	26	70 - 130
			p+m-Xylene	2019/05/16		96	96	70 - 130
6124567	ASL	Method Blank	4-Bromofluorobenzene	2019/05/16		98	%	70 - 130
			D4-1,2-Dichloroethane	2019/05/16		108	%	70 - 130
			D8-Toluene	2019/05/16		100	%	70 - 130
			1,1-Dichloroethane	2019/05/16	ND, RDL=2.0		ug/t	
			1.1-Dichloroethylene	2019/05/16	ND, RDL=0.50		ug/L	
			1,1,1-Trichloroethane	2019/05/16	ND, RDL=1.0		ug/L	
			1,1,2-Trichloroethane	2019/05/16	ND, RDL=1.0		ug/L	
			1,1,2,2-Tetrachioroethane	2019/05/16	ND, RDL=0.50		ug/L	
			Ethylene Dibromide	2019/05/16	ND, RDL=0.20		ug/L	
			1,2-Dichlorobenzene	2019/05/16	ND, RDL=0.50		ug/L	
			1,2-Dichloroethane	2019/05/16	ND, RDL=1.0		ug/L	
			cis-1,2-Dichloroethylene	2019/05/16	ND, RDL=0.50		ug/L	



Client Project #: Effluent Treatment Plant Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch Init QC Type	Parameter	Date Analyzed	Value	Recovery UNI	S QC Limit
AND 187 187	trans-1,2-Dichloroethylene	2019/05/16	ND, RDL=0.50	ug/	
	1,2-Dichloropropane	2019/05/16	ND, RDL=0.50	ug/	
	1,3-Dichlorobenzene	2019/05/16	ND, RDL=1.0	ug/	1
	cis-1,3-Dichloropropene	2019/05/16	ND, RDL=0.50	ug/	i,
	trans-1,3-Dichloropropene	2019/05/16	ND, RDL=0.50	ug/	1.
	1,4-Dichlorobenzene	2019/05/16	ND, RDL=1.0	ug/	L.
	Benzene	2019/05/16	ND, RDL=1.0	ug/	t.
	Bromodichloromethane	2019/05/16	ND, RDL=1.0	ug/	L
	Bromoform	2019/05/16	ND, RDL=1.0	ug/	L
	Bromomethane	2019/05/16	ND, RDL=0.50	ug/	i.
	Carbon Tetrachloride	2019/05/16	ND, RDL=0.50	ug/	L
	Chlorobenzene	2019/05/16	NO, ROL=1.0	ug/	
	Chloroethane	2019/05/16	ND, RDL=8.0	ug/	1
	Chloroform	2019/05/16	ND, RDL=1.0	ug/	L.
	Chloromethane	2019/05/16	ND, RDL=8.0	ug/	1.
	Dibromochloromethane	2019/05/16	ND, RDL=1.0	ug/	L
	Methylene Chloride(Dichloromethane)	2019/05/16	ND, RDL=3.0	ug/	t.
	Ethylbenzene	2019/05/16	ND, RDL=1.0	ug/	L
	Methyl t-butyl ether (MTBE)	2019/05/16	ND, RDL=2.0	ug/	
	Styrene	2019/05/16	ND, RDL=1.0	ug/	t.
	Tetrachloroethylene	2019/05/16	ND, RDL=1.0	ug/	L
	Toluene	2019/05/16	ND, RDL=1.0	ug/	ì.
	Trichloroethylene	2019/05/16	ND, RDL=1.0	ug/	T.
	Trichlorofluoromethane (FREON 11)	2019/05/16	ND, RDL=8.0	ug/	L
	Vinyl Chloride	2019/05/16	ND, RDL=0.50	ug/	L
	p-Xylene	2019/05/16	NO, ROL=1.0	ug/	L
	p+m-Xylene	2019/05/16	ND, RDL=2.0	ug/	L



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Xylenes	2019/05/16	ND, RDL=1.0		ug/L	
			Total Trihalomethanes	2019/05/16	NO. ROL=1.0		ug/L	
6124567	ASL	RPD	1.1-Dichlorpethane	2019/05/16	NC		%	40
	100		1,1-Dichloroethylene	2019/05/16	NC		36	40
			1.1.1-Trichloroethane	2019/05/16	NC		%	40
			1.1.2-Trichlorgethane	2019/05/16	NC		76.	40
			1,1,2,2-Tetrachloroethane	2019/05/16	NC		36	40
			Ethylene Dibromide	2019/05/16	NC		96	40
			1,Z-Dichlorobenzene	2019/05/16	NC		%	40
			1,2-Dichloroethane	2019/05/16	NC		N.	40
			cis-1,2-Dichloroethylene	2019/05/16	NC		36	40
			trans-1,2-Dichloroethylene	2019/05/16	NC		76	40
			1,2-Dichloropropane	2019/05/16	NC		%	40
			1.3-Dichlorobenzene	2019/05/16	NC		16	40
			cis-1,3-Dichloropropene	2019/05/16	NC		96	40
			trans-1,3-Dichloropropene	2019/05/16	NC		76	40
			1,4-Dichlarobenzene	2019/05/16	NC		14	40
			Benzene	2019/05/16	NC		26	40
			Bromodichloromethane	2019/05/16	NC		%	40
			Bromoform	2019/05/16	NC		96	40
			Bromomethane	2019/05/16	NC		%	40
			Carbon Tetrachloride	2019/05/16	NC		96	40
			Chlorobenzene	2019/05/16	NC		%	40
			Chloroethane	2019/05/16	NC		96	40
			Chloroform	2019/05/16	1.4		%	40
			Chloromethane	2019/05/16	NC		%	40
			Dibromochloromethane	2019/05/16	NC		%	40
			Methylene Chloride(Dichloromethane)	2019/05/16	NC		%	40
			Ethylbenzene	2019/05/16	NC		%	40
			Methyl t-butyl ether (MTBE)	2019/05/16	NC		N.	40
			Styrene	2019/05/16	NC		%	40
			Tetrachioroethylene	2019/05/16	NC		%	40
			Toluene	2019/05/16	NC		56	40
			Trichlaraethylene	2019/05/16	NC			40
			Trichlorofluoromethane (FREON 11)	2019/05/16	NC		26	40
			Vinyl Chloride	2019/05/16	NC		26	40
			o-Xylene	2019/05/16	NC		N	40
			p+m-Xylene	2019/05/16	NC		76.	40
			Total Xylenes	2019/05/16	NC		%	40
********	2416	*************	Total Trihalomethanes	2019/05/16	1.4	000	76	40
5124570	BAN	Matrix Spike	Total Aluminum (AI)	2019/05/16		98	N	80 - 120
			Total Antimony (5b)	2019/05/16		101	76	80 - 120
			Total Arsenic (As)	2019/05/16		98	96	80 - 120
			Total Barium (Ba)	2019/05/16		97	76	80 - 120
			Total Beryllium (Be)	2019/05/16		98	14	80 - 120
			Total Bismuth (Bi)	2019/05/16		96	%	80 - 120
			Total Boron (B)	2019/05/16		99	96	80 - 120
			Total Cadmium (Cd)	2019/05/16		97	76	80 - 120
			Total Calcium (Ca)	2019/05/16		101	76	80 - 120
			Total Chromium (Cr)	2019/05/16		99	%	80 - 120
			Total Cobalt (Co)	2019/05/16		103	%	80 - 120



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC	2000	12227	25 29	220 27 40 4	A720	25	0.000	200000
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Total Copper (Cu)	2019/05/16		96	76.	80 - 12
			Total Iron (Fe)	2019/05/16		104	34	80 - 120
			Total Lead (Pb)	2019/05/16		99	%	80 - 120
			Total Magnesium (Mg)	2019/05/16		102	%	80 - 120
			Total Manganese (Mn)	2019/05/16		98	76.	80 - 120
			Total Molybdenum (Mo)	2019/05/16		99	%	80 - 120
			Total Nickel (Ni)	2019/05/16		100	76	80 - 120
			Total Phosphorus (P)	2019/05/16		103	N	80 - 120
			Total Potassium (K)	2019/05/16		103	76	80 - 120
			Total Selenium (Se)	2019/05/16		98	%	80 - 120
			Total Silver (Ag)	2019/05/16		98	76.	80 - 120
			Total Sodium (Na)	2019/05/16		98	14	80 - 120
			Total Strontium (Sr)	2019/05/16		98	76	80 - 120
			Total Thallium (TI)	2019/05/16		100	96	80 - 120
			Total Tin (Sn)	2019/05/16		101	76	80 - 120
			Total Titanium (Ti)	2019/05/16		100	14	80 - 120
			Total Uranium (U)	2019/05/16		103	76	80 - 120
			Total Vanadium (V)	2019/05/16		98	36	80 - 120
			Total Zinc (Zn)	2019/05/16		97	%	80 - 120
5124570	BAN	Spiked Blank	Total Aluminum (Al)	2019/05/16		99	76	80 - 120
			Total Antimony (Sb)	2019/05/16		100	76	80 - 120
			Total Arsenic (As)	2019/05/16		97	%.	80 - 120
			Total Barium (8a)	2019/05/16		98	96	80 - 120
		Total Beryllium (Be) 2019/05/16 99	%	80 - 120				
			Total Bismuth (Bi)	2019/05/16		98	Ye.	80 - 120
			Total Boron (B)	2019/05/16		99	96.	80 - 120
			Total Cadmium (Cd)	2019/05/16		96	36	80 - 120
			Total Calcium (Ca)	2019/05/16		104	8	80 - 120
			Total Chromium (Cr)	2019/05/16		100	74.	80 - 120
			Total Cobalt (Co)	2019/05/16		104	36	80 - 120
			Total Copper (Cu)	2019/05/16		100	36	80 - 120
			Total fron (Fe)	2019/05/16		104	. %	80 - 120
			Total Lead (Pb)	2019/05/16		99	76.	80 - 120
			Total Magnesium (Mg)	2019/05/16		104	%	80 - 120
			Total Manganese (Mn)	2019/05/16		100	76	80 - 120
			Total Molybdenum (Mo)	2019/05/16		100	N:	80 - 120
			Total Nickel (Ni)	2019/05/16		101	16	80 - 120
			Total Phosphorus (P)	2019/05/16		103	%	80 - 120
			Total Potassium (K)	2019/05/16		102	76	80 - 120
			Total Selenium (Se)	2019/05/16		97	14	80 - 120
			Total Silver (Ag)	2019/05/16		96	%	80 - 120
			Total Sodium (Na)	2019/05/16		100	96	80 - 120
			Total Strontium (Sr)	2019/05/16		101	76	80 - 120
			Total Thallium (TI)	2019/05/16		100	16	80 - 120
			Total Tin (Sn)	2019/05/16		98	%	80 - 120
			Total Titanium (Ti)	2019/05/16		101	36	80 - 120
			Total Uranium (U)	2019/05/16		103	%	80 - 120
			Total Vanadium (V)	2019/05/16		99	%	80 - 120
			Total Zinc (Zn)	2019/05/16		98	%	80 - 120
124570	BAN	Method Blank	Total Aluminum (Al)	2019/05/16	ND, RDL=5.0	7.77	ug/L	25/0/52
			Total Antimony (Sb)	2019/05/16	ND, RDL=1.0		ug/L	



Client Project #: Effluent Treatment Plant Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

IA/QC Batch Init QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
	Total Arsenic (As)	2019/05/16	ND, RDL=1.0		ug/L	
	Total Barium (Ba)	2019/05/16	NO. ROL=1.0		ug/L	
	Total Beryllium (Be)	2019/05/16	ND, RDL=1.0		ug/L	
	Total Bismuth (Bi)	2019/05/16	ND, RDL=2.0		ug/L	
	Total Boron (B)	2019/05/16	ND, RDL=50		ug/L	
	Total Cadmium (Cd)	2019/05/16	ND, RDL=0.010		ug/L	
	Total Calcium (Ca)	2019/05/16	ND, RDL=100		ug/L	
	Total Chromium (Cr)	2019/05/16	ND, RDL=1.0		ug/L	
	Total Cobalt (Co)	2019/05/16	ND, RDL=0.40		ug/L	
	Total Copper (Cu)	2019/05/16	ND, RDL=0.50		ug/L	
	Total Iron (Fe)	2019/05/16	ND, RDL=50		ug/L	
	Total Lead (Pb)	2019/05/16	ND, RDL=0.50		ug/L	
	Total Magnesium (Mg)	2019/05/16	ND, RDL=100		ug/L	
	Total Manganese (Mn)	2019/05/16	ND, RDL=2.0		ug/L	
	Total Molybdenum (Mo)	2019/05/16	ND, RDL=2.0		ug/L	
	Total Nickel (Ni)	2019/05/16	ND, RDL=2.0		ug/L	
	Total Phosphorus (P)	2019/05/16	ND, RDL=100		ug/t	
	Total Potassium (K)	2019/05/16	ND, RDL=100		ug/L	
	Total Selenium (Se)	2019/05/16	ND, RDL=1.0		ug/L	
	Total Silver (Ag)	2019/05/16	ND, RDL=0.10		ug/L	
	Total Sodium (Na)	2019/05/16	ND, RDL=100		ug/L	
	Total Strontium (Sr)	2019/05/16	ND, RDL=2.0		ug/L	
	Total Thallium (TI)	2019/05/16	ND, RDL=0.10		ug/L	
	Total Tin (Sn)	2019/05/16	ND, RDL=2.0		ug/L	
	Total Titanium (Ti)	2019/05/16	ND, RDL=2.0		ug/L	
	Total Uranium (U)	2019/05/16	NO, RDL=0.10		ug/L	
	Total Vanadium (V)	2019/05/16	ND, RDL=2.0		ug/L	



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC								
Batch	fnit	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Zinc (Zn)	2019/05/16	ND, RDL=5.0		ug/L	
6124570	BAN	RPD	Total Aluminum (Al)	2019/05/16	NC		96	20
			Total Antimony (Sb)	2019/05/16	NC		96	20
			Total Arsenic (As)	2019/05/16	NC		%	20
			Total Barium (Ba)	2019/05/16	2.3		96	20
			Total Beryllium (Be)	2019/05/16	NC		96	20
			Total Bismuth (Bi)	2019/05/16	NC		96	20
			Total Boron (B)	2019/05/16	NC		%	20
			Total Cadmium (Cd)	2019/05/16	NC		96	20
			Total Calcium (Ca)	2019/05/16	3.3		%	20
			Total Chromium (Cr)	2019/05/16	NC		%	20
			Total Cobalt (Co)	2019/05/16	1.7		%	20
			Total Copper (Cu)	2019/05/16	3.0		96	20
			Total Iron (Fe)	2019/05/16	2.0		%	20
			Total Lead (Pb)	2019/05/15	NC		%	20
			Total Magnesium (Mg)	2019/05/16	4.2		16.	20
			Total Manganese (Mn)	2019/05/16	2.7		36	20
			Total Molybdenum (Mo)	2019/05/16	NC		%	20
			Total Nickel (Ni)	2019/05/16	NC		76	20
			Total Phosphorus (P)	2019/05/16	10		%	20
			Total Potassium (K)	2019/05/16	7.2		%	20
			Total Selenium (Se)	2019/05/16	NC		76	20
			Total Silver (Ag)	2019/05/16	NC		14	20
			Total Sodium (Na)	2019/05/16	2.1		16	20
			Total Strontium (Sr)	2019/05/16	3.3		96	20
			Total Thallium (TI)	2019/05/16	NC		%	20
			Total Tin (Sn)	2019/05/16	NC		16	20
			Total Titanium (Ti)	2019/05/16	NC		%	20
			Total Uranium (U)	2019/05/16	NC		96	20
			Total Vanadium (V)	2019/05/16	NC		96	20
			Total Zinc (Zn)	2019/05/16	0.77		%	20
6124637	MCN	Matrix Spike	Total Phosphorus	2019/05/17	2778G3	117	%	80 - 120
6124637	MCN	Spiked Blank	Total Phosphorus	2019/05/17		94	96	80 - 120
6124637	MCN	Method Blank	Total Phosphorus	2019/05/17	ND, RDL=0.020		mg/L	
6124637	MCN	RPD	Total Phosphorus	2019/05/17	NC		56	25
6124744	AM6	QC Standard	Total Suspended Solids	2019/05/21		97	96	80 - 120
6124744	AM6	Method Blank	Total Suspended Solids	2019/05/21	ND, RDL=1.0		mg/L	
6124744	AM6	RPD	Total Suspended Solids	2019/05/21	19		96	20
6124966	KKE	Matrix Spike	D10-Anthracene	2019/05/16		97	96	50 - 130
enwises.		7.04.000 CO. 04.000 P. 04.000	D14-Terphenyl	2019/05/16		98	96	50 - 130
			D8-Acenaphthylene	2019/05/16		93	96.	50 - 130
			1-Methylnaphthalene	2019/05/16		82	96	50 - 130
			2-Methylnaphthalene	2019/05/16		84	%	50 - 130
			Acenaphthene	2019/05/16		95	96	50 - 130
			Acenaphthylene	2019/05/16		95	%	50 - 130
			Aceraphthylene 2019/05/16 95 % Anthracene 2019/05/16 95 %	50 - 130				
			Benzo(a)anthracene	2019/05/16		90	76	50 - 130
			Benzo(a)pyrene	2019/05/16		81	%	50 - 130
			Benzo(b)fluoranthene	2019/05/16		89	26.	50 - 130
			Benzo(g,h,i)perylene	2019/05/16		86	96	50 - 130



Client Project #: Effluent Treatment Plant Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QCLimit
41111111		and the same of th	Benzo(j)fluoranthene	2019/05/16		79	%.	50 - 130
			Benzo(k)fluoranthene	2019/05/16		77	34	50 - 130
			Chrysene	2019/05/16		108	96	50 - 130
			Dibenz(a,h)anthracene	2019/05/16		80	%	50 - 136
			Fluoranthene	2019/05/16		98	%	50 - 136
			Fluorene	2019/05/16		99	%	50 - 13
			Indeno(1,2,3-cd)pyrene	2019/05/16		81	76	50 - 13
			Naphthalene	2019/05/16		86	%	50 - 13
			Perylene	2019/05/16		76	%	50 - 13
			Phenanthrene	2019/05/16		101	%	50 - 13
			Pyrene	2019/05/16		96	76	50 - 13
5124966	KKE	Spiked Blank	D10-Anthracene	2019/05/16		103	14	50 - 13
		054075074044713.14	D14-Terphenyl	2019/05/16		102	%	50 - 13
			D8-Acenaphthylene	2019/05/16		101	96	50 - 13
			I-Methylnaphthalene	2019/05/16		88	76	50 - 13
			2-Methylnaphthalene	2019/05/16		90	×	50 - 13
			Acenaphthene	2019/05/16		102	%	50 - 13
			Acenaphthylene	2019/05/16		103	36	50 - 13
			Anthracene	2019/05/16		100	%	50 - 13
			Benzo(a)anthracene	2019/05/16		92	%	50 - 13
			Benzo(a)pyrene	2019/05/16		84	%	50 - 13
			Benzo(b)fluoranthene	2019/05/16		90	N.	50 - 13
			Benzo(g,h,i)perylene	2019/05/16		89	34	50 - 13
			Benzo(j)fluoranthene	2019/05/16		83	%	50 - 13
			Benzo(k)fluoranthene	2019/05/16		84	Y4.	50 - 13
			Chrysene	2019/05/16		107	%	50 - 13
			Dibenz(a,h)anthracene	2019/05/16		82	36	50 - 13
			Fluoranthene	2019/05/16		103	36	50 - 13
			Fluorene	2019/05/16		108	16	50 - 13
			Indeno(1,2,3-cd)pyrene	2019/05/16		85	26	50 - 13
			Naphthalene	2019/05/16		92	%	50 - 13
			Perylene	2019/05/16		79	%	50 - 13
			Phenanthrene	2019/05/16		107	×	50 - 13
			Pyrene	2019/05/16		101	%	50 - 13
5124966	KKE	Method Blank	D10-Anthracene	E 4 (0.30 to 10.00)		103		
1174300	565	Method blank		2019/05/16			76	50 - 13 50 - 13
			D14-Terphenyl	2019/05/16		103	*	
			08-Acenaphthylene	2019/05/16	Septe	99	76	50 - 13
			1-Methylnaphthalene	2019/05/16	ND, RDL=0.050		ug/L	
			2-Methylnaphthalene	2019/05/16	ND, RDL=0.050		ug/L	
			Acenaphthene	2019/05/16	ND, RDL=0.010		ug/t	
			Acenaphthylene	2019/05/16	ND. RDL=0.010		ug/L	
			Anthracene	2019/05/16	ND, RDL=0.010		ug/L	
			Benzo(a)anthracene	2019/05/16	ND, RDL=0.010		ug/L	
			Benzo(a)pyrene	2019/05/16	ND, RDL=0.010		ug/L	
			Benzo(b)fluoranthene	2019/05/16	ND, RDL=0.010		ug/L	



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC								
Batch	fnit	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzo(g,h,i)perylene	2019/05/16	ND, RDL=0.010		ug/L	
			Benzo(j)fluoranthene	2019/05/16	ND, RDL=0.010		ug/L	
			Benzo(k)fluoranthene	2019/05/16	ND, RDL=0.010		ug/L	
			Chrysene	2019/05/16	ND, RDL=0.010		ug/L	
			Dibenz(a,h)anthracene	2019/05/16	ND, RDL=0.010		ug/L	
			Fluoranthene	2019/05/16	ND, RDL=0.010		ug/L	
			Fluorene	2019/05/16	ND, RDL=0.010		ug/L	
			Indeno(1,2,3-cd)pyrene	2019/05/16	ND, RDL=0.010		ug/L	
			Naphthalene	2019/05/16	ND, RDL=0.20		ug/L	
			Perylene	2019/05/16	ND, RDL=0.010		ug/L	
			Phenanthrene	2019/05/16	ND, RDL=0.010		ug/L	
			Pyrene	2019/05/16	ND, RDL=0.010		ug/L	
124966	KKE	RPD	1-Methylnaphthalene	2019/05/16	NC		96.	40
			2-Methylnaphthalene	2019/05/16	NC		96	40
			Acenaphthene	2019/05/16	NC		%	40
			Acenaphthylene	2019/05/16	NC		%	40
			Anthracene	2019/05/16	NC		94	40
			Benzo(a)anthracene	2019/05/16	NC		76	40
			Benzo(a)pyrene	2019/05/16	NC		96	40
			Benzo(b)fluoranthene	2019/05/16	NC		%	40
			Benzo(g,h,i)perylene	2019/05/16	NC		%	40
			Benzo(j)fluoranthene	2019/05/16	NC		76	40
			Benzo(k)fluoranthene	2019/05/16	NC		%	40
			Chrysene	2019/05/16	NC		16	40
			Dibenz(a,h)anthracene	2019/05/16	NC		96	40
			Fluoranthene	2019/05/16	NC		%	40
			Fluorene	2019/05/16	NC		14	40
			Indeno(1,2,3-cd)pyrene	2019/05/16	NC		%	40
			Naphthalene	2019/05/16	NC		96	40
			Perylene	2019/05/16	NC		96	40
			Phenanthrene	2019/05/16	NC		16	40
			Pyrene	2019/05/16	NC		%	40
127143	22)(Matrix Spike	Total Chemical Oxygen Demand	2019/05/17		99	96	80 - 120
127143	ZZH	QC Standard	Total Chemical Oxygen Demand	2019/05/17		101	96	80 - 120
127143	ZZH	Spiked Blank	Total Chemical Oxygen Demand	2019/05/17		101	96	80 - 120
127143	ZZH	Method Blank	Total Chemical Oxygen Demand	2019/05/17	ND, RDL=20		mg/L	
127143	ZZH	RPD	Total Chemical Oxygen Demand	2019/05/17	4.4		. %	25
127147	RGE	Spiked Blank	Decachlorobiphenyl	2019/05/17		87	%	30 - 130
	300	305 TE T	Aroclor 1254	2019/05/17		90	%	70 - 130
5127147	RGE	Method Blank	Decachlorobiphenyl	2019/05/17		80	76	30 - 130



Client Project #: Effluent Treatment Plant Site Location: POINT A, EFFLUENT SAMPLING

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QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Aroclar 1016	2019/05/17	ND, RDL=0.050		ug/L	
			Aroclor 1221	2019/05/17	ND, RDL=0.050		ug/L	
			Aroclor 1232	2019/05/17	ND, RDL=0.050		ug/L	
			Aroclor 1248	2019/05/17	ND, RDL=0.050		ug/L	
			Aroclor 1242	2019/05/17	ND, RDL=0.050		ug/L	
			Aroclor 1254	2019/05/17	ND, RDL=0.050		ug/L	
			Aroclor 1260	2019/05/17	ND, RDL=0.050		ug/L	
5127147	RGE	RPD	Aroclor 1016	2010/05/17	NC.		1961	40
112/14/	NGE	RPD		2019/05/17			%	
			Aroclor 1221 Aroclor 1232	2019/05/17	NC NC		96	40
				2019/05/17			14	
			Aroclor 1248	2019/05/17	NC		%	40
			Aroclor 1242	2019/05/17	NC		96.	40
			Aroclor 1254	2019/05/17	NC		96	40
	444	Re-Colo Wolfe	Aroclor 1260	2019/05/17	NC	1000	76	40
127651	THIL	Matrix Spike	Isobutylbenzene - Volatile	2019/05/17		101	%.	70 - 130
			Benzene	2019/05/17		116	96.	70 - 130
			Toluene	2019/05/17		116	36	70 - 130
			Ethylbenzene	2019/05/17		117	76	70 - 130
Company of the Co	140.778	CONTROL OF TAXABLE AND ADDR	Total Xylenes	2019/05/17		116	76.	70 - 130
127651	THE	Spiked Blank	Isobutyibenzene - Volatile	2019/05/17		103	%.	70 - 130
			Benzene	2019/05/17		102	96	70 - 130
			Toluene	2019/05/17		104	%	70 - 130
			Ethylbenzene	2019/05/17		103	%	70 - 130
		TO 11 T	Total Xylenes	2019/05/17		104	96.	70 - 130
127651	THU	Method Blank	Isobutylbenzene - Volatile	2019/05/17		102	76	70 - 130
			Benzene	2019/05/17	ND, RDL=0.0010		rng/L	
			Toluene	2019/05/17	ND, RDL=0.0010		mg/L	
			Ethylbenzene	2019/05/17	ND, RDL=0.0010		mg/L	
			Total Xylenes	2019/05/17	ND, RDL=0.0020		mg/L	
			C6 - C10 (less BTEX)	2019/05/17	ND, RDL=0.010		mg/L	
5127651	THE	RPO	Benzene	2019/05/17	NC		16	40
			Toluene	2019/05/17	NC		%	40
			Ethylbenzene	2019/05/17	NC		36	40
			Total Xylenes	2019/05/17	NC		96	40
			C6 - C10 (less BTEX)	2019/05/17	NC		96	40
127724	SSI	Matrix Spike	Total Organic Carbon (C)	2019/05/17		98	96	85 - 115
127724	SSI	Spiked Blank	Total Organic Carbon (C)	2019/05/17		101	94	80 - 120
5127724	ŚŚł	Method Blank	Total Organic Carbon (C)	2019/05/17	ND, RDL=0.50		mg/L	
6127724	SSI	RPD	Total Organic Carbon (C)	2019/05/17	NC (1)		%	15
5127728	SSI	Matrix Spike	Dissolved Organic Carbon (C)	2019/05/17	- A.V.	98	76	85 - 115



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QA/QC	2707	222	25 59	200	A72	25	W. C.	22000
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
6127728	SSI	Spiked Blank	Dissolved Organic Carbon (C)	2019/05/17		100	76	80 - 120
6127728	122	Method Blank	Dissolved Organic Carbon (C)	2019/05/17	ND,		mg/L	
				1.2538.6.6538.3555	RDL≃0.50			
6127728	SSI	RPD	Dissolved Organic Carbon (C)	2019/05/17	1.3		%	15
6128661	RTY	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2019/05/22		85	%	80 - 120
6128661	STY	QC Standard	Total Kjeldahl Nitrogen (TKN)	2019/05/21		102	%	80 - 120
6128661	RTY	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2019/05/21		104	96	80 - 120
6128661	RTY	Method Blank	Total Kjeldahl Nitrogen (TKN)	2019/05/21	ND, RDL=0.10		mg/L	
6128661	RTY	RPD	Total Kjeldahl Nitrogen (TKN)	2019/05/22	NC (2)		76	20
6130613	BBD	QC Standard	Salinity	2019/05/21		101	. %	80 - 120
6130613	BBD	Method Blank	Salinity	2019/05/21	ND, 8DL=2.0		N/A	
6130613	BBD	RPD	Salinity	2019/05/21	NC		96	25
6130645	SRM	Matrix Spike (JSK186-06)	Total Alkalinity (Total as CaCO3)	2019/05/21		NC	96	80 - 120
6130645	SRM	Spiked Blank	Total Alkalinity (Total as CaCO3)	2019/05/21		105	96.	80 - 120
6130645	SRM	Method Blank	Total Alkalinity (Total as CaCO3)	2019/05/21	7.4,	19176	mg/L	in Civ
					RDL=5.0			
6130645	SRM	RPD [JSK186-06]	Total Alkalinity (Total as CaCO3)	2019/05/21	14 (3)		%	25
6130647	SRM	Matrix Spike [JSK186-06]	Dissolved Chloride (CI-)	2019/05/21	0.707000	NC	56	80 - 120
6130647	SRM	Spiked Blank	Dissolved Chloride (CI-)	2019/05/21		102	94	80 - 120
6130647	SRM	Method Blank	Dissolved Chloride (CI-)	2019/05/21	NO,		mg/L	
					ROL=1.0			. 2016
6130647	SRM	RPD [JSK186-06]	Dissolved Chloride (CI-)	2019/05/21	0.40		96	25
6130654	SRM	Matrix Spike [JSK186-06]	Dissolved Sulphate (SO4)	2019/05/21		NC	96	80 - 120
6130654	SRM	Spiked Blank	Dissolved Sulphate (SO4)	2019/05/21		103	%.	80 - 120
6130654	SRM	Method Blank	Dissolved Sulphate (SO4)	2019/05/21	ND, RDL=2.0		mg/L	
6130654	SRM	RPD [JSK186-06]	Dissolved Sulphate (SO4)	2019/05/21	0.67		96	25
6130655	SRM	Matrix Spike (JSK186-06)	Reactive Silica (SiO2)	2019/05/21		NC	%	80 - 120
6130655	SRM	Spiked Blank	Reactive Silica (SiO2)	2019/05/21		104	%	80 - 120
6130655	SRM	Method Blank	Reactive Silica (SiO2)	2019/05/21	ND, RDL=0.50		mg/L	
6130655	SRM	RPD [JSK186-06]	Reactive Silica (SiO2)	2019/05/21	0.26		16	25
6130656	SRM	Matrix Spike [JSK186-06]	Orthophosphate (P)	2019/05/22		NC	94	80 - 120
6130656	SRM	Spiked Blank	Orthophosphate (P)	2019/05/22		102	96	80 - 120
6130656	SRM	Method Blank	Orthophosphate (P)	2019/05/22	ND, RDL=0.010		mg/L	
6130656	SRM	RPD [JSK186-06]	Orthophosphate (P)	2019/05/22	0.10		76	25
6130657	SRM	Matrix Spike [JSK186-06]	Nitrate + Nitrite (N)	2019/05/21		70 (4)	%	80 - 120
6130657	SRM	Spiked Blank	Nitrate + Nitrite (N)	2019/05/21		105	74	80 - 120
6130657	SRM	Method Blank	Nitzate + Nitrite (N)	2019/05/21	ND,	12000	mg/L	
101100000	1/2/2/201	12597272727927	CONTRA TRACKING PURE.	2506 W 254 W22	RDL=0.050		1500	363
6130657	SRM	RPD [JSK186-06]	Nitrate + Nitrite (N)	2019/05/21	0.29	FLEXIV.	%	25
6130658	SRM	Matrix Spike [JSK186-06]	Nitrite (N)	2019/05/21		80	36	80 - 120
6130658	SRM	Spiked Blank	Nitrite (N)	2019/05/21	U.S.	107	96	80 - 120
6130658	SRM	Method Blank	Nitrite (N)	2019/05/21	ND, RDL=0.010		mg/L	
6130658	SRM	RPD [JSK186-06]	Nitrite (N)	2019/05/21	0.53		96.	20
6130801	NRG	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2019/05/21		NC	96	80 - 120
6130801	NRG	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2019/05/21		98	%	80 - 120
6130801	NRG	Method Blank	Nitrogen (Ammonia Nitrogen)	2019/05/21	ND.		mg/L	
		10.110.4200.0111.014-00.000		11/0/2012/00/2011/00	RDL=0.050			



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QA/QC Batch	init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6130801	NRG	RPD	Nitrogen (Ammonia Nitrogen)	2019/05/21	0.50		%	20
6130899	NRG	Spiked Blank	Colour	2019/05/21		99	94	80 - 120
6130899	NRG	Method Blank	Colour	2019/05/21	ND,		TCU	
					RDL=5.0			
6130899	NRG	RPD	Colour	2019/05/21	NC		%	20
6130992	GTO	Matrix Spike	Sulphide	2019/05/21		87	96	80 - 120
6130992	GTO	Spiked Blank	Sulphide	2019/05/21		94	96	80 - 120
6130992	GTO	Method Blank	Sulphide	2019/05/21	ND,		mg/L	
					RDL=0.020			
6130992	GIO	RPD	Sulphide	2019/05/21	NC		76	20
6131192	CCR	Matrix Spike	Total Mercury (Hg)	2019/05/23		101	%	80 - 120
6131192	CCR	Spiked Blank	Total Mercury (Hg)	2019/05/23		99	16	80 - 120
6131192	CCR	Method Blank	Total Mercury (Hg)	2019/05/23	ND,		ug/L	
0.00010165560	2,00	90/07	Inches and the source	* 27/07/07/02/02/03	RDL=0.013		2007	100
6131192	CCR	RPD	Total Mercury (Hg)	2019/05/23	NC	trate 1	96	20
6133009	AM6	QC Standard	Volatile Suspended Solids	2019/05/22		95	%	80 - 120
6133009	AM6	Method Blank	Volatile Suspended Solids	2019/05/22	ND,		mg/L	
	1722041	No.		2010/06/20	RDL=2.0		200	200
6133009	AM6	RPD	Volatile Suspended Solids	2019/05/22	0	(2000)	16	25
6133108	EMT	QC Standard	pH	2019/05/22	0.20	101	%	97 - 103
6133108	EMT	RPD	pH	2019/05/22	0.38	202	94	N/A
6133115	EMT	Spiked Blank	Conductivity	2019/05/23	USI	102	96	80 - 120
6133115	EMT	Method Blank	Conductivity	2019/05/23	1.3, RDL=1.0		uS/cm	
6133115	EMT	RPD	Conductivity	2019/05/23	0.83		96	10
6135407	EMT	QC Standard	Turbidity	2019/05/23	1,000	111	%	80 - 120
6135407	EMT	Spiked Blank	Turbidity	2019/05/23		101	16	80 - 120
6135407	EMT	Method Blank	Turbidity	2019/05/23	ND,	1200	NTU	0.5-45.00
					RDL=0.10			
6135407	EMT	RPD	Turbidity	2019/05/23	3.0		%	20
6136917	IC4	Spiked Blank	Total Nitrogen (N)	2019/05/22		98	%	80 - 120
6136917	IC4	Method Blank	Total Nitrogen (N)	2019/05/22	ND, RDL≈0.020		mg/L	
6137355	BKE	Matrix Spike	Total Cyanide (CN)	2019/05/23		96	%	80 - 120
6137355	BKE	Spiked Blank	Total Cyanide (CN)	2019/05/23		101	94	80 - 120
6137355	BKE	Method Blank	Total Cyanide (CN)	2019/05/23	ND, RDL=0.0050		mg/L	
6137355	BKE	RPD	Total Cyanide (CN)	2019/05/23	NC		%	20
6154325	KD9	Matrix Spike	Dissolved Chlorate (CIO3-)	2019/05/23		NC	36	80 - 120
			Dissolved Chlorate (CIO3-)	2019/05/23		NC	%	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/23		NC	96	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/23		NC	96	80 - 120
6154325	KD9	Spiked Blank	Dissolved Chlorate (CIO3-)	2019/05/19		94	96	80 - 120
			Dissolved Chlorate (CIO3-)	2019/05/19		94	36	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/19		92	%	80 - 120
			Dissolved Chlarite (CLO2-)	2019/05/19		92	16	80 - 120
6154325	KD9	Method Blank	Dissolved Chlorate (CIO3-)	2019/05/19	ND, RDL=0.10		mg/L	
			Dissolved Chlorate (CIO3-)	2019/05/19	ND, RDL=0.10		mg/L	
			Dissolved Chlorite (CLO2-)	2019/05/19	ND, RDL=0.10		mg/L	



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QCLimit
300000		100 1100	Dissolved Chlorite (CLO2-)	2019/05/19	ND.	NECONAL Y	mg/L	Sec. milita
			535251-XXII-0311-1-XXII-0311-1-XXII-0311-1-XXII	**************************************	BDL=0.10		0.000	
6154325	KD9	RPD	Dissolved Chlorate (CIO3-)	2019/05/23	6.7		%	20
			Dissolved Chlorite (CLO2-)	2019/05/23	NC		96	20
6154327	5/1	Matrix Spike	9,10-Dichlorostearic acid	2019/05/22		95	%	50 - 130
			Decanoic Acid (C10)	2019/05/22		93	96	50 - 130
			Docosanoic acid (C22)	2019/05/22		92	%	50 - 130
			Dodecanoic acid (C12)	2019/05/22		91	96	50 - 130
			Eicosanoic acid (C20)	2019/05/22		101	%	50 - 130
			Hexadecanoic acid (C16)	2019/05/22		93	96	50 - 130
			Linoleic acid (C18:2)	2019/05/22		90	%	50 - 130
			Linolenic acid (C18:3)	2019/05/22		88	%	50 - 130
			Octadecanoic acid (C18)	2019/05/22		100	%	50 - 130
			Oleic acid (C18:1)	2019/05/22		98	96	50 - 130
			Tetradecanoic acid (C14)	2019/05/22		92	%	50 - 130
			Undecanoic acid (C11)	2019/05/22		103	%	50 - 130
			12,14-Dichlorodehydroabietic acid	2019/05/22		89	16.	50 - 130
			12-Chlorodehydroabietic acid	2019/05/22		84	36	50 - 130
			14-Chlorodehydroabletic acid	2019/05/22		88	%	50 - 130
			Abietic acid	2019/05/22		78	76	50 - 130
			Dehydroabietic acid	2019/05/22		99	%	50 - 130
			Isopimaric acid	2019/05/22		90	%	50 - 130
			Neoabietic acid	2019/05/22		59	76.	50 - 130
			Palustric acid	2019/05/22		58	14	50 - 130
			Pimaric acid	2019/05/22		95	%	50 - 130
			Sandaracopimaric acid	2019/05/22		91	96	50 - 130
6154327	SJI	Spiked Blank	9,10-Dichlorostearic acid	2019/05/22		97	%	50 - 130
			Decanoic Acid (C10)	2019/05/22		91	×	50 - 130
			Docosanoic acid (C22)	2019/05/22		95	%	50 - 130
			Dodecanoic acid (C12)	2019/05/22		91	36	50 - 130
			Eicosanoic acid (C20)	2019/05/22		101	%	50 - 130
			Hexadecanoic acid (C16)	2019/05/22		98	%	50 - 130
			Linoleic acid (C18:2)	2019/05/22		91	%	50 - 130
			Linolenic acid (C18:3)	2019/05/22		87	96	50 - 130
			Octadecanoic acid (C18)	2019/05/22		108	%	50 - 130
			Oleic acid (C18:1)	2019/05/22		104	%	50 - 130
			Tetradecanoic acid (C14)	2019/05/22		91	%	50 - 130
			Undecanoic acid (C11)	2019/05/22		100	96	50 - 130
			12,14-Dichlorodehydroabietic acid	2019/05/22		87	%	50 - 130
			12-Chlorodehydroabietic acid	2019/05/22		83	%	50 - 130
			14-Chlorodehydroabietic acid	2019/05/22		86	%	50 - 130
			Abietic acid	2019/05/22		74	96	50 - 130
			Dehydroabletic acid	2019/05/22		96	%	50 - 130
			Isopimaric acid	2019/05/22		91	%	50 - 130
			Neoabietic acid	2019/05/22		62	96.	50 - 130
			Palustric acid	2019/05/22		63	96	50 - 130
			Pimaric acid	2019/05/22		92	%	50 - 130
			Sandaracopimaric acid	2019/05/22		90	76	50 - 130
6154327	SJI	Method Blank	Total Fatty Acids	2019/05/22	ND, RDL=0.072		mg/L	
			Total Resin Acids	2019/05/22	ND, RDL=0.060		mg/L	



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QA/QC Batch	fnit:	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
Datten	HUL.	цс туре	9,10-Dichlorostearic acid	2019/05/22	ND,	Necovery	mg/L	QC-LIMIT
			5,10-bichiolostearic acia	2013/02/22	RDL=0.0060		maga c	
			Decanoic Acid (C10)	2019/05/22	ND,		mg/L	
			and the same desired		RDL=0.0060			
			Docosanoic acid (C22)	2019/05/22	ND, RDL=0.0060		mg/L	
			Dodecanoic acid (C12)	2019/05/22	ND, RDL=0.0060		mg/L	
			Eicosanoic acid (C20)	2019/05/22	ND, RDL=0.0060		mg/L	
			Hexadecanoic acid (C16)	2019/05/22	ND, RDL=0.0060		mg/L	
			Linoleic acid (C18:2)	2019/05/22	ND, RDL=0.0060		mg/L	
			Linolenic acid (C18:3)	2019/05/22	ND, RDL=0.0060		mg/L	
			Octadecanoic acid (C18)	2019/05/22	ND, RDL=0.0060		mg/L	
			Oleic acid (C18:1)	2019/05/22	ND, RDL=0.0060		mg/L	
			Tetradecandic acid (C14)	2019/05/22	ND, RDL=0.0060		mg/L	
			Undecanoic acid (C11)	2019/05/22	ND, RDL=0.0060		mg/L	
			12,14-Dichlorodehydroabietic acid	2019/05/22	ND, RDL=0.0060		mg/L	
			12-Chlorodehydroabietic acid	2019/05/22	ND, RDL=0.0060		mg/L	
			14-Chlorodehydroabietic acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Abietic acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Dehydroabietic acid	2019/05/22	ND, RDL=0.0060		mg/L	
			(sopimaric acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Neoabietic acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Palustric acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Pimaric acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Sandaracopimaric acid	2019/05/22	ND, RDL=0.0060		mg/L	
6158877	BCD	Spiked Blank	Isobutylbenzene - Extractable	2019/06/05		97	76	70 - 130
			n-Dotriacontane - Extractable	2019/06/05		118	%	70 - 130
			>C10-C16 Hydrocarbons	2019/06/05		95	94	70 - 130
			>C16-C21 Hydrocarbons	2019/06/05		88	96.	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2019/06/05</td><td></td><td>111</td><td>96</td><td>70 - 130</td></c32>	2019/06/05		111	96	70 - 130
5158877	BCD	Method Blank	Isobutylbenzene - Extractable	2019/06/05		91	%	70 - 130
			n-Dotriacontane - Extractable	2019/06/05		109	N-	70 - 130
			>C10-C16 Hydrocarbons	2019/06/05	ND, RDL≃0.050		mg/L	



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QA/QC Batch	init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
2000000			>C16-C21 Hydrocarbons	2019/06/05	ND, RDL=0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2019/06/05</td><td>ND, RDL=0.10</td><td></td><td>mg/L</td><td></td></c32>	2019/06/05	ND, RDL=0.10		mg/L	
6164383	OBC	Spiked Blank	C13-1234678 HeptaCDD	2019/06/09	01845-0344A	86	%	30 - 130
		5/15/5/25/2	C13-1234678 HeptaCDF	2019/06/09		72	36	30 - 130
			C13-123678 HexaCDD	2019/06/09		110	%	30 - 130
			C13-123678 HexaCOF	2019/06/09		73	76.	30 - 130
			C13-12378 PentaCDD	2019/06/09		71	34	30 - 130
			C13-12378 PentaCOF	2019/06/09		49	96	30 - 130
			C13-2378 TetraCDD	2019/06/09		76	%	30 - 130
			C13-2378 TetraCDF	2019/06/09		61	%	30 - 130
			C13-OCDD	2019/06/09		92	36	30 - 130
			2,3,7,8-Tetra CDD	2019/06/09		92	76	80 - 140
			1,2,3,7,8-Penta CDD	2019/06/09		109	N	80 - 140
			1,2,3,4,7,8-Hexa CDD	2019/06/09		88	76	80 - 140
			1,2,3,6,7,8-Hexa CDD	2019/06/09		98	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2019/06/09		85	76	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2019/06/09		112	14	80 - 140
			Octa CDD	2019/06/09		80	25	80 - 140
			2.3.7.8-Tetra COF	2019/06/09		111	36.	80 - 140
			1,2,3,7,8-Penta CDF	2019/06/09		125	96	80 - 140
			2.3,4,7,8-Penta CDF	2019/06/09		115	36	80 - 140
			1,2,3,4,7,8-Hexa CDF	2019/06/09		122	%	80 - 140
			1.2.3.6.7.8-Hexa CDF	2019/06/09		130	16	80 - 140
			2,3,4,6,7,8-Hexa CDF	2019/06/09		135	76	80 - 140
			1,2,3,7,8,9-Hexa CDF	(*************************************		139		80 - 140
			4. [2. 4.27]	2019/06/09			*	
			1,2,3,4,6,7,8-Hepta CDF	2019/06/09		113 113	% %	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2019/06/09				80 - 140
	one	NAME OF THE OWNER, WHEN THE OW	Octa CDF	2019/06/09	11.	87	%	80 - 140
5164383	OBC	RPD	z,3,7,8-Tetra CDD	2019/06/09			%	35
			1,2,3,7,8-Penta CDD	2019/06/09	0.92		%.	35
			1,2,3,4,7,8-Hexa CDD	2019/06/09	2.3		%	35
			1,2,3,6,7,8 Hexa CDD	2019/06/09	6.9		36	35
			1,2,3,7,8,9-Hexa CDD	2019/06/09	13		%	35
			1,2,3,4,6,7,8-Hepta CDD	2019/06/09	0		76.	35
			Octa CDD	2019/06/09	0		96	35
			2,3,7,8-Tetra CDF	2019/06/09	7.5		%	35
			1,2,3,7,8-Penta CDF	2019/06/09	4,1		% %	35
			2,3,4,7,8-Penta CDF	2019/06/09	4.4			35
			1,2,3,4,7,8-Hexa CDF	2019/06/09	10		%	35
			1,2,3,6,7,8-Hexa CDF	2019/06/09	6.3		76	35
			2,3,4,6,7,8-Hexa CDF	2019/06/09	3.8		% %	35
			1,2,3,7,8,9-Hexa CDF	2019/06/09	5.2			35
			1,2,3,4,6,7,8-Hepta CDF	2019/06/09	4.5		96	35
			1,2,3,4,7,8,9-Hepta CDF	2019/06/09	5.5		76	35
perconductive	102472	Valent de la maria de la companya d	Octa CDF	2019/06/09	0	tipes i	14	35
164383	OBC	Method Blank	C13-1234678 HeptaCDD	2019/06/09		88	76	30 - 130
			C13-1234678 HeptaCDF	2019/06/09		82	96	30 - 130
			C13-123678 HexaCDD	2019/06/09		99	76	30 - 130
			C13-123678 HexaCDF	2019/06/09		66	14	30 - 130
			C13-12378 PentaCDD	2019/06/09		70	%	30 - 130
			C13-12378 PentaCDF	2019/06/09		55	36	30 - 130



Client Project #: Effluent Treatment Plant Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC	2000	***	21 19	250 27 27 27	4772	25	W. C.	2000
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			C13-2378 TetraCDD	2019/06/09		83	76-	30 - 13
			C13-2378 TetraCDF	2019/06/09		62	34	30 - 13
			C13-OCDD	2019/06/09	Ave. 1	86	96	30 - 13
			2,3,7,8-Tetra CDD	2019/06/09	ND,		pg/L	
				2010/05/05	EDL=1.19		140499	
			1,2,3,7,8-Penta CDD	2019/06/09	ND, EDL=1.14		pg/L	
			113478444 (00	2010/05/00	ND,		0/2/2W	
			1,2,3,4,7,8-Hexa CDD	2019/06/09	EDL=1.23		pg/L	
			1,2,3,6,7,8-Hexa CDD	2019/06/09	NO.		pg/L	
			apayayay yar titizad saara	2023/00/05	EDL=1.07		Pare	
			1,2,3,7,8,9-Hexa CDD	2019/06/09	ND,		pg/L	
			111111111111111111111111111111111111111		EDL=1.04		6.00	
			1,2,3,4,6,7,8-Hepta CDD	2019/06/09	ND,		pg/L	
				0.2252442455	EDL=1.14		E-96-70	
			Octa CDD	2019/06/09	1.27,		pg/L	
					EDL=1.17			
			Total Tetra COD	2019/06/09	ND,		pg/L	
					EDL=1.19			
			Total Penta CDD	2019/06/09	NO,		pg/L	
					EDL=1.14			
			Total Hexa CDD	2019/06/09	ND,		pg/L	
					EDL=1.11			
			Total Hepta CDD	2019/06/09	ND,		pg/L	
					EDL=1.14			
			2,3,7,8-Tetra CDF	2019/06/09	ND,		pg/L	
			A SECURITY OF THE PROPERTY OF		EDL=1.14		110000EW	
			1,2,3,7,8-Penta CDF	2019/06/09	ND,		pg/L	
			224200	2010/05/00	EDL=1.17			
			2,3,4,7,8-Penta CDF	2019/06/09	ND, EDL=1.18		pg/L	
			1.2.3.4.7.8-Hexa CDF	2019/06/09	ND,		nati	
			Trestationes Co.	2013/00/03	EDL=1.14		bg/r	
			1,2,3,6,7,8-Hexa CDF	2019/06/09	ND,		pg/L	
			alexanded to the second server	was dad as	EDL=0.953		6.01 e	
			2,3,4,6,7,8-Hexa CDF	2019/06/09	ND,		pg/L	
			memeria mententi interiori di manto		EDL=1.08		-20-	
			1,2,3,7,8,9-Hexa CDF	2019/06/09	ND,		pg/L	
			PERSONAL PROPERTY OF THE SCHOOL		EDL=1.20		100000	
			1,2,3,4,6,7,8-Hepta CDF	2019/06/09	ND,		pg/L	
			The second secon		EDL=0.997			
			1,2,3,4,7,8,9-Hepta CDF	2019/06/09	ND,		pg/t	
				17 17	EDL=1.13			
			Octa CDF	2019/06/09	ND.		pg/L	
					EDL=1.19			
			Total Tetra CDF	2019/06/09	ND,		pg/L	
				17 ag 17 c 17 ag 17 c 17	EDL=1.14			
			Total Penta CDF	2019/06/09	ND,		pg/L	
			29/65/2004	4464100000	EDL=1.18		0.50	
			Total Hexa CDF	2019/06/09	ND,		pg/t	
					EDL=1.09			



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Hepta CDF	2019/06/09	ND,		pg/L	
					EDL=1.06			

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD). The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

- (1) Elevated reporting limit due to turbidity.
- (2) Due to a high concentration of NOx, the sample required dilution. The detection limit was adjusted accordingly.
- (3) Elevated reporting limit due to method blank performance.
- (4) Poor spike recovery due to sample matrix.



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

The analytical data and all QC contained in this report were review
Obereule
Anastassia Hamanov, Scientific Specialist
8
Snelly tu
Andy Lu, Ph.D., P.Chem., Scientific Specialist
Temy long
Harry (Peng) Llang, Senior Analyst
7. J. atarquez
Filomena Abarquez, Senior Analyst
ak Diaima_
Eric Dearman, Scientific Specialist
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Mike MacGillivray, Scientific Specialist (Inorganics)
Dely.
Owen Cosby, BSc.C.Chem, Supervisor, HRMS Services



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

VALIDATION SIGNATURE PAGE(CONT'D)

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Rosemarie MacDonald, Scientific Specialist (Organics)

Jing yuan Soney

Jingyuan Song, QP, Organics – Senior Analyst

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant
Site Location: POINT A, EFFLUENT SAMPLING

Your C.O.C. #: 715285-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

> Report Date: 2019/06/06 Report #: R5741304

Version: 3 - Partial

CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

BV LABS JOB #: B9C9866 Received: 2019/05/15, 12:49

Sample Matrix: Water # Samples Received: 1

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Reference
TEH in Water (PIRI)	1	2019/06/05	2019/06/05	ATL SOP 00113	Atl. RBCA v3.1 m
ModTPH (T1) Calc. for Water	1	N/A	2019/06/05	N/A	Atl. RBCA v3 m

Remarks:

m

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

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 $Reference\ Method\ suffix\ "m"\ indicates\ test\ methods\ incorporate\ validated\ modifications\ from\ specific\ reference\ methods\ to\ improve\ performance.$

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Maryann Comeau, Project Manager Email: Maryann.COMEAU@bvlabs.com Phone# (902)420-0203 Ext:298

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

ATLANTIC RBCA HYDROCARBONS (WATER)

BV Labs ID		JSK186			
Sampling Date		2019/05/14			
Sampling Date		13:15			
COC Number		715285-01-01			
	UNITS	POINT A 14-MAY	RDL	MDL	QC Batch
Petroleum Hydrocarbons					
>C10-C16 Hydrocarbons	mg/L	0.17	0.050	N/A	6158877
>C16-C21 Hydrocarbons	mg/L	0.23	0.050	N/A	6158877
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>0.68</td><td>0.10</td><td>N/A</td><td>6158877</td></c32>	mg/L	0.68	0.10	N/A	6158877
Modified TPH (Tier1)	mg/L	1.2	0.10	N/A	6156528
Reached Baseline at C32	mg/L	Yes	N/A	N/A	6158877
Hydrocarbon Resemblance	mg/L	COMMENT (1)	N/A	N/A	6158877
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	90			6158877
n-Dotriacontane - Extractable	%	83 (2)			6158877

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

- (1) Unidentified compound(s) in fuel / lube range. One product in lube oil range.
- (2) TEH Analysis: Silica gel clean-up performed prior to analysis as per client request.



BV Labs Job #: B9C9866 Northern Pulp N.S.
Report Date: 2019/06/06 Client Project #: EffI

Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

GENERAL COMMENTS

Each t	emperature is the	average of up to	three cooler te	nperature	es taker	n at recei	ot			
	Package 1	8.3°C								
Resul	ts relate only to th	e items tested.								



Report Date: 2019/06/06

Northern Pulp N.S.

Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QUALITY ASSURANCE REPORT

ſ	QA/QC								
	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
	6158877	BCD	Spiked Blank	Isobutylbenzene - Extractable	2019/06/05		97	%	70 - 130
				n-Dotriacontane - Extractable	2019/06/05		118	%	70 - 130
				>C10-C16 Hydrocarbons	2019/06/05		95	%	70 - 130
				>C16-C21 Hydrocarbons	2019/06/05		88	%	70 - 130
				>C21- <c32 hydrocarbons<="" td=""><td>2019/06/05</td><td></td><td>111</td><td>%</td><td>70 - 130</td></c32>	2019/06/05		111	%	70 - 130
	6158877	BCD	Method Blank	Isobutylbenzene - Extractable	2019/06/05		91	%	70 - 130
1				n-Dotriacontane - Extractable	2019/06/05		109	%	70 - 130
				>C10-C16 Hydrocarbons	2019/06/05	ND, RDL=0.050		mg/L	
				>C16-C21 Hydrocarbons	2019/06/05	ND, RDL=0.050		mg/L	
				>C21- <c32 hydrocarbons<="" td=""><td>2019/06/05</td><td>ND, RDL=0.10</td><td></td><td>mg/L</td><td></td></c32>	2019/06/05	ND, RDL=0.10		mg/L	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



Report Date: 2019/06/06

Northern Pulp N.S.

Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Kosmarie Mac Donald Rosemarie MacDonald, Scientific Specialist (Organics)

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Your Project #: BEDENV JOB# 89C9866 Your C.O.C. #: N-A

Attention: Maryann Comeau

Maxxam Analytics 200 Bluewater road Bedford, NS CANADA 848 1G9

Report Date: 2019/05/23

Report #: R2441773 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B917725 Received: 2019/05/17, 08:45

Sample Matrix: Water # Samples Received: 1

	Date	Date		
Analyses	Quantity Extracted	Analyzed	Laboratory Method	Primary Reference
Phenols in Pulp & Paper mill effluents	1 2019/05/2	21 2019/05/2	3 STL SOP-00121	MA.400-Phé 1.0 R3 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing. Maxxam is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Note: All parameters included in the present certificate are accredited by the MELCC unless stated otherwise.



Your Project #: BEDENV JOB# 89C9866 Your C.O.C. #: N-A

Attention: Maryann Comeau

Maxxam Analytics 200 Bluewater road Bedford, NS CANADA 84B 1G9

Report Date: 2019/05/23

Report #: R2441773 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B917725 Received: 2019/05/17, 08:45

Encryption Key

Sugmin detailless Profess Manager 23 May JOLA [5587:18

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Sophie Retailleau, Project Manager Email: SRetailleau@maxxam.ca Phone# (514)448-9001 Ext:7066232

This report has been generated and distributed using a secure automated process.

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E). signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



PHENOLS BY GCMS (WATER)

Maxxam ID		GL0763		
Sampling Date		2019/05/14 13:15		
COC Number	+	N-A	-	
COC Number	Units	JSK186-13R\POINT A 14-MAY	RDL	QC Batcl
PHENOLS	_	2115/25/11		
Total of Regl. P&P Phenols T	ug/L	1400	25	1990581
Phenol	ug/L	65	2.5	1990581
2-Chlorophenol	ug/L	<2.5	2.5	199058
3-Chlorophenoi	ug/L	<2.5	2.5	199058
4-Chlorophenol	ug/L	<2.5	2.5	199058
o-Cresol	ug/L	3.1	2.5	199058
m-Cresol	ug/L	<2.5	2.5	199058
p-Cresol	ug/L	<16 (1)	16	199058
Guaiacol	ug/L	1300	25	199058
Catechol	ug/L	8.4	2.5	199058
Eugenol	ug/L	12	2.5	199058
Isoeugenol	ug/L	2.6	2.5	199058
6-Chlorovanillin	ug/L	4.8	2.5	199058
5,6-Dichlorovanillin	ug/L	<2.5	2,5	199058
3,4,5-Trichlorosyringol	ug/L	<2.5	2.5	199058
2,4-Dimethylphenol	ug/L	<2.5	2.5	199058
2,6-Dichlorophenol	ug/L	<2.5	2.5	199058
3,5-Dichlorophenol	ug/L	<2.5	2.5	199058
2,3-Dichlorophenal	ug/L	<2.5	2.5	199058
3,4-Dichlorophenol	ug/L	<2.5	2.5	199058
2,4 + 2,5-Dichlorophenol	ug/L	<2.5	2.5	199058
2-Nitrophenol	ug/L	<5.0	5.0	199058
4-Nitrophenal	ug/L	<25	25	199058
2,4,6-Trichlorophenol	ug/L	<2.5	2.5	199058
2,3,5-Trichlorophenol	ug/L	<2.5	2.5	199058
2,3,6-Trichlorophenol	ug/L	<2.5	2.5	199058
2,4,5-Trichlorophenal	ug/L	<2.5	2.5	199058
2,3,4-Trichlorophenol	ug/L	<2.5	2.5	199058
3,4,5-Trichlorophenol	ug/L	<2.5	2,5	199058
4-Chloroguaiacol	ug/L	2.5	2.5	199058
4,5-Dichloroguaiacol	ug/L	<2.5	2.5	199058
4,6-Dichloroguaiacol	ug/L	<4.0 (1)	4.0	199058
2,3,5,6-Tetrachlorophenol	ug/L	<2.5	2.5	199058

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

[†] Parameter is not accreditable

⁽¹⁾ Detection limit raised due to matrix interference.



Maxxam Analytics Client Project #: BEDENV JOB# 89C9866

PHENOLS BY GCMS (WATER)

	GL0763		
	2019/05/14 13:15		
	N-A		
Units	JSK186-13R\POINT A 14-MAY	RDL	QC Batch
ug/L	<2.5	2.5	1990581
ug/L	<2.5	2.5	1990581
ug/L	<2.5	2,5	1990581
ug/L	<2.5	2.5	1990581
ug/L	<2.5	2.5	1990581
ug/L	<2.5	2.5	1990581
ug/L	<2.5	2.5	1990581
ug/L	<2.5	2.5	1990581
ug/L	<2.5	2.5	1990581
ug/L	<2.5	2.5	1990581
ug/L	<2.5	2.5	1990581
ug/L	<2.5	2.5	1990581
ug/L	<2.5	2.5	1990581
ug/L	<2.5	2.5	1990581
-			
96	112	N/A	1990581
%	124	N/A	1990581
%	110	N/A	1990581
	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	2019/05/14 13:15 N-A Units JSK186-13R\POINT A 14-MAY Ug/L <2.5	2019/05/14 13:15 N-A



Maxxam Analytics Client Project #: BEDENV JOB# 89C9866

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.7°C

PHENOLS BY GCMS (WATER)

Un-rounded results are used in the total Regl. P&P Phenols calculation. This total result is then rounded to two significant figures.

The total indicated is calculated only for the requested parameters.

Reported detection limits are multiplied by dilution factors used for sample analysis.

Due to the sample matrix, a better detection limit cannot be reported.

Results relate only to the items tested.



Maxxam Analytics Client Project #: BEDENV JOB# 89C9866

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limit
990581	MAI	Spiked Blank	D6-Phenol	2019/05/22		116	76	50 - 130
			Tribromophenol-2,4,6	2019/05/22		95	96	50 - 130
			Trifluoro-m-cresol	2019/05/22		116	%	50 - 130
			Phenol	2019/05/22		117	96	50 - 130
			Z-Chlorophenol	2019/05/22		111	76	50 - 130
			3-Chlorophenol	2019/05/22		114	16	50 - 130
			4-Chlorophenol	2019/05/22		111	%	50 - 13
			o-Cresol	2019/05/22		120	96	50 - 130
			m-Cresol	2019/05/22		120	%	50 - 130
			p-Cresol	2019/05/22		117	96	50 - 130
			2,4-Dimethylphenol	2019/05/22		108	%	50 - 13
			2,6-Dichlorophenol	2019/05/22		116	96	50 - 13
			3,5-Dichlorophenoi	2019/05/22		105	96	50 - 130
			2,3-Dichlorophenol	2019/05/22		109	%	50 - 130
			3,4-Dichlorophenol	2019/05/22		110	96	50 - 130
			2,4 + 2,5-Dichlorophenol	2019/05/22		111	96	50 - 130
			2-Nitrophenol	2019/05/22		109	%	50 - 130
			4-Nitrophenol	2019/05/22		107	16	50 - 130
			2,4,6-Trichlorophenol	2019/05/22		110	96.	50 - 130
			2,3,5-Trichlorophenol	2019/05/22		102	96	50 - 130
			2,3,6-Trichlorophenol	2019/05/22		117	96	50 - 13
			2,4,5-Trichlarophenol	2019/05/22		113	56	50 - 13
			2,3,4-Trichloraphenol	2019/05/22		110	%	50 - 13
			3,4,5-Trichlorophenol	2019/05/22		108	96	50 - 130
			2,3,5,6-Tetrachlorophenol	2019/05/22		103	76	50 - 130
			2,3,4,6-Tetrachlorophenol	2019/05/22		110	%	50 - 13
			2,3,4,5-Tetrachlorophenol	2019/05/22		102	%	50 - 130
			Pentachlorophenol	2019/05/22		94	96	50 - 130
990581	MAI	Spiked Blank DUP	D6-Phenol	2019/05/22		112	76	50 - 130
*****		CHECONOMINATION OF THE	Tribromophenol-2,4,6	2019/05/22		92	16	50 - 130
			Trifluoro-m-cresol	2019/05/22		110	16	50 - 130
			Phenol	2019/05/22		115	96	50 - 130
			Z-Chlorophenol	2019/05/22		108	76	50 - 130
			3-Chlorophenol	2019/05/22		111	16	50 - 130
			4-Chlorophenol	2019/05/22		108	36	50 - 130
			p-Cresol	2019/05/22		119	36	50 - 130
			m-Cresol	2019/05/22		119	%	50 - 130
			p-Cresol	2019/05/22		113	16	50 - 13
			2,4-Dimethylphenol	2019/05/22		106	%	50 - 130
			2,6-Dichlorophenol	2019/05/22		113	96	50 - 130
			3,5-Dichlorophenoi	2019/05/22		104	96	50 - 130
			2,3-Dichlorophenol	2019/05/22		108	96	50 - 130
			3,4-Dichlorophenol	2019/05/22		109	%	50 - 130
			2,4 + 2,5-Dichlorophenol	2019/05/22		108	96	50 - 130
			2-Nitrophenol	2019/05/22		108	%	50 - 130
			4-Nitrophenol	2019/05/22		106	14	50 - 130
			2,4,6-Trichlorophenol	2019/05/22		100	%	50 - 130
			2,3,5-Trichlorophenol	2019/05/22		101	96	50 - 130
						115		
			2,3,6-Trichlorophenol	2019/05/22			%	50 - 130
			2,4,5-Trichlorophenol	2019/05/22		113	N.	50 - 130
			2,3,4-Trichlorophenol 3,4,5-Trichlorophenol	2019/05/22 2019/05/22		109	% %	50 - 130
			2 4 3 LECTION OF BOOK	- A019/05/22		- 1118-	276	50 - 130



Maxxam Analytics Client Project #: BEDENV JOB# 89C9866

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limit
			2,3,4,6-Tetrachlorophenol	2019/05/22		109	76.	50 - 13
			2,3,4,5-Tetrachlorophenol	2019/05/22		102	14	50 - 13
			Pentachlorophenol	2019/05/22		92	76	50 - 13
1990581	MA1	Method Blank	D6-Phenol	2019/05/22		108	96	50 - 13
			Total of Regl. P&P Phenols	2019/05/22	<5.0		ug/L	
			Tribromophenol-2,4,6	2019/05/22		89	16	50 - 13
			Trifluoro-m-cresol	2019/05/22		105	%	50 - 13
			Phenol	2019/05/22	< 0.50		ug/L	
			2-Chlorophenol	2019/05/22	< 0.50		ug/L	
			3-Chlorophenol	2019/05/22	< 0.50		ug/L	
			4-Chlorophenol	2019/05/22	< 0.50		ug/L	
			o-Cresol	2019/05/22	< 0.50		ug/L	
			m-Cresol	2019/05/22	< 0.50		ug/L	
			p-Cresol	2019/05/22	< 0.50		ug/L	
			Gualacol	2019/05/22	< 0.50		ug/L	
			Catechol	2019/05/22	< 0.50		ug/L	
			Eugenol	2019/05/22	< 0.50		ug/L	
			Isoeugenal	2019/05/22	< 0.50		ug/L	
			6-Chlorovanillin	2019/05/22	< 0.50		ug/L	
			5,6-Dichlorovanillin	2019/05/22	< 0.50		ug/L	
			3,4,5-Trichlorosyringol	2019/05/22	< 0.50		ug/L	
			2,4-Dimethylphenol	2019/05/22	<0.50		ug/L	
			2,6-Dichlorophenol	2019/05/22	< 0.50		ug/L	
			3,5-Dichlorophenol	2019/05/22	< 0.50		ug/L	
			2,3-Dichlorophenol	2019/05/22	< 0.50		ug/t	
			3,4-Dichlorophenol	2019/05/22	<0.50		ug/L	
			2,4 + 2,5-Dichlorophenal	2019/05/22	< 0.50		ug/L	
			2-Nitrophenol	2019/05/22	<1.0		ug/L	
			4-Nitrophenol	2019/05/22	<5.0		ug/L	
			2,4,6-Trichlorophenol	2019/05/22	< 0.50		ug/L	
			2,3,5-Trichlaraphenol	2019/05/22	<0.50		ug/L	
			2,3,6-Trichlorophenol	2019/05/22	<0.50		ug/L	
			2,4,5-Trichlorophenol	2019/05/22	< 0.50		ug/L	
			2,3,4-Trichlorophenol	2019/05/22	< 0.50		ug/L	
			3,4,5-Trichlorophenol	2019/05/22	<0.50		ug/L	
			4-Chloroguaiacol	2019/05/22	<0.50		ug/L	
			4,5-Dichloroguaiscol	2019/05/22	< 0.50		ug/L	
			4,6-Dichlorogualacol	2019/05/22	<0.50			
			2,3,5,6-Tetrachlorophenol	2019/05/22	<0.50		ug/L	
			2,3,4,6-Tetrachlorophenol	2019/05/22	<0.50			
							ug/L	
			2,3,4,5-Tetrachiorophenoi	2019/05/22	<0.50		ug/L	
			4-Chlorocatechol	2019/05/22	<0.50		ug/t	
			3,5-Dichlorocatechol	2019/05/22	<0.50		ug/L	
			4,5-Dichlorocatechol	2019/05/22	<0.50		ug/L	
			3,4,5-Trichlorogualacol	2019/05/22	<0.50		ug/L	
			4,5,6-Trichloroguaiacol	2019/05/22	<0.50		ug/L	
			Pentachlorophenol	2019/05/22	<0.50		ug/L	
			3,4,5-Trichlorocatechol	2019/05/22	<0.50		ug/L	
			Tetrachlorocatechol	2019/05/22	<0.50		ug/L	
			Tetrachloroguaiacol	2019/05/22	<0.50		ug/L	
			4,5-Dichloroveratrol	2019/05/22	< 0.50		ug/L	
			3,4,5-Trichloroveratrol	2019/05/22	< 0.50		ug/L	



Maxxam Analytics Client Project #: BEDENV JOB# 89C9866

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			3,4,5,6-Tetrachioroveratrol	2019/05/22	<0.50	_ 0.000000	ug/L	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination,

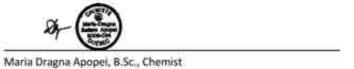
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



Maxxam Analytics Client Project #: BEDENV JOB# 89C9866

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

MAXXAM ANALYTICS

200 Bluewater Road Bedford, Nova Scotia, 848 169 (902) 420-0203 (902) 420-8512



Northern Pulp N.S. Maxxam PM: Maryann Comeau

SUBCONTRACTING REQUEST FORM

To: Be	dford t	o Mon	treal S	ubcontrac			Job#	B9C9866
ves Ne				if yes, add copy of Moveme	nt Cert., heat treat is	required prior t	o disposal)	
Sample ID			Matrix	Testro Required		Container	Date Sampled	Date Required
5K186-13K\P	DINT A 14-M	AY	w	Phenois in Pulp and Pa	per Mill Effluents	2-0PHE	2019/05/14 13	15 2019/05/24
	Temp. 1	Temp. 2	Temp. 3	1				
poler #1	1000			Custody Seal Present	YES	(NO)		
	0	7	7	Custody Seal Intact	VES :-	No.		
	2	12	3	ice Present Upon Receipt	(83)	NO		
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ooler #3	1	_		Custody Seal Present	VES	NO.		
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2) Please a 1) Include o	dvise us if yo	our laborati	ory cannot	lease reference Sample ID perform the requested an st COC & signed final repo	alysis or must subo			
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Your Project #: Effluent Treatment Plant Site Location: POINT A, EFFLUENT SAMPLING

Your C.O.C. #: 715285-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/06/03

Report #: R5736986 Version: 1 - Partial

CERTIFICATE OF ANALYSIS - PARTIAL RESULTS

BV LABS JOB #: 89C9866 Received: 2019/05/15, 12:49

Sample Matrix: Water # Samples Received: 1

	Date	Date		
Analyses	Quantity Extracted	Analyzed	Laboratory Method	Reference
Chlorate and Chlorite by IC (1)	1 N/A	2019/05/1	9 CAL SOP-00040	SM 22 41100 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bedford to Calgary Offsite

Encryption Key

Depopuls Continuents: Project Sonoger Assistant

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Maryann Comeau, Project Manager Email: Maryann COMEAU@bvlabs.com Phone# (902)420-0203 Ext:298

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5:10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total Cover Pages: 1

Northern Pulp N.S.

Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

RESULTS OF ANALYSES OF WATER

BV Labs ID	[]	JSK186			
Sampling Date		2019/05/14 13:15			
COC Number		715285-01-01			
	UNITS	POINT A 14-MAY	RDL	MDL	QC Batch
Inorganics					
Dissolved Chlorate (ClO3-)	mg/L	53 (1)	1.0	N/A	6154325
Dissolved Chlorite (CLO2-)	mg/L	ND (1)	1.0	N/A	6154325

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Detection limits raised due to sample matrix.



Report Date: 2019/06/03

Northern Pulp N.S.

Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

GENERAL COMMENTS

Each t	emperature is the	average of up to	ree cooler tempera	tures taken at re	ceipt	
	Package 1	8.3°C]			
Result	s relate only to th	e items tested.				



Northern Pulp N.S.

Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6154325	KD9	Matrix Spike	Dissolved Chlorate (ClO3-)	2019/05/23		NC	%	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/23		NC	34	80 - 120
6154325	KD9	Spiked Blank	Dissolved Chlorate (ClO3-)	2019/05/19		94	96	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/19		92	. %	80 - 120
6154325	KD9	Method Blank	Dissolved Chlorate (CIO3-)	2019/05/19	ND, RDL=0.10		mg/L	
			Dissolved Chlorite (CLO2-)	2019/05/19	ND, RDL=0.10		mg/L	
6154325	KD9	RPD	Dissolved Chlorate (CIO3-)	2019/05/23	6.7		34	20
			Dissolved Chlorite (CLO2-)	2019/05/23	NC		36	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination,

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).



Northern Pulp N.S.

Client Project #: Effluent Treatment Plant

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

, and pund

Harry (Peng) Liang, Senior Analyst

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		INVOICE TO:				Report Inf	ormation							Project le	nformation				Labor	ratory Use O	
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ess	PO Box 549 St		Add	dress			Project # Effluent Treatment Plant					8101800		715285							
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	AP@northernp	outp.com	Em	oil	boat.harbo	ungthowe	0.CB					pled By							C#715285-01-01		
gulatory Cri	teria:	,		Special I	Instructions					ANAL	YSIS REQ	UESTED (PLEASE	BE SPECIF	(0)				Turnaround Ti	me (TAT) Req	uired:
																			Please provide adva	nce notice for rus	h projects
Specify Ma	trix: Surface/Ground/1	Tagwalar Scwage Effuer (Seawater					pau			Demand (COD)	(Adsorbable)	gen in Water	Colourimetry		Water (EPS		ter	(will be app Standard 1 Please not	Randard) TAT: plied if Rush TAT is not specif IAT = 5-7 Working days for m te: Standard TAT for certain to tact your Project Manager for	ost tests	and Dioxins/Furanz are
		issue/Soli-Studge/Metal KEPT COOL (< 10YO) FROM TIME OF S	AMPLING UNTIL E	DELIVERY T	O MAXXAM		Fittered & Prese	VSS	onaceous BOD	ical Oxygen	nic Halogen (/	Kjeldahi Nitrogen	phorus Total (≥	urans in	and PCB	tic VOC in Wa	Job Spec Date Requi	offic Rush TAT (if applies to ired:	entire submissi Time Requ	
1.00	Sarcode Label	Sample (Location) Identification	Date San	THE OWNER OF THE OWNER, WHEN	Time Sampled	Matrix	Fleid F	TSSNSS	Carbo	Chem	Organ	Cotal	Phosi	Salinity	Dioxins/Fit	PAH	Man	F of Bottles	Comments / F	Sazards / Other Re	quired Analysis
		Point A	1	7	:15pm			X	×	x	Х	×	X	X	Х	×	X				
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: 1549	Susyeo ay (syman	ure/Print) Date	e: (YYIMMIDD)	Time		RECE	VED BY: (ignature/	Print)		Du	te: (YY/MAR	(00)	Time		s used and			Lab Us	e Only	
917	de Judg	- 10	1010		/	10	\sim	_	<		_				not	submitted	Time Ser	Te	mperature (°C) on Receipt		Seal Intact on Cooler?
MIK	e Pidgeb	IN WRITING, WORK SUBMITTED ON THIS C	10/10		7 70 111111111		DATE 4100										\perp	1 1	2,8,5		Yes No.

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Maxxam Analytics International Corporation ola Maxxam Analytics

12	Xam	Maxxam Analytics International Corpor 200 Bluewater Road, Bedford, Nova Sc		N02) 420-0203 Toll-free:800	-563-6266	ax (902)	420-8612 ww	w.maxxam.c	a							Chair	of Custody Record	
-		INVOICE TO:			Informatio							Project In	formation				Laboratory Use 0	Page 2 of 2 Only
npany Name	#22435 North	em Pulp N.S.	Company Name	#11067 Northern	Pulp N.S				Ouest	Quotation # B86064						Maxxam Job #	Bottle Order #:	
lact Name	Accounts Pays	able	Contact Name	Michael Pidgeon						P.O. #							0000011	1000000000
ness	PO Box 549 S	tation Main	Address	340 Simpson Lane	340 Simpson I and			Projec		E	Effluent T	reatmer	nt Plant			B9C9866	715285	
	New Glasgow	NS B2H 5E8		Pictou NS BOK 1X	2		- 410	6 1A		ct Name	4 9		-	100			Chain Of Custody Record	Project Manager
ne	(902) 755-717	700.	Phone	(902) 755-7178	C	Fac			Site #		- 0			100				Maryann Comeau
alt	AP@northerns	oulp.com	Emoil	boat.harbour@tnc	web.ca		_		Samp	oled By							C#715285-01-02	Maryann Comeau
egulatory C	rberia:	art r	Special I	netructions				ANALY	ISIS REQU	JESTED (F	LEASE B	BE SPECIFI	C)				Turnaround Time (TAT) Rec	quired:
		6. 6. 6			1.1			F							- 1		Please provide advance notice for ru	sh projects
		Taywaler/Sowage/Efflueni/Soawiller			peve	ros in Water		(Includes Sodiur	(CVAA,LL)		rite by IC		spo			Regular (Standard) TAT: (will be applied if Rush TAT is not specified): Standard TAT = 5-7 Whoking days for most tests. Please note: Standard TAT for certain tests such as days - contact your Project Manager for details.		D and Dibains/Furans an
		Issue/Col/Cludge/Mical KEPT COOL (< 10°C) FROM TIME OF SAM	IPI NO INTI DE MERY T	O MAYSAM	illered & Press	Hydrocarbo	s in Pulp	a RCAp-MS (Inclu	ry - Total (C	ide (H2S)	ate and Chlorite	Cyanide	and Fatty Ac		c	Job Spec late Requi	ific Rush TAT (if applies to entire submiss red: Time Req	
1	Barcode Label	Sample (Location) Identification		Time Sampled Mutri	Fleid	RBCA	Pheno	Atlantic	Mercu	Sulph	Chlora	Total	Resin		1	# of Bottles	Comments / Hazards / Other R	lequired Analysis
		Point A	Mayiylis	115011		х		х	х	х	х	х	х					
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* RELB	apateo er Bana	une/Print) Date:	(YYMMEDD) Time		CEIVED BY	(Signatur	nuPrint)		De	to: (YY/MM	00)	Time	# jare	used and			Lab Use Only	
1)	the light	84-1 191	2/	10	U_	_	a. may		00	To simple				ubmitted	Time Sens	Tor		Soal Intact on Cooler?

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Maxxam Analytics International Corporation ola Maxxam Analytics



Your Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your C.O.C. #: 663334-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

> Report Date: 2018/06/14 Report #: R5237724

Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8C8596 Received: 2018/05/30, 13:20

Sample Matrix: Water # Samples Received: 1

Analyses	Ownstitu	Date Extracted	Date Analyzed	Laboratory Method	Reference
(and the second second	The second second second second		The state of the s
ABN Compounds in Water by GC/MS (1)	1		그래 하는 경험 얼마를 하는데	CAM SOP-00301	EPA 8270 m
Carbonate, Bicarbonate and Hydroxide	1	N/A	2018/06/05	SECTION STREET, SPECIFIC SECTION SECTI	SM 22 4500-CO2 D
Alkalinity	1	N/A		ATL SOP 00013	EPA 310.2 R1974 m
Benzo(b/j)fluoranthene Sum (water)	1	N/A	2018/05/01	THE STREET, SANS	Auto Calc.
Biochemical Oxygen Demand				ATL SOP 00041	5M 22 5210B m
Biochemical Oxygen Demand (Dissolved)	1	SAPAC .		ATL SOP 00041	SM 22 5210B m
Residual Chlorine, Total	1	N/A		ATL SOP 00038	HACH 8167 m
Chloride	1	N/A	2018/06/06	ATL SOP 00014	SM 22 4500-CI- E m
Str. Acid Diss. Cyanide water (5)	1	N/A	2018/05/31	ATL SOP 00040	EPA 335.3 m
Soluble COD	1	N/A	2018/06/04	ATL SOP 00042	SM 22 5220D m
Chemical Oxygen Demand (COD)	1	N/A	2018/06/04	ATL SOP 00042	SM 22 52200 m
TC/EC Non Drinking Water CFU/100mL	1	N/A	2018/05/30	ATL SOP 00096	OMOE E3407 V5.2
Colour	1	N/A	2018/06/05	ATL SOP 00020	SM 22 2120C m
Acid Extractables by GC/MS (1)	1	2018/06/05	2018/06/05	CAM SOP-00332	EPA 8270 m
Conductance - water	1	N/A	2018/06/05	ATL SOP 00004	SM 23 2510B m
TEH in Water (PIRI)	1	2018/06/04	2018/06/07	ATL SOP 00113	Atl. RBCA v3.1 m
Petroleum Hydro. CCME F1 & BTEX in Water (1)	1	N/A	2018/06/05	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1, 6)	1	2018/06/06	2018/06/07	CAM SOP-00316	CCME PHC-CWS m
Fluoride	1	N/A	2018/06/05	ATL SOP 00043	SM 23 4500-F- C m
Fecal coliform in water (CFU/100 mL)	1	N/A	2018/05/30	ATL SOP 00071	SM 22 9222D
Hardness (calculated as CaCO3)	1	N/A	2018/06/04	ATL SOP 00048	SM 22 2340 B
Metals Water Total MS	1	2018/05/31	2018/06/01	ATL SOP 00058	EPA 6020A R1 m
on Balance (% Difference)	1	N/A	2018/06/06	N/A	Auto Calc
Anion and Cation Sum	1	N/A	2018/06/05		Auto Calc.
Organic Halogen (Adsorbable) (2)	1			PTC SOP-00056	Coulometric - Titr.
Chlorate and Chlorite by IC (3)	1	N/A		CAL SOP-00040	SM 22 41100 m
Sylcol in Water (3)	1	N/A		CAL SOP-00093	BCMOE Glycols 09/1
Nitrogen Ammonia - water	1	N/A		ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	1	N/A		ATL SOP 00016	USGS I-2547-11m



Your Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your C.O.C. #: 663334-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report #: R5237724

Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8C8596 Received: 2018/05/30, 13:20

Sample Matrix: Water # Samples Received: 1

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Reference
Nitrogen - Nitrite	1	N/A	2018/06/05	ATL SOP 00017	SM 23 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2018/06/06	ATL SOP 00018	ASTM D3867-16
Animal and Vegetable Oil and Grease (1)	1	N/A	2018/06/13	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease (1)	1	2018/06/02	2018/05/03	CAM SOP-00326	EPA16648 m,SM5520A m
PAH in Water by GC/MS (SIM)	1	2018/05/31	2018/06/01	ATL SOP 00103	EPA 8270D 2014 m
pH (7)	1	N/A	2018/06/05	ATL SOP 00003	SM 23 4500-H+ B m
Phosphorus - ortho	1	N/A	2018/06/05	ATL SOP 00021	SM 23 4500-P E m
VPH in Water (PIRI)	1	N/A	2018/06/05	ATL SOP 00118	Atl. RBCA v3.1 m
Sat. pH and Langelier Index (@ 20C)	1	N/A	2018/06/06	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	1	N/A	2018/06/06	ATL SOP 00049	Auto Calc.
Reactive Silica	1	N/A	2018/06/05	ATL SOP 00022	EPA 366.0 m
Sulphite in Water (4)	1	2018/06/02	2018/06/02		
Sulphate	1	N/A	2018/06/05	ATL SOP 00023	ASTM D516-16 m
Sulphide (1)	1	N/A	2018/06/06	CAM SOP-00455	SM 23 4500-S G m
Total Dissolved Solids (TDS calc)	1	N/A	2018/06/06	N/A	Auto Calc.
Nitrogen TKN - water (as N)	1	2018/06/01	2018/06/04	ATL SOP 00019	EPA 351.2 R2 m
Organic carbon - Total (TOC) (8)	1	N/A	2018/06/08	ATL SOP 00203	SM 23 5310B m
Mineral/Synthetic O & G (TPH Heavy Oil) (1, 9)	1	2018/06/13	2018/06/13	CAM SOP-00326	EPA1664B m,SM5520F m
ModTPH (T1) Calc. for Water	1	N/A	2018/06/07	N/A	Atl. RBCA v3 m
Phosphorus Total Colourimetry	1	2018/06/01	2018/06/04	ATL SOP 00057	EPA 365.1 R2 m
Total Suspended Solids	1	2018/06/01	2018/06/07	ATL SOP 00007	SM 22 2540D m
Turbidity	1	N/A	2018/06/05	ATL SOP 00011	EPA 180.1 R2 m
Volatile Organic Compounds in Water	ï	N/A	2018/05/31	ATL SOP 00133	EPA 8260C R3 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All



Your Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your C.O.C. #: 663334-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2018/06/14

Report #: R5237724 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8C8596 Received: 2018/05/30, 13:20

data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

- * RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
- (1) This test was performed by Maxxam Analytics Mississauga
- (2) This test was performed by Bedford to Edm Petrol Offsite
- (3) This test was performed by Bedford to Calgary Offsite
- (4) This test was performed by Bedford to Calgary Subcontract.
- (5) Strong acid dissociable cyanide value may include contribution from thiocyanate.
- (6) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.
- (7) The APHA Standard Method require pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.
- (8) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.
- (9) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease

Encryption Key

Project Micaget Arrivent

1+ Jun 201+ 1+142165

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Maryann Comeau, Project Manager Email: MComeau@maxxam.ca

Phone# (902) 420-0203

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

RESULTS OF ANALYSES OF WATER

Maxxam ID		GVA104			
Sampling Date		2018/05/29 09:18			
COC Number		663334-01-01	(O)		
	UNITS	Point A	RDL	MDL	QC Batch
Calculated Parameters					
Total Animal/Vegetable Oil and Grease	mg/L	3.8	0.50	0.10	5554936
Anion Sum	me/L	14.8	N/A	N/A	5555408
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	190	1.0	0.20	5555404
Calculated TDS	mg/L	940	1.0	0.20	5555411
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND	1.0	0.20	5555404
Cation Sum	me/L	15.0	N/A	N/A	5555408
Hardness (CaCO3)	mg/L	110	1.0	1.0	5555406
Ion Balance (% Difference)	%	0.800	N/A	N/A	5555407
Langelier Index (@ 20C)	N/A	-0.592			5555409
Langelier Index (@ 4C)	N/A	-0.838			5555410
Nitrate (N)	mg/L	ND	0.050	N/A	5554534
Saturation pH (@ 20C)	N/A	7.68	i i		5555409
Saturation pH (@ 4C)	N/A	7.93			5555410
Inorganics					
Total Alkalinity (Total as CaCO3)	mg/L	190 (1)	25	N/A	5564006
Biochemical Oxygen Demand	mg/L	110	12	0.60	5556837
Dissolved Biochemical Oxygen Demand	mg/L	84	12	0.60	5556926
Dissolved Chemical Oxygen Demand	mg/L	350	20	N/A	5562120
Total Chemical Oxygen Demand	mg/L	600	20	N/A	5562118
Dissolved Chlorate (CIO3-)	mg/L	ND (2)	1.0	N/A	5565323
Dissolved Chloride (CI)	mg/L	150	1.0	N/A	5564015
Dissolved Chlorite (CLO2-)	mg/L	ND (2)	1.0	N/A	5565323
Calaut	TCU	590 (1)	100	N/A	5564019
Strong Acid Dissoc. Cyanide (CN)	mg/L	0.0019	0.0010	N/A	5557413
Dissolved Fluoride (F-)	mg/L	ND	0.10	0.050	5563831
Nitrate + Nitrite (N)	mg/L	ND	0.050	N/A	5564023
Nitrite (N)	mg/L	ND	0.010	N/A	5564030
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	N/A	5562559
Total Organic Carbon (C)	mg/L	170 (3)	5.0	N/A	5570664

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected

- (1) Elevated reporting limit due to sample matrix.
- (2) Detection limits raised due to sample matrix.
- (3) Elevated reporting limit due to turbidity.



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

RESULTS OF ANALYSES OF WATER

Maxxam ID		GVA104	n		
Sampling Date		2018/05/29 09:18			
COC Number		663334-01-01			
	UNITS	Point A	RDL	MDL	QC Batch
Orthophosphate (P)	mg/L	0.14	0.010	N/A	5564022
pH	pH	7.09	N/A	N/A	5563828
Total Phosphorus	mg/L	0.60	0.050	N/A	5559052
Total Residual Chlorine	mg/L	ND	0.10	N/A	5555338
Reactive Silica (SiO2)	mg/L	6.5	0.50	N/A	5564018
Total Suspended Solids	mg/L	67	5.0	N/A	5559459
Dissolved Sulphate (5O4)	mg/L	330 (1)	40	N/A	5564016
Sulphide	mg/L	0.33	0.020	0.010	5562250
Total Kjeldahl Nitrogen	mg/L	1.8(1)	0.25	N/A	5559255
Turbidity	NTU	54	0.10	0.10	5563858
Conductivity	uS/cm	1500	1.0	N/A	5563830
Organic Halogens					
Adsorbable Organic Halogen	mg/L	1.64	0.25	N/A	5569923
Subcontracted Analysis					
Subcontract Parameter	N/A	ATTACHED	N/A	N/A	5561519
Petroleum Hydrocarbons	-		-		
Total Oil & Grease	mg/L	3.8	0.50	0.10	5561623
Total Oil & Grease Mineral/Synthetic	mg/L	ND	0.50	0.10	5577678
PRI 2 - 11 2 - 1 1 2	-				

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected

(1) Elevated reporting limit due to sample matrix,



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

GLYCOLS BY GC-FID (WATER)

Maxxam ID		GVA104			
Sampling Date		2018/05/29 09:18			
COC Number		663334-01-01			
	UNITS	Point A	RDL	MDL	QC Batch
Glycols					
Ethylene Glycol	mg/L	ND	3.0	N/A	5567493
Diethylene Glycol	mg/L	ND	5.0	N/A	5567493
Triethylene Glycol	mg/L	ND	5.0	N/A	5567493
Propylene Glycol	mg/L	ND	5.0	N/A	5567493
Surrogate Recovery (%)					
Methyl sulfone	%	90			5567493
RDL = Reportable Detec	tion Limit	0	-		
QC Batch = Quality Cont	rol Batch				
ND = Not detected					
N/A = Not Applicable					



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

ELEMENTS BY ICP/MS (WATER)

Maxxam ID		GVA104			
Sampling Date		2018/05/29 09:18			
COC Number		663334-01-01			()
AND RECOGNISHED TO SEE STATE OF THE SECOND S	UNITS	Point A	RDL	MDL	QC Batch
Metals					
Total Aluminum (Al)	ug/L	2000	5.0	N/A	5556751
Total Antimony (Sb)	ug/L	ND	1.0	N/A	5556751
Total Arsenic (As)	ug/L	1.2	1.0	N/A	5556751
Total Barium (Ba)	ug/L	350	1.0	N/A	5556751
Total Beryllium (Be)	ug/L	ND	1.0	N/A	5556751
Total Bismuth (Bi)	ug/L	ND	2.0	N/A	5556751
Total Boron (B)	ug/L	:55	50	N/A	5556751
Total Cadmium (Cd)	ug/L	1.4	0.010	N/A	5556751
Total Calcium (Ca)	ug/L	38000	100	N/A	5556751
Total Chromium (Cr)	ug/L	2,4	1.0	N/A	5556751
Total Cobalt (Co)	ug/L	0.55	0.40	N/A	5556751
Total Copper (Cu)	ug/L	13	2.0	N/A	5556751
Total Iron (Fe)	ug/L	860	50	N/A	5556751
Total Lead (Pb)	ug/L	4.8	0.50	N/A	5556751
Total Magnesium (Mg)	ug/L	4500	100	N/A	5556751
Total Manganese (Mn)	ug/L	2500	2.0	N/A	5556751
Total Molybdenum (Mo)	ug/L	ND	2.0	N/A	5556751
Total Nickel (Ni)	ug/L	3.2	2.0	N/A	5556751
Total Phosphorus (P)	ug/L	830	100	N/A	5556751
Total Potassium (K)	ug/L	14000	100	N/A	5556751
Total Selenium (Se)	ug/L	ND	1.0	N/A	5556751
Total Silver (Ag)	ug/L	0.49	0.10	N/A	5556751
Total Sodium (Na)	ug/L	290000	100	N/A	5556751
Total Strontium (Sr)	ug/L	140	2.0	N/A	5556751
Total Thallium (TI)	ug/L	0.20	0.10	N/A	5556751
Total Tin (Sn)	ug/t.	ND	2.0	N/A	5556751
Total Titanium (Ti)	ug/L	23	2.0	N/A	5556751
Total Uranium (U)	ug/L	0.30	0.10	N/A	5556751
Total Vanadium (V)	ug/L	2.4	2.0	N/A	5556751
Total Zinc (Zn)	ug/L	160	5.0	N/A	5556751

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		GVA104			
Sampling Date		2018/05/29 09:18			
COC Number		663334-01-01			
	UNITS	Point A	RDL	MDL	QC Batch
Semivolatile Organics					
Acenaphthene	ug/L	ND	0.80	0.20	5562200
Acenaphthylene	ug/L	ND	0.80	0.20	5562200
Anthracene	ug/L	ND	0.80	0.20	5562200
Benzo(a)anthracene	ug/L	ND	0.80	0.20	5562200
Benzo(a)pyrene	ug/L	ND	0.80	0.20	5562200
Benzo(b/j)fluoranthene	ug/l.	ND	0.80	0.40	5562200
Benzo(g.h,i)perylene	ug/L	ND :	0.80	0.20	5562200
Benzo(k)fluoranthene	ug/L	ND	0.80	0.20	5562200
1-Chloronaphthalene	ug/L	ND	4.0	0.40	5562200
2-Chloronaphthalene	ug/L	ND	2.0	0.20	5562200
Chrysene	ug/L	ND	0.80	0.20	5562200
Dibenz(a,h)anthracene	ug/L	ND	0.80	0.20	5562200
Fluoranthene	ug/L	ND	0.80	0.20	5562200
Fluorene	ug/L	ND	0.80	0.40	5562200
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.80	0.20	5562200
1-Methylnaphthalene	ug/L	ND	0.80	0.40	5562200
2-Methylnaphthalene	ug/L	ND	0.80	0.40	5562200
Naphthalene	ug/L	ND (1)	1.0	0.50	5562200
Perylene	ug/L	ND.	0.80	0.40	5562200
Phenanthrene	ug/L	ND	0.80	0.20	5562200
Pyrene	ug/L	ND	0.80	0.20	5562200
1,2-Dichlorobenzene	ug/L	ND	2.0	0.40	5562200
1,3-Dichlorobenzene	ug/L	ND	2.0	0.40	5562200
1,4-Dichlorobenzene	ug/L	ND	2.0	0.40	5562200
Hexachlorobenzene	ug/L	ND	2.0	0.40	5562200
Pentachlorobenzene	ug/L	ND	2.0	0.40	5562200
1,2,3,5-Tetrachiorobenzene	ug/L	ND	2.0	0.40	5562200
1,2,4,5-Tetrachlorobenzene	ug/L	ND	2.0	0.40	5562200
1,2,3-Trichlorobenzene	ug/L	ND	2.0	0.40	5562200
1,2,4-Trichlorobenzene	ug/L	ND	2.0	0.40	5562200
1,3,5-Trichlorobenzene	ug/L	ND	2.0	0.40	5562200
2-Chlorophenol	ug/L	ND	1.2	0.40	5562200

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

(1) Detection limit was raised due to matrix interference.



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		GVA104			
Sampling Date		2018/05/29 09:18			
COC Number		663334-01-01			
	UNITS	Point A	RDL	MDL	QC Batch
4-Chioro-3-Methylphenol	ug/L	ND	2.0	0.40	5562200
m/p-Cresol	ug/L	ND	2.0	0.80	5562200
o-Cresol	ug/L	ND (1)	3.0	0.60	5562200
1,2,3,4-Tetrachlorobenzene	ug/L	ND	2.0	0.40	5562200
2,3-Dichlorophenol	ug/L	ND	2.0	0.40	5562200
2,4-Dichlorophenol	ug/L	ND	1.2	0.40	5562200
2,5-Dichlorophenol	ug/L	ND	2.0	1.2	5562200
2,6-Dichlorophenol	ug/L	ND .	2.0	0.80	5562200
3,4-Dichlorophenol	ug/L	ND	2.0	0.40	5562200
3,5-Dichlorophenol	ug/L	ND	2.0	0.40	5562200
2,4-Dimethylphenol	ug/L	ND	2.0	0.40	5562200
2,4-Dinitrophenol	ug/L	ND (1)	25	2.5	5562200
4,6-Dinitro-2-methylphenol	ug/L	ND	8.0	2.0	5562200
2-Nitrophenol	ug/L	ND	2.0	0.40	5562200
4-Nitrophenol	ug/L	ND	5.6	0.40	5562200
Pentachlorophenol	ug/L	ND	4.0	0.80	5562200
Phenol	ug/L	11	2.0	0.40	5562200
2,3,4,5-Tetrachlorophenol	ug/L	ND	1.6	0.40	5562200
2,3,4,6-Tetrachlorophenol	ug/L	ND	2.0	0.80	5562200
2,3,5,6-Tetrachlorophenol	ug/t	ND	2.0	0.80	5562200
2,3,4-Trichlorophenol	ug/L	ND	2.0	0.40	5562200
2,3,5-Trichlorophenol	ug/L	ND	2.0	0.40	5562200
2,3,6-Trichlorophenol	ug/L	ND	2.0	0.80	5562200
2,4,5-Trichlorophenal	ug/L	ND	2.0	0.80	5562200
2,4,6-Trichlorophenol	ug/L	ND	2.0	0.40	5562200
3,4,5-Trichlorophenol	ug/L	ND	2.0	0.80	5562200
Benzyl butyl phthalate	ug/L	ND	2.0	0.40	5562200
Biphenyl	ug/L	ND	2.0	0.40	5562200
Bis(2-chloroethyl)ether	ug/L	ND	2.0	0.40	5562200
Bis(2-chloroethoxy)methane	ug/L	ND	2.0	0.40	5562200
Bis(2-chloroisopropyl)ether	ug/L	ND	2.0	0.40	5562200
Bis(2-ethylhexyl)phthalate	ug/L	14	8.0	0.40	5562200
4-Bromophenyl phenyl ether	ug/L	ND	1.2	0.40	5562200

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

(1) Detection limit was raised due to matrix interference.



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		GVA104			
Sampling Date		2018/05/29 09:18			
COC Number		663334-01-01			
	UNITS	Point A	RDL	MDL	QC Batch
p-Chloroaniline	ug/L	ND	4.0	2.0	5562200
4-Chlorophenyl phenyl ether	ug/L	ND	2.0	0.40	5562200
Di-N-butyl phthalate	ug/L	ND	8.0	0.40	5562200
di-n-octyl phthalate	ug/L	ND	3.2	0.40	5562200
2,4-Dinitrotoluene	ug/L	ND	2.0	0.40	5562200
Diethyl phthalate	ug/L	ND	4.0	0.40	5562200
3,3'-Dichlorobenzidine	ug/L	ND	2.0	1.6	5562200
Dimethyl phthalate	ug/L	ND	4.0	0.40	5562200
2,6-Dinitrotoluene	ug/L	ND	2.0	0.40	5562200
Diphenyl Ether	ug/L	ND	1.2	0.40	5562200
Hexachlorobutadiene	ug/L	ND	1.6	0.40	5562200
Hexachlorocyclopentadiene	ug/L	ND	8.0	0.40	5562200
Hexachloroethane	ug/L	ND	2.0	0.40	5562200
Isophorone	ug/L	ND	2.0	0.40	5562200
Nitrobenzené	ug/L	ND	2.0	0.40	5562200
Nitrosodiphenylamine/Diphenylamine	ug/L	ND	4.0	0.40	5562200
N-Nitroso-di-n-propylamine	ug/L	ND	2.0	0.40	5562200
Polyaromatic Hydrocarbons					
1-Methylnaphthalene	ug/L	ND	0.050	N/A	5556874
2-Methylnaphthalene	ug/L	ND	0.050	N/A	5556874
Acenaphthene	ug/L	ND	0.010	N/A	5556874
Acenaphthylene	ug/L	ND (1)	0.030	N/A	5556874
Anthracene	ug/L	ND	0.010	N/A	5556874
Benzo(a)anthracene	ug/L	ND	0.010	N/A	5556874
Benzo(a)pyrene	ug/L	ND	0.010	N/A	5556874
Benzo(b)fluoranthene	ug/L	ND	0.010	N/A	5556874
Benzo(b/j)fluoranthene	ug/L	ND	0.020	N/A	5554765
Benzo(g,h,i)perylene	ug/L	ND	0.010	N/A	5556874
Benzo(j)fluoranthene	ug/L	ND	0.010	N/A	5556874
Benzo(k)fluoranthene	ug/L	ND	0.010	N/A	5556874
Chrysene	ug/L	ND	0.010	-	5556874
Dibenz(a,h)anthracene	ug/L	ND	0.010	N/A	5556874

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		GVA104			
Sampling Date		2018/05/29 09:18			
COC Number		663334-01-01			
	UNITS	Point A	RDL	MDL	QC Batch
Fluoranthene	ug/L	ND (1)	0.22	N/A	5556874
Fluorene	ug/L	ND	0.010	N/A	5556874
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.010	N/A	5556874
Naphthalene	ug/L	ND	0.20	N/A	5556874
Perylene	ug/L	ND	0.010	N/A	5556874
Phenanthrene	ug/L	0.069	0.010	N/A	5556874
Pyrene	ug/L	ND (1)	0.030	N/A	5556874
Phenolics					
2-Chlorophenol	ug/L	ND	0.4	0.2	5564324
2,3,4,6-Tetrachlorophenol	ug/L	ND	0.4	0.2	5564324
2,3,5-Trichlorophenol	ug/L	ND	0.4	0.2	5564324
2,4-Dichlorophenol	ug/L	ND	0.4	0.2	5564324
2,4-Dimethylphenol	ug/L	ND	4	0.2	5564324
2,4,6-Trichlorophenol	ug/L	ND	0.4	0.2	5564324
2,6-Dichlorophenol	ug/L	ND	0.4	0.2	5564324
4-Chloro-3-Methylphenol	ug/L	ND	0.4	0.2	5564324
4-Nitrophenol	ug/L	ND	4	0.2	5564324
m/p-Cresol	ug/L	ND	2	0.2	5564324
o-Cresol	ug/L	3	2	0.2	5564324
Pentachlorophenol	ug/L	ND	0.4	0.2	5564324
Phenol	ug/L	31	2	0.2	5564324
2,3,4,5-Tetrachlorophenol	ug/L	ND	0.4	0.2	5564324
2,3,5,6-Tetrachlorophenol	ug/L	ND	0.4	0.2	5564324
2,3,4-Trichlorophenol	ug/L	ND	0.4	0.2	5564324
2,3,6-Trichlorophenol	ug/L	ND	0.4	0.2	5564324
2,4,5-Trichlorophenol	ug/L	ND	0.4	0.2	5564324
3,4,5-Trichlorophenol	ug/L	ND	0.4	0.2	5564324
2,4-Dinitrophenol	ug/L	ND	-4	0.8	5564324
2,3-Dichlorophenol	ug/L	ND	0.4	0.2	5564324
2,5-Dichlorophenol	ug/L	ND	0.4	0.2	5564324
3,4-Dichlorophenol	ug/L	ND	0.4	0.2	5564324
3,5-Dichlorophenol	ug/L	ND	0.4	0.2	5564324

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected

(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		GVA104			
Sampling Date		2018/05/29 09:18			
COC Number		663334-01-01			
	UNITS	Point A	RDL	MDL	QC Batch
4,6-Dinitro-2-methylphenol	ug/L	ND:	4	0.2	5564324
3 & 4-Chlorophenol	ug/L	ND	0.4	0.2	5564324
2-Nitrophenol	ug/L	ND	4	0.2	5564324
Surrogate Recovery (%)					
2,4,6-Tribromophenol	96	126			5562200
2-Fluorobiphenyl	96	47			5562200
2-Fluorophenol	%	28			5562200
D14-Terphenyl	%	94			5562200
D5-Nitrobenzene	%	95			5562200
D5-Phenol	%	19			5562200
2,4,6-Tribromophenol	96	95			5564324
2-Fluorophenol	96	39 (1)			5564324
D5-Phenol	%	53			5564324
D10-Anthracene	%	90			5556874
D14-Terphenyl	%	82			5556874
D8-Acenaphthylene	96	88			5556874

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

(1) Surrogate recovery was below the lower control limit due to matrix interference.

This may represent a lower bias in some results.



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		GVA104			
Sampling Date		2018/05/29 09:18			
COC Number		663334-01-01			
	UNITS	Point A	RDL	MDL	QC Batch
Chlorobenzenes					
1_2-Dichlorobenzene	ug/L	ND:	0.50	N/A	5556765
1,3-Dichlorobenzene	ug/L	ND	1.0	N/A	5556765
1,4-Dichlorobenzene	ug/L	ND	1.0	N/A	5556765
Chlorobenzene	ug/L	ND	1.0	N/A	5556765
Volatile Organics					
1,1,1-Trichloroethane	ug/L	ND	1.0	N/A	5556765
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	N/A	5556765
1,1,2-Trichloroethane	ug/L	ND:	1.0	N/A	5556765
1,1-Dichloroethane	ug/L	ND:	2.0	N/A	5556765
1,1-Dichloroethylene	ug/L	ND (1)	71	140	5556765
1,2-Dichloroethane	ug/L	ND	1.0	N/A	5556765
1,2-Dichloropropane	ug/L	ND	0.50	N/A	5556765
Benzene	ug/L	ND:	1.0	N/A	5556765
Bromodichloromethane	ug/L	ND	1.0	0.20	5556765
Bromoform	ug/L	ND	1.0	0.20	5556765
Bromomethane	ug/L	ND	0.50	N/A	5556765
Carbon Tetrachloride	ug/L	ND	0.50	N/A	5556765
Chloroethane	ug/L	ND	8.0	N/A	5556765
Chloroform	ug/L	4.4	1.0	0.20	5556765
Chloromethane	ug/L	ND	8.0	N/A	5556765
cis-1,2-Dichloroethylene	ug/L	ND	0.50	N/A	5556765
cis-1,3-Dichloropropene	ug/L	ND	0.50	N/A	5556765
Dibromochloromethane	ug/L	ND	1.0	0.20	5556765
Ethylbenzene	ug/L	ND	1.0	N/A	5556765
Ethylene Dibromide	ug/L	ND	0.20	0.50	5556765
Methyl t-butyl ether (MTBE)	ug/L	ND	2.0	N/A	5556765
Methylene Chloride(Dichloromethane)	ug/L	ND	3.0	N/A	5556765
o-Xylene	ug/L	ND:	1.0	N/A	5556765
p+m-Xylene	ug/L	ND	2.0	N/A	5556765
Styrene	ug/L	ND	1.0	N/A	5556765
Tetrachloroethylene	ug/L	ND	1.0	N/A	5556765

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

(1) Elevated VOC RDL(s) due to matrix interference.



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		GVA104			
Sampling Date		2018/05/29 09:18			
COC Number		663334-01-01			
	UNITS	Point A	RDL	MDL	QC Batch
Toluene	ug/L	ND	1.0	N/A	5556765
Total Trihalomethanes	ug/L	4.4	1.0	N/A	5556765
Total Xylenes	ug/L	ND	1.0	1.0	5556765
trans-1,2-Dichloroethylene	ug/L	ND	0.50	N/A	5556765
trans-1,3-Dichloropropene	ug/L	ND	0.50	N/A	5556765
Trichloroethylene	ug/L	ND	1.0	N/A	5556765
Trichlorofluoromethane (FREON 11)	ug/L	ND	8.0	N/A	5556765
Vinyl Chloride	ug/L	ND:	0.50	2.0	5556765
Surrogate Recovery (%)					.,
4-Bromofluorobenzene	1%	99			5556765
D4-1,2-Dichloroethane	%	95			5556765
D8-Toluene	96	93			5556765
RDL = Reportable Detection Limit QC Batch = Quality Control Batch					
ND = Not detected					
N/A = Not Applicable					



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GVA104			
Sampling Date		2018/05/29 09:18			
COC Number		663334-01-01			
	UNITS	Point A	RDL	MDL	QC Batch
BTEX & F1 Hydrocarbons					
Benzene	ug/L	ND	0.20	0.040	5562964
Toluene	ug/L	1.1	0.20	0.040	5562964
Ethylbenzene	ug/L	ND	0.20	0.040	5562964
o-Xylene	ug/L	ND	0.20	0.040	5562964
p+m-Xylene	ug/L	ND	0.40	0.080	5562964
Total Xylenes	ug/t.	ND	0.40	0.080	5562964
F1 (C6-C10)	ug/L	ND	25	20	5562964
F1 (C6-C10) - BTEX	ug/L	ND	. 25	20	5562964
F2-F4 Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	ug/L	250	100	50	5567365
F3 (C16-C34 Hydrocarbons)	ug/L	1000	200	70	5567365
F4 (C34-C50 Hydrocarbons)	ug/L	ND	200	50	5567365
Reached Baseline at C50	ug/L	Yes			5567365
Surrogate Recovery (%)					
1,4-Difluorobenzene	%	105			5562964
4-Bromofluorobenzene	%	103			5562964
D10-Ethylbenzene	96	98			5562964
D4-1,2-Dichloroethane	96	102			5562964
o-Terphenyl	96	103			5567365
RDL = Reportable Detection QC Batch = Quality Control B ND = Not detected					



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

ATLANTIC RBCA HYDROCARBONS (WATER)

Maxxam ID		GVA104			
Sampling Date		2018/05/29 09:18			
COC Number		663334-01-01			
	UNITS	Point A	RDL	MDL	QC Batch
Petroleum Hydrocarbons					
Benzene	mg/L	ND	0.0010	N/A	5563985
Toluene	mg/L	ND	0.0010	N/A	5563985
Ethylbenzene	mg/L	ND	0.0010	N/A	5563985
Total Xylenes	mg/L	ND	0.0020	N/A	5563985
C6 - C10 (less BTEX)	mg/L	0.093 (1)	0.010	N/A	5563985
>C10-C16 Hydrocarbons	mg/L	0.34	0.050	N/A	5562547
>C16-C21 Hydrocarbons	mg/L	1.0	0.050	N/A	5562547
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>2.3</td><td>0.10</td><td>N/A</td><td>5562547</td></c32>	mg/L	2.3	0.10	N/A	5562547
Modified TPH (Tier1)	mg/L	3.7	0.10	N/A	5555273
Reached Baseline at C32	mg/L	Yes	N/A	N/A	5562547
Hydrocarbon Resemblance	mg/L	COMMENT (2)	N/A	N/A	5562547
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	110			5562547
n-Dotriacontane - Extractable	%	101			5562547
Isobutylbenzene - Volatile	%	79			5563985

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

- (1) Interference from Volatile Organic Compounds (VOCs) in the gasoline range.
- (2) Unidentified compound(s) in fuel / lube range. One product in fuel / lube range.



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

MICROBIOLOGY (WATER)

Maxxam ID		GVA104			
Sampling Date		2018/05/29 09:18			
COC Number		663334-01-01			
	UNITS	Point A	RDL	MDL	QC Batch
Microbiological					
Escherichia coli	CFU/100mL	ND	10	N/A	5555772
Fecal coliform	CFU/100mL	ND	10	N/A	5555448
Total Coliforms	CFU/100mL	ND	10	N/A	5555772
RDL = Reportable Dete	ction Limit				
QC Batch = Quality Cor	ntrol Batch				
ND = Not detected					
N/A = Not Applicable					



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1 14.3°C

Note: Average temperature upon receipt greater than 10 degrees.

Sample GVA104 [Point A] : Total Residual Chlorine: sample contained headspace.

ABN analysis: Due to the nature of the sample matrix, a smaller than usual portion of the sample was used for extraction. Detection limits were adjusted accordingly.

CPH Analysis: Due to sample matrix, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Results relate only to the items tested.



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
5555338	ZZH	QC Standard	Total Residual Chlorine	2018/05/30		97	N.	80 - 120
5555338	ZZH	Method Blank	Total Residual Chlorine	2018/05/30	ND, RDL=0.10		mg/L	
5555338	ZZH	RPD	Total Residual Chlorine	2018/05/30	NC		%	25
5555448	KBO	Method Blank	Fecal coliform	2018/05/30	ND, RDL=1.0		CFU/100mL	
5555772	KBT	Method Blank	Escherichia coli	2018/05/30	ND, RDL=1.0		CFU/100mL	
			Total Coliforms	2018/05/30	ND, RDL=1.0		CFU/100ml	
5556751	BAN	Matrix Spike	Total Aluminum (Al)	2018/05/31		98	36	80 - 12
			Total Antimony (5b)	2018/05/31		100	%	80 - 12
			Total Arsenic (As)	2018/05/31		97	16	80 - 12
			Total Barium (Ba)	2018/05/31		93	%	80 - 12
			Total Beryllium (Be)	2018/05/31		98	94	80 - 12
			Total Bismuth (Bi)	2018/05/31		100	%	80 - 12
			Total Boron (B)	2018/05/31		99	16	80 - 12
			Total Cadmium (Cd)	2018/05/31		97	%	80 - 12
			Total Calcium (Ca)	2018/05/31		103	76	80 - 12
			Total Chromium (Cr)	2018/05/31		95	76	80 - 12
			Total Cobalt (Co)	2018/05/31		97	8	80 - 12
			Total Copper (Cu)	2018/05/31		NC	16	80 - 12
			Total Iron (Fe)	2018/05/31		NC	24	80 - 12
			Total Lead (Pb)	2018/05/31		96	76	80 - 12
			Total Magnesium (Mg)	2018/05/31		100		80 - 12
			Total Manganese (Mn)	2018/05/31		97	%	80 - 12
			Total Molybdenum (Mo)	2018/05/31		99	%	80 - 12
			Total Nickel (Ni)	2018/05/31		97	76.	80 - 12
			Total Phosphorus (P)	2018/05/31		103	N	80 - 12
			Total Potassium (K)	2018/05/31		100	16	80 - 12
			Total Selenium (Se)	2018/05/31		96	96	80 - 12
			Total Silver (Ag)	2018/05/31		98	%	80 - 12
			Total Sodium (Na)	2018/05/31		97	16	80 - 12
			Total Strontium (Sr)	2018/05/31		101	*	80 - 12
			Total Thallium (TI)	2018/05/31		99	96	80 - 12
			Total Tin (Sn)	2018/05/31		105	96	80 - 12
			Total Titanium (Ti)	2018/05/31		96		80 - 12
			Total Uranium (U)	2018/05/31		101	76 56	80 - 12
			Total Vanadium (V)	2018/05/31		98	36	80 - 12
rereases.		Talled Start	Total Zinc (Zn)	2018/05/31		NC	96	80 - 12
5556751	BAN	Spiked Blank	Total Aluminum (AI)	2018/05/31		102	16	80 - 12
			Total Antimony (Sb)	2018/05/31		103	%	80 - 12
			Total Arsenic (As)	2018/05/31		99	94	80 - 12
			Total Barium (Ba)	2018/05/31		96	%	80 - 12
			Total Beryllium (Be)	2018/05/31		99	%	80 - 12
			Total Bismuth (Bi)	2018/05/31		104	96	80 - 12
			Total Boron (B)	2018/05/31		101	96	80 - 12
			Total Cadmium (Cd)	2018/05/31		99	76	80 - 12
			Total Calcium (Ca)	2018/05/31		103	74	80 - 12
			Total Chromium (Cr)	2018/05/31		98	%	80 - 12
			Total Cobalt (Co)	2018/05/31		100	96	80 - 120
			Total Copper (Cu)	2018/05/31		98	76	80 - 120



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Total Iron (Fe)	2018/05/31		104	%	80 - 12
			Total Lead (Pb)	2018/05/31		99	76	80 - 12
			Total Magnesium (Mg)	2018/05/31		102	%	80 - 12
			Total Manganese (Mn)	2018/05/31		100	76	80 - 12
			Total Molybdenum (Mo)	2018/05/31		102	14	80 - 12
			Total Nickel (Ni)	2018/05/31		100	%	80 - 12
			Total Phosphorus (P)	2018/05/31		105	96	80 - 12
			Total Potassium (K)	2018/05/31		102	%	80 - 12
			Total Selenium (Se)	2018/05/31		97	14	80 - 12
			Total Silver (Ag)	2018/05/31		98	%	80 - 12
			Total Sodium (Na)	2018/05/31		98	36	80 - 12
			Total Strontium (Sr)	2018/05/31		104	%	80 - 12
			Total Thallium (TI)	2018/05/31		102	96	80 - 12
			Total Tin (Sn)	2018/05/31		103	%	80 - 12
			Total Titanium (Ti)	2018/05/31		104	94	80 - 12
			Total Uranium (U)	2018/05/31		104	%	80 - 12
			Total Vanadium (V)	2018/05/31		101	%	80 - 12
			Total Zinc (Zn)	2018/05/31		101	%	80 - 12
556751	BAN	Method Blank	Total Aluminum (AI)	2018/05/31	ND,	375	ug/L	
			Littley bede stomeway		RDL=5.0			
			Total Antimony (Sb)	2018/05/31	ND, RDL=1.0		ug/t	
			Total Arsenic (As)	2018/05/31	ND, RDL=1.0		ug/t	
			Total Barium (Ba)	2018/05/31	ND, RDL=1.0		ug/L	
			Total Beryllium (Be)	2018/05/31	ND, RDL=1.0		ug/L	
			Total Bismuth (Bi)	2018/05/31	ND, RDL=2.0		ug/t	
			Total Boron (B)	2018/05/31	ND, RDL=50		ug/t	
			Total Cadmium (Cd)	2018/05/31	ND, RDL=0.010		ug/L	
			Total Calcium (Ca)	2018/05/31	ND, RDL=100		ug/L	
			Total Chromium (Cr)	2018/05/31	ND, RDL=1.0		ug/L	
			Total Cobalt (Co)	2018/05/31	ND, RDL=0.40		ug/L	
			Total Copper (Cu)	2018/05/31	ND, RDL=2.0		ug/L	
			Total Iron (Fe)	2018/05/31	ND, RDL=50		ug/L	
			Total Lead (Pb)	2018/05/31	ND, RDL=0.50		ug/L	
			Total Magnesium (Mg)	2018/05/31	ND, ROL=100		ug/L	
			Total Manganese (Mn)	2018/05/31	ND, RDL=2.0		ug/L	
			Total Molybdenum (Mo)	2018/05/31	ND, RDL=2.0		ug/L	



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	Init QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Lim
		Total Nickel (NI)	2018/05/31	ND, RDL=2.0		ug/L	
		Total Phosphorus (P)	2018/05/31	ND, RDL=100		ug/L	
		Total Potassium (K)	2018/05/31	ND, RDL=100		ug/L	
		Total Selenium (Se)	2018/05/31	ND, RDL=1.0		ug/L	
		Total Silver (Ag)	2018/05/31	ND, RDL=0.10		ug/L	
		Total Sodium (Na)	2018/05/31	ND, RDL=100		ug/L	
		Total Strontium (Sr)	2018/05/31	ND, RDL=2.0		ug/L	
		Total Thallium (TI)	2018/05/31	ND, RDL=0.10		ug/L	
		Total Tin (Sn)	2018/05/31	ND, RDL=2.0		ug/L	
		Total Titanium (Ti)	2018/05/31	ND, RDL=2.0		ug/L	
		Total Uranium (U)	2018/05/31	ND, RDL=0.10		ug/t	
		Total Vanadium (V)	2018/05/31	ND, RDL=2.0		ug/t	
		Total Zinc (Zn)	2018/05/31	ND, RDL=5.0		ug/L	
556751	BAN RPD	Total Aluminum (Al)	2018/06/01	2.3		N	20
		Total Antimony (5b)	2018/06/01	NC		76	20
		Total Arsenic (As)	2018/06/01	2.2		N	20
		Total Barium (Ba)	2018/06/01	2.2		%	20
		Total Beryllium (Be)	2018/06/01	1.9		%	20
		Total Bismuth (Bi)	2018/06/01	NC			20
		Total Boron (B)	2018/06/01	NC		76 76	20
		Total Cadmium (Cd)	2018/06/01	4.7		%	20
		Total Calcium (Ca)	2018/06/01	2.0		96	20
		Total Chromium (Cr)	2018/06/01	NC		%	20
		Total Cobalt (Co)	2018/06/01	NC		16	20
		Total Copper (Cu)	2018/06/01	2.4		%	20
		Total Iron (Fe)	2018/06/01	1.9		36	20
		Total Lead (Pb)	2018/06/01	0.74		%	20
		Total Magnesium (Mg)	2018/06/01	1.7		96	20
		Total Manganese (Mn)	2018/06/01	8.5		%	20
		Total Molybdenum (Mo)	2018/06/01	NC		94	20
		Total Nickel (Ni)	2018/06/01	NC		%	20
		Total Phosphorus (P)	2018/06/01	NC		96	20
		Total Potassium (K)	2018/06/01	1.3		96	20
		Total Selenium (Se)	2018/06/01	NC		96	20
		Total Silver (Ag)	2018/06/01	NC		×	20
		Total Sodium (Na)	2018/06/01	3.0		14	20
		Total Strontium (Sr)	2018/06/01	14		96	20
		Total Thallium (TI)	2018/06/01	NC		96	20
		Total Tin (Sn)	2018/06/01	NC		%	20



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Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Total Titanium (Ti)	2018/06/01	NC		%	20
			Total Uranium (U)	2018/06/01	2.5		%	20
			Total Vanadium (V)	2018/06/01	NC		96	20
			Total Zinc (Zn)	2018/06/01	0.012		%	20
556765	ASL	Matrix Spike	1,2-Dichlorobenzene	2018/05/31		92	16	70 - 13
		MINE CANOLINAMO	1,3-Dichlorobenzene	2018/05/31		93	%	70 - 13
			1,4-Dichlorobenzene	2018/05/31		88	96	70 - 13
			Chiorobenzene	2018/05/31		95	96	70 - 13
			1.1.1-Trichloroethane	2018/05/31		109	14	70 - 13
			1.1.2.2-Tetrachioroethane	2018/05/31		98	%	70 - 13
			1,1,2-Trichloroethane	2018/05/31		100	36	70 - 13
			1,1-Dichloroethane	2018/05/31		108	96	70 - 13
			1,1-Dichloroethylene	2018/05/31		107	%	70 - 13
			1,2-Dichlorgethane	2018/05/31		90	96.	70 - 13
			1,2-Dichloropropane	2018/05/31		92	96	70 - 13
			4-Bromofluorobenzene	2018/05/31		102	%	70 - 1
			Benzene	2018/05/31		93	%	70 - 13
			Bromodichloromethane	2018/05/31		92	56	70 - 1
			Bromoform	2018/05/31		104	96	70 - 13
			Bromomethane	2018/05/31		102	76	60 - 1
			Carbon Tetrachloride	2018/05/31		106	%	70 - 1
			Chloroethane	2018/05/31		93	%	60 - 1
			Chloroform	2018/05/31		96	96	70 - 1
			Chloromethane	2018/05/31		125	76	60 - 1
			cis-1,2-Dichloroethylene	2018/05/31		113	%	70 - 1
			cis-1,3-Dichloropropene	2018/05/31		100	%	70 - 1
			D4-1.2-Dichloroethane	2018/05/31		94	%	70 - 13
			D8-Toluene	2018/05/31		92	76	70 - 1
			Dibromochloromethane	2018/05/31		101	N	70 - 1
			Ethylbenzene	2018/05/31		95	%	70 - 1
			Ethylene Dibromide	2018/05/31		101	96	70 - 1
			Methyl t-butyl ether (MTBE)	2018/05/31		105	%	70 - 1
			Methylene Chloride(Dichloromethane)	2018/05/31		109	16	70 - 1
			o-Xylene	2018/05/31		94	76	70 - 1
			p+m-Xylene	2018/05/31		94	96	70 - 1
			Styrene	2018/05/31		101	%	70 - 1
			Tetrachloroethylene	2018/05/31		102	N	70 - 1
			Toluene	2018/05/31		100	%	70 - 1
			trans-1,2-Dichloroethylene	2018/05/31		113	36	70 - 1
			trans-1,3-Dichloropropene	1 TO		91		70 - 13
			Trichloroethylene	2018/05/31		99	96	70 - 1
			Trichlorofluoromethane (FREON 11)	2018/05/31 2018/05/31		94	% %	60 - 14
			491. Tay 2014 S. T. (1) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					60 - 14
556765	464	Spiked Blank	Vinyl Chloride 1,2-Dichlorobenzene	2018/05/31		122	%	
556765	ASL	эрікей віалік	70 1 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2018/05/31		94		70 - 1
			1,3-Dichlorobenzene	2018/05/31		95	%	70 - 13
			1,4-Dichlorobenzene	2018/05/31		91	36	70 - 13
			Chlorobenzene	2018/05/31		95	96	70 - 1
			1,1,1-Trichloroethane	2018/05/31		111	76	70 - 1
			1,1,2,2-Tetrachloroethane	2018/05/31		96	74	70 - 13
			1,1,2-Trichloroethane	2018/05/31		102	96.	70 - 13
			1,1-Dichloroethane	2018/05/31		111	96	70 - 1
			1,1-Dichloroethylene	2018/05/31		110	76	70 - 13



Northern Pulp N.S.

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Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
		1,2-Dichloroethane	2018/05/31		91	%	70 - 130
		1,2-Dichloropropane	2018/05/31		94	%	70 - 13
		4-Bromofluorobenzene	2018/05/31		100	%	70 - 13
		Benzene	2018/05/31		94	%	70 - 13
		Bromodichloromethane	2018/05/31		94	14	70 - 13
		Bromaform	2018/05/31		103	%	70 - 13
		Bromomethane	2018/05/31		101	96	60 - 14
		Carbon Tetrachloride	2018/05/31		109	%	70 - 13
		Chloroethane	2018/05/31		96	16	60 - 14
		Chloroform	2018/05/31		99	%	70 - 13
		Chloromethane	2018/05/31		75	36	60 - 14
		cis-1,2-Dichloroethylene	2018/05/31		115	%	70 - 13
		cis-1,3-Dichloropropene	2018/05/31		99	%	70 - 13
		D4-1,2-Dichloroethane	2018/05/31		94	%	70 - 13
		D8-Toluene	2018/05/31		93	94	70 - 13
		Dibromochloromethane	2018/05/31		103	%	70 - 13
		Ethylbenzene	2018/05/31		96	%	70 - 13
		Ethylene Dibromide	2018/05/31		103	%	70 - 13
		Methyl t-butyl ether (MTBE)	2018/05/31		108	76	70 - 13
		Methylene Chloride(Dichloromethane)	2018/05/31		112	76	70 - 13
		p-Xylene	2018/05/31		95	%	70 - 13
		p+m-Xylene	2018/05/31		95	%	70 - 13
		Styrene	2018/05/31		104	34	70 - 13
		Tetrachioroethylene	2018/05/31		106	76	70 - 13
		Toluene	2018/05/31		103	%	70 - 13
		trans-1,2-Dichloroethylene	2018/05/31		117	%	70 - 13
		trans-1,3-Dichloropropene	2018/05/31		87	%	70 - 13
		Trichloroethylene	2018/05/31		102	76.	70 - 13
		Trichlorofluoromethane (FREON 11)	2018/05/31		97	%	60 - 14
		Vinyl Chloride	2018/05/31		127	%	60 - 14
556765 ASL	Method Blank	1,2-Dichlorobenzene	2018/05/31	ND, RDL=0.50	Time.	ug/L	00
		1,3-Dichlarobenzene	2018/05/31	ND, RDL=1.0		ug/L	
		1,4-Dichlorobenzene	2018/05/31	ND, RDL=1.0		ug/L	
		Chlorobenzene	2018/05/31	ND, RDL=1.0		ug/L	
		1,1,1-Trichioroethane	2018/05/31	ND, RDL=1.0		ug/L	
		1,1,2,2-Tetrachloroethane	2018/05/31	ND, RDL=0.50		ug/L	
		1.1.2-Trichloroethane	2018/05/31	ND, RDL=1.0		ug/L	
		1,1-Dichloroethane	2018/05/31	ND, RDL=2.0		ug/L	
		1,1-Dichloroethylene	2018/05/31	ND, RDL=0.50		ug/L	
		1,2-Dichloroethane	2018/05/31	ND. RDL=1.0		ug/L	
		1,2-Dichloropropane	2018/05/31	ND, RDL=0.50		ug/L	



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Your P.O. #: 43013552

Batch Init QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
	4-Bromafluorobenzene	2018/05/31	50753.1	98	N	70 - 13
	Benzene	2018/05/31	NO, ROL=1.0		ug/L	
	Bromodichloromethane	2018/05/31	ND, RDL=1.0		ug/L	
	Bromoform	2018/05/31	ND, RDL=1.0		ug/L	
	Bromomethane	2018/05/31	ND, RDL=0.50		ug/L	
	Carbon Tetrachloride	2018/05/31	ND. RDL=0.50		ug/L	
	Chloroethane	2018/05/31	ND, RDL=8.0		ug/L	
	Chloroform	2018/05/31	ND, RDL=1.0		ug/L	
	Chloromethane	2018/05/31	ND, RDL=8.0		ug/L	
	cis-1,2-Dichloroethylene	2018/05/31	ND, RDL=0.50		ug/L	
	cis-1,3-Dichloropropene	2018/05/31	ND, RDL+0.50		ug/L	
	D4-1,2-Dichloroethane	2018/05/31		94	%	70 - 13
	D8-Toluene	2018/05/31		95	26	70 - 13
	Dibromochloromethane	2018/05/31	ND, RDL=1.0		ug/L	
	Ethylbenzene	2018/05/31	ND, RDL=1.0		ug/L	
	Ethylene Dibromide	2018/05/31	ND, RDL=0.20		ug/L	
	Methyl t-butyl ether (MT8E)	2018/05/31	NO _v RDL=2.0		ug/L	
	Methylene Chloride(Dichlocomethane)	2018/05/31	ND, RDL=3.0		ug/L	
	o-Xylene	2018/05/31	NO. RDL=1.0		ug/L	
	p+m-Xylene	2018/05/31	ND, RDL=2.0		ug/L	
	Styrene	2018/05/31	ND, RDL=1.0		ug/L	
	Tetrachioroethylene	2018/05/31	ND, RDL=1.0		ug/L	
	Toluene	2018/05/31	ND, RDL=1.0		ug/L	
	Total Tribalomethanes	2018/05/31	ND, RDL=1.0		ug/L	
	Total Xylenes	2018/05/31	ND, RDL=1.0		ug/L	
	trans-1,2-Dichloroethylene	2018/05/31	ND, RDL=0.50		ug/L	
	trans-1,3-Dichloropropene	2018/05/31	ND, RDL=0.50		ug/L	



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Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Trichloroethylene	2018/05/31	ND, RDL=1.0		ug/L	
			Trichlorofluoromethane (FREON 11)	2018/05/31	ND, RDL=8.0		ug/L	
			Vinyl Chloride	2018/05/31	ND, RDL=0.50		ug/t	
5556765	ASL	RPD [GVA104-04]	1,2-Dichlorobenzene	2018/05/31	NC		96	40
			1.3-Dichlorobenzene	2018/05/31	NC		%	40
			1.4-Dichlorobenzene	2018/05/31	NC		16	40
			Chlorobenzene	2018/05/31	NC		%	40
			1,1,1-Trichloroethane	2018/05/31	NC		36	40
			1,1,2,2-Tetrachioroethane	2018/05/31	NC		%	40
			1,1,2-Trichloroethane	2018/05/31	NC		%	40
			1.1-Dichloroethane	2018/05/31	NC		96	40
			1,1-Dichloroethylene	2018/05/31	NC (1)		94	40
			1,2-Dichloroethane	2018/05/31	NC		%	40
			1,2-Dichloropropane	2018/05/31	NC		16	40
			Benzene	2018/05/31	NC		%	40
			Bromodichloromethane	2018/05/31	NC		76	40
			Bromoform	2018/05/31	NC		76	40
			Bromomethane	2018/05/31	NC		%	40
			Carbon Tetrachloride	2018/05/31	NC		%	40
			Chloroethane	2018/05/31	NC		34	40
			Chloroform	2018/05/31	7.0		76	40
			Chloromethane	2018/05/31	NC		%	40
			cis-1,2-Dichloroethylene	2018/05/31	NC		%	40
			cis-1.3-Dichloropropene	2018/05/31	NC		%	40
			Dibromochloromethane	2018/05/31	NC		76	40
			Ethylbenzene	2018/05/31	NC		%	40
			Ethylene Dibromide	2018/05/31	NC		%	40
			Methyl t-butyl ether (MTBE)	2018/05/31	NC		%	40
			Methylene Chloride(Dichlocomethane)	2018/05/31	NC		%	40
			o-Xylene	2018/05/31	NC		14	40
			p+m-Xylene	2018/05/31	NC		%	40
			Styrene	2018/05/31	NC		96	40
			Tetrachioroethylene	2018/05/31	NC		%	40
			Toluene	2018/05/31	NC		16	40
			Total Trihalomethanes	2018/05/31	7.0		%	40
			Total Xylenes	2018/05/31	NC		36	40
			trans-1,2-Dichloroethylene	2018/05/31	NC		%	40
			trans-1,3-Dichloropropene	2018/05/31	NC		96	40
			Trichloroethylene	2018/05/31	NC		96	40
			Trichlorofluoromethane (FREON 11)	2018/05/31	NC		94	40
			Vinyl Chloride	2018/05/31	NC		%	40
5556837	MLW	QC Standard	Biochemical Oxygen Demand	2018/06/05		83	%	80 - 12
5556837		Spiked Blank	Biochemical Oxygen Demand	2018/06/05		81	%	80 - 12
5556837		Method Blank	Biochemical Oxygen Demand	2018/06/05	ND, RDL=2.0		mg/L	200-1983
5556837	MLW	RPD	Biochemical Oxygen Demand	2018/06/05	3.3		%	25
5556874	LGE	Matrix Spike	D10-Anthracene	2018/05/31	1000	84	96	50 - 130
	9000		D14-Terphenyl	2018/05/31		86	96	50 - 130
			D8-Acenaphthylene	2018/05/31		81	*	50 - 130



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Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			1-Methylnaphthalene	2018/05/31		73	N	50 - 13
			2-Methylnaphthalene	2018/05/31		79	76	50 - 13
			Acenaphthene	2018/05/31		80	%	50 - 13
			Acenaphthylene	2018/05/31		83	76	50 - 13
			Anthracene	2018/05/31		86	14	50 - 13
			Benzo(a)anthracene	2018/05/31		91	76	50 - 13
			Benzo(a)pyrene	2018/05/31		96	96	50 - 13
			Benzo(b)fluoranthene	2018/05/31		107	%	50 - 13
			Benzo(g_h,i)perylene	2018/05/31		100	16	50 - 13
			Benzo(j)fluoranthene	2018/05/31		96	%	50 - 13
			Benzo(k)fluoranthene	2018/05/31		108	36	50 - 13
			Chrysene	2018/05/31		89	%	50 - 13
			Dibenz(a,h)anthracene	2018/05/31		91	96	50 - 13
			Fluoranthene	2018/05/31		92	%	50 - 13
			Fluorene	2018/05/31		84	94	50 - 13
			Indeno(1,2,3-cd)pyrene	2018/05/31		89	%	50 - 13
			Naphthalene	2018/05/31		75	%	50 - 13
			Perylene	2018/05/31		98	%	50 - 13
			Phenanthrene	2018/05/31		87	76	50 - 13
			Pyrene	2018/05/31		92	76	50 - 13
556874	LGE	Spiked Blank	D10-Anthracene	2018/05/31		97	%	50 - 13
			D14-Terphenyl	2018/05/31		97	%	50 - 13
			D8-Acenaphthylene	2018/05/31		95	34	50 - 13
			1-Methylnaphthalene	2018/05/31		87	76	50 - 13
			Z-Methylnaphthalene	2018/05/31		93	96	50 - 13
			Acenaphthene	2018/05/31		96	%	50 - 13
			Acenaphthylene	2018/05/31		99	%	50 - 13
			Anthracene	2018/05/31		103	76	50 - 13
			Benzo(a)anthracene	2018/05/31		104	96	50 - 13
			Benzo(a)pyrene	2018/05/31		109	16	50 - 13
			Benzo(b)fluoranthene	2018/05/31		122	96	50 - 13
			Benzo(g.h.i)perylene	2018/05/31		114	%	50 - 13
			Benzo(j)fluoranthene	2018/05/31		112	16	50 - 13
			Benzo(k)fluoranthene	2018/05/31		114	%	50 - 13
			Chrysene	2018/05/31		102	96	50 - 13
			Dibenz(a,h)anthracene	2018/05/31		96	%	50 - 13
			Fluoranthene	2018/05/31		104	16	50 - 13
			Fluorene	2018/05/31		98		50 - 13
			Indeno(1,2,3-cd)pyrene	2018/05/31		98	36	50 - 13
			Naphthalene	2018/05/31		87	%	50 - 13
			Perylene	2018/05/31		112	96	50 - 13
			Phenanthrene	2018/05/31		102	96.	50 - 13
			Pyrene	2018/05/31		104	94	50 - 13
556874	LGE	Method Blank	D10-Anthracene	2018/05/31		88	%	50 - 13
220074	200	Indiana Seems	D14-Terphenyl	2018/05/31		94	16	50 - 13
			D8-Acenaphthylene	2018/05/31		98	26	50 - 13
			1-Methylnaphthalene	2018/05/31	ND, RDL≈0.050	30	ug/L	50-1
			Z-Methylnaphthalene	2018/05/31	ND, RDL=0.050		ug/L	
			Acenaphthene	2018/05/31	ND, RDL=0.010		ug/L	



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QA/QC Batch	Init QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limi
		Acenaphthylene	2018/05/31	ND, RDL=0.010		ug/L	
		Anthracene	2018/05/31	ND, RDL=0.010		ug/L	
		Benzo(a)anthracene	2018/05/31	ND, RDL=0.010		ug/L	
		Benzo(a)pyrene	2018/05/31	ND, RDL=0.010		ug/L	
		Benzo(b)fluoranthene	2018/05/31	ND, RDL=0.010		ug/L	
		Benzo(g,h,i)perylene	2018/05/31	ND, RDL=0.010		ug/L	
		Benzo(j)fluoranthene	2018/05/31	ND, RDL=0.010		ug/L	
		Benzo(k)fluoranthene	2018/05/31	ND, RDL=0.010		ug/L	
		Chrysene	2018/05/31	ND, RDL=0.010		ug/L	
		Dibenz(a,h)anthracene	2018/05/31	ND, RDL=0.010		ug/L	
		Fluoranthene	2018/05/31	ND, RDL=0.010		ug/t	
		Fluorene	2018/05/31	ND, RDL=0.010		ug/L	
		Indeno(1,2,3-cd)pyrene	2018/05/31	ND, RDL=0.010		ug/L	
		Naphthalene	2018/05/31	ND, RDL=0.20		ug/L	
		Perylene	2018/05/31	ND, RDL=0.010		ug/L	
		Phenanthrene	2018/05/31	ND, RDL=0.010		ug/L	
		Pyrene	2018/05/31	ND, RDL=0.010		ug/L	
556874	LGE RPD	1-Methylnaphthalene	2018/05/31	NC		96	40
		2-Methylnaphthalene	2018/05/31	NC .			40
		Acenaphthene	2018/05/31	NC		96 96	40
		Acenaphthylene	2018/05/31	NC		%	40
		Anthracene	2018/05/31	NC		36	40
		Benzo(a)anthracene	2018/05/31	NC		%	40
		Benzo(a)pyrene	2018/05/31	NC		%	40
		Benzo(b)fluoranthene	2018/05/31	NC		%	40
		Benzo(g,h,i)perylene	2018/05/31	NC		% %	40
		Benzo(j)fluoranthene	2018/05/31	NC		%	40
		Benzo(k)fluoranthene	2018/05/31	NC		%	40
		Chrysene	2018/05/31	NC		%	40
		Dibenz(a,h)anthracene	2018/05/31	NC		76	40
		Fluoranthene	2018/05/31	NC		%	40
		Fluorene	2018/05/31	NC		% %	40
		Indeno(1,2,3-cd)pyrene	2018/05/31	NC		16.	40
		Naphthalene	2018/05/31	NC .		96	40
		Perylene	2018/05/31	NC		%	40



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Phenanthrene	2018/05/31	NC		%	40
			Pyrene	2018/05/31	NC		76	40
5556926	MLW	QC Standard	Dissolved Biochemical Oxygen Demand	2018/06/05		83	96	80 - 120
5556926	MLW	Spiked Blank	Dissolved Biochemical Oxygen Demand	2018/06/05		81	%	80 - 120
5556926	MLW	Method Blank	Dissolved Biochemical Oxygen Demand	2018/06/05	ND, RDL=2.0		mg/L	
5557413	CRA	Matrix Spike	Strong Acid Dissoc. Cyanide (CN)	2018/05/31		106	96	80 - 120
5557413	CRA	Spiked Blank	Strong Acid Dissoc. Cyanide (CN)	2018/05/31		105	%	80 - 120
5557413	CRA	Method Blank	Strong Acid Dissoc. Cyanide (CN)	2018/05/31	ND, RDL=0.0010		mg/L	
5557413	CRA	RPD	Strong Acid Dissoc. Cyanide (CN)	2018/05/31	15		36	25
5559052	THY	Matrix Spike	Total Phosphorus	2018/06/04		105	96	80 - 120
5559052	THY	Spiked Blank	Total Phosphorus	2018/06/04		100	96	80 - 120
5559052	THA	Method Blank	Total Phosphorus	2018/06/04	ND. RDL=0.020		mg/L	
5559052	THY	RPD	Total Phosphorus	2018/06/04	NC		%	. 25
5559255	THA	Matrix Spike	Total Kjeldahl Nitrogen	2018/06/04		NC	%	80 - 120
5559255	THY	Spiked Blank	Total Kjeldahl Nitrogen	2018/06/04		104	56	80 - 120
5559255	JHY	Method Blank	Total Kjeldahl Nitrogen	2018/06/04	ND, RDL=0.10		mg/L	
5559255	JHY	RPD	Total Kjeldahl Nitrogen	2018/06/04	6.7		%	25
5559459	EMT	QC Standard	Total Suspended Solids	2018/06/07		97	% %	80 - 120
5559459	EMT	Method Blank	Total Suspended Solids	2018/06/07	ND, RDL=1.0		mg/L	
5559459	EMT	RPD (GVA104-16)	Total Suspended Solids	2018/06/07	9.9		%	20
5561623	MA4	Spiked Blank	Total Oil & Grease	2018/06/03		100	%	85 - 115
5561623	MA4	RPD	Total Oil & Grease	2018/06/03	4.1		%	25
5561623	MAA	Method Blank	Total Oil & Grease	2018/06/03	ND, RDL=0.50		mg/L	
5562118	ZZH	Matrix Spike	Total Chemical Oxygen Demand	2018/06/04		102	%	80 - 120
5562118	ZZH	QC Standard	Total Chemical Oxygen Demand	2018/06/04		97	96	N/A
5562118	ZZH	Spiked Blank	Total Chemical Oxygen Demand	2018/06/04		102	%	80 - 120
5562118	ZZH	Method Blank	Total Chemical Oxygen Demand	2018/06/04	ND, RDL=20		mg/L	
5562118	ZZH	RPD	Total Chemical Oxygen Demand	2018/06/04	4.2		96	25
5562120	ZZH	Matrix Spike	Dissolved Chemical Oxygen Demand	2018/06/04		102	%	80 - 120
5562120	ZZH	QC Standard	Dissolved Chemical Oxygen Demand	2018/06/04		97	16	80 - 120
5562120	ZZH	Spiked Blank	Dissolved Chemical Oxygen Demand	2018/06/04		102	%	80 - 120
5562120	ZZH	Method Blank	Dissolved Chemical Oxygen Demand	2018/06/04	ND, RDL=20		mg/L	
5562120	ZZH	RPD	Dissolved Chemical Oxygen Demand	2018/06/04	1.3		16	25
5562200	ANL	Matrix Spike	2,4,6-Tribromophenol	2018/06/05		90	96.	10 - 130
			2-Fluorobiphenyl	2018/06/05		66	94	30 - 130
			2-Fluorophenol	2018/06/05		48	%	10 - 130
			D14-Terphenyl	2018/06/05		95	96	30 - 130
			D5-Nitrobenzene	2018/06/05		84	56	30 - 130
			D5-Phenol	2018/06/05		34	16	10 - 130
			Acenaphthene	2018/06/05		92	%	30 - 130
			Acenaphthylene	2018/06/05		84	14	30 - 130
			Anthracene	2018/06/05		89	96.	30 - 130
			Benzo(a)anthracene	2018/06/05		97	96	30 - 130
			Benzo(a)pyrene	2018/06/05		95	%	30 - 130



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QA/QC Batch Init QC Type	Parameter	Date Analyzed Value	Recovery	UNITS	QC Limit
	Benzo(b/j)fluoranthene	2018/06/05	100	%	30 - 13
	Benzo(g,h,i)perylene	2018/06/05	75	76	30 - 13
	Benzo(k)fluoranthene	2018/06/05	106	96	30 - 13
	1-Chloronaphthalene	2018/06/05	68	%	30 - 13
	2-Chloronaphthalene	2018/06/05	86	14	30 - 13
	Chrysene	2018/06/05	100	%	30 - 13
	Dibenz(a,h)anthracene	2018/06/05	87	96	30 - 13
	Fluoranthene	2018/06/05	99	%	30 - 13
	Fluorene	2018/06/05	94	16	30 - 13
	Indeno(1,2,3-cd)pyrene	2018/06/05	82	%	30 - 1
	1-Methylnaphthalene	2018/06/05	74	36	30 - 13
	2-Methylnaphthalene	2018/06/05	67	96	30 - 13
	Naphthalene	2018/06/05	69	16	30 - 1
	Perylene	2018/06/05	100	%	30 - 13
	Phenanthrene	2018/06/05	92	94	30 - 1
	Pyrene	2018/06/05	95	%	30 - 1
	1,2-Dichlorobenzene	2018/06/05	73	%	30 - 1
	1,3-Dichlorobenzene	2018/06/05	73	56	30 - 1
	1,4-Dichlorobenzene	2018/06/05	71	76	30 - 1
	Hexachlorobenzene	2018/06/05	93	76	30 - 1
	Pentachlorobenzene	2018/06/05	79	%	30 - 1
	1,2,3,5-Tetrachlorobenzene	2018/06/05	93	76	30 - 1
	1,2,4,5-Tetrachlorobenzene	2018/06/05	84	94	30 - 1
	1,2,3-Trichlorobenzene	2018/06/05	79	76.	30 - 1
	1,2,4-Trichlarobenzene	2018/06/05	76	. %	30 - 1
	1,3,5-Trichlorobenzene	2018/06/05	74	%	30 - 1
	2-Chlorophenol	2018/06/05	80	%	10 - 1
	4-Chloro-3-Methylphenol	2018/06/05	78	76	10-1
	m/p-Cresal	2018/06/05	65	%	10-1
	o-Cresol	2018/06/05	56	16	10 - 1
	1,2,3,4-Tetrachlorobenzene	2018/06/05	76	96	30 - 1
	2,3-Dichlorophenol	2018/06/05	87	%	10-1
	2,4-Dichlorophenol	2018/06/05	97	16	10 - 1
	2,5-Dichlorophenol	2018/06/05	88	%	10 - 1
	2,6-Dichlorophenol	2018/06/05	89	96	10 - 1
	3,4-Dichlorophenol	2018/06/05	107	%	10 - 1
	3,5-Dichlorophenol	2018/06/05	107	16	10 - 1
	2,4-Dimethylphenol	2018/06/05	17	%	10-1
	2,4-Dinitrophenol	2018/06/05	52	36	10-1
	4,6-Dinitro-2-methylphenol	2018/06/05	83	%	10 - 1
	Z-Nitrophenol	2018/06/05	89	%	10 - 1
	4-Nitrophenol	2018/06/05	41	%	10 - 1
	Pentachlorophenol	2018/06/05	80	96	10-1
	Phenol	2018/06/05	40	%	10 - 1
	2,3,4,5-Tetrachlorophenol	2018/06/05	101	%	10 - 1
	2,3,4,6-Tetrachlorophenol	2018/06/05	105	56	10-1
	2,3,5,6-Tetrachiorophenol	2018/06/05	85	16	10 - 1
	2,3,4-Trichlorophenol	2018/06/05	103	%	10 - 1
	2,3,5-Trichlorophenal	2018/06/05	128	76	10 - 1
	2,3,6-Trichlorophenol	2018/06/05	96	96.	10 - 1
	2,4,5-Trichlorophenol	2018/06/05	111	96	10 - 1
	2,4,6-Trichlorophenol	2018/06/05	95	%	10 - 1



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QA/QC Batch Init	t QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
		3,4,5-Trichlarophenol	2018/06/05		109	%	10 - 13
		Benzyl butyl phthalate	2018/06/05		106	16	30 - 13
		Biphenyl	2018/06/05		84	%	30 - 13
		Bis(2-chloroethyl)ether	2018/06/05		82	%	30 - 13
		Bis(2-chloroethoxy)methane	2018/06/05		80	14	30 - 13
		Bis(2-chlorolsopropyl)ether	2018/06/05		78	%	30 - 13
		Bis(2-ethylhexyl)phthalate	2018/06/05		104	96	30 - 13
		4-Bromophenyl phenyl ether	2018/06/05		93	96	30 - 1
		p-Chloroaniline	2018/06/05		22 (2)	16	30 - 1
		4-Chlorophenyl phenyl ether	2018/06/05		92	%	30 - 1
		Di-N-butyl phthalate	2018/06/05		104	36	30 - 1
		di-n-octyl phthalate	2018/06/05		115	96	30 - 1
		2.4-Dinitrotoluene	2018/06/05		103	96	30 - 1
		Diethyl phthalate	2018/06/05		92	96	30 - 1
		3,3'-Dichlorabenzidine	2018/06/05		0.00(3)	94	30 - 1
		Dimethyl phthalate	2018/06/05		95	%	30 - 1
		2.6-Dinitrotoluene	2018/06/05		102	96	30 - 1
		Diphenyl Ether	2018/06/05		89	56	30 - 1
		Hexachlorobutadiene	2018/06/05		65	76	30 - 1
		Hexachlorocyclopentadiene	2018/06/05		40	76	30 - 1
		Hexachloroethane	2018/06/05		65	%	30 - 1
		Isophorone	2018/06/05		77	%	30 - 1
		Nitrobenzene	2018/06/05		88	94	30 - 1
		Nitrosodiphenylamine/Diphenylamine	2018/06/05		90	76	30 - 1
		N-Nitroso-di-n-propylamine	2018/06/05		86	%	30 - 1
562200 AN	L Spiked Blank	2,4,6-Tribromophenol	2018/06/04		96	%	10 - 1
,,,,,	a applied dearing	2-Fluorobiphenyl	2018/06/04		65	96	30 - 1
		2-Fluorophenol	2018/06/04		55	76.	10-1
		D14-Terphenyl	2018/06/04		97	%	30 - 1
		D5-Nitrobenzene	2018/06/04		90	16	30 - 1
		D5-Phenal	2018/06/04		36	96	10 - 1
		Acenaphthene	2018/06/04		94		30 - 1
		Acenaphthylene	2018/06/04		90	% %	30 - 1
			2018/06/04		87		30 - 1
		Anthracene	U.S. S.			%	
		Benzo(a)anthracene	2018/06/04		98	96	30 - 1
		Benzo(a)pyrene	2018/06/04		96	96	30 - 1
		Benzo(b/j)fluoranthene	2018/06/04		103	74	30 - 1
		Benzo(g.h.l)perylene	2018/06/04		93	76	30 - 1
		Benzo(k)fluoranthene	2018/06/04		108	96	30 - 1
		1-Chloronaphthalene	2018/06/04		58	%	30 - 1
		2-Chloronaphthalene	2018/06/04		81	%	30 - 1
		Chrysene	2018/06/04		104	96.	30 - 1
		Diberz(a,h)anthracene	2018/06/04		99	94	30 - 1
		Fluoranthene	2018/06/04		96	%	30 - 1
		Fluorene	2018/06/04		77	%	30 - 1
		Indeno(1,2,3-cd)pyrene	2018/06/04		93	36	30 - 1
		1-Methylnaphthalene	2018/06/04		87	96	30 - 1
		Z-Methylnaphthalene	2018/96/04		86	%	30 - 1
		Naphthalene	2018/06/04		84	14	30 - 1
		Perylene.	2018/06/04		103	%	30 - 1
		Phenanthrene	2018/06/04		89	96	30 - 1
		Pyrene	2018/06/04		94	%	30 - 1



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	1,2-Dichlorobenzene	2018/06/04	80	N	30 - 13
	1,3-Dichlorobenzene	2018/06/04	76	76	30 - 13
	1,4-Dichlorobenzene	2018/06/04	7.4	96	30 - 13
	Hexachlorobenzene	2018/06/04	90	%	30 - 13
	Pentachlorobenzene	2018/06/04	77	16	30 - 13
	1,2,3,5-Tetrachlorobenzene	2018/06/04	75	%	30 - 13
	1,2,4,5-Tetrachiorobenzene	2018/06/04	61	96	30 - 13
	1,2,3-Trichlorobenzene	2018/06/04	81	%	30 - 13
	1,2,4-Trichlorobenzene	2018/06/04	79	16	30 - 13
	1,3,5-Trichlorobenzene	2018/06/04	85	%	30 - 13
	2-Chlorophenol	2018/06/04	87	36	10 - 13
	4-Chioro-3-Methylphenol	2018/06/04	84	96	10 - 13
	m/p-Cresol	2018/06/04	82	96	10 - 1
	o-Cresol	2018/06/04	82	96.	10 - 13
	1,2,3,4-Tetrachlorobenzene	2018/06/04	69	96	30 - 1
	2,3-Dichlorophenol	2018/06/04	94	%	10 - 1
	2,4-Dichlorophenal	2018/06/04	103	%	10 - 1
	2,5-Dichlorophenol	2018/06/04	89	56	10-1
	2,6-Dichlorophenol	2018/06/04	95	. 96	10 - 1
	3,4-Dichlorophenot	2018/06/04	91	76	10-1
	3,5-Dichlorophenol	2018/06/04	89	%	10 - 1
	2,4-Dimethylphenol	2018/06/04	79	76	10 - 1
	2,4-Dinitrophenol	2018/06/04	103	94	10 - 1
	4,6-Dinitro-2-methylphenol	2018/06/04	137 (4)	76	10-1
	Z-Nitrophenol	2018/06/04	101	%	10 - 1
	4-Nitrophenol	2018/06/04	37	%	10 - 1
	Pentachlorophenol	2018/06/04	94	%	10 - 1
	Phenol	2018/06/04	34	76	10 - 1
	2,3,4,5-Tetrachlorophenol	2018/06/04	85	N	10-1
	2,3,4,6-Tetrachlorophenol	2018/06/04	103	%	10 - 1
	2,3,5,6-Tetrachlorophenol	2018/06/04	83	96	10 - 1
	2,3,4-Trichlorophenol	2018/06/04	89	%	10-1
	2,3,5-Trichlorophenol	2018/06/04	94	14	10 - 1
	2,3,6-Trichlorophenol	2018/06/04	86	%	10 - 1
	2,4,5-Trichlorophenol	2018/06/04	99	96	10 - 1
	2,4,6-Trichlorophenol	2018/06/04	89	%	10 - 1
	3,4,5-Trichlorophenol	2018/06/04	92	44	10 - 1
	Benzyl butyl phthalate	2018/06/04	105	*	30 - 1
	Biphenyl	2018/06/04	77	36	30 - 1
	Bis(2-chloroethyl)ether	2018/06/04	90	%	30 - 1
	Bis(2-chloroethoxy)methane	2018/06/04	85	36	30 - 1
	Bis(2-chloroisopropyl)ether	2018/06/04	86	96	30 - 1
	Bis(2-ethylhexyl)phthalate	2018/06/04	104	96	30-1
	4-Bromophenyl phenyl ether	2018/06/04	87	%	30 - 1
	p-Chioroaniline	2018/06/04	97	96	30 - 1
	4-Chlorophenyl phenyl ether	2018/06/04	76	56	30 - 1
	Di-N-butyl phthalate	2018/06/04	103	76	30 - 1
	di-n-octyl phthalate	2018/06/04	115		30 - 1
				% #	
	2,4-Dinitrotoluene	2018/06/04	100	94	30 - 1
	Diethyl phthalate	2018/06/04	80	96.	30 - 1
	3,3'-Dichlorobenzidine	2018/06/04	101	96	30 - 1 30 - 1



Northern Pulp N.S.

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Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			2,6-Dinitratoluene	2018/06/04		86	N.	30 - 13
			Diphenyl Ether	2018/06/04		79	76	30 - 13
			Hexachlorobutadiene	2018/06/04		66	96	30 - 13
			Hexachlorocyclopentadiene	2018/06/04		50	%	30 - 13
			Hexachloroethane	2018/06/04		72	14	30 - 13
			Isophorone	2018/06/04		86	%	30 - 13
			Nitrobenzene	2018/06/04		90	96	30 - 13
			Nitrosodiphenylamine/Diphenylamine	2018/06/04		117	%	30 - 13
			N-Nitroso-di-n-propylamine	2018/06/04		91	16	30 - 13
562200	ANL	Method Blank	2,4,6-Tribromophenol	2018/06/04		82	%	10-1
			2-Fluorobiphenyl	2018/06/04		77	96	30 - 1
			2-Fluorophenol	2018/06/04		49	96	10 - 13
			D14-Terphenyl	2018/06/04		119	96	30 - 13
			D5-Nitrobenzene	2018/06/04		81	%	30 - 13
			D5-Phenol	2018/06/04		31	94	10 - 13
			Acenaphthene	2018/06/04	ND,		ug/L	
					RDL=0.20			
			Acenaphthylene	2018/06/04	ND, RDL=0.20		ug/L	
			Anthrocene	2018/06/04	ND, RDL+0.20		ug/L	
			Benzo(a)anthracene	2018/06/04	ND, RDL=0.20		ug/L	
			Benzo(a)pyrene	2018/06/04	ND, RDL=0.20		ug/L	
			Benzo(b/j)fluoranthene	2018/06/04	ND, RDL=0.20		ug/L	
			Benzo(g,h,i)perylene	2018/06/04	ND, RDL=0.20		ug/L	
			Benzo(k)fluoranthene	2018/06/04	ND, RDL=0.20		ug/L	
			1-Chloronaphthalene	2018/06/04	ND, RDL=1.0		ug/L	
			2-Chloronaphthalene	2018/06/04	ND, RDL=0.50		ug/L	
			Chrysene	2018/06/04	ND, RDL=0.20		ug/L	
			Dibenz(a,h)anthracene	2018/06/04	ND. RDL=0.20		ug/L	
			Fluoranthene	2018/06/04	ND, RDL=0.20		ug/L	
			Fluorene	2018/06/04	ND, RDL=0.20		ug/L	
			Indeno(1,2,3-cd)pyrene	2018/06/04	ND, RDL=0.20		ug/L	
			1-Methylnaphthalene	2018/06/04	ND, RDL=0.20		ug/L	
			Z-Methylnaphthalene	2018/06/04	ND, RDL=0.20		ug/L	
			Naphthalene	2018/06/04	ND, RDL=0.20		ug/L	



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QA/QC Batch Init QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Lim
	Perylene	2018/06/04	ND, RDL=0.20		ug/L	
	Phenanthrene	2018/06/04	ND, RDL=0.20		ug/L	
	Pytene	2018/06/04	ND, RDL=0.20		ug/L	
	1,2-Dichlorobenzene	2018/06/04	ND, RDL=0.50		ug/L	
	1,3-Dichlorabenzene	2018/06/04	ND, RDL=0.50		ug/L	
	1,4-Dichlorobenzene	2018/06/04	ND, RDL=0.50		ug/L	
	Hexachlorobenzene	2018/06/04	ND, RDL=0.50		ug/L	
	Pentachlorobenzene	2018/06/04	ND, RDL=0.50		ug/L	
	1,2,3,5-Tetrachlorobenzene	2018/06/04	ND, RDL=0.50		ug/L	
	1,2,4,5-Tetrachiorobenzene	2018/06/04	ND, RDL=0.50		ug/L	
	1,2,3-Trichlorobenzene	2018/06/04	ND, RDL=0.50		ug/t	
	1,2,4-Trichlorobenzene	2018/06/04	ND, RDL=0.50		ug/L	
	1,3,5-Trichlorobenzene	2018/06/04	ND, RDL=0.50		ug/L	
	2-Chlorophenol	2018/06/04	ND, RDL=0.30		ug/L	
	4-Chloro-3-Methylphenol	2018/06/04	ND, RDL=0.50		ug/L	
	m/p-Cresol	2018/06/04	ND, RDL=0.50		ug/L	
	o-Cresol	2018/06/04	ND, RDL=0.50		ug/L	
	1,2,3,4-Tetrachiorobenzene	2018/06/04	ND, RDL=0.50		ug/L	
	2,3-Dichlorophenol	2018/06/04	ND, RDL=0.50		ug/L	
	2,4-Dichlorophenol	2018/06/04	ND, RDL=0.30		ug/L	
	2,5-Dichlorophenol	2018/06/04	ND, RDL=0.50		ug/L	
	2.6-Dichlorophenol	2018/06/04	ND, RDL=0.50		ug/L	
	3,4-Dichlorophenal	2018/06/04	ND, RDL=0.50		ug/L	
	3,5-Dichlorophenol	2018/06/04	ND, RDL=0.50		ug/L	
	2,4-Dimethylphenol	2018/06/04	ND, RDL=0.50		ug/L	
	2,4-Dinitrophenol	2018/06/04	NO, RDL=2.0		ug/L	



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	4,6-Dinitra-2-methylphenol	2018/06/04	ND, RDL=2.0		ug/L	
	2-Nitrophenol	2018/06/04	ND, RDL=0.50		ug/L	
	4-Nitrophenol	2018/06/04	ND, RDL=1.4		ug/t	
	Pentachlorophenol	2018/06/04	ND, RDL=1.0		ug/L	
	Phenol	2018/06/04	ND, RDL=0.50		ug/L	
	2,3,4,5-Tetrachlorophenol	2018/06/04	ND, RDL=0.40		ug/L	
	2,3,4,6-Tetrachlorophenol	2018/06/04	ND, RDL=0.50		ug/L	
	2.3.5.6-Tetrachiorophenol	2018/06/04	ND, RDL=0.50		ug/L	
	2,3,4-Trichlorophenol	2018/06/04	ND, RDL=0.50		ug/L	
	2,3,5-Trichlorophenol	2018/06/04	ND, RDL=0.50		ug/L	
	2,3,6-Trichlorophenol	2018/06/04	ND, RDL=0.50		ug/t	
	2,4,5-Trichlorophenol	2018/06/04	ND, RDL=0.50		ug/L	
	2,4,6-Trichlorophenol	2018/06/04	ND, RDL=0.50		ug/L	
	3,4,5-Trichlorophenol	2018/06/04	ND, RDL=0.50		ug/L	
	Benzyl butyl phthalate	2018/06/04	ND, RDL=0.50		ug/L	
	Biphenyl	2018/06/04	ND, RDL=0.50		ug/L	
	Bis(2-chloroethyl)ether	2018/06/04	ND, RDL=0.50		ug/t	
	Bis(2-chloroethoxy)methane	2018/06/04	ND, RDL=0.50		ug/L	
	Bis(2-chlorolsopropyt)ether	2018/06/04	ND, RDL=0.50		ug/L	
	Bis(2-ethylhexyl)phthalate	2018/06/04	ND, RDL=2.0		ug/L	
	4-Bromophenyl phenyl ether	2018/06/04	ND, RDL=0.30		ug/L	
	p-Chloroaniline	2018/06/04	ND, RDL=1.0		ug/L	
	4-Chlorophenyl phenyl ether	2018/06/04	ND, RDL=0.50		ug/L	
	Di-N-butyl phthalate	2018/06/04	ND, RDL=2.0		ug/L	
	di-n-octyl phthalate	2018/06/04	ND. RDL=0.80		ug/L	
	2,4-Dinitrotoluene	2018/06/04	ND, RDL=0.50		ug/L	



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Diethyl phthalate	2018/06/04	ND, RDL=1.0		ug/L	
			3,3'-Dichlorobenzidine	2018/06/04	ND, RDL=0.50		ug/L	
			Dimethyl phthalate	2018/06/04	ND, RDL=1.0		ug/L	
			2,6-Dinitrotoluene	2018/06/04	ND, RDL=0.50		ug/L	
			Diphenyl Ether	2018/06/04	ND, RDL=0.30		ug/L	
			Hexachlorobutadiene	2018/06/04	ND, RDL=0.40		ug/L	
			Hexachlorocyclopentadiene	2018/06/04	ND, RDL=2.0		ug/L	
			Hexachloroethane	2018/06/04	ND, RDL=0.50		ug/L	
			Isophorone	2018/06/04	ND, RDL=0.50		ug/L	
			Nitrobenzene	2018/06/04	ND, RDL=0.50		ug/L	
			Nitrosodiphenylamine/Diphenylamine	2018/06/04	ND, RDL=1.0		ug/t	
			N-Nitroso-di-n-propylamine	2018/06/04	ND, RDL=0.50		ug/L	
5562200	ANL	RPD:	Bis(2-ethylhexyl)phthalate	2018/06/05	NC		96	40
		1 Marco	Di-N-butyl phthalate	2018/06/05	NC		%	40
5562250	GTO	Matrix Spike	Sulphide	2018/06/06		91	56	80 - 120
5562250	GTO	Spiked Blank	Sulphide	2018/06/06		94	76.	80 - 120
5562250	GTO	Method Blank	Sulphide	2018/06/06	ND, RDL=0.020		mg/L	
5562250	GTO	RPD	Sulphide	2018/06/06	NC		%	20
5562547	MGN	Matrix Spike	isobutylbenzene - Extractable	2018/06/07		98	%	70 - 130
			n-Dotriacontane - Extractable	2018/06/07		117	14	70 - 130
			>C10-C16 Hydrocarbons	2018/06/07		95	%	70 - 130
			>C16-C21 Hydrocarbons	2018/06/07		78	96	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2018/06/07</td><td></td><td>87</td><td>%</td><td>70 - 130</td></c32>	2018/06/07		87	%	70 - 130
5562547	MGN	Spiked Blank	Isobutylbenzene - Extractable	2018/06/07		108	16	70 - 130
			n-Dotriacontane - Extractable	2018/06/07		120	%	70 - 130
			>C10-C16 Hydrocarbons	2018/06/07		85	36	70 - 130
			>C16-C21 Hydrocarbons	2018/06/07		73	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2018/06/07</td><td></td><td>80</td><td>16</td><td>70 - 130</td></c32>	2018/06/07		80	16	70 - 130
562547	MGN	Method Blank	isobutylbenzene - Extractable	2018/06/06		90	%	70 - 130
			n-Dotriacontane - Extractable	2018/06/06		114	94	70 - 130
			>C10-C16 Hydrocarbons	2018/06/06	ND, RDL=0.050		mg/L	
			>C16-C21 Hydrocarbons	2018/06/06	ND, RDL=0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2018/06/06</td><td>ND, RDL=0.10</td><td></td><td>mg/L</td><td></td></c32>	2018/06/06	ND, RDL=0.10		mg/L	
5562547	MGN	RPD	>C10-C16 Hydrocarbons	2018/06/06	NC		96.	40
			>C16-C21 Hydrocarbons	2018/06/06	NC		96	40
			>C21- <c32 hydrocarbons<="" td=""><td>2018/06/06</td><td>NC</td><td></td><td>%</td><td>40</td></c32>	2018/06/06	NC		%	40



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
5562559	JHY	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2018/06/05		101	%	80 - 120
5562559	THY	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2018/06/04		109	76	80 - 120
5562559	YHL	Method Blank	Nitrogen (Ammonia Nitrogen)	2018/06/05	ND,		mg/L	
			457 17	10.00	RDL=0.050		117.5	
5562559	JHY.	RPO	Nitrogen (Ammonia Nitrogen)	2018/06/05	NC		14	20
5562964	GRU	Matrix Spike	1,4-Difluorobenzene	2018/06/05		101	%	70 - 130
Autorities (Control			4-Bromofluorobenzene	2018/06/05		104	96	70 - 130
			D10-Ethylbenzene	2018/06/05		103	%	70 - 130
			D4-1,Z-Dichloroethane	2018/06/05		102	14	70 - 130
			Benzone	2018/06/05		126	%	70 - 130
			Toluene	2018/06/05		105	36	70 - 130
			Ethylbenzene	2018/06/05		114	%	70 - 130
			o-Xylene	2018/06/05		125	96	70 - 130
			p+m-Xylene	2018/06/05		113	%	70 - 130
			F1 (C6-C10)	2018/06/05		86	94	70 - 130
5562964	GRU	Spiked Blank	1,4-Diffuorobenzene	2018/06/05		105	%	70 - 130
meterope		NAME OF STREET OF STREET	4-Bromafluorobenzene	2018/06/05		100	96	70 - 130
			D10-Ethylbenzene	2018/06/05		95	%	70 - 130
			D4-1,2-Dichlorpethane	2018/06/05		100	76	70 - 130
			Benzene	2018/06/05		99	76	70 - 130
			Toluene	2018/06/05		88	%	70 - 130
			Ethylbenzene	2018/06/05		95	%	70 - 130
			p-Xylene	2018/06/05		107	36	70 - 130
			p+m-Xylene	2018/06/05		96	76	70 - 130
			F1 (C6-C10)	2018/06/05		97	%	70 - 130
5562964	GRU	Method Blank	1,4-Diffuorobenzene	2018/06/05		107	%	70 - 130
		A STATE OF THE STA	4-Bromofluorobenzene	2018/06/05		101	%	70 - 130
			D10-Ethylbenzene	2018/06/05		100	76.	70 - 130
			D4-1,2-Dichloroethane	2018/06/05		101	%	70 - 130
			Benzene	2018/06/05	ND.		ug/L	100000
				V0510A00A0A0	RDL=0.20			
			Totuene	2018/06/05	ND, RDL=0.20		ug/L	
			Ethylbenzene	2018/06/05	ND. RDL=0.20		ug/L	
			o-Xylene	2018/06/05	ND, RDL=0.20		ug/L	
			p+m-Xylene	2018/06/05	ND, RDL=0.40		ug/L	
			Total Xylenes	2018/06/05	ND, RDL=0.40		ug/L	
			F1 (C6-C10)	2018/06/05	ND, RDL=25		ug/L	
			F1 (C6-C10) - BTEX	2018/06/05	ND, RDL=25		ug/l	
5562964	GRU	RPD	F1 (C6-C10)	2018/06/05	NC		56	30
	11111		F1 (C6-C10) - BTEX	2018/06/05	NC		16	30
5563828	MV	QC Standard	pH	2018/06/05		101	%	97 - 103
5563828	JMV	RPD	pH	2018/06/05	1.0	HE HATE	%	N/A
5563830	JMV	Spiked Blank	Conductivity	2018/06/05	0.0450	103	96.	80 - 120
5563830	MV	Method Blank	Conductivity	2018/06/05	1.1,		uS/cm	
					RDL=1.0			



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
5563830	JMV	RPO	Conductivity	2018/06/05	0.18		%	25
563831	VIVIL	Matrix Spike	Dissolved Fluoride (F-)	2018/06/05		88	16	80 - 120
563831	JMV	Spiked Blank	Dissolved Fluoride (F-)	2018/06/05		104	96	80 - 120
563831	VML	Method Blank	Dissolved Fluoride (F-)	2018/06/05	ND, RDL=0.10		mg/L	
563831	JMV	RPD	Dissolved Fluoride (F-)	2018/06/05	NC		%	25
563858	JMV	QC Standard	Turbidity	2018/06/05		97	96	80 - 120
563858	JMV	Spiked Blank	Turbidity	2018/06/05		93	%	80 - 120
563858	JMV	Method Blank	Turbidity	2018/06/05	ND, RDL=0.10		NTU	
563858	JMV	RPD	Turbidity	2018/06/05	3.9		36	20
563985	MS3	Matrix Spike	Isobuty/benzene - Volatile	2018/06/05		101	96	70 - 130
			Benzene	2018/06/05		119	96	70 - 130
			Toluene	2018/06/05		119	%	70 - 130
			Ethylbenzene	2018/06/05		120	94	70 - 130
			Total Xylenes	2018/06/05		118	%	70 - 130
563985	M53	Spiked Blank	Isobutylbenzene - Volatile	2018/06/05		98	96	70 - 130
			Benzene	2018/06/05		102	56	70 - 130
			Toluene	2018/06/05		102	76	70 - 130
			Ethylbenzene	2018/06/05		100	76	70 - 130
			Total Xylenes	2018/06/05		99	56	70 - 130
563985	MS3	Method Blank	Isobutylbenzene - Volatile	2018/06/05		98	%	70 - 130
		Mental series and a	Benzene	2018/06/05	ND, RDL=0.0010		mg/L	224-284
			Toluene	2018/06/05	ND, RDL=0.0010		mg/L	
			Ethylbenzene	2018/06/05	ND, RDL=0.0010		mg/L	
			Total Xylenes	2018/06/05	ND, RDL=0.0020		mg/L	
			C6 - C10 (less BTEX)	2018/06/05	ND, RDL=0.010		mg/L	
5563985	MS3	RPO	Benzene	2018/06/05	NC		14	40
			Toluene	2018/06/05	NC		%	40
			Ethylbenzene	2018/06/05	NC		96	40
			Total Xylenes	2018/06/05	NC		%	40
			C6 - C10 (less BTEX)	2018/06/05	NC		16	40
5564006	THA	Matrix Spike	Total Alkalinity (Total as CaCO3)	2018/06/05		98	%	80 - 120
5564006	JHY	Spiked Blank	Total Alkalinity (Total as CaCO3)	2018/06/05		109	96	80 - 120
5564006	THA	Method Blank	Total Alkalinity (Total as CaCO3)	2018/06/05	NO, RDL=5.0		mg/L	
5564006	JHY	RPD	Total Alkalinity (Total as CaCO3)	2018/06/05	NC		96	25
5564015	JHY.	Matrix Spike	Dissolved Chloride (CI)	2018/06/05		96	94	80 - 120
5564015	THY	QC Standard	Dissolved Chloride (CI)	2018/06/06		108	%	80 - 120
5564015	THY	Spiked Blank	Dissolved Chloride (CI)	2018/06/05		100	%	80 - 120
5564015	THA	Method Blank	Dissolved Chlaride (CI)	2018/06/05	ND, RDL=1.0		mg/L	
5564015	JHY	RPD	Dissolved Chloride (CI)	2018/06/05	NC		%	25
5564016	JHY	Matrix Spike	Dissolved Sulphate (SO4)	2018/06/05		94	74	80 - 120
5564016	YHL	Spiked Blank	Dissolved Sulphate (SO4)	2018/06/05		99	96.	80 - 120
5564016	THY	Method Blank	Dissolved Sulphate (SO4)	2018/06/05	ND, RDL=2.0	U57	mg/L	554,755



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5564016	JHY	RPO	Dissolved Sulphate (SO4)	2018/06/05	NC		N:	25
5564018	YHL	Matrix Spike	Reactive Silica (SiO2)	2018/06/05		101	76	80 - 12
5564018	YHL	Spiked Blank	Reactive Silica (SiO2)	2018/06/05		105	96	80 - 12
5564018	JHY	Method Blank	Reactive Silica (SiO2)	2018/06/05	ND, RDL=0.50		mg/L	
5564018	JHY	RPD	Reactive Silica (SiO2)	2018/06/05	NC		%	25
5564019	JHY	Spiked Blank	Colour	2018/06/05	1000	94	96	80 - 12
5564019	THA	Method Blank	Colour	2018/06/05	ND, RDL=5.0		TCU	
5564019	JHY	RPD	Colour	2018/06/05	NC		%	20
5564022	JHY	Matrix Spike	Orthophosphate (P)	2018/06/05		95	36	80 - 12
5564022	THA	Spiked Blank	Orthophosphate (P)	2018/06/05		92	%	80 - 12
5564022	THY	Method Blank	Orthophosphate (P)	2018/06/05	ND, RDL=0.010		mg/L	89110924
5564022	JHY	RPD	Orthophosphate (P)	2018/06/05	NC		%	25
5564023	THY	Matrix Spike	Nitrate + Nitrite (N)	2018/06/06		97	%	80 - 12
5564023	THA	Spiked Blank	Nitrate + Nitrite (N)	2018/06/06		100	16	80 - 12
5564023	THA	Method Blank	Nitrate + Nitrite (N)	2018/06/06	ND, RDL=0.050	HECTA	mg/L	START
5564023	JHY	RPD	Nitrate + Nitrite (N)	2018/06/06	NC		%	25
5564030	JHY	Matrix Spike	Nitrite (N)	2018/06/05		95	%	80 - 12
5564030	JHY	Spiked Blank	Nitrite (N)	2018/06/05		94	%	80 - 12
5564030	THY	Method Blank	Nitrite (N)	2018/06/05	ND, RDL=0.010		mg/L	0.0
5564030	JHY	RPD	Nitrite (N)	2018/06/05	NC		%	20
5564324	MY	Matrix Spike	2,4,6-Tribromophenol	2018/06/05		82	%	50 - 13
			2-Fluorophenol	2018/06/05		32 (5)	%	50 - 13
			D5-Phenol	2018/06/05		25 (5)	76	30 - 13
			2-Chlorophenol	2018/06/05		42 (2)	N.	50 - 13
			2,3,4,6-Tetrachlorophenol	2018/06/05		70	76	10 - 13
			2,3,5-Trichlorophenol	2018/06/05		62	%	10 - 13
			2,4-Dichlorophenol	2018/06/05		53	%	50 - 13
			2,4-Dimethylphenol	2018/06/05		59	14	30 - 13
			2,4,6-Trichlorophenol	2018/06/05		58	%	10 - 13
			2,6-Dichlorophenol	2018/06/05		51	96	10 - 13
			4-Chioro-3-Methylphenol	2018/06/05		62	%	10 - 13
			4-Nitrophenol	2018/06/05		53	76	10 - 13
			m/p-Cresol	2018/06/05		46	%	10 - 13
			o-Cresol	2018/06/05		45	36	10 - 13
			Pentachiorophenol	2018/06/05		77	%	50 - 13
			Phenol	2018/06/05		25 (3)	%	30 - 13
			2,3,4,5-Tetrachlorophenol	2018/06/05		78	%	10 - 13
			2,3,5,6-Tetrachlorophenol	2018/06/05		72	94	10 - 13
			2,3,4-Trichlorophenol	2018/06/05		80	%	10 - 13
			2,3,6-Trichlorophenal	2018/06/05		61	%	30 - 13
			2,4,5-Trichlorophenol	2018/06/05		64	%	50 - 13
			3,4,5-Trichlorophenol	2018/06/05		64	16	10 - 13
			2,4-Dinitrophenol	2018/06/05		46	%	30 - 1
			2_3-Dichlorophenol	2018/06/05		54	14	10 - 13
			2,5-Dichlorophenol	2018/06/05		53	%	10 - 13
			3,4-Dichlorophenol	2018/06/05		62	96	10 - 13
			3,5-Dichlorophenol	2018/06/05		68	%	10 - 13



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			4,6-Dinitro-2-methylphenol	2018/06/05		61	N	10 - 130
			3 & 4-Chlorophenol	2018/06/05		51	%	10 - 130
			2-Nitrophenol	2018/06/05		38	%	10 - 130
5564324	MYI	Spiked Blank	2,4,6-Tribromophenol	2018/06/05		110	76	50 - 130
			2-Fluorophenol	2018/06/05		50	14	50 - 130
			DS-Phenol	2018/06/05		68	%	30 - 130
			2-Chlorophenol	2018/06/05		66	96	50 - 130
			2,3,4,6-Tetrachiorophenol	2018/06/05		105	%	10 - 130
			2,3,5-Trichlorophenol	2018/06/05		98	16	10 - 130
			2,4-Dichlorophenol	2018/06/05		98	%	50 - 130
			2,4-Dimethylphenol	2018/06/05		106	36	30 - 130
			2,4,6-Trichlarophenol	2018/06/05		99	96	10 - 130
			2,6-Dichlorophenol	2018/06/05		99	96	10 - 130
			4-Chloro-3-Methylphenol	2018/06/05		98	%	10 - 130
			4-Nitrophenol	2018/06/05		90	94	10 - 130
			m/p-Cresol	2018/06/05		100	%	10 - 130
			o-Cresol	2018/06/05		94	%	10 - 130
			Pentachlorophenol	2018/06/05		96	56	50 - 130
			Phenol	2018/06/05		70	76	30 - 130
			2,3,4,5-Tetrachiorophenol	2018/06/05		104	76	10 - 130
			2,3,5,6-Tetrachlorophenol	2018/06/05		101	%	10 - 130
			2,3,4-Trichlorophenol	2018/06/05		104	%	10 - 130
			2,3,6-Trichlorophenol	2018/06/05		100	36	30 - 130
			2,4,5-Trichlorophenol	2018/06/05		96	76	50 - 130
			3,4,5-Trichlorophenol	2018/06/05		86	%	10 - 130
			2,4-Dinitrophenol	2018/06/05		62	%	30 - 130
			2,3-Dichlorophenol	2018/06/05		98	%	10 - 130
			2,5-Dichlorophenol	2018/06/05		99	76.	10 - 130
			3,4-Dichlorophenol	2018/06/05		54	%	10 - 130
			3,5-Dichlorophenol	2018/06/05		81	%	10 - 130
			4,6-Dinitro-2-methylphenol	2018/06/05		76	%	10 - 130
			3 & 4-Chlorophenol	2018/06/05		92	76	10 - 130
			2-Nitrophenol	2018/06/05		87	14	10 - 130
5564324	MY	Method Blank	2,4,6-Tribromaphenal	2018/06/05		105	%	50 - 130
3304324		Street Street	2-Fluorophenol	2018/06/05		62	96	50 - 130
			D5-Phenol	2018/06/05		89	%	30 - 130
			2-Chlorophenol	2018/06/05	ND,	63	ug/L	30 - 130
			Control of the Control	0.049-02-0409-	RDL=0.1			
			2,3,4,6-Tetrachlorophenol	2018/06/05	ND, RDL=0.1		ug/t	
			2,3,5-Trichlorophenal	2018/06/05	ND, RDL=0.1		ug/L	
			2,4-Dichlorophenol	2018/06/05	ND, RDL=0.1		ug/L	
			2,4-Dimethylphenol	2018/06/05	ND,RDL=1		ug/L	
			2,4,6-Trichlarophenol	2018/06/05	ND, RDL=0.1		ug/L	
			2,6-Dichlorophenal	2018/06/05	ND, RDL=0.1		ug/L	
			4-Chloro-3-Methylphenol	2018/06/05	ND, RDL=0.1		ug/L	
			4-Nitrophenol	2018/06/05	ND,RDL=1		ug/t	



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch In	it QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limi
		m/p-Cresal	2018/06/05	ND, RDL=0.5		ug/L	
		o-Cresol	2018/06/05	ND, RDL=0.5		ug/L	
		Pentachlorophenol	2018/06/05	ND, RDL=0.1		ug/L	
		Phenol	2018/06/05	ND, RDL=0.5		ug/L	
		2,3,4,5-Tetrachlorophenol	2018/06/05	ND, RDL=0.1		ug/L	
		2.3,5,6-Tetrachlorophenol	2018/06/05	ND, RDL=0.1		ug/L	
		2,3,4-Trichlarophenal	2018/06/05	ND, RDL=0.1		ug/L	
		2.3.6-Trichlorophenol	2018/06/05	ND, RDL=0.1		ug/L	
		2,4,5-Trichlorophenol	2018/06/05	ND, RDL=0.1		ug/L	
		3,4,5-Trichlorophenol	2018/06/05	ND, RDL=0.1		ug/L	
		2,4-Dinitrophenol	2018/06/05	ND,RDL=1		ug/t	
		2,3-Dichlorophenol	2018/06/05	ND, RDL=0.1		ug/L	
		2,5-Dichlorophenol	2018/06/05	ND, RDL=0.1		ug/l	
		3,4-Dichlorophenol	2018/06/05	ND, RDL=0.1		ug/L	
		3,5-Dichlorophenoi	2018/06/05	ND, RDL=0.1		ug/L	
		4,6-Dinitro-2-methylphenol	2018/06/05	ND,RDL=1		ug/L	
		3 & 4-Chlorophenol	2018/06/05	ND, RDL=0.1		ug/L	
		2-Nitrophenol	2018/06/05	NO,ROL=1		ug/L	
564324 M	IYI RPD	2-Chlorophenol	2018/06/05	NC		%	30
		2,3,4,6-Tetrachlorophenol	2018/06/05	NC		96	40
		2,3,5-Trichlorophenol	2018/06/05	NC		%	40
		2,4-Dichlorophenal	2018/06/05	NC		×	30
		2,4-Dimethylphenol	2018/06/05	NC		%	30
		2,4,6-Trichlorophenol	2018/06/05	NC		36	30
		2,6-Dichlorophenol	2018/06/05	NC		%	40
		4-Chloro-3-Methylphenol 4-Nitrophenol	2018/06/05	NC NC		%	40
		m/p-Cresol	2018/06/05	NC		96	40
		o-Cresol	2018/06/05	NC		% %	40
		Pentachlorophenol	2018/06/05	NC		16	30
		Phenol	2018/06/05	NC		56	30
		2,3,4,5-Tetrachiorophenol	2018/06/05	NC		76	40
		2,3,5,6-Tetrachlorophenol	2018/06/05	NC		36	40
		2,3,4-Trichlorophenol	2018/06/05	NC		% %	40
		2,3,6-Trichlorophenol	2018/06/05	NC		26	40
		2,4,5-Trichlorophenol	2018/06/05	NC .		96	30
		3,4,5-Trichlorophenol	2018/06/05	NC		%	40



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			2,4-Dinitrophenol	2018/06/05	NC		N.	30
			2,3-Dichlorophenol	2018/06/05	NC		16	40
			2,5-Dichlorophenol	2018/06/05	NC		%	40
			3,4-Dichlorophenol	2018/06/05	NC		%	40
			3,5-Dichlarophenol	2018/06/05	NC		14	40
			4,6-Dinitro-2-methylphenol	2018/06/05	NC		%	40
			3 & 4-Chlorophenol	2018/06/05	NC		96	40
			2-Nitrophenol	2018/06/05	NC		96	40
5565323	KD9	Matrix Spike	Dissolved Chlorate (CIO3-)	2018/06/03		94	16	80 - 12
			Dissolved Chlorate (CIO3-)	2018/06/03		94	%	80 - 12
			Dissolved Chlorite (CLO2-)	2018/06/03		96	36	80 - 12
			Dissolved Chlorite (CLO2-)	2018/06/03		96	%	80 - 12
5565323	KD9	Spiked Blank	Dissolved Chlorate (CIO3-)	2018/06/03		106	96	80 - 12
45.11.5.13004		F-KULTINGSTON I	Dissolved Chlorate (CIO3-)	2018/06/03		106	%	80 - 12
			Dissolved Chlorite (CLO2-)	2018/06/03		99	94	80 - 12
			Dissolved Chlorite (CLO2-)	2018/06/03		99	%	80 - 12
5565323	KD9	Method Blank	Dissolved Chlorate (CIO3-)	2018/06/03	ND, RDL=0.10		mg/L	
			Dissolved Chlorate (CIO3-)	2018/06/03	ND, RDL=0.10		mg/L	
			Dissolved Chlorite (CLO2-)	2018/06/03	ND, RDL=0.10		rng/L	
			Dissolved Chlorite (CLO2-)	2018/06/03	ND, RDL=0.10		mg/L	
5565323	KD9	RPO:	Dissolved Chlorate (CIO3-)	2018/06/03	NC		94	20
			Dissolved Chlorite (CLO2-)	2018/06/03	NC		%	20
5567365	ZZ	Matrix Spike	o-Terphenyl	2018/06/07		108	%	60 - 13
		4,500	F2 (C10-C16 Hydrocarbons)	2018/06/07		NC	76	50 - 13
			F3 (C16-C34 Hydrocarbons)	2018/06/07		108	%	50 - 13
			F4 (C34-C50 Hydrocarbons)	2018/06/07		105	%	50 - 13
5567365	ZZ	Spiked Blank	o-Terphenyl	2018/06/07		108	96	60 - 13
		2.0	F2 (C10-C16 Hydrocarbons)	2018/06/07		85	%	60 - 13
			F3 (C16-C34 Hydrocarbons)	2018/06/07		97	16	60 - 13
			F4 (C34-C50 Hydrocarbons)	2018/06/07		96	%	60 - 13
5567365	ZZ	Method Blank	o-Terphenyl	2018/06/07		102	96	60 - 13
			F2 (C10-C16 Hydrocarbons)	2018/06/07	ND, RDL=100		ug/L	
			F3 (C16-C34 Hydrocarbons)	2018/06/07	ND, RDL=200		ug/L	
			F4 (C34-C50 Hydrocarbons)	2018/06/07	ND, RDL=200		ug/L	
5567365	22	RPD	F2 (C10-C16 Hydrocarbons)	2018/06/07	0.91		%	30
			F3 (C16-C34 Hydrocarbons)	2018/06/07	NC		94	30
			F4 (C34-C50 Hydrocarbons)	2018/06/07	NC		%	30
5567493	éAZ	Matrix Spike	Methyl sulfane	2018/06/05		90	96	70 - 13
		The state of the s	Ethylene Glycol	2018/06/05		90	56	60 - 14
			Diethylene Glycol	2018/06/05		91	76	60 - 14
			Triethylene Glycol	2018/06/05		85	%	60 - 14
			Propylene Glycol	2018/06/05		89	16	60 - 14
5567493	éAZ	Spiked Blank	Methyl sulfane	2018/06/05		93	96	70 - 13
	A Co		Ethylene Glycol	2018/06/05		89	96	70 - 13
			Diethylene Glycol	2018/06/05		95	%	70 - 13



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4000000	11.14	Siege (The	Triethylene Glycol	2018/06/05	, 40,000	89	%	70 - 130
			Propylene Glycol	2018/06/05		101	%	70 - 130
5567493	éAZ	Method Blank	Methyl sulfone	2018/06/05		98	96	70 - 130
			Ethylene Glycol	2018/06/05	ND, RDL=3.0		mg/L	
			Diethylene Glycol	2018/06/05	ND, RDL=5.0		mg/L	
			Triethylene Glycol	2018/06/05	ND, RDL=5.0		mg/L	
			Propylene Glycol	2018/06/05	ND. RDL=5.0		mg/L	
5567493	éAZ	RPD [GVA104-22]	Ethylene Glycol	2018/06/05	NC		%	30
			Diethylene Glycol	2018/06/05	NC		%	30 30
			Triethylene Glycol	2018/06/05	NC		% %	30
			Propylene Glycol	2018/06/05	NC		94	30
5569923	éB3	QC Standard	Adsorbable Organic Halogen	2018/06/04		102	%	84 - 111
5569923	éB3	Method Blank	Adsorbable Organic Halogen	2018/06/04	ND, RDL=0.5		mg/L	
5570664	LMP	Matrix Spike	Total Organic Carbon (C)	2018/06/08		98	36	85 - 115
5570664	LMP	Spiked Blank	Total Organic Carbon (C)	2018/06/08		100	76	80 - 120
5570664	LMP	Method Blank	Total Organic Carbon (C)	2018/06/08	ND, RDL=0.50		rng/L	
5570664	LMP	RPD	Total Organic Carbon (C)	2018/06/08	10		N.	15
5577678	FA	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2018/06/13		96	76	85 - 115
5577678	FA	RPD	Total Oil & Grease Mineral/Synthetic	2018/06/13	2.1		94	25
5577678	FA	Method Blank	Total Oil & Grease Mineral/Synthetic	2018/06/13	ND, RDL=0.50		mg/L	

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency,

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

- (1) Elevated VOC RDL(s) due to matrix interference.
- (2) The recovery was below the lower control limit. This may represent a low bias in some results for flagged analytes.
- (3) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.
- (4) The recovery was above the upper control limit. This may represent a high bias in some results for this specific analyte. For results that were not detected (ND), this potential bias has no impact.
- (5) Surrogate recovery was below the lower control limit due to matrix Interference. This may represent a lower bias in some results.



Northern Pulp N.S.

Client Project #: Extra Effluent Testing

Site Location: POINT A, EFFLUENT SAMPLING

Your P.O. #: 43013552

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Oen 21 Samuel
Alan Stewart, Organics Manager, Bedford
-Ede
Brad Newman, Scientific Service Specialist
X
Dennis Ngondu, B.Sc., P.Chem., QP, Supervisor, Organics
fr
Gayle Simpson, Senior Analyst
UK Quama_
Eric Dearman, Scientific Specialist
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Jason Wang, Bedford Micro
- Nike The Galley

Mike MacGillivray, Scientific Specialist (Inorganics)



Northern Pulp N.S.
Client Project #: Extra Effluent Testing
Site Location: POINT A, EFFLUENT SAMPLING
Your P.O. #: 43013552

VALIDATION SIGNATURE PAGE(CONT'D)

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Your Project #: DB8C8596

Site Location: EXTRA EFFLUENT TESTING

Your C.O.C. #: 1 of 1

Attention: BEDFORD CLIENT SERVICE

MAXXAM ANALYTICS 200 BLUEWATER ROAD, SUITE 105 BEDFORD, NS CANADA 84B 1G9

Report Date: 2018/06/07

Report #: R2566005 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B842773 Received: 2018/06/01, 09:00

Sample Matrix: Water # Samples Received: 1

	Date	Date		
Analyses	Quantity Extra	cted Analyzed	Laboratory Method	Analytical Method
Sulphite by IC	1 N/A	2018/06/0	02 AB SOP-00026 / CAL SOP- 00071	SM 23 4110 B m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.



Your Project #: DB8C8596

Site Location: EXTRA EFFLUENT TESTING

Your C.O.C. #: 1 of 1

Attention: BEDFORD CLIENT SERVICE

MAXXAM ANALYTICS 200 BLUEWATER ROAD, SUITE 105 BEDFORD, NS CANADA **B4B 1G9**

Report Date: 2018/06/07

Report #: R2566005 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B842773 Received: 2018/06/01, 09:00

Encryption Key



Maxxam 07 Jun 2018 12:34:29

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Omran Desouki, Junior Project Manager Email: ODesouki@maxxam.ca

Phone# (403) 291-3077

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This report has been generated and distributed using a secure automated process.

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Maxxam Job #: B842773 Report Date: 2018/06/07 MAXXAM ANALYTICS Client Project #: DB8C8596

Site Location: EXTRA EFFLUENT TESTING

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		T00484		
Sampling Date		2018/05/29 09:18		
COC Number		1 of 1		
	UNITS	POINT A (GVA104)	RDL	QC Batch
Anions				
Dissolved Sulphite (SO3)	mg/L	<25 (1)	25	9010453
RDL = Reportable Detection (1) Detection limits raised of		x interference		



Maxxam Job #: B842773 Report Date: 2018/06/07 MAXXAM ANALYTICS Client Project #: DB8C8596

Site Location: EXTRA EFFLUENT TESTING

GENERAL COMMENTS

Each t			ree cooler temperatures taken at receipt	
	Package 1	2.0°C		
Result	s relate only to th	e items tested.		





QUALITY ASSURANCE REPORT

MAXXAM ANALYTICS Client Project #: DB8C8596 Site Location: EXTRA EFFLUENT TESTING

			Matrix Spike	Spike	Spiked Blank	Blank	Method Blank	3lank	RPD	0
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
9010453	Dissolved Sulphite (SO3)	2018/06/02	NC	80 - 120	103	80-120	<0.50	mg/L	NC	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too fow to permit a reliable RPD calculation (absolute difference <= 2x RDL)



Maxxam Job #: B842773 Report Date: 2018/06/07 MAXXAM ANALYTICS Client Project #: DB8C8596

Site Location: EXTRA EFFLUENT TESTING

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics

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	#22455 Northern Pulp N.S.		Zi.	Company these	#11067 Nor	Normann Pulp N.S.	87			D. Commission		652277	1111				Surrent Ath 8	Spent County
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	AP@nomengup.com		- 4	11	boat harbour	bout@moveb.ca				Service Co.	20.00					- 	O SPACES	Separations:
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Manager Analysis interment Corporation on Manage Analysis.

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Point C





Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant Site Location: POINT C, EFFLUENT SAMPLING

Your C.O.C. #: 715286-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report #: R5748920

Version: 3 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89C9847 Received: 2019/05/15, 12:54

Sample Matrix: Water # Samples Received: 1

* CALL TO A COLUMN		Date	Date		
Analyses		Extracted	Analyzed	Laboratory Method	Reference
Carbonate, Bicarbonate and Hydroxide	1	N/A	2019/05/23		SM 23 4500-CO2 D
Alkalinity	1	N/A	2019/05/21	ATL SOP 00013	EPA 310.2 R1974 m
Benzo(b/j)fluoranthene Sum (water)	1	N/A	2019/05/17	N/A	Auto Calc.
Carbonaceous BOD	1	2019/05/16	2019/05/21	ATL SQP 00041	SM 23 5210B m
Chloride	1	N/A	2019/05/21	ATL SOP 00014	SM 23 4500-CI- E m
Chemical Oxygen Demand (COD)	1	N/A	2019/05/17	ATL SOP 00042	SM 23 5220D m
Colour	1	N/A	2019/05/21	ATL SOP 00020	SM 23 2120C m
Total Cyanide (1)	1	2019/05/23	2019/05/23	CAM SOP-00457	OMOE E3015 5 m
Dioxins/Furans in Water (EPS 1/RM/23) (1, 6)	1	2019/06/03	2019/06/09	BRL SOP-00406 (mod)	EPS 1/RM/23 m
Organic carbon - Diss (DOC) (7)	1	N/A	2019/05/17	ATL SOP 00203	SM 23 5310B m
Conductance - water	1	N/A	2019/05/23	ATL SOP 00004	SM 23 2510B m
TEH in Water (PIRI)	1	2019/05/21	2019/05/21	ATL SOP 00113	Atl. RBCA v3.1 m
Sulphide as H2S (1)	1	N/A	2019/05/21		
Hardness (calculated as CaCO3)	1	N/A	2019/05/17	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	1	2019/05/23	2019/05/23	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total MS	1	2019/05/16	2019/05/16	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	1	N/A	2019/05/23	N/A	Auto Calc
Anion and Cation Sum	1	N/A	2019/05/23	N/A	Auto Calc
Organic Halogen (Adsorbable) (2)	1	2019/05/21	2019/05/21	PTC SOP-00056	Coulometric - Titr.
Chlorate and Chlorite by IC (3)	1	N/A	2019/05/25	CAL SOP-00040	SM 23 4110D m
Nitrogen (Total) (4)	1	N/A	2019/05/22	BBY6SOP-00016	SM 22 4500-N C m
Resin and Fatty Acids (3)	1	2019/05/21	2019/05/23	CAL SOP-00099	AE129.0
Nitrogen Ammonia - water	1	N/A	2019/05/21	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2019/05/21	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	1	N/A	2019/05/21	ATL SOP 00017	SM 23 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2019/05/22	ATL SOP 00018	ASTM D3867-16
PAH in Water by GC/MS (SIM)	1	2019/05/16		ATL SOP 00103	EPA 8270E R6 m
PCBs in water by GC/ECD	1	2019/05/17	2019/05/21	ATL SOP 00107	EPA 8082A m
PCB Aroclor sum (water)	1	N/A	2019/05/21		Auto Calc.
Phenois in Pulp and Paper Mill Effluents (5)	1		2019/05/22		
pH (8)	1	N/A		ATL SOP 00003	SM 23 4500-H+ B m



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant Site Location: POINT C, EFFLUENT SAMPLING

Your C.O.C. #: 715286-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report #: R5748920

Version: 3 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89C9847 Received: 2019/05/15, 12:54

Sample Matrix: Water # Samples Received: 1

# Samples Received: 1		D	B.44		
Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Phosphorus - ortho	1	N/A	2019/05/22	ATL SOP 00021	SM 23 4500-P E m
VPH in Water (PIRI)	1	N/A	2019/05/17	ATL SOP 00118	Atl. RBCA v3.1 m
Salinity (9)	1	N/A	2019/05/21		SM 22 2520B
Sat. pH and Langelier Index (@ 20C)	1	N/A	2019/05/23	ATL SQP 00049	Auto Calc
Sat. pH and Langelier Index (@ 4C)	1	N/A	2019/05/23	ATL SOP 00049	Auto Calc
Reactive Silica	1	N/A	2019/05/21	ATL SOP 00022	EPA 366.0 m
Sulphate	1	N/A	2019/05/21	ATL SOP 00023	ASTM D516-16 m
Sulphide (1)	1	N/A	2019/05/21	CAM SOP-00455	SM 23 4500-S G m
Total Dissolved Solids (TDS calc)	1	N/A	2019/05/22	N/A	Auto Calc.
Total Kjeldahl Nitrogen in Water (1)	1	2019/05/17	7 2019/05/21	CAM SOP-00938	OMOE E3516 m
Organic carbon - Total (TOC) (7)	1	N/A	2019/05/17	ATL SOP 00203	SM 23 5310B m
ModTPH (T1) Calc. for Water	1	N/A	2019/05/22	N/A	Atl, RBCA v3 m
Phosphorus Total Colourimetry	1	2019/05/18	2019/05/17	ATL SOP 00057	EPA 365.1 R2 m
Total Suspended Solids	1	2019/05/18	2019/05/21	ATL SOP 00007	SM 23 2540D m
Turbidity	1	N/A	2019/05/23	ATL SOP 00011	EPA 180.1 R2 m
Volatile Organic Compounds in Water	1	N/A	2019/05/16	ATL SOP 00133	EPA 8260D R4 m
Volatile Suspended Solids	1	N/A	2019/05/22	ATL SOP 00008	EPA 160.4 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant Site Location: POINT C, EFFLUENT SAMPLING

Your C.O.C. #: 715286-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/06/11

Report #: R5748920 Version: 3 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89C9847 Received: 2019/05/15, 12:54

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

- * RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
- (1) This test was performed by Bureau Veritas Laboratories Mississauga
- (2) This test was performed by Bedford to Edm Petrol Offsite
- (3) This test was performed by Bedford to Calgary Offsite
- (4) This test was performed by Bedford to Burnaby Offsite
- (5) This test was performed by Bedford to Montreal Subcontrac
- (6) Confirmatory runs for 2,3,7,8-TCDF are performed only if the primary result is greater than the RDL.
- (7) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.
- (8) The APHA Standard Method require pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.
- (9) Non-accredited test method

Encryption Key

Steyensta Standar Assistant

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Maryann Comeau, Project Manager Email: Maryann COMEAU@bvlabs.com Phone# (902)420-0203 Ext: 298

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of i50/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

RESULTS OF ANALYSES OF WATER

BV Labs ID		JSK101			
Sampling Date		2019/05/14 08:20			
COC Number		715286-01-01			
	UNITS	POINT C 14-MAY	RDL	MDL	QC Batch
Calculated Parameters					
Anion Sum	me/L	20.0	N/A	N/A	6122693
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	420	1.0	0.20	6122686
Calculated TDS	mg/L	1200	1.0	0.20	6122701
Carb. Alkalinity (calc. as CaCO3)	mg/L	1.4	1.0	0.20	6122686
Cation Sum	me/L	18.8	N/A	N/A	6122693
Hardness (CaCO3)	mg/L	100	1.0	1.0	6122689
Ion Balance (% Difference)	26	3.25	N/A	N/A	6122691
Langelier Index (@ 20C)	N/A	0.149			6122697
Langelier Index (@ 4C)	N/A	-0.0960			6122699
Nitrate (N)	mg/L	ND	0.050	N/A	6122695
Saturation pH (@ 20C)	N/A	7.41			6122697
Saturation pH (@ 4C)	N/A	7.66			6122699
Sulphide (as H2S)	mg/L	1.9	0.021	0.011	6122964
Inorganics	diameter de		-		***************************************
Total Alkalinity (Total as CaCO3)	mg/L	420	25	N/A	6130625
Carbonaceous BOD	mg/L	25	17	N/A	6122932
Total Chemical Oxygen Demand	mg/L	630	20	N/A	6127143
Dissolved Chlorate (ClO3-)	mg/L	ND (1)	1.0	N/A	6154326
Dissolved Chloride (CI-)	mg/L	160	5.0	N/A	6130627
Dissolved Chlorite (CLO2-)	mg/L	2.1(1)	1.0	N/A	6154326
Colour	TCU	1100	250	N/A	6130899
Total Kjeldahl Nitrogen (TKN)	mg/L	4.3	1.0	0.60	6128661
Nitrate + Nitrite (N)	mg/L	ND	0.050	N/A	6130632
Nitrite (N)	mg/L	ND	0.010	N/A	6130633
Nitrogen (Ammonia Nitrogen)	mg/L	0.74	0.050	N/A	6130801
Dissolved Organic Carbon (C)	mg/L	15	0.50	N/A	6127728
Total Organic Carbon (C)	mg/L	200 (2)	5.0	N/A	6127724
Orthophosphate (P)	mg/L	0.080	0.010	N/A	6130631
pH	рН	7.56	N/A	N/A	6133108

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected

- (1) Detection limits raised due to sample matrix.
- (2) Elevated reporting limit due to turbidity.



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

RESULTS OF ANALYSES OF WATER

BV Labs ID		JSK101			
Sampling Date		2019/05/14 08:20			
COC Number		715286-01-01			
	UNITS	POINT C 14-MAY	RDL	MDL	QC Batch
Total Phosphorus	mg/L	1.6	0.040	N/A	6124637
Salinity	N/A	ND	2.0	N/A	6130613
Reactive Silica (SiO2)	mg/L	9.6	0.50	N/A	6130630
Total Suspended Solids	mg/L	38	10	N/A	6124744
Dissolved Sulphate (SO4)	mg/L	330	10	N/A	6130629
Sulphide	mg/L	1.8	0.020	0.010	6130992
Total Cyanide (CN)	mg/L	ND	0.0050	0.00010	6137355
Turbidity	NTU	45	0.10	0.10	6135407
Volatile Suspended Solids	mg/L	40	20	N/A	6133009
Conductivity	uS/cm	1700	1.0	N/A	6133115
Nutritional Parameters					
Total Nitrogen (N)	mg/L	7.40 (1)	0.20	N/A	6136918
Organic Halogens					
Adsorbable Organic Halogen	mg/L	0.57	0.25	N/A	6132297
Subcontracted Analysis					
Subcontract Parameter	N/A	ATTACHED	N/A	N/A	6125981
ani na anti-la na anti-la	40				

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected

(1) Detection limits raised due to dilution to bring analyte within the calibrated range.



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

MERCURY BY COLD VAPOUR AA (WATER)

BV Labs ID		JSK101			
Sampling Date		2019/05/14 08:20			
COC Number		715286-01-01			
	UNITS	POINT C 14-MAY	RDL	MDL	QC Batch
Metals			10.——1		
Total Mercury (Hg)	ug/L	0.013	0.013	N/A	6131192
RDL = Reportable Detect QC Batch = Quality Cont			-	*	
N/A = Not Applicable					



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

ELEMENTS BY ICP/MS (WATER)

BV Labs ID		JSK101			ji.
Sampling Date		2019/05/14 08:20			
COC Number		715286-01-01			
	UNITS	POINT C 14-MAY	RDL	MDL	QC Batch
Metals					
Total Aluminum (Al)	ug/L	1600	5.0	N/A	6124570
Total Antimony (Sb)	ug/L	ND	1.0	N/A	6124570
Total Arsenic (As)	ug/L	1.2	1.0	N/A	6124570
Total Barium (Ba)	ug/L	370	1.0	N/A	6124570
Total Beryllium (Be)	ug/L	ND	1.0	N/A	6124570
Total Bismuth (Bi)	ug/L	ND	2.0	N/A	6124570
Total Boron (8)	ug/L	66	50	N/A	6124570
Total Cadmium (Cd)	ug/L	1.4	0.010	N/A	6124570
Total Calcium (Ca)	ug/L	34000	100	N/A	6124570
Total Chromium (Cr)	ug/L	2.8	1.0	N/A	6124570
Total Cobalt (Co)	ug/L	0.53	0.40	N/A	6124570
Total Copper (Cu)	ug/L	6.4	0.50	N/A	6124570
Total Iron (Fe)	ug/L	400	50	N/A	6124570
Total Lead (Pb)	ug/L	2.2	0.50	N/A	6124570
Total Magnesium (Mg)	ug/L	4200	100	N/A	6124570
Total Manganese (Mn)	ug/L	2200	2.0	N/A	6124570
Total Molybdenum (Mo)	ug/L	ND	2.0	N/A	6124570
Total Nickel (Ni)	ug/L	2.7	2.0	N/A	6124570
Total Phosphorus (P)	ug/L	1500	100	N/A	6124570
Total Potassium (K)	ug/L	20000	100	N/A	6124570
Total Selenium (Se)	ug/L	ND	1.0	N/A	6124570
Total Silver (Ag)	ug/L	0.28	0.10	N/A	6124570
Total Sodium (Na)	ug/L	370000	100	N/A	6124570
Total Strontium (Sr)	ug/L	130	2.0	N/A	6124570
Total Thallium (TI)	ug/L	ND	0.10	N/A	6124570
Total Tin (Sn)	ug/L	ND	2.0	N/A	6124570
Total Titanium (Ti)	ug/L	12	2.0	N/A	6124570
Total Uranium (U)	ug/L	0.29	0.10	N/A	6124570
Total Vanadium (V)	ug/L	2.9	2.0	N/A	6124570
Total Zinc (Zn)	ug/L	130	5.0	N/A	6124570

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		JSK101		[]	
Sampling Date		2019/05/14 08:20			
COC Number		715286-01-01			
	UNITS	POINT C 14-MAY	RDL	MDL	QC Batch
Polyaromatic Hydrocarbor	15				
1-Methylnaphthalene	ug/L	ND	0.050	N/A	6124966
2-Methylnaphthalene	ug/L	ND	0.050	N/A	6124966
Acenaphthene	ug/L	ND	0.010	N/A	6124966
Acenaphthylene	ug/L	ND	0.010	N/A	6124966
Anthracene	ug/L	ND (1)	0.020	N/A	6124966
Benzo(a)anthracene	ug/L	ND	0.010	N/A	6124966
Benzo(a)pyrene	ug/L	ND	0.010	N/A	6124966
Benzo(b)fluoranthene	ug/L	ND	0.010	N/A	6124966
Benzo(b/j)fluoranthene	ug/L	ND	0.020	N/A	6123000
Benzo(g,h,i)perylene	ug/L	ND	0.010	N/A	6124966
Benzo(j)fluoranthene	ug/L	ND	0.010	N/A	6124966
Benzo(k)fluoranthene	ug/L	ND	0.010	N/A	6124966
Chrysene	ug/L	ND	0.010	N/A	6124966
Dibenz(a,h)anthracene	ug/L	ND	0.010	N/A	6124966
Fluoranthene	ug/L	0.034	0.010	N/A	6124966
Fluorene	ug/L	ND (1)	0.10	N/A	6124966
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.010	N/A	6124966
Naphthalene	ug/L	ND	0.20	N/A	6124966
Perylene	ug/L	ND	0.010	N/A	6124966
Phenanthrene	ug/L	0.049	0.010	N/A	6124966
Pyrene	ug/L	ND (1)	0.020	N/A	6124966
Surrogate Recovery (%)	10-2-11				
D10-Anthracene	%	85		1	6124966
D14-Terphenyl	96	71			6124966
D8-Acenaphthylene	%	85			6124966

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		JSK101			
Sampling Date		2019/05/14 08:20			
COC Number		715286-01-01			
	UNITS	POINT C 14-MAY	RDL	MDL	QC Batch
Volatile Organics					
1,1-Dichloroethane	ug/L	ND	2.0	N/A	6124567
1,1-Dichloroethylene	ug/L	ND (1)	6.6	13	6124567
1,1,1-Trichloroethane	ug/L	ND	1.0	N/A	6124567
1,1,2-Trichloroethane	ug/L	ND	1.0	N/A	6124567
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	N/A	6124567
Ethylene Dibromide	ug/L	ND	0.20	0.50	6124567
1,2-Dichlorobenzene	ug/t.	ND	0.50	N/A	6124567
1,2-Dichloroethane	ug/L	ND:	1.0	N/A	6124567
cis-1,2-Dichloroethylene	ug/L	ND	0.50	N/A	6124567
trans-1,2-Dichloroethylene	ug/L	ND:	0.50	N/A	6124567
1,2-Dichloropropane	ug/L	ND:	0.50	N/A	6124567
1,3-Dichlorobenzene	ug/L	ND:	1.0	N/A	6124567
cis-1,3-Dichloropropene	ug/L	ND	0.50	N/A	6124567
trans-1,3-Dichloropropene	ug/L	ND	0.50	N/A	6124567
1,4-Dichlorobenzene	ug/L	ND	1.0	N/A	6124567
Benzene	ug/L	ND	1.0	N/A	6124567
Bromodichloromethane	ug/L	ND	1.0	0.20	6124567
Bromoform	ug/L	ND	1.0	0.20	6124567
Bromomethane	ug/L	ND	0.50	N/A	6124567
Carbon Tetrachloride	ug/L	ND	0.50	N/A	6124567
Chlorobenzene	ug/L	ND:	1.0	N/A	6124567
Chloroethane	ug/L	ND:	8.0	N/A	6124567
Chloroform	ug/L	ND:	1.0	0.20	6124567
Chloromethane	ug/L	ND:	8.0	N/A	6124567
Dibromochloromethane	ug/L	ND	1.0	0.20	6124567
Methylene Chloride(Dichloromethane)	ug/L	ND	3.0	N/A	6124567
Ethylbenzene	ug/L	ND	1.0	N/A	6124567
Methyl t-butyl ether (MTBE)	ug/L	ND	2.0	N/A	6124567
Styrene	ug/L	ND	1.0	N/A	6124567
Tetrachloroethylene	ug/L	ND	1.0	N/A	6124567

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

(1) Elevated VOC RDL(s) due to matrix interference.



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		JSK101			
Sampling Date		2019/05/14 08:20			
COC Number		715286-01-01			
	UNITS	POINT C 14-MAY	RDL	MDL	QC Batch
Toluene	ug/L	ND:	1.0	N/A	6124567
Trichloroethylene	ug/L	ND	1.0	N/A	5124567
Trichlorofluoromethane (FREON 11)	ug/L	ND	8.0	N/A	6124567
Vinyl Chloride	ug/L	ND	0.50	2.0	6124567
o-Xylene	ug/L	ND	1.0	N/A	6124567
p+m-Xylene	ug/L	ND	2.0	N/A	6124567
Total Xylenes	ug/L	ND	1.0	1.0	6124567
Total Trihalomethanes	ug/L	ND	1.0	N/A	6124567
Surrogate Recovery (%)					
4-Bromofluorobenzene	96	99	T		6124567
D4-1,2-Dichloroethane	%	114			6124567
08-Toluene	%	101			6124567
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not detected N/A = Not Applicable				51	



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

ATLANTIC RBCA HYDROCARBONS (WATER)

BV Labs ID		JSK101			
Sampling Date		2019/05/14 08:20			
COC Number		715286-01-01			
	UNITS	POINT C 14-MAY	RDL	MDL	QC Batch
Petroleum Hydrocarbons					
Benzene	mg/L	ND	0.0010	N/A	6127651
Toluene	mg/L	ND	0.0010	N/A	6127651
Ethylbenzene	mg/L	ND	0.0010	N/A	6127651
Total Xylenes	mg/L	ND	0.0020	N/A	6127651
C6 - C10 (less BTEX)	mg/L	ND.	0.010	N/A	6127651
>C10-C16 Hydrocarbons	mg/L	0.13	0.050	N/A	6131033
>C16-C21 Hydrocarbons	mg/L	0.13	0.050	N/A	6131033
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>0.26</td><td>0.10</td><td>N/A</td><td>6131033</td></c32>	mg/L	0.26	0.10	N/A	6131033
Modified TPH (Tier1)	mg/L	0.53	0.10	N/A	6122285
Reached Baseline at C32	mg/L	Yes	N/A	N/A	6131033
Hydrocarbon Resemblance	mg/L	COMMENT (1)	N/A	N/A	6131033
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	78			6131033
n-Dotriacontane - Extractable	96	78 (2)			6131033
Isobutylbenzene - Volatile	96	84			6127651

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

- (1) Unidentified compound(s) in fuel / lube range.
- (2) TEH sample contained sediment.



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

BV Labs ID		JSK101			
Sampling Date		2019/05/14 08:20			
COC Number		715286-01-01			
	UNITS	POINT C 14-MAY	RDL	MDL	QC Batch
PCBs			12. 1		
Arocior 1016	ug/L	ND	0.050	N/A	6127147
Aroclor 1221	ug/L	ND	0.050	N/A	6127147
Aroclor 1232	ug/L	ND	0.050	N/A	6127147
Aroclor 1248	ug/L	ND	0.050	N/A	6127147
Aroclar 1242	ug/L	ND	0.050	N/A	6127147
Aroclar 1254	ug/L	ND	0.050	N/A	6127147
Araclar 1260	ug/L	ND	0.050	N/A	6127147
Calculated Total PCB	ug/L	ND	0.050	N/A	6123002
Surrogate Recovery (%)	- 11		10		
Decachlorobiphenyl	%	16(1)			6127147

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

(1) PCB surrogate not within acceptance limits. Analysis was repeated with similar results.



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

RESIN AND FATTY ACIDS BY GC-MS (WATER)

BV Labs ID		JSK101			
Sampling Date		2019/05/14 08:20			
COC Number		715286-01-01			
	UNITS	POINT C 14-MAY	RDL	MDL	QC Batch
Calculated Parameters					N.
Total Fatty Acids	mg/L	0.49	0.072	N/A	6154327
Total Resin Acids	mg/L	1.0	0.060	N/A	6154327
Fatty Acids	diameter de				
9,10-Dichlorostearic acid	mg/L	0.0094	0.0060	N/A	6154327
Decanoic Acid (C10)	mg/L	ND	0.0060	N/A	6154327
Docosanoic acid (C22)	mg/L	0.24 (1)	0.060	N/A	6154327
Dodecanoic acid (C12)	mg/L	ND	0.0060	N/A	6154327
Eicosanoic acid (C20)	mg/L	0.081	0.0060	N/A	6154327
Hexadecanoic acid (C16)	mg/L	0.039	0.0060	N/A	6154327
Linoleic acid (C18:2)	mg/L	0.020	0.0060	N/A	6154327
Linolenic acid (C18:3)	mg/L	ND:	0.0060	N/A	6154327
Octadecanoic acid (C18)	mg/L	0.047	0.0060	N/A	6154327
Oleic acid (C18:1)	mg/L	0.050	0.0060	N/A	6154327
Tetradecanoic acid (C14)	mg/L	ND	0.0060	N/A	6154327
Undecanoic acid (C11)	mg/L	ND	0.0060	N/A	6154327
Resin Acids			-		
12,14-Dichlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6154327
12-Chlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6154327
14-Chlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6154327
Abietic acid	mg/L	0.25(1)	0.060	N/A	6154327
Dehydroabietic acid	mg/L	0.20(1)	0.060	N/A	6154327
Isopimaric acid	mg/L	0.34(1)	0.060	N/A	6154327
Neoabietic acid	mg/L	0.022	0.0060	N/A	6154327
Palustric acid	mg/L	ND:	0.0060	N/A	6154327
Pimaric acid	mg/L	0.14	0.0060	N/A	6154327
Sandaracopimaric acid	mg/L	0.061	0.0060	N/A	6154327

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected

(1) Detection limits raised due to dilution to bring analyte within the calibrated range.



Client Project #: Effluent Treatment Plant Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

DIOXINS AND FURANS BY HRMS (WATER)

BV Labs ID		JSK101							
Sampling Date		2019/05/14 08:20							
COC Number		715286-01-01				TOXIC EQUI	VALENCY	# of	
	UNITS	POINT C 14-MAY	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Dioxins & Furans	-								
2,3,7,8-Tetra CDD *	pg/L	ND:	1.05	9.43	N/A	1.00	1.05		6164383
1,2,3,7,8-Penta CDD *	pg/L	ND.	1.12	9.43	N/A	1.00	1.12		6164383
1,2,3,4,7,8-Hexa CDD *	pg/L	ND	1.17	9.43	N/A	0.100	0.117		6164383
1,2,3,6,7,8-Hexa CDD *	pg/L	ND	1.01	9.43	N/A	0.100	0.101		6164383
1,2,3,7,8,9-Hexa CDD *	pg/L	ND	0.986	9.43	N/A	0.100	0.0986		6164383
1,2,3,4,6,7,8-Hepta COD *	pg/L	ND	1.06	9,43	N/A	0.0100	0.0106		6164383
Octa CDD *	pg/L	4.07	1.00	94.3	N/A	0.000300	0.00122		6164383
Total Tetra CDD *	pg/L	ND	1.05	9.43	N/A			0	6164383
Total Penta CDD *	pg/L	ND:	1.12	9.43	N/A			0	6164383
Total Hexa CDD *	pg/L	ND	1.05	9.43	N/A			0	6164383
Total Hepta CDD *	pg/L	ND:	1.06	9.43	N/A			0	6164383
2,3,7,8-Tetra CDF **	pg/L	ND	1.08	9.43	N/A	0.100	0.108		6164383
1,2,3,7,8-Penta CDF **	pg/L	ND	1.06	9.43	N/A	0.0300	0.0318		6164383
2,3,4,7,8-Penta CDF **	pg/L	ND	1.07	9.43	N/A	0.300	0.321		6164383
1,2,3,4,7,8-Hexa CDF **	pg/L	ND	1.07	9.43	N/A	0.100	0.107		6164383
1,2,3,6,7,8-Hexa CDF **	pg/L	ND	0.892	9.43	N/A	0.100	0.0892		6164383
2,3,4,6,7,8-Hexa CDF **	pg/L	ND	1.01	9.43	N/A	0.100	0.101		6164383
1,2,3,7,8,9-Hexa CDF **	pg/L	ND.	1.12	9,43	N/A	0.100	0.112		6164383
1,2,3,4,6,7,8-Hepta COF **	pg/L	ND	1.02	9.43	N/A	0.0100	0.0102		6164383
1,2,3,4,7,8,9-Hepta CDF **	pg/L	ND	1.15	9.43	N/A	0.0100	0.0115		6164383
Octa CDF **	pg/L	ND	0.998	94.3	N/A	0.000300	0.000299		6164383
Total Tetra CDF **	pg/L	ND	1.08	9.43	N/A			0	6164383
Total Penta CDF **	pg/L	ND:	1.06	9.43	N/A			0	6164383
Total Hexa CDF **	pg/L	ND:	1.02	9.43	N/A			0	6164383

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,

The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

* CDD = Chloro Dibenzo-p-Dioxin

ND = Not detected

N/A = Not Applicable

** CDF = Chloro Dibenzo-p-Furan



Client Project #: Effluent Treatment Plant
Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

DIOXINS AND FURANS BY HRMS (WATER)

BV Labs ID		JSK101							
Sampling Date		2019/05/14 08:20							
COC Number		715286-01-01				TOXIC EQUIV	/ALENCY	# of	
	UNITS	POINT C 14-MAY	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Hepta CDF **	pg/L	ND	1.08	9.43	N/A			0	6164383
TOTAL TOXIC EQUIVALENCY	pg/L						3.39		
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	44							6164383
C13-1234678 HeptaCDF **	%	41							6164383
C13-123678 HexaCDD *	%	61							6164383
C13-123678 HexaCDF **	%	41							6164383
C13-12378 PentaCDD *	96	50							6164383
C13-12378 PentaCDF **	.96	40							6164383
C13-2378 TetraCDD *	%	57							6164383
C13-2378 TetraCDF **	%	40							6164383
C13-OCDD *	96	47							6164383

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,

The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

** CDF = Chloro Dibenzo-p-Furan

ND = Not detected

N/A = Not Applicable

* CDD = Chloro Dibenzo-p-Dioxin



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

GENERAL COMMENTS

Each t	emperature is the	average of up to	hree cooler t	mperatures	s taken at	receipt		
	Package 1	3.7°C	1					
	100	362						
Result	s relate only to th	e items tested.						



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QCLimit
5122932	MLW	QC Standard	Carbonaceous BOD	2019/05/21	value	105	W.	80 - 12
5122932	MLW	Spiked Blank	Carbonaceous BOD	2019/05/21		110	26	80 - 12
5122932		Method Blank	Carbonaceous BOD	2019/05/21	ND,	110	mg/L	00-11
estations.		THE STOCK STREET			RDL=2.0		ing) c	
5122932	MLW	RPD	Carbonaceous 800	2019/05/21	4.6		%	25
T. P. Parrier	10000		Carbonaceous 800	2019/05/21	5.4		96	25
124567	ASL	Matrix Spike [JSK101-10]	4-Bromofluorobenzene	2019/05/16		102	%	70 - 13
- presidente.	0.9976	/ Action to	D4-1,2-Dichloroethane	2019/05/16		114	96	70 - 13
			D8-Toluene	2019/05/16		96	%	70 - 1
			1,1-Dichloroethane	2019/05/16		104	96	70 - 13
			1.1-Dichloroethylene	2019/05/16		107	%	70 - 1
			1.1.1-Trichloroethane	2019/05/16		106	%	70 - 13
			1,1,2-Trichloroethane	2019/05/16		104	96	70 - 13
			1,1,2,2-Tetrachloroethane	2019/05/16		108	96	70 - 13
			Ethylene Dibromide	2019/05/16		106	%	70 - 13
			1,2-Dichlorobenzene	2019/05/16		91	N.	70 - 13
			1.2-Dichloroethane	2019/05/16		107	96.	70 - 13
			cis-1,2-Dichloroethylene	2019/05/16		97	96	70 - 13
			trans-1,2-Dichloroethylene	2019/05/16		103	%	70 - 13
			1,2-Dichloropropane	2019/05/16		102	×	70 - 13
			1,3-Dichlorobenzene	2019/05/16		88	%	70 - 1
			cis-1,3-Dichloropropene	2019/05/16		101	%	70 - 13
			trans-1,3-Dichloropropene	2019/05/16		108	76	70 - 13
			1,4-Dichlorobenzene	2019/05/16		86	74	70 - 1
			Benzene	2019/05/16		92	%	70 - 13
			Bromodichloromethane	2019/05/16		98	36.	70 - 13
			Bromeform	2019/05/16		101	%	70 - 13
			Bromomethane	2019/05/16		99	14	60 - 14
			Carbon Tetrachloride	2019/05/16		101	%	70 - 13
			Chlorobenzene	2019/05/16		97	36	70 - 13
			Chloroethane	2019/05/16		90	%	60 - 14
			Chloroform	2019/05/16		97	%	70 - 13
			Chloromethane	2019/05/16		101	%	60 - 14
			Dibromochloromethane	2019/05/16		103	96	70 - 13
			Methylene Chloride(Dichloromethane)	2019/05/16		100	%	70 - 13
			Ethylbenzene	2019/05/16		99	96	70 - 13
			Methyl t-butyl ether (MTBE)	2019/05/16		99	%	70 - 13
			Styrene	2019/05/16		101	96	70 - 13
			Tetrachloroethylene	2019/05/16		93		70 - 13
			Toluene	2019/05/16		97	%	70 - 13
			Trichloroethylene	2019/05/16		96	%	70 - 13
			Trichlorofluoromethane (FREON 11)	100000000000000000000000000000000000000				60 - 14
				2019/05/16		92	96	60 - 14
			Vinyl Chloride	2019/05/16		95 97	76	
			o-Xylene	2019/05/16		- 32	%.	70 - 13
	ACL	Salkad Ottole	p+m-Xylene			95	96.	70 - 13
5124567	ASL	Spiked Blank	4-Bromofluorobenzene	2019/05/16		100	96	70 - 13
			D4-1,2-Dichloroethane	2019/05/16		106	*	70 - 13
			D8-Toluene	2019/05/16		98	76.	70 - 13
			1,1-Dichloroethane	2019/05/16		103	%.	70 - 13
			1,1-Dichloroethylene	2019/05/16		109	%	70 - 13
			1,1,1-Trichloroethane	2019/05/16		106	%	70 - 13
			1,1,2-Trichloroethane	2019/05/16		99	76.	70 - 13
			1,1,2,2-Tetrachloroethane	2019/05/16		99	%	70 - 13



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
A STATE OF THE STA		and the last of th	Ethylene Dibromide	2019/05/16	- 2025	100	%	70 - 130
			1,2-Dichlorobenzene	2019/05/16		92	94	70 - 130
			1,2-Dichloroethane	2019/05/16		100	36	70 - 130
			cis-1,2-Dichloroethylene	2019/05/16		95	%	70 - 136
			trans-1,2-Dichloroethylene	2019/05/16		105	%.	70 - 130
			1,2-Dichloropropane	2019/05/16		101	%	70 - 13
			1,3-Dichlorobenzene	2019/05/16		90	76	70 - 130
			cis-1,3-Dichloropropene	2019/05/16		100	N	70 - 130
			trans-1,3-Dichloropropene	2019/05/16		104	16	70 - 130
			1,4-Dichlorobenzene	2019/05/16		89	96	70 - 130
			Benzene	2019/05/16		91	76	70 - 130
			Bromodichloromethane	2019/05/16		96	16	70 - 13
			Bromoform	2019/05/16		94	%	70 - 13
			Bromomethane	2019/05/16		95	96	60 - 140
			Carbon Tetrachloride	2019/05/16		102	%	70 - 130
			Chlorobenzene	2019/05/16		94	×	70 - 130
			Chloroethane	2019/05/16		89	%	60 - 14
			Chloroform	2019/05/16		95	36	70 - 130
			Chloromethane	2019/05/16		99	%	60 - 14
			Dibromochloromethane	2019/05/16		99	%	70 - 13
			Methylene Chloride(Dichloromethane)	2019/05/16		96	%	70 - 13
			Ethylbenzene	2019/05/16		98	%.	70 - 13
			Methyl t-butyl ether (MTBE)	2019/05/16		97	96	70 - 13
			Styrene	2019/05/16		103	%	70 - 13
			Tetrachloroethylene	2019/05/16		98	%.	70 - 13
			Toluene	2019/05/16		98	%	70 - 130
			Trichloroethylene	2019/05/16		98	36	70 - 130
			Trichlorofluoromethane (FREON 11)	2019/05/16		94	%	60 - 140
			Vinyl Chloride	2019/05/16		95	76.	60 - 140
			o-Xylene	2019/05/16		98	96	70 - 130
			p+m-Xylene	2019/05/16		96	96	70 - 130
5124567	ASL	Method Blank	4-Bromofluorobenzene	2019/05/16		98	%	70 - 130
10000	5,055	100000000000000000000000000000000000000	D4-1,2-Dichloroethane	2019/05/16		108	%	70 - 130
			D8-Toluene	2019/05/16		100	%	70 - 130
			1,1-Dichloroethane	2019/05/16	ND,	100	ug/t	10 130
			1,1-Dichloroethylene	2019/05/16	RDL=2.0			
					RDL=0.50		ug/L	
			1,1,1-Trichloroethane	2019/05/16	ND, RDL=1.0		ug/L	
			1.1.2-Trichloroethane	2019/05/16	ND, RDL=1.0		ug/L	
			1,1,2,2-Tetrachioroethane	2019/05/16	ND, RDL=0.50		ug/L	
			Ethylene Dibromide	2019/05/16	ND, RDL=0.20		ug/L	
			1,2-Dichlorobenzene	2019/05/16	ND, RDL=0.50		ug/L	
			1,2-Dichloroethane	2019/05/16	ND, RDL=1.0		ug/L	
			cis-1,2-Dichloroethylene	2019/05/16	ND, RDL=0.50		ug/L	



Client Project #: Effluent Treatment Plant Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch Init QC Type	Parameter	Date Analyzed	Value	Recovery UN	ITS QC Lim
	trans-1,2-Dichloroethylene	2019/05/16	ND, RDL=0.50	uş	/L
	1,2-Dichloropropane	2019/05/16	ND, RDL=0.50	ug	/L
	1,3-Dichlorobenzene	2019/05/16	ND, RDL=1.0	u	VL
	cis-1,3-Dichloropropene	2019/05/16	ND, RDL=0.50	uş	/\
	trans-1,3-Dichloropropene	2019/05/16	ND, RDL=0.50	ug	/L
	1,4-Dichlorobenzene	2019/05/16	ND, RDL=1.0	uį	VL
	Benzene	2019/05/16	ND, RDL=1.0	ug	y/L
	Bromodichloromethane	2019/05/16	ND, RDL=1.0	u	I/L
	Bromoform	2019/05/16	ND, RDL=1.0	uį	y/L
	Bromomethane	2019/05/16	ND, RDL=0.50	us	1/1
	Carbon Tetrachloride	2019/05/16	ND, RDL=0.50	u	<u>1</u> /L
	Chlorobenzene	2019/05/16	NO, ROL=1.0	ug	T.
	Chloroethane	2019/05/16	ND, RDL=8.0	u	1/1
	Chloroform	2019/05/16	ND, RDL=1.0	u	/1
	Chloromethane	2019/05/16	ND, RDL=8.0	Oug	/L
	Dibromochloromethane	2019/05/16	ND, RDL=1.0	u	VL.
	Methylene Chloride(Dichloromethane)	2019/05/16	ND, RDL=3.0	u	t/L
	Ethylbenzene	2019/05/16	ND, RDL=1.0	u	/L
	Methyl t-butyl ether (MTBE)	2019/05/16	ND, RDL=2.0	u	/L
	Styrene	2019/05/16	ND, RDL=1.0	ug	/1
	Tetrachloroethylene	2019/05/16	ND, RDL=1.0	u	/L
	Toluene	2019/05/16	ND, RDL=1.0	ug	A.
	Trichloroethylene	2019/05/16	ND, RDL=1.0	ug	/L
	Trichlorofluoromethane (FREON 11)	2019/05/16	ND, RDL=8.0	u _l	<u>/</u> L
	Vinyl Chloride	2019/05/16	ND, RDL=0.50	(ug	1/1
	p-Xylene	2019/05/16	NO, ROL=1.0	uį	y/L
	p+m-Xylene	2019/05/16	ND, RDL=2.0	uį	/ L



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC				1245 NO. 17				
Batch	Init:	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Xylenes	2019/05/16	ND, RDL=1.0		ug/L	
			Total Trihalomethanes	2019/05/16	NO. RDL=1.0		ug/L	
6124567	ASL	RPD	1,1-Dichloroethane	2019/05/16	NC		%	40
0.000	100		1,1-Dichloroethylene	2019/05/16	NC		36	40
			1,1,1-Trichloroethane	2019/05/16	NC		%	40
			1,1,2-Trichlorgethane	2019/05/16	NC		16.	40
			1,1,2,2-Tetrachloroethane	2019/05/16	NC		36	40
			Ethylene Dibromide	2019/05/16	NC		96	40
			1,Z-Dichlorobenzene	2019/05/16	NC		%	40
			1,2-Dichloroethane	2019/05/16	NC		%	40
			cis-1,2-Dichloroethylene	2019/05/16	NC		%	40
			trans-1,2-Dichloroethylene	2019/05/16	NC		76	40
			1,2-Dichloropropane	2019/05/16	NC		%	40
			1,3-Dichlorobenzene	2019/05/16	NC		%	40
			cis-1,3-Dichloropropene	2019/05/16	NC		%	40
			trans-1,3-Dichloropropene	2019/05/16	NC		76	40
			1,4-Dichlorobenzene	2019/05/16	NC		14	40
			Benzene	2019/05/16	NC		76	40
			Bromodichloromethane	2019/05/16	NC		%	40
			Bromoform	2019/05/16	NC		96	40
			Bromomethane	2019/05/16	NC		36	40
			Carbon Tetrachloride	2019/05/16	NC		%	40
			Chlorobenzene	2019/05/16	NC		96	40
			Chloroethane	2019/05/16	NC		96	40
			Chloroform	2019/05/16	1.4		76	40
			Chloromethane	2019/05/16	NC		%	40
			Dibromochloromethane	2019/05/16	NC		%.	40
			Methylene Chloride(Dichloromethane)	2019/05/16	NC		%	40
			Ethylbenzene	2019/05/16	NC		%	40
			Methyl t-butyl ether (MTBE)	2019/05/15	NC		N.	40
			Styrene	2019/05/16	NC		96	40
			Tetrachloroethylene	2019/05/16	NC		36	40
			Toluene	2019/05/16	NC		36	40
			Trichlaraethylene	2019/05/16	NC		16.	40
			Trichlorofluoromethane (FREON 11)	2019/05/16	NC		36	40
			Vinyl Chloride	2019/05/16	NC		96	40
			p-Xylene	2019/05/16	NC		%	40
			p+m-Xylene	2019/05/16	NC		%	40
			Total Xylenes	2019/05/16	NC		%	40
			Total Trihalomethanes	2019/05/16	1.4		76	40
6124570	BAN	Matrix Spike	Total Aluminum (Al)	2019/05/16		98	N	80 - 120
		DATASA GARAGA	Total Antimony (Sb)	2019/05/16		101	%	80 - 120
			Total Arsenic (As)	2019/05/16		98	%	80 - 120
			Total Barium (Ba)	2019/05/16		97	76	80 - 120
			Total Beryllium (Be)	2019/05/16		98	14	80 - 120
			Total Bismuth (Bi)	2019/05/16		96	%	80 - 120
			Total Boron (B)	2019/05/16		99	96	80 - 120
			Total Cadmium (Cd)	2019/05/16		97	76	80 - 120
			Total Calcium (Ca)	2019/05/16		101	16	80 - 120
			Total Chromium (Cr)	2019/05/16		99	76	80 - 120
			Total Cobalt (Co)	2019/05/16		103	36	80 - 120



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC	2000	12227	25 29	220 27 40 3	A720	25	W. C.	200000
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Total Copper (Cu)	2019/05/16		96	76.	80 - 12
			Total Iron (Fe)	2019/05/16		104	34	80 - 120
			Total Lead (Pb)	2019/05/16		99	%	80 - 120
			Total Magnesium (Mg)	2019/05/16		102	%	80 - 120
			Total Manganese (Mn)	2019/05/16		98	76.	80 - 120
			Total Molybdenum (Mo)	2019/05/16		99	%	80 - 120
			Total Nickel (Ni)	2019/05/16		100	76	80 - 120
			Total Phosphorus (P)	2019/05/16		103	N	80 - 120
			Total Potassium (K)	2019/05/16		103	76	80 - 120
			Total Selenium (Se)	2019/05/16		98	%	80 - 120
			Total Silver (Ag)	2019/05/16		98	76.	80 - 120
			Total Sodium (Na)	2019/05/16		98	14	80 - 120
			Total Strontium (Sr)	2019/05/16		98	76	80 - 120
			Total Thallium (TI)	2019/05/16		100	96	80 - 120
			Total Tin (Sn)	2019/05/16		101	76	80 - 120
			Total Titanium (Ti)	2019/05/16		100	14	80 - 120
			Total Uranium (U)	2019/05/16		103	76	80 - 120
			Total Vanadium (V)	2019/05/16		98	36	80 - 120
			Total Zinc (Zn)	2019/05/16		97	%	80 - 120
5124570	BAN	Spiked Blank	Total Aluminum (Al)	2019/05/16		99	76	80 - 120
			Total Antimony (Sb)	2019/05/16		100	76	80 - 120
			Total Arsenic (As)	2019/05/16		97	%.	80 - 120
			Total Barium (8a)	2019/05/16		98	96	80 - 120
			Total Beryllium (Be)	2019/05/16		99	%	80 - 120
			Total Bismuth (Bi)	2019/05/16		98	Ye.	80 - 120
			Total Boron (B)	2019/05/16		99	96.	80 - 120
			Total Cadmium (Cd)	2019/05/16		96	36	80 - 120
			Total Calcium (Ca)	2019/05/16		104	%	80 - 120
			Total Chromium (Cr)	2019/05/16		100	74.	80 - 120
			Total Cobalt (Co)	2019/05/16		104	36	80 - 120
			Total Copper (Cu)	2019/05/16		100	36	80 - 120
			Total fron (Fe)	2019/05/16		104	. %	80 - 120
			Total Lead (Pb)	2019/05/16		99	76	80 - 120
			Total Magnesium (Mg)	2019/05/16		104	%	80 - 120
			Total Manganese (Mn)	2019/05/16		100	76	80 - 120
			Total Molybdenum (Mo)	2019/05/16		100	N:	80 - 120
			Total Nickel (Ni)	2019/05/16		101	16	80 - 120
			Total Phosphorus (P)	2019/05/16		103	%	80 - 120
			Total Potassium (K)	2019/05/16		102	76	80 - 120
			Total Selenium (Se)	2019/05/16		97	14	80 - 120
			Total Silver (Ag)	2019/05/16		96	%	80 - 120
			Total Sodium (Na)	2019/05/16		100	96	80 - 120
			Total Strontium (Sr)	2019/05/16		101	76	80 - 120
			Total Thallium (TI)	2019/05/16		100	16	80 - 120
			Total Tin (Sn)	2019/05/16		98	%	80 - 120
			Total Titanium (Ti)	2019/05/16		101	36	80 - 120
			Total Uranium (U)	2019/05/16		103	%	80 - 120
			Total Vanadium (V)	2019/05/16		99	%	80 - 120
			Total Zinc (Zn)	2019/05/16		98	%	80 - 120
124570	BAN	Method Blank	Total Aluminum (Al)	2019/05/16	ND, RDL≃5.0	7.77	ug/L	25/0/52
			Total Antimony (Sb)	2019/05/16	ND, RDL=1.0		ug/L	



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

DA/QC Batch Init QC Type	Parameter	Date Analyzed	Value	Recovery UNIT	S QC Limi
11000	Total Arsenic (As)	2019/05/16	ND, RDL=1.0	ug/	
	Total Barium (Ba)	2019/05/16	NO, ROL=1.0	ug/	L.
	Total Beryllium (Be)	2019/05/16	ND, RDL=1.0	ug/	
	Total Bismuth (Bi)	2019/05/16	ND, RDL=2.0	ug/	63
	Total Boron (B)	2019/05/16	ND, RDL=50	ug/	i.
	Total Cadmium (Cd)	2019/05/16	ND, RDL=0.010	ug/	L .
	Total Calcium (Ca)	2019/05/16	ND, RDL=100	ug/	L
	Total Chromium (Cr)	2019/05/16	ND, RDL=1.0	ug/	
	Total Cobalt (Co)	2019/05/16	ND, RDL=0.40	ug/	-
	Total Copper (Cu)	2019/05/16	ND, RDL=0.50	ug/	i.
	Total Iron (Fe)	2019/05/16	ND, RDL=50	ug/	l _{e i}
	Total Lead (Pb)	2019/05/16	ND, RDL=0.50	ug/	i.
	Total Magnesium (Mg)	2019/05/16	ND, RDL=100	Ug/	90
	Total Manganese (Mn)	2019/05/16	ND, RDL=2.0	ug/	63
	Total Molybdenum (Mo)	2019/05/16	ND, RDL=2.0	ug/	i.
	Total Nickel (Ni)	2019/05/16	ND, RDL=2.0	ug/	L,
	Total Phosphorus (P)	2019/05/16	ND, RDL=100	ug/	L.
	Total Potassium (K)	2019/05/16	ND,	ug/	
	Total Selenium (Se)	2019/05/16	RDL=100 ND,	ug/	
	Total Silver (Ag)	2019/05/16	RDL=1.0 ND,	ug/	i.
	Total Sodium (Na)	2019/05/16	RDL=0.10 ND, RDL=100	ug/	L
	Total Strontium (Sr)	2019/05/16	ND, RDL=2.0	ug/	L.
	Total Thallium (TI)	2019/05/16	ND,	ug/	L.
	Total Tin (Sn)	2019/05/16	RDL=0.10 ND,	ug/	i.
	Total Titanium (Ti)	2019/05/16	RDL=2.0 ND,	ug/	L.
	Total Uranium (U)	2019/05/16	RDL=2.0 ND,	ug/	-
	Total Vanadium (V)	2019/05/16	RDL=0.10 ND, RDL=2.0	ug/	



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Zinc (Zn)	2019/05/16	ND, RDL=5.0		ug/L	
6124570	BAN	RPD	Total Aluminum (Al)	2019/05/16	NC		96	.20
			Total Antimony (Sb)	2019/05/16	NC		96	20
			Total Arsenic (As)	2019/05/16	NC		%	20
			Total Barium (Ba)	2019/05/16	2.3		96	20
			Total Beryllium (Be)	2019/05/16	NC		96	20
			Total Bismuth (Bi)	2019/05/16	NC		96	20
			Total Boron (B)	2019/05/16	NC		%	20
			Total Cadmium (Cd)	2019/05/16	NC		96	20
			Total Calcium (Ca)	2019/05/16	3.3		%	20
			Total Chromium (Cr)	2019/05/16	NC		%	20
			Total Cobalt (Co)	2019/05/16	1.7		96	20
			Total Copper (Cu)	2019/05/16	3.0		96	20
			Total Iron (Fe)	2019/05/16	2.0		%	20
			Total Lead (Pb)	2019/05/15	NC		%.	20
			Total Magnesium (Mg)	2019/05/16	4.2		96.	20
			Total Manganese (Mn)	2019/05/16	2.7		36	20
			Total Molybdenum (Mo)	2019/05/16	NC		%	20
			Total Nickel (Ni)	2019/05/16	NC		76	20
			Total Phosphorus (P)	2019/05/16	10		%	20
			Total Potassium (K)	2019/05/16	7.2		96	20
			Total Selenium (Se)	2019/05/16	NC		76	20
			Total Silver (Ag)	2019/05/16	NC		14	20
			Total Sodium (Na)	2019/05/16	2.1		16	20
			Total Strontium (Sr)	2019/05/16	3.3		96	20
			Total Thallium (TI)	2019/05/16	NC		%	20
			Total Tin (Sn)	2019/05/16	NC		N	20
			Total Titanium (Ti)	2019/05/16	NC		%	20
			Total Uranium (U)	2019/05/16	NC		94	20
			Total Vanadium (V)	2019/05/16	NC		96	20
			Total Zinc (Zn)	2019/05/16	0.77		%	20
6124637	MCN	Matrix Spike	Total Phosphorus	2019/05/17		117	%	80 - 120
6124637	MCN	Spiked Blank	Total Phosphorus	2019/05/17		94	96	80 - 120
6124637	MCN	Method Blank	Total Phosphorus	2019/05/17	ND, RDL=0.020		mg/L	
6124637	MCN	RPD	Total Phosphorus	2019/05/17	NC		36	25
6124744	AM6	QC Standard	Total Suspended Solids	2019/05/21		97	96	80 - 120
6124744	AM6	Method Blank	Total Suspended Solids	2019/05/21	ND, RDL=1.0		mg/L	
6124744	AM6	RPD	Total Suspended Solids	2019/05/21	19		96	20
6124966	KKE	Matrix Spike	D10-Anthracene	2019/05/16		97	96	50 - 130
		7 Particulary #0409	D14-Terphenyl	2019/05/16		98	96	50 - 130
			D8-Acenaphthylene	2019/05/16		93	96	50 - 130
			1-Methylnaphthalene	2019/05/16		82	96	50 - 130
			2-Methylnaphthalene	2019/05/16		84	%	50 - 130
			Acenaphthene	2019/05/16		95	%	50 - 130
			Acenaphthylene	2019/05/16		95	56	50 - 130
			Anthracene	2019/05/16		95	96	50 - 130
			Benzo(a)anthracene	2019/05/16		90	%	50 - 130
			Benzo(a)pyrene	2019/05/16		81	%	50 - 130
			Benzo(b)fluoranthene	2019/05/16		89	96.	50 - 130
			Benzo(g,h,i)perylene	2019/05/16		86	26	50 - 130



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
41111111			Benzo(j)fluoranthene	2019/05/16		79	%	50 - 130
			Benzo(k)fluoranthene	2019/05/16		77	96	50 - 130
			Chrysene	2019/05/16		108	96	50 - 130
			Dibenz(a,h)anthracene	2019/05/16		80	36	50 - 130
			Fluoranthene	2019/05/16		98	Y6.	50 - 130
			Fluorene	2019/05/16		99	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/05/16		81	76	50 - 130
			Naphthalene	2019/05/16		86	N	50 - 130
			Perylene	2019/05/16		76	%	50 - 130
			Phenanthrene	2019/05/16		101	96	50 - 130
			Pyrene	2019/05/16		96	76	50 - 130
124966	KKE	Spiked Blank	D10-Anthracene	2019/05/16		103	16	50 - 130
		CONTRACTOR AND	D14-Terphenyl	2019/05/16		102	%	50 - 130
			D8-Acenaphthylene	2019/05/16		101	96	50 - 130
			I-Methylnaphthalene	2019/05/16		88	76	50 - 130
			2-Methylnaphthalene	2019/05/16		90	16	50 - 130
			Acenaphthene	2019/05/16		102	%	50 - 130
			Acenaphthylene	2019/05/16		103	36	50 - 130
			Anthracene	2019/05/16		100	%	50 - 130
			Benzo(a)anthracene	2019/05/16		92	%	50 - 130
			Benzo(a)pyrene	2019/05/16		84	%	50 - 130
			Benzo(b)fluoranthene	2019/05/16		90	%.	50 - 130
			Benzo(g,h,i)perylene	2019/05/16		89	94	50 - 13
			Benzo(j)fluoranthene	2019/05/16		83	%	50 - 13
			Benzo(k)fluoranthene	2019/05/16		84	N.	50 - 130
			Chrysene	2019/05/16		107	96.	50 - 130
			Dibenz(a,h)anthracene	2019/05/16		82	36	50 - 130
			Fluoranthene	2019/05/16		103	%	50 - 130
			Fluorene	2019/05/16		108	76.	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/05/16		85	26	50 - 130
			Naphthalene	2019/05/16		92	36	50 - 130
			Perylene	2019/05/16		79	96	50 - 130
			Phenanthrene	2019/05/16		107	%.	50 - 130
			Pyrene	2019/05/16		101	%	50 - 130
5124966	KKE	Method Blank	D10-Anthracene	2019/05/16		103		50 - 130
1124300	565	Method blank	D14-Terphenyl	2019/05/16		103	76 94	50 - 130
				- 1 537 DOM: THE O		99		
			08-Acenaphthylene	2019/05/16	Serve	99	76	50 - 130
			1-Methylnaphthalene	2019/05/16	ND, RDL=0.050		ug/L	
			2-Methylnaphthalene	2019/05/16	ND, RDL=0.050		ug/L	
			Acenaphthene	2019/05/16	ND, RDL=0.010		ug/t	
			Acenaphthylene	2019/05/16	ND. RDL=0.010		ug/L	
			Anthracene	2019/05/16	ND, RDL=0.010		ug/L	
			Benzo(a)anthracene	2019/05/16	ND, RDL≈0.010		ug/L	
			Benzo(a)pyrene	2019/05/16	ND, RDL=0.010		ug/L	
			Benzo(b)fluoranthene	2019/05/16	ND, RDL=0.010		ug/L	



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzo(g,h,i)perylene	2019/05/16	ND, RDL=0.010		ug/L	
			Benzo(j)fluoranthene	2019/05/16	ND, RDL=0.010		ug/L	
			Benzo(k)fluoranthene	2019/05/16	ND, RDL=0.010		ug/L	
			Chrysene	2019/05/16	ND, RDL=0.010		ug/L	
			Dibenz(a,h)anthracene	2019/05/16	ND, RDL=0.010		ug/L	
			Fluoranthene	2019/05/16	ND, RDL=0.010		ug/L	
			Fluorene	2019/05/16	ND, RDL=0.010		ug/L	
			Indeno(1,2,3-cd)pyrene	2019/05/16	ND, RDL=0.010		ug/L	
			Naphthalene	2019/05/16	ND, RDL=0.20		ug/L	
			Perylene	2019/05/16	ND, RDL=0.010		ug/L	
			Phenanthrene	2019/05/16	ND, RDL=0.010		ug/L	
			Pyrene	2019/05/16	ND, RDL=0.010		ug/L	
124966	KKE	RPD	1-Methylnaphthalene	2019/05/16	NC		96.	40
			2-Methylnaphthalene	2019/05/16	NC		96	40
			Acenaphthene	2019/05/16	NC		%	40
			Acenaphthylene	2019/05/16	NC		%	40
			Anthracene	2019/05/16	NC		94	40
			Benzo(a)anthracene	2019/05/16	NC		76	40
			Benzo(a)pyrene	2019/05/16	NC		96	40
			Benzo(b)fluoranthene	2019/05/16	NC		%	40
			Benzo(g,h,i)perylene	2019/05/16	NC		96	40
			Benzo(j)fluoranthene	2019/05/16	NC		76	40
			Benzo(k)fluoranthene	2019/05/16	NC		%	40
			Chrysene	2019/05/16	NC		16	40
			Dibenz(a,h)anthracene	2019/05/16	NC		96	40
			Fluoranthene	2019/05/16	NC		%	40
			Fluorene	2019/05/16	NC		16	40
			Indeno(1,2,3-cd)pyrene	2019/05/16	NC		%	40
			Naphthalene	2019/05/16	NC		96	40
			Perylene	2019/05/16	NC		96	40
			Phenanthrene	2019/05/16	NC		16	40
			Pyrene	2019/05/16	NC		%	40
127143	ZZH	Matrix Spike	Total Chemical Oxygen Demand	2019/05/17		99	96	80 - 120
127143	ZZH	QC Standard	Total Chemical Oxygen Demand	2019/05/17		101	96	80 - 120
127143	ZZH	Spiked Blank	Total Chemical Oxygen Demand	2019/05/17		101	96	80 - 120
127143	ZZH	Method Blank	Total Chemical Oxygen Demand	2019/05/17	ND, RDL=20		mg/L	
127143	ZZH	RPD	Total Chemical Oxygen Demand	2019/05/17	4.4		%	25
127147	RGE	Spiked Blank	Decachlorobiphenyl	2019/05/17		87	16.	30 - 130
			Aroclor 1254	2019/05/17		90	%	70 - 130
5127147	RGE	Method Blank	Decachlorobiphenyl	2019/05/17		80	76	30 - 130



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QA/QC	2200	OCTure	Barrantas	Big all a	000		1 parent	0011
Batch	Init	QC Type	Parameter 1015	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Aroclar 1016	2019/05/17	ND, RDL=0.050		ug/L	
			Aroclor 1221	2019/05/17	ND, RDL=0.050		ug/L	
			Aroclor 1232	2019/05/17	ND, RDL=0.050		ug/L	
			Aroclor 1248	2019/05/17	ND, RDL=0.050		ug/L	
			Aroclor 1242	2019/05/17	ND, RDL=0.050		ug/L	
			Aroclor 1254	2019/05/17	NO,		ug/L	
			Arocfor 1260	2019/05/17	RDL=0.050 ND,		ug/L	
					RDL=0.050		100.00	
6127147	RGE	RPD	Aroclar 1016	2019/05/17	NC		%	40
			Aroclor 1221	2019/05/17	NC		%	40
			Aroclar 1232	2019/05/17	NC		74 %	40
			Aroclor 1248	2019/05/17	NC			40
			Aroclor 1242	2019/05/17	NC		36	40
			Aroclar 1254	2019/05/17	NC		96	40
			Arocfor 1260	2019/05/17	NC.		76	40
127651	THIL	Matrix Spike	Isobutylbenzene - Volatile	2019/05/17		101	%	70 - 130
			Benzene	2019/05/17		116	96.	70 - 130
			Toluene	2019/05/17		116	56	70 - 130
			Ethylbenzene	2019/05/17		117	%	70 - 130
			Total Xylenes	2019/05/17		116	16.	70 - 130
127651	THE	Spiked Blank	Isobutylbenzene - Volatile	2019/05/17		103	%.	70 - 130
			Benzene	2019/05/17		102	26	70 - 130
			Toluene	2019/05/17		104	%	70 - 130
			Ethylbenzene	2019/05/17		103	16.	70 - 130
			Total Xylenes	2019/05/17		104	%	70 - 130
127651	THU	Method Blank	Isobutylbenzene - Volatile	2019/05/17		102	76	70 - 130
			Benzene	2019/05/17	ND, RDL=0.0010		rng/L	
			Toluene	2019/05/17	ND, RDL=0.0010		mg/L	
			Ethylbenzene	2019/05/17	ND, RDL=0.0010		mg/L	
			Total Xylenes	2019/05/17	ND, RDL=0.0020		mg/L	
			C6 - C10 (less BTEX)	2019/05/17	ND, RDL=0.010		mg/L	
5127651	THE	RPO	Benzene	2019/05/17	NC		16	40
	00.00		Toluene	2019/05/17	NC		%	40
			Ethylbenzene	2019/05/17	NC		96	40
			Total Xylenes	2019/05/17	NC		%	40
			C6 - C10 (less BTEX)	2019/05/17	NC		96	40
127724	SSI	Matrix Spike	Total Organic Carbon (C)	2019/05/17	1.00	98	96.	85 - 115
127724	SSI	Spiked Blank	Total Organic Carbon (C)	2019/05/17		101	94	80 - 120
127724	551	Method Blank	Total Organic Carbon (C)	2019/05/17	ND,		mg/L	00-120
		The state of the s			RDL=0.50			
5127724	SSI	RPD	Total Organic Carbon (C)	2019/05/17	NC (1)		%	15
5127728	SSI	Matrix Spike [JSK101-06]	Dissolved Organic Carbon (C)	2019/05/17		98	76	85 - 115



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QA/QC Batch	fnit	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6127728	SSI	Spiked Blank	Dissolved Organic Carbon (C)	2019/05/17		100	%.	80 - 120
6127728	SSI	Method Blank	Dissolved Organic Carbon (C)	2019/05/17	ND,	1996	mg/L	00000000
				N	RDL=0.50		5.00	
6127728	SSI	RPD [JSK101-06]	Dissolved Organic Carbon (C)	2019/05/17	1.3		%	15
6128661	RTY	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2019/05/22		85	%	80 - 120
6128661	BTY	QC Standard	Total Kjeldahl Nitrogen (TKN)	2019/05/21		102	96	80 - 120
6128661	RTY	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2019/05/21		104	%	80 - 120
6128661	RTY	Method Blank	Total Kjeldahl Nitrogen (TKN)	2019/05/21	ND,		mg/L	
					RDL=0.10			
6128661	RTY	RPD	Total Kjeldahl Nitrogen (TKN)	2019/05/22	NC (2)		96	20
6130613	BBD	QC Standard	Salinity	2019/05/21		101	.94	80 - 120
6130613	BBD	Method Blank	Salinity	2019/05/21	ND, RDL=2.0		N/A	
6130613	BBD	RPD	Salinity	2019/05/21	NC		%	25
5130625	SRM	Matrix Spike	Total Alkalinity (Total as CaCO3)	2019/05/21	11090	NC	96	80 - 120
5130625	SRM	Spiked Blank	Total Alkalinity (Total as CaCO3)	2019/05/21		113	%	80 - 120
5130625	SRM	Method Blank	Total Alkalinity (Total as CaCO3)	2019/05/21	ND,		mg/L	100
					RDL=5.0			
6130625	SRM	RPD	Total Alkalinity (Total as CaCO3)	2019/05/21	4.7		%	25
5130627	SRM	Matrix Spike	Dissolved Chloride (CI-)	2019/05/21		NC	%	80 - 120
5130627	SRM	Spiked Blank	Dissolved Chloride (CI-)	2019/05/21		103	96	80 - 120
6130627	SRM	Method Blank	Dissolved Chloride (CI-)	2019/05/21	NO,		mg/L	
					RDL=1.0			
5130627	SRM	RPD	Dissolved Chloride (CI-)	2019/05/21	0.26		%	25
5130629	SRM	Matrix Spike	Dissolved Sulphate (SO4)	2019/05/21		101	96	80 - 120
5130629	SRM	Spiked Blank	Dissolved Sulphate (SO4)	2019/05/21		104	%	80 - 120
5130629	SRM	Method Blank	Dissolved Sulphate (SO4)	2019/05/21	ND, RDL=2.0		mg/L	
6130629	SRM	RPD	Dissolved Sulphate (SO4)	2019/05/21	1.5		96	25
5130630	SRM	Matrix Spike	Reactive Silica (SIO2)	2019/05/21		97	%	80 - 120
130630	SRM	Spiked Blank	Reactive Silica (SiO2)	2019/05/21		106	%	80 - 120
6130630	SRM	Method Blank	Reactive Silica (SiO2)	2019/05/21	ND, RDL=0.50		mg/L	
6130630	SRM	RPD	Reactive Silica (SiO2)	2019/05/21	1.4		%	25
6130631	SRM	Matrix Spike	Orthophosphate (P)	2019/05/22		101	36	80 - 120
5130631	SRM	Spiked Blank	Orthophosphate (P)	2019/05/22		106	76	80 - 120
6130631	SRM	Method Blank	Orthophosphate (P)	2019/05/22	ND, RDL=0.010		mg/L	
6130631	SRM	RPD	Orthophosphate (P)	2019/05/22	NC		76	25
6130632	SRM	Matrix Spike	Nitrate + Nitrite (N)	2019/05/21		100	%	80 - 120
6130632	SRM	Spiked Blank	Nitrate + Nitrite (N)	2019/05/21		104	%	80 - 120
5130632	SRM	Method Blank	Nitrate + Nitrite (N)	2019/05/21	ND,	(Ellinoid)	mg/L	20,000
6130632	SRM	RPO	Nitrate + Nitrite (N)	2019/05/21	RDL=0.050			25
6130633	SRM	Matrix Spike	Nitrite (N)	2019/05/21	7.7	14 (3)	%	80 - 120
5130633	SRM	Spiked Blank	Nitrite (N)	2019/05/21		104	96	80 - 120
6130633	SRM	Method Blank	Nitrite (N)	2019/05/21	ND,		mg/L	
			THE PARTY OF THE P	1	RDL=0.010			
5130633	SRM	RPD	Nitrite (N)	2019/05/21	NC		56	20
5130801	NRG	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2019/05/21		NC	96	80 - 120
5130801	NRG	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2019/05/21		98	%	80 - 120
5130801	NRG	Method Blank	Nitrogen (Ammonia Nitrogen)	2019/05/21	ND.		mg/L	
the will be to be the	100000	AAR-822331-014-2500		1100010700001001	RDL=0.050			



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QCLimits
5130801	NRG	RPD	Nitrogen (Ammonia Nitrogen)	2019/05/21	0.50	STATE OF THE PARTY	16.	20
5130899	NRG	Spiked Blank	Colour	2019/05/21		99	34	80 - 120
5130899	NRG	Method Blank	Colour	2019/05/21	ND,		TCU	
					RDL=5.0			
5130899	NRG	RPD	Colour	2019/05/21	NC		%	20
5130992	GTO	Matrix Spike	Sulphide	2019/05/21		87	%	80 - 120
130992	GTO	Spiked Blank	Sulphide	2019/05/21		94	96	80 - 120
5130992	GTO	Method Blank	Sulphide	2019/05/21	ND,		mg/L	
					RDL=0.020			
130992	GTO	RPD	Sulphide	2019/05/21	NC		36	20
131033	BCD	Matrix Spike	isobutylbenzene – Extractable	2019/05/21		99	%	70 - 130
			n-Dotriacontane - Extractable	2019/05/21		111	76.	70 - 130
			>C10-C16 Hydrocarbons	2019/05/21		89	%	70 - 130
			>C16-C21 Hydrocarbons	2019/05/21		82	76	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/21</td><td></td><td>97</td><td>N</td><td>70 - 130</td></c32>	2019/05/21		97	N	70 - 130
131033	BCD	Spiked Blank	Isobutylbenzene - Extractable	2019/05/21		95	76	70 - 130
			n-Dotriacontane - Extractable	2019/05/21		109	%	70 - 130
			>C10-C16 Hydrocarbons	2019/05/21		99	76.	70 - 130
			>C16-C21 Hydrocarbons	2019/05/21		94	14	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/21</td><td></td><td>111</td><td>%</td><td>70 - 130</td></c32>	2019/05/21		111	%	70 - 130
5131033	BCD	Method Blank	isobutylbenzene - Extractable	2019/05/21		97	%	70 - 130
			n-Dotriacontane - Extractable	2019/05/21		99	%	70 - 130
			>C10-C16 Hydrocarbons	2019/05/21	ND, RDL=0.050		mg/L	
			>C16-C21 Hydrocarbons	2019/05/21	ND, RDL=0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/21</td><td>ND, RDL=0.10</td><td></td><td>mg/L</td><td></td></c32>	2019/05/21	ND, RDL=0.10		mg/L	
131033	BCD	RPD	>C10-C16 Hydrocarbons	2019/05/21	NC		76	40
			>C16-C21 Hydrocarbons	2019/05/21	NC		. %	40
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/21</td><td>NC</td><td></td><td>76</td><td>40</td></c32>	2019/05/21	NC		76	40
131192	CCR	Matrix Spike	Total Mercury (Hg)	2019/05/23		101	. %	80 - 120
131192	CCR	Spiked Blank	Total Mercury (Hg)	2019/05/23		99	76	80 - 120
131192	CCR	Method Blank	Total Mercury (Hg)	2019/05/23	ND, RDL=0.013		ug/L	
131192	CCR	RPD	Total Mercury (Hg)	2019/05/23	NC .		.96	20
132297	éAX	QC Standard	Adsorbable Organic Halogen			96	%	84 - 111
			Adsorbable Organic Halogen			96	YL.	84 - 111
132297	éAX	Method Blank	Adsorbable Organic Halogen		ND, RDL=0.5		mg/L	
			Adsorbable Organic Halogen		ND, RDL=0.5		mg/L	
133009	AM6	QC Standard	Volatile Suspended Solids	2019/05/22		95	.96	80 - 120
133009	AM6	Method Blank	Volatile Suspended Solids	2019/05/22	ND, RDL=2.0		mg/L	
133009	AM6	RPD	Volatile Suspended Solids	2019/05/22	0		. %	25
133108	EMT	QC Standard	pH	2019/05/22		101	76	97 - 103
133108	EMT	RPO	pН	2019/05/22	0.38		96	N/A
133115	EMT	Spiked Blank	Conductivity	2019/05/23		102	%	80 - 120
133115	EMT	Method Blank	Conductivity	2019/05/23	1.3, RDL=1.0		uS/cm	
5133115	EMT	RPO	Conductivity	2019/05/23	0.83		YL.	10
5135407	EMT	QC Standard	Turbidity	2019/05/23	(10 mm of 1)	111	%	80 - 120



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Site Location: POINT C, EFFLUENT SAMPLING

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QA/QC				part Andrew				
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5135407	EMT	Spiked Blank	Turbidity	2019/05/23		101	76	80 - 120
135407	EMT	Method Blank	Turbidity	2019/05/23	ND,		NTU	
-0.7505101	LOGINES.	TAUS H	ED-MARIACH I	T-300 Vi2-130	RDL=0.10			5000
5135407	EMT	RPD	Turbidity	2019/05/23	3.0		%	20
5136918	IC4	Spiked Blank	Total Nitrogen (N)	2019/05/22		98	%	80 - 120
6136918	IC4	Method Blank	Total Nitrogen (N)	2019/05/22	ND, RDL=0.020		mg/L	
5137355	BKE	Matrix Spike	Total Cyanide (CN)	2019/05/23		96	16	80 - 120
6137355	BKE	Spiked Blank	Total Cyanide (CN)	2019/05/23		101	34	80 - 120
5137355	BKE	Method Blank	Total Cyanide (CN)	2019/05/23	ND,		mg/L	
					RDL=0.0050			
5137355	BKE	RPD	Total Cyanide (CN)	2019/05/23	NC		%	20
6154326	KD9	Matrix Spike	Dissolved Chlorate (CIO3-)	2019/05/23		NC	96	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/23		NC	%	80 - 120
5154326	KD9	Spiked Blank	Dissolved Chlorate (CIO3-)	2019/05/19		94	96	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/19		92	%	80 - 120
6154326	KD9	Method Blank	Dissolved Chlorate (CiO3-)	2019/05/19	ND, RDL=0.10		mg/L	
			Dissolved Chlorite (CLO2-)	2019/05/19	ND, RDL=0.10		mg/L	
6154327 5	531	Matrix Spike	9,10-Dichlorostearic acid	2019/05/22		95	26	50 - 130
		Trial City Spring	Decanoic Acid (C10)	2019/05/22		93	%	50 - 130
			Docosanoic acid (C22)	2019/05/22		92	16.	50 - 130
			Dodecanoic acid (C12)	2019/05/22		91	96	50 - 130
			Eicosanoic acid (C20)	2019/05/22		101	96	50 - 130
			Hexadecanoic acid (C16)	2019/05/22		93	%	50 - 130
			Lingleic acid (C18:2)	2019/05/22		90	16	50 - 130
			Linolenic acid (C18:3)	2019/05/22		88	34	50 - 130
			Octadecanoic acid (C18)	2019/05/22		100	76	50 - 130
			Oleic acid (C18:1)	2019/05/22		98	%	50 - 130
			Tetradecandic acid (C14)	2019/05/22		92	%	50 - 130
			Undecanoic acid (C11)	2019/05/22		103	96	50 - 130
			12,14-Dichlorodehydroabietic acid	2019/05/22		89	76	50 - 130
			12-Chlorodehydroabletic acid	2019/05/22		84	%	50 - 130
			14-Chlorodehydroabietic acid	2019/05/22		88	%	50 - 130
			Abietic acid	2019/05/22		78	%	50 - 130
			Dehydroabietic acid	2019/05/22		99	76	50 - 130
			Isopimaric acid	2019/05/22		90	96	50 - 130
			Neoabietic acid	2019/05/22		59	%	50 - 130
			Palustric acid	2019/05/22		58	36	50 - 130
			Pimaric acid	2019/05/22		95	%	50 ~ 130
			Sandaracopimaric acid	2019/05/22		91	N	50 - 130
6154327	SJI	Spiked Blank	9,10-Dichlorostearic acid	2019/05/22		97	%	50 - 130
	200	Control of the second	Decanoic Acid (C10)	2019/05/22		91	36	50 - 130
			Docosanoic acid (C22)	2019/05/22		95	%	50 - 130
			Dodecanoic acid (C12)	2019/05/22		91	96	50 - 130
			Eicosanoic acid (C20)	2019/05/22		101	%	50 - 130
			Hexadecanoic acid (C16)	2019/05/22		98	96	50 - 130
			Linoleic acid (C18:2)	2019/05/22		91	%	50 - 130
			Linplenic acid (C18:3)	2019/05/22		87	96	50 - 130
			Octadecanpic acid (C18)	2019/05/22		108	%	50 - 130
			Oleic acid (C18:1)	2019/05/22		104	96	50 - 130
			Tetradecanoic acid (C14)	2019/05/22		91	36	50 - 130



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QA/QC Batch	init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
ATTOOR!	2104	100000000	Undecanoic acid (C11)	2019/05/22		100	16	50 - 130
			12,14-Dichlorodehydroabietic acid	2019/05/22		87	36	50 - 13
			12-Chlorodehydroabietic acid	2019/05/22		83	96	50 - 130
			14-Chlorodehydroabietic acid	2019/05/22		86	%	50 - 130
			Abietic acid	2019/05/22		74	%	50 - 130
			Dehydroabletic acid	2019/05/22		96	%	50 - 130
			Isopimaric acid	2019/05/22		91	76	50 - 130
			Nepabletic acid	2019/05/22		62	%	50 - 130
			Palustric acid	2019/05/22		63	%	50 - 13
			Pimaric acid	2019/05/22		92	%	50 - 130
			Sandaracopimaric acid	2019/05/22		90	76	50 - 130
6154327	531	Method Blank	Total Fatty Acids	2019/05/22	ND,		mg/L	
COCCOST (AS)		WENNEYS TONORIST	A TOO GRANT HEATEN	100000000000000000000000000000000000000	RDL=0.072		100000000000000000000000000000000000000	
			Total Resin Acids	2019/05/22	ND, RDL=0.060		mg/L	
			9,10-Dichlorostearic acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Decanoic Acid (C10)	2019/05/22	ND, RDL=0.0060		mg/L	
			Docosanoic acid (C22)	2019/05/22	ND, RDL=0.0060		mg/L	
			Dodecanoic acid (C12)	2019/05/22	ND, RDL=0.0060		mg/L	
			Eicosanoic acid (C20)	2019/05/22	ND, RDL=0.0060		mg/L	
			Hexadecanoic acid (C16)	2019/05/22	ND, RDL=0.0060		mg/L	
			Linoleic acid (C18:2)	2019/05/22	ND, RDL=0.0060		mg/L	
			Linolenic acid (C18:3)	2019/05/22	ND, RDL=0.0060		mg/L	
			Octadecanoic acid (C18)	2019/05/22	ND, RDL=0.0060		mg/L	
			Oleic acid (C18:1)	2019/05/22	ND, RDL=0.0060		mg/L	
			Tetradecanoic acid (C14)	2019/05/22	ND, RDL=0,0060		mg/L	
			Undecanoic acid (C11)	2019/05/22	ND, RDL=0.0060		mg/L	
			12,14-Dichlorodehydroabietic acid	2019/05/22	ND, RDL=0.0060		mg/L	
			12-Chlorodehydroabietic acid	2019/05/22	ND, RDL=0.0060		mg/L	
			14-Chlorodehydroabietic acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Abletic acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Dehydroabietic acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Isopimaric acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Neoabietic acid	2019/05/22	ND, RDL=0.0060		mg/L	



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
40110111			Palustric acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Pimaric acid	2019/05/22	ND, RDL=0.0060		mg/L	
			Sandaracopimaric acid	2019/05/22	ND,		mg/L	
2000	1000	12/04/17/20/17	11. 25-27-14/27 SAFETTY A 16-3-27-25-5	THEORYGENE	RDL=0.0060	744	32.0	50,427.00
6164383	OBC	Spiked Blank	C13-1234678 HeptaCDD	2019/06/09		86	76	30 - 130
			C13-1234678 HeptaCDF	2019/06/09		72	76	30 - 130
			C13-123678 HexaCDD	2019/06/09		110	94	30 - 130
			C13-123678 HexaCDF	2019/06/09		73	96	30 - 13
			C13-12378 PentaCDD	2019/06/09		71	96	30 - 13
			C13-12378 PentaCDF	2019/06/09		49	%	30 - 13
			C13-2378 TetraCDD	2019/06/09		76	96	30 - 13
			C13-2378 TetraCDF	2019/06/09		61	96	30 - 13
			C13-OCDD	2019/06/09		92	96	30 - 13
			2,3,7,8-Tetra CDD	2019/06/09		92	96.	80 - 14
			1,2,3,7,8-Penta CDD	2019/06/09		109	96	80 - 140
			1,2,3,4,7,8-Hexa CDD	2019/06/09		88	%	80 - 140
			1,2,3,5,7,8-Hexa CDD	2019/06/09		98	76	80 - 140
			1,2,3,7,8,9-Hexa CDD	2019/06/09		85	16	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2019/06/09		112	96	80 - 140
			Octa CDD	2019/06/09		80	76	80 - 14
			2,3,7,8-Tetra CDF	2019/06/09		111	%	80 - 14
			1,2,3,7,8-Penta CDF	2019/06/09		125	16	80 - 14
			2,3,4,7,8-Penta CDF	2019/06/09		115	%	80 - 14
			1,2,3,4,7,8-Hexa CDF	2019/06/09		122	76	80 - 14
			1,2,3,6,7,8-Hexa CDF	2019/06/09		130	%	80 - 14
			2,3,4,6,7,8-Hexa CDF	2019/06/09		135	16	80 - 14
			1,2,3,7,8,9-Hexa CDF	2019/06/09		139	96	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2019/06/09		113	76	80 - 14
			1,2,3,4,7,8,9-Hepta CDF	2019/06/09		113	14	80 - 14
			Octa CDF	2019/06/09		87	16	80 - 140
5164383	OBC	RPD	2,3,7,8-Tetra CDD	2019/06/09	11		96	35
			1,2,3,7,8-Penta CDD	2019/06/09	0.92		%	35
			1,2,3,4,7,8-Hexa CDO	2019/06/09	2.3		×	35
			1,2,3,6,7,8-Hexa CDD	2019/06/09	6.9		76	35
			1,2,3,7,8,9-Hexa CDD	2019/06/09	13		34	35
			1,2,3,4,6,7,8-Hepta CDD	2019/06/09	0		%	35
			Octa CDD	2019/06/09	0		76	35
			2,3,7,8-Tetra CDF	2019/06/09	7.5		%	35
			1,2,3,7,8-Penta CDF	2019/06/09	4.1		96	35
			2,3,4,7,8-Penta CDF	2019/06/09	4.4		96	35
			1,2,3,4,7,8-Hexa CDF	2019/06/09	10		96	35
			1,2,3,6,7,8-Hexa CDF	2019/06/09	6.3		36	35
			2,3,4,6,7,8-Hexa CDF	2019/06/09	3.8		96	35
			1,2,3,7,8,9-Hexa CDF	2019/06/09	5.2		%	35
			1,2,3,4,6,7,8-Hepta CDF	2019/06/09	4.5		76	35
			1,2,3,4,7,8,9-Hepta COF	2019/06/09	5.5		96	35
			Octa CDF	2019/06/09	0		96	35
164383	OBC	Method Blank	C13-1Z34678 HeptaCDD	2019/06/09		88	76	30 - 13
			C13-1234678 HeptaCDF	2019/06/09		82	%.	30 - 130
			C13-123678 HexaCDD	2019/06/09		99	96.	30 - 130
			C13-123678 HexaCDF	2019/06/09		66	26	30 - 130



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch Init QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QCLimit
100 m	C13-12378 PentaCDD	2019/06/09		70	16	30 - 130
	C13-12378 PentaCDF	2019/06/09		55	36	30 - 13
	C13-2378 TetraCDD	2019/06/09		83	96	30 - 13
	C13-2378 TetraCDF	2019/06/09		62	%	30 - 13
	C13-OCDD	2019/06/09		86	%	30 - 13
	2,3,7,8-Tetra CDD	2019/06/09	ND,		pg/L	
	15000		EDL=1.19		11.5	
	1,2,3,7,8-Penta CDD	2019/06/09	ND, EDL=1.14		pg/L	
	1,2,3,4,7,8-Hexa CDD	2019/06/09	ND, EDL=1.23		pg/L	
	1,2,3,6,7,8-Hexa CDD	2019/06/09	ND, EDL=1.07		pg/L	
	1,2,3,7,8,9-Hexa CDD	2019/06/09	ND, EDL=1.04		pg/t	
	1.2,3,4,6,7,8-Hepta CDD	2019/06/09	ND, EDL=1.14		pg/L	
	Octa CDD	2019/06/09	1.27, EDL=1.17		pg/L	
	Total Tetra CDD	2019/06/09	ND, EDL=1.19		pg/L	
	Total Penta CDD	2019/06/09	ND, EDL=1.14		pg/L	
	Total Hexa CDD	2019/06/09	ND, EDL=1.11		pg/L	
	Total Hepta CDD	2019/06/09	ND, EDL=1.14		pg/L	
	2,3,7,8-Tetra CDF	2019/06/09	ND, EDL=1.14		pg/L	
	1,2,3,7,8-Penta CDF	2019/06/09	ND, EDL=1.17		pg/L	
	2,3,4,7,8-Penta CDF	2019/06/09	ND, EDL=1.18		pg/L	
	1,2,3,4,7,8-Hexa CDF	2019/06/09	ND, EDL=1.14		pg/t	
	1.2.3,6.7,8-Hexa CDF	2019/06/09	ND, EDL=0.953		pg/L	
	2,3,4,6,7,8-Hexa CDF	2019/06/09	ND, EDL=1.08		pg/L	
	1,2,3,7,8,9-Hexa CDF	2019/06/09	ND, EDL=1.20		pg/L	
	1,2,3,4,6,7,8-Hepta CDF	2019/06/09	ND, EDL=0.997		pg/L	
	1,2,3,4,7,8,9-Hepta CDF	2019/06/09	ND, EDL=1.13		pg/t	
	Octa CDF	2019/06/09	ND, EDL=1.19		pg/L	
	Total Tetra COF	2019/06/09	ND, EDL=1.14		pg/L	
	Total Penta CDF	2019/06/09	ND, EDL=1.18		pg/t	
	Total Hexa CDF	2019/06/09	ND, EDL=1.09		pg/L	



Report Date: 2019/06/11

Northern Pulp N.S.

Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Hepta CDF	2019/06/09	ND,		pg/L	
				entre established	EDL=1.06			

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD). The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

- (1) Elevated reporting limit due to turbidity.
- (2) Due to a high concentration of NOx, the sample required dilution. The detection limit was adjusted accordingly.
- (3) Poor spike recovery due to sample matrix.



Northern Pulp N.S.

Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

the analytical data and all QC contained in this report were reviewe
Observe
Anastassia Hamanov, Scientific Specialist
Snelf to
Andy Lu, Ph.D., P.Chem., Scientific Specialist
Teny hong
and hand
Harry (Peng) Llang, Senior Analyst
/
Fr
Gayle Simpson, Senior Analyst
(A)
W. Jeanson
Ede Deseman Selectific Specialist
Eric Dearman, Scientific Specialist
While Thee Sulling
2
Mike MacGillivray, Scientific Specialist (Inorganics)
na 1
Staly
Owen Cosby, BSc.C.Chem. Supervisor, HRMS Services



Northern Pulp N.S.

Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

VALIDATION SIGNATURE PAGE(CONT'D)

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Rosemarie MacDonald, Scientific Specialist (Organics)

Jing yuan Soney

Jingyuan Song, QP, Organics – Senior Analyst

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Your Project #: BEDENV JOB# B9C9847 Your C.O.C. #: N-A

Attention: Maryann Comeau

Maxxam Analytics 200 Bluewater road Bedford, NS CANADA 848 1G9

Report Date: 2019/05/22

Report #: R2441470 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B917734 Received: 2019/05/17, 08:45

Sample Matrix: Water # Samples Received: 1

	Date	Date		
Analyses	Quantity Extracte	d Analyzed	Laboratory Method	Primary Reference
Phenols in Pulp & Paper mill effluents	1 2019/09	/21 2019/05/2	22 STL SOP-00121	MA.400-Phé 1.0 R3 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing. Maxxam is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Note: All parameters included in the present certificate are accredited by the MELCC unless stated otherwise.



Your Project #: BEDENV JOB# 89C9847 Your C.O.C. #: N-A

Attention: Maryann Comeau

Maxxam Analytics 200 Bluewater road Bedford, NS CANADA 84B 1G9

Report Date: 2019/05/22

Report #: R2441470 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B917734 Received: 2019/05/17, 08:45

Encryption Key

Sugmin detailless Profess Manager 23 May JOLA 12:00:18

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Sophie Retailleau, Project Manager Email: SRetailleau@maxxam.ca Phone# (514)448-9001 Ext:7066232

This report has been generated and distributed using a secure automated process.

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E). signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



PHENOLS BY GCMS (WATER)

Maxxam ID		GL0785		
Sampling Date		2019/05/14 08:20		
COC Number		N-A		
	Units	JSK101-13R\POINT C 14-MAY	RDL	QC Batch
PHENOLS		1 12.39112		
Total of Regl. P&P Phenols †	ug/L	9.2	5.6	1990581
Phenol	ug/L	0.96	0.50	1990581
2-Chlorophenol	ug/L	<0.50	0.50	1990581
3-Chlorophenol	ug/L	<0.50	0.50	1990581
4-Chlorophenol	ug/L	<0.50	0.50	1990581
o-Cresol	ug/L	0.85	0.50	1990581
m-Cresol	ug/L	<0.50	0.50	1990581
p-Cresol	ug/L	0.71	0.50	1990581
Guaiacol	ug/L	1.2	0.50	1990581
Catechol	ug/L	3.7	0.50	1990581
Eugenol	ug/L	<0.50	0.50	1990581
Isoeugenol	ug/L	<0.50	0.50	1990581
6-Chlorovanillin	ug/L	0.75	0.50	1990581
5,6-Dichlorovanillin	ug/L	<0.50	0.50	1990581
3,4,5-Trichlorosyringol	ug/L	<0.50	0.50	1990581
2,4-Dimethylphenol	ug/L	1.1	0.50	1990581
2,6-Dichlorophenol	ug/L	<0.50	0.50	1990581
3,5-Dichlorophenol	ug/L	<0.50	0.50	1990581
2,3-Dichlorophenal	ug/L	<0.50	0.50	1990581
3,4-Dichlorophenol	ug/L	<0.50	0.50	1990581
2,4 + 2,5-Dichlorophenol	ug/L	<0.50	0.50	1990581
2-Nitrophenol	ug/L	<1.0	1.0	1990581
4-Nitrophenol	ug/L	<5.0	5.0	1990581
2,4,6-Trichlorophenol	ug/L	<0.50	0.50	1990581
2,3,5-Trichlorophenol	ug/L	<0.50	0.50	1990581
2,3,6-Trichlorophenol	ug/L	<0.50	0.50	1990581
2,4,5-Trichlorophenol	ug/L	<0.50	0.50	1990581
2,3,4-Trichlorophenol	ug/L	<0.50	0.50	1990581
3,4,5-Trichlorophenol	ug/L	<1.2 (1)	1.2	1990581
4-Chloroguaiacol	ug/L	<0.50	0.50	1990581
4,5-Dichloroguaiacol	ug/L	<0.50	0.50	1990581
4,6-Dichloroguaiacol	ug/L	<5.6 (1)	5.6	1990581
2,3,5,6-Tetrachlorophenol	ug/L	<0.50	0.50	1990581

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

[†] Parameter is not accreditable

⁽¹⁾ Detection limit raised due to matrix interference.



Maxxam Analytics Client Project #: BEDENV JOB# 89C9847

PHENOLS BY GCMS (WATER)

Maxxam ID		GL0785		
Sampling Date		2019/05/14 08:20		
COC Number		N-A		
	Units	JSK101-13R\POINT C 14-MAY	RDL	QC Batch
2,3,4,6-Tetrachlorophenol	ug/L	<0.50	0.50	1990581
2,3,4,5-Tetrachlorophenol	ug/L	<0.50	0.50	1990581
4-Chlorocatechol	ug/L	<0.55 (1)	0.55	1990581
3,5-Dichlorocatechol	ug/L	<0.50	0.50	1990581
4,5-Dichlorocatechol	ug/L	<0.72 (1)	0.72	1990581
3,4,5-Trichloroguaiacol	ug/L	<0.50	0.50	1990581
4,5,6-Trichloroguaiacol	ug/L	<0.50	0.50	1990581
Pentachlorophenol	ug/L	<0.50	0.50	1990581
3,4,5-Trichlorocatechol	ug/L	<0.50	0.50	1990581
Tetrachlorocatechol	ug/L	<0.50	0.50	1990581
Tetrachloroguaiacol	ug/L	<0.50	0.50	1990581
4,5-Dichloroveratrol	ug/L	<0.50	0.50	1990581
3,4,5-Trichloroveratrol	ug/L	<0.50	0.50	1990581
3,4,5,6-Tetrachloroveratrol	ug/L	<0.50	0.50	1990581
Surrogate Recovery (%)	•	n -		-1
D6-Phenol	%	104	N/A	1990581
Tribromophenol-2,4,6	%	90	N/A	1990581
Trifluoro-m-cresol	%	103	N/A	1990581

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Detection limit raised due to matrix interference.



Maxxam Analytics Client Project #: BEDENV JOB# 89C9847

GENERAL COMMENTS

Each temperature is th	e average of up to	three cooler temperatures taken at re-	ceipt	
Package 1	2.7°C]		

PHENOLS BY GCMS (WATER)

Un-rounded results are used in the total Regl. P&P Phenols calculation. This total result is then rounded to two significant figures.

The total indicated is calculated only for the requested parameters.

Results relate only to the items tested.



Maxxam Analytics Client Project #: BEDENV JOB# 89C9847

QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter		Value	Recovery	Units	QC Limit
1990581	MAI	Spiked Blank	D6-Phenol	2019/05/22		116	76	50 - 13
			Tribromophenol-2,4,6	2019/05/22		95	74	50 - 13
			Triffuoro-m-cresol	2019/05/22		116	76	50 - 13
			Phenol	2019/05/22		117	96	50 - 13
			Z-Chlorophenol	2019/05/22		111	76	50 - 13
			3-Chlorophenol	2019/05/22		114	16	50 - 13
			4-Chlorophenol	2019/05/22		111	76	50 - 13
			o-Cresol	2019/05/22		120	36	50 - 13
			m-Cresol	2019/05/22		120	%	50 - 13
			p-Cresol	2019/05/22		117	%	50 - 13
			2,4-Dimethylphenol	2019/05/22		108	%	50 - 13
			2,6-Dichlorophenol	2019/05/22		116	34	50 - 13
			3,5-Dichlorophenoi	2019/05/22		105	96	50 - 13
			2,3-Dichlorophenol	2019/05/22		109	%	50 - 13
			3,4-Dichlorophenol	2019/05/22		110	96	50 - 13
			2,4 + 2,5-Dichlorophenol	2019/05/22		111	76	50 - 13
			2-Nitrophenol	2019/05/22		109	%	50 - 13
			4-Nitrophenol	2019/05/22		107	74	50 - 13
			2,4,6-Trichlorophenol	2019/05/22		110	36.	50 - 13
			2,3,5-Trichlorophenol	2019/05/22		102	96	50 - 13
			2,3,6-Trichlorophenol	2019/05/22		117	%	50 - 13
			2,4,5-Trichlarophenol	2019/05/22		113	26	50 - 13
			2,3,4-Trichlorophenol	2019/05/22		110	%	50 - 13
			3,4,5-Trichlorophenol	2019/05/22		108	%	50 - 13
			2,3,5,6-Tetrachlorophenol	2019/05/22		103	76	50 - 13
			2,3,4,6-Tetrachlorophenol	2019/05/22		110	%	50 - 13
			2,3,4,5-Tetrachlorophenol	2019/05/22		102	16	50 - 13
			Pentachlorophenol	2019/05/22		94	96	50 - 13
1990581	MAI	Spiked Blank DUP	D6-Phenol	2019/05/22		112	76	50 - 13
			Tribromophenol-2,4,6	2019/05/22		92	16	50 - 13
			Triffuoro-m-cresol	2019/05/22		110	16	50 - 13
			Phenol	2019/05/22		115	96	50 - 13
			Z-Chlorophenol	2019/05/22		108	76	50 - 13
			3-Chlorophenol	2019/05/22		111	16	50 - 13
			4-Chlorophenol	2019/05/22		108	%	50 - 13
			o-Cresol	2019/05/22		119	96	50 - 13
			m-Cresol	2019/05/22		119	%	50 - 13
			p-Cresol	2019/05/22		113	96	50 - 13
			2,4-Dimethylphenol	2019/05/22		106	%	50 - 13
			2,6-Dichlorophenol	2019/05/22		113	96	50 - 13
			3,5-Dichlorophenoi	2019/05/22		104	96	50 - 13
			2,3-Dichlorophenol	2019/05/22		108	%	50 - 13
			3,4-Dichlorophenol	2019/05/22		109	%	50 - 13
			2,4 + 2,5-Dichlorophenol	2019/05/22		108	96	50 - 13
			Z-Nitrophenol	2019/05/22		108	%	50 - 13
			4-Nitrophenol	2019/05/22		106	76	50 - 13
			2,4,6-Trichlorophenol	2019/05/22		109	%	50 - 13
			2,3,5-Trichlorophenol	2019/05/22		101	96	50 - 13
			2.3,6-Trichlarophenol	2019/05/22		115	%	50 - 13
			2,4,5-Trichlorophenol	2019/05/22		113	%	50 - 13
			2,3,4-Trichlorophenol	2019/05/22		109	16	50 - 13
			3,4,5-Trichlorophenol	2019/05/22		108	96	50 - 13
			2,3,5,6-Tetrachlorophenol	2019/05/22		102	76	50 - 13



Maxxam Analytics Client Project #: BEDENV JOB# 89C9847

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limit
			2,3,4,6-Tetrachiorophenol	2019/05/22	2,771	109	76	50 - 13
			2,3,4,5-Tetrachlorophenol	2019/05/22		102	14	50 - 13
			Pentachlorophenol	2019/05/22		92	76	50 - 13
990581	MA1	Method Blank	D6-Phenol	2019/05/22		108	96	50 - 13
			Total of Regi. P&P Phenois	2019/05/22	<5.0		ug/L	
			Tribromophenol-2,4,6	2019/05/22		89	16	50 - 13
			Trifluoro-m-cresol	2019/05/22		105	%	50 - 13
			Phenol	2019/05/22	< 0.50		ug/L	
			2-Chlorophenol	2019/05/22	< 0.50		ug/L	
			3-Chlorophenol	2019/05/22	< 0.50		ug/L	
			4-Chlorophenol	2019/05/22	< 0.50		ug/L	
			o-Cresol	2019/05/22	< 0.50		ug/L	
			m-Cresol	2019/05/22	< 0.50		ug/L	
			p-Cresol	2019/05/22	<0.50		ug/L	
			Gualacol	2019/05/22	< 0.50		ug/L	
			Catechol	2019/05/22	< 0.50		ug/L	
			Eugenol	2019/05/22	< 0.50		ug/L	
			Isoeugenal	2019/05/22	< 0.50		ug/L	
			6-Chlorovanillin	2019/05/22	< 0.50		ug/L	
			5,6-Dichlorovanillin	2019/05/22	< 0.50		ug/L	
			3,4,5-Trichlorosyringol	2019/05/22	< 0.50		ug/L	
			2,4-Dimethylphenol	2019/05/22	< 0.50		ug/L	
			2,6-Dichlorophenol	2019/05/22	< 0.50		ug/L	
			3,5-Dichlorophenol	2019/05/22	< 0.50		ug/L	
			2,3-Dichlorophenol	2019/05/22	< 0.50		ug/t	
			3,4-Dichlorophenol	2019/05/22	<0.50		ug/t	
			2,4 + 2,5-Dichlorophenal	2019/05/22	< 0.50		ug/L	
			2-Nitrophenol	2019/05/22	<1.0		ug/L	
			4-Nitrophenol	2019/05/22	<5.0		ug/L	
			2,4,6-Trichlorophenol	2019/05/22	< 0.50		ug/L	
			2,3,5-Trichlorophenol	2019/05/22	< 0.50		ug/L	
			2,3,6-Trichlorophenol	2019/05/22	< 0.50		ug/L	
			2,4,5-Trichlorophenol	2019/05/22	< 0.50		ug/L	
			2,3,4-Trichlorophenol	2019/05/22	< 0.50		ug/L	
			3,4,5-Trichlorophenol	2019/05/22	< 0.50		ug/L	
			4-Chlorogualacol	2019/05/22	< 0.50		ug/L	
			4,5-Dichloroguaiacol	2019/05/22	< 0.50		ug/L	
			4,6-Dichlorogualacol	2019/05/22	< 0.50		ug/L	
			2,3,5,6-Tetrachlorophenol	2019/05/22	< 0.50		ug/L	
			2,3,4,6-Tetrachlorophenol	2019/05/22	< 0.50		ug/L	
			2,3,4,5-Tetrachiorophenoi	2019/05/22	< 0.50		ug/L	
			4-Chlorocatechol	2019/05/22	< 0.50		ug/L	
			3,5-Dichlorocatechol	2019/05/22	< 0.50		ug/L	
			4,5-Dichlorocatechol	2019/05/22	< 0.50		ug/L	
			3,4,5-Trichloroguaiacol	2019/05/22	< 0.50		ug/L	
			4,5,6-Trichloroguaiacol	2019/05/22	<0.50		ug/L	
			Pentachlorophenol	2019/05/22	<0.50		ug/L	
			3,4,5-Trichlorocatechol	2019/05/22	< 0.50		ug/L	
			Tetrachiorocatechol	2019/05/22	< 0.50		ug/L	
			Tetrachloroguaiacol	2019/05/22	<0.50		ug/L	
			4,5-Dichloroveratrol	2019/05/22	<0.50		ug/L	
			3,4,5-Trichloroveratrol	2019/05/22	<0.50		ug/L	



Maxxam Analytics Client Project #: BEDENV JOB# 89C9847

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			3,4,5,6-Tetrachioroveratrol	2019/05/22	<0.50	- 0.000	ug/L	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination,

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



Maxxam Analytics Client Project #: BEDENV JOB# 89C9847

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

MAXXAM ANALYTICS

200 Bluewater Road Bedford, Nova Scotia, 848 1G9 (902) 420-0203 (902) 420-8612



Northern Pulp N.S.

Maxxam PM: Maryann Comean

SUBCONTRACTING REQUEST FORM

							William Ellister
Sample ID			Matrix	Test(s) Required		Container	Date Sampled Date Required
SX101-11RVP	OINT C 14-M	AY	w	Phonois in Pulp and P	aper Mill Effluents	2-DPHE	2019/05/14 08:20 2019/05/22
Cooler #1		7		Custody Seal Present	VES	(NO)	
	2	13	13	Custody Seal Intact	YES.	(NO)	
			/	ice Present Upon Receipt	(res)	NO	
cooler #2				Custody Seal Present	YES	NO	
	1	1		Custody Seal Intact	YES	NO	
				ce Present Upon Receipt	YES	NO	
Cooler #3				Custody Seal Present	YES	NO	
		1	1	Custody Seal Intact	YES	NO	
				toe Present Upon Receipt	YES	NO	
Received by (To be a least	idia		(print) -	FORN BURKE TRUMG-LUK		Date and Time 20/9/05/15 153 Date and Time 20/9/05-17 08: UPS W \$34
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Your Project #: DB8C8821

Site Location: EXTRA EFFLUENT TESTING

Your C.O.C. #: 1 of 1

Attention: BEDFORD CLIENT SERVICE

MAXXAM ANALYTICS 200 BLUEWATER ROAD, SUITE 105 BEDFORD, NS CANADA B4B 1G9

Report Date: 2018/06/07

Report #: R2566003 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B842771 Received: 2018/06/01, 09:00

Sample Matrix: Water # Samples Received: 1

	Date	Date		
Analyses	Quantity Extra	ted Analyzed	Laboratory Method	Analytical Method
Sulphite by IC	1 N/A	2018/06/0	2 AB SOP-00026 / CAL SOP- 00071	SM 23 4110 B m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.



Your Project #: D88C8821

Site Location: EXTRA EFFLUENT TESTING

Your C.O.C. #: 1 of 1

Attention: BEDFORD CLIENT SERVICE

MAXXAM ANALYTICS 200 BLUEWATER ROAD, SUITE 105 BEDFORD, NS CANADA 84B 1G9

Report Date: 2018/06/07

Report #: R2566003 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B842771 Received: 2018/06/01, 09:00

Encryption Key



Maxxam 07 Jun 2018 12:34:09

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Omran Desouki, Junior Project Manager

Email: ODesouki@maxxam.ca

Phone# (403) 291-3077

......

This report has been generated and distributed using a secure automated process.

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Maxxam Job #: B842771 Report Date: 2018/06/07 MAXXAM ANALYTICS Client Project #: DB8C8821

Site Location: EXTRA EFFLUENT TESTING

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		TO0481	T00481		
Sampling Date		2018/05/29 13:04	2018/05/29 13:04		
COC Number		1 of 1	1 of 1		
	UNITS	POINT C (GVB582)	POINT C (GVB582) Lab-Dup	RDL	QC Batch
Anions					
Dissolved Sulphite (SO3)	mg/t,	<25 (1)	<25	25	9010453
PDI - Panastable Datestics	a t loods				77

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

(1) Detection limits raised due to matrix interference.



Maxxam Job #: B842771 Report Date: 2018/06/07 MAXXAM ANALYTICS Client Project #: DB8C8821

Site Location: EXTRA EFFLUENT TESTING

GENERAL COMMENTS

2.0°C].	
		average of up to three cooler temperatures taken at receipt 2.0°C





QUALITY ASSURANCE REPORT

MAXXAM ANALYTICS Client Project #: DB8C8821 Site Location: EXTRA EFFLUENT TESTING

very QC Limits % Recovery QC Limits Value L 80-120 103 80-120 <0.50				Matrix Spike	Spike	Spiked Blan	Blank	Method Blan	Blank	RPD	٥
NC 80-120 103 80-120 <0.50 mg/L	QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
	9010453	Dissolved Sulphite (SO3)	2018/06/02	NC	80-120	103	80-120	<0.50	mg/L	NC	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too fow to permit a reliable RPD calculation (absolute difference <= 2x RDL)



Maxxam Job #: B842771 Report Date: 2018/06/07 MAXXAM ANALYTICS Client Project #: DB8C8821

Site Location: EXTRA EFFLUENT TESTING

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics

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Page 1 of 3

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Your Project #: 89J7249 Your C.O.C. #: n/a

Attention: Maryann Comeau

Bureau Veritas Laboratories 200 Bluewater road Bedford, NS CANADA B4B 1G9

Report Date: 2019/07/25

Report #: R2459078 Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: 8932382 Received: 2019/07/19, 09:00

Sample Matrix: Water # Samples Received: 1

	Date	Date		
Analyses	Quantity Extracted	Analyzed	Laboratory Method	Primary Reference
Phenols in Pulp & Paper mill effluents	1 2019/07/	22 2019/07/2	4 STL SOP-00121	MA.400-Phé 1.0 R3 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Note: All parameters included in the present certificate are accredited by the MELCC unless stated otherwise:



Your Project #: 89J7249 Your C.O.C. #: n/a

Attention: Maryann Comeau

Bureau Veritas Laboratories 200 Bluewater road Bedford, NS CANADA 84B 1G9

Report Date: 2019/07/25

Report #: R2459078 Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: 8932382 Received: 2019/07/19, 09:00

Encryption Key

Signio detailless 25/2005 Manager 26 Jul J014 08:57:38

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Sophie Retailleau, Project Manager Email: Sophie RETAILLEAU@bylabs.com Phone# (514)448-9001 Ext:7066232

This report has been generated and distributed using a secure automated process.

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

PHENOLS BY GCMS (WATER)

Lab BV ID		GS4463		
Sampling Date		2019/07/17		
COC Number		n/a		
	Units	KHI008-13R/POINT C17-JUL	RDL	QC Batch
PHENOLS				
Total of Regl. P&P Phenols †	ug/L	6.8	5.0	2010808
Phenol	ug/L	0.99	0.50	2010808
2-Chlorophenol	ug/L	<0.50	0.50	2010808
3-Chlorophenol	ug/L	<0.50	0.50	2010808
4-Chlorophenol	ug/L	<0.50	0.50	2010808
o-Cresol	ug/L	0.70	0.50	2010808
m-Cresol	ug/L	<0.50	0.50	2010808
p-Cresol	ug/L	1.2	0.50	2010808
Gualacol	ug/L	1.3	0.50	2010808
Catechol	ug/L	1.8	0.50	2010808
Eugenol	ug/L	<0.50	0.50	2010808
Isoeugenal	ug/L	<0.50	0.50	2010808
6-Chlorovanillin	ug/L	<0.50	0.50	2010808
5,6-Dichlorovanillin	ug/L	<0.50	0.50	2010808
3,4,5-Trichlorosyringol	ug/L	<0.50	0.50	2010808
2,4-Dimethylphenol	ug/L	0.85	0.50	2010808
2,6-Dichlorophenol	ug/L	<0.50	0.50	2010808
3,5-Dichlorophenol	ug/L	<1.8 (1)	1.8	2010808
2,3-Dichlorophenol	ug/L	<0.50	0.50	2010808
3,4-Dichlorophenol	ug/L	<0.50	0.50	2010808
2,4 + 2,5-Dichlorophenal	ug/L	<1.3 (2)	1.3	2010808
2-Nitrophenol	ug/L	<1.0	1.0	2010808
4-Nitrophenol	ug/L	<5.0	5.0	2010808
2,4,6-Trichlorophenol	ug/L	<0.50	0.50	2010808
2,3,5-Trichlorophenol	ug/L	<0.50	0.50	2010808
2,3,6-Trichlorophenol	ug/L	<0.50	0.50	2010808
2,4,5-Trichlorophenol	ug/L	<0.50	0.50	2010808
2,3,4-Trichlorophenol	ug/L	<0.50	0.50	2010808
3,4,5-Trichlorophenol	ug/L	<0.50	0.50	2010808
4-Chloroguaiacol	ug/L	<0.50	0.50	2010808
4,5-Dichlorogualacol	ug/L	<0.50	0.50	2010808
4,6-Dichloroguaiacol	ug/L	<0.50	0.50	2010808
2,3,5,6-Tetrachlorophenol	ug/L	<0.50	0.50	2010808

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

[†] Parameter is not accreditable

⁽¹⁾ Detection limit raised due to matrix interference.

⁽²⁾ Dû à l'interférence de la matrice, la limite de détection a été augmentée.



PHENOLS BY GCMS (WATER)

Lab BV ID		GS4463		J.
Sampling Date		2019/07/17		
COC Number		n/a		
	Units	KHI008-13R/POINT C17-JUL	RDL	QC Batch
2,3,4,6-Tetrachlorophenol	ug/L	<0.50	0.50	2010808
2,3,4,5-Tetrachiorophenol	ug/L	<0.50	0.50	2010808
4-Chlorocatechol	ug/L	<0.50	0.50	2010808
3,5-Dichlorocatechol	ug/L	<0.50	0.50	2010808
4,5-Dichlorocatechol	ug/L	<0.50	0.50	2010808
3,4,5-Trichlorogualacol	ug/L	<0.50	0.50	2010808
4,5,6-Trichloroguaiacol	ug/L	<0.50	0.50	2010808
Pentachlorophenol	ug/L	<0.50	0.50	2010808
3,4,5-Trichlorocatechol	ug/L	<0.50	0.50	2010808
Tetrachiorocatechol	ug/L	<0.50	0.50	2010808
Tetrachlorogualacol	ug/L	<0.50	0.50	2010808
4,5-Dichloroveratrol	ug/L	<0.50	0.50	2010808
3,4,5-Trichloroveratrol	ug/L	<0.50	0.50	2010808
3,4,5,6-Tetrachloroveratrol	ug/L	<0.50	0.50	2010808
Surrogate Recovery (%)				
D6-Phenol	%	86	N/A	2010808
Tribromophenol-2,4,6	%	98	N/A	2010808
Trifluoro-m-cresol	96	91	N/A	2010808

QC Batch = Quality Control Batch

N/A = Not Applicable



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.0°C
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PHENOLS BY GCMS (WATER)

Un-rounded results are used in the total "Total Phenols (RFPP)" calculation. This total result is then rounded to two significant figures.

The total indicated is calculated only for the requested parameters.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC	V1940	Cartellance	w945.6944777	upon process contactors over	NAME OF THE OWNER, OWNE	40.0000000	04X1X6-7	Calculate State Co.
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limit
2010808	MAI	Spiked Blank	D6-Phenol	2019/07/23		102	76.	50 - 13
			Tribromophenol-2,4,6	2019/07/23		105	14	50 - 13
			Trifluoro-m-cresol	2019/07/23		102	76	50 - 13
			Phenal	2019/07/23		90	96	50 - 13
			2-Chlorophenol	2019/07/23		88	76	50 - 13
			3-Chlorophenol	2019/07/23		87	16	50 - 13
			4-Chlorophenol	2019/07/23		86	%	50 - 13
			o-Cresol	2019/07/23		98	96	50 - 13
			m-Cresol	2019/07/23		95	%	50 - 13
			p-Cresol	2019/07/23		93	%	50 - 13
			2,4-Dimethylphenol	2019/07/23		. 88	%	50 - 13
			2,6-Dichlorophenol	2019/07/23		95	94	50 - 13
			3,5-Dichlorophenol	2019/07/23		86	96	50 - 13
			2,3-Dichlorophenol	2019/07/23		90	%	50 - 13
			3,4-Dichlorophenol	2019/07/23		90	%	50 - 13
			2,4 + 2,5-Dichlorophenol	2019/07/23		91	76	50 - 13
			2-Nitrophenol	2019/07/23		86	%	50 - 13
			4-Nitrophenol	2019/07/23		83	94	50 - 13
			2,4,6-Trichlorophenol	2019/07/23		92	96.	50 - 13
			2,3,5-Trichlorophenol	2019/07/23		85	96	50 - 13
			2,3,6-Trichlorophenol	2019/07/23		96	%	50 - 13
			2,4,5-Trichlarophenol	2019/07/23		95	26	50 - 1
			2,3,4-Trichlorophenol	2019/07/23		93	76	50 - 13
			3,4,5-Trichlorophenol	2019/07/23		91	%	50 - 13
			2,3,5,6-Tetrachlorophenol	2019/07/23		92	76	50 - 13
			2,3,4,6-Tetrachlorophenol	2019/07/23		92	N	50 - 13
			2,3,4,5-Tetrachlorophenol	2019/07/23		87	16	50 - 13
			Pentachlorophenol	2019/07/23		83	96	50 - 13
010808	MAI	Spiked Blank DUP	D6-Phenol	2019/07/23		106	76	50 - 13
			Tribromophenol-2,4,6	2019/07/23		103	14	50 - 13
			Triffuoro-m-cresol	2019/07/23		103	16	50 - 13
			Phenol	2019/07/23		102	96	50 - 1
			Z-Chlorophenol	2019/07/23		97	76	50 - 13
			3-Chlorophenol	2019/07/23		98	14	50 - 13
			4-Chlorophenol	2019/07/23		96	76	50 - 13
			o-Cresol	2019/07/23		108	96	50 - 13
			m-Cresol	2019/07/23		107	%	50 - 13
			p-Cresol	2019/07/23		101	96	50 - 13
			2,4-Dimethylphenol	2019/07/23		95	%	50 - 13
			2,6-Dichlorophenol	2019/07/23		102	94	50 - 13
			3,5-Dichlorophenoi	2019/07/23		93	96	50 - 1
			2,3-Dichlorophenol	2019/07/23		97	96	50 - 1
			3,4-Dichlorophenol	2019/07/23		97	%	50 - 13
			2,4 + 2,5-Dichlorophenol	2019/07/23		98	96	50 - 1
			2-Nitrophenol	2019/07/23		93	%	50 - 1
			4-Nitrophenol	2019/07/23		89	14	50 - 1
			2,4,6-Trichlorophenol	2019/07/23		99	96.	50 - 13
			2,3,5-Trichlorophenol	2019/07/23		91	96	50 - 13
			2.3.6-Trichlorophenol	2019/07/23		103	%	50 - 13
			2,4,5-Trichlorophenol	2019/07/23		103	YL.	50 - 13
			2,3,4-Trichlaraphenal	2019/07/23		98	16	50 - 13
			3,4,5-Trichlorophenol	2019/07/23		95	96	50 - 13
			2,3,5,6-Tetrachlorophenol	2019/07/23		100	%	50 - 13



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limit
			2,3,4,6-Tetrachlorophenol	2019/07/23		99	76	50 - 13
			2,3,4,5-Tetrachlorophenol	2019/07/23		93	74	50 - 13
			Pentachlorophenol	2019/07/23		88	76	50 - 13
2010808	MA1	Method Blank	D6-Phenol	2019/07/23		97	96	50 - 130
			Total of Regl. P&P Phenois	2019/07/23	<5.0		ug/L	
			Tribromophenol-2,4,6	2019/07/23		99	76	50 - 13
			Trifluoro-m-cresol	2019/07/23		95	76	50 - 13
			Phenol	2019/07/23	< 0.50		ug/L	
			2-Chlorophenol	2019/07/23	< 0.50		ug/L	
			3-Chlorophenol	2019/07/23	< 0.50		ug/L	
			4-Chlorophenol	2019/07/23	< 0.50		ug/L	
			o-Cresol	2019/07/23	< 0.50		ug/L	
			m-Cresol	2019/07/23	< 0.50		ug/L	
			p-Cresol	2019/07/23	< 0.50		ug/L	
			Gualacol	2019/07/23	< 0.50		ug/L	
			Catechol	2019/07/23	< 0.50		ug/L	
			Eugenol	2019/07/23	< 0.50		ug/L	
			Isoeugenal	2019/07/23	< 0.50		ug/L	
			6-Chlorovanillin	2019/07/23	< 0.50		ug/L	
			5,6-Dichlorovanillin	2019/07/23	< 0.50		ug/L	
			3,4,5-Trichlorosyringol	2019/07/23	< 0.50		ug/L	
			2,4-Dimethylphenol	2019/07/23	<0.50		ug/L	
			2,6-Dichlorophenol	2019/07/23	< 0.50		ug/L	
			3,5-Dichlorophenol	2019/07/23	< 0.50		ug/L	
			2,3-Dichlorophenol	2019/07/23	< 0.50		ug/L	
			3,4-Dichlorophenol	2019/07/23	< 0.50		ug/L	
			2,4 + 2,5-Dichlorophenal	2019/07/23	< 0.50		ug/L	
			2-Nitrophenol	2019/07/23	<1.0		ug/L	
			4-Nitrophenol	2019/07/23	<5.0		ug/L	
			2,4,6-Trichlorophenol	2019/07/23	< 0.50		ug/L	
			2,3,5-Trichlarophenol	2019/07/23	< 0.50		ug/L	
			2,3,6-Trichlorophenol	2019/07/23	< 0.50		ug/L	
			2,4,5-Trichlorophenol	2019/07/23	< 0.50		ug/L	
			2,3,4-Trichlorophenol	2019/07/23	< 0.50		ug/L	
			3,4,5-Trichlorophenol	2019/07/23	<0.50		ug/L	
			4-Chloroguaiacol	2019/07/23	<0.50		ug/L	
			4,5-Dichloroguaiscol	2019/07/23	< 0.50		ug/L	
			4,6-Dichlorogualacol	2019/07/23	<0.50		ug/L	
			2,3,5,6-Tetrachlorophenol	2019/07/23	<0.50		ug/L	
			2,3,4,6-Tetrachlorophenol	2019/07/23	<0.50		ug/L	
			2,3,4,5-Tetrachiorophenoi	2019/07/23	<0.50		ug/L	
			4-Chiorocatechol	2019/07/23	<0.50		ug/L	
			3.5-Dichlorocatechol	2019/07/23	<0.50			
							ug/L	
			4,5-Dichlorocatechol	2019/07/23	<0.50		ug/L	
			3,4,5-Trichlorogualacol	2019/07/23	<0.50 <0.50		ug/L	
			4,5,6-Trichloroguaiacol	0.640,000,000,000			ug/L	
			Pentachlorophenol	2019/07/23	<0.50		ug/L	
			3,4,5-Trichlorocatechol	2019/07/23	<0.50		ug/L	
			Tetrachlorocatechol	2019/07/23	<0.50		ug/L	
			Tetrachloroguaiacol	2019/07/23	<0.50		ug/L	
			4,5-Dichloroveratrol	2019/07/23	< 0.50		ug/L	
			3,4,5-Trichloroveratrol	2019/07/23	< 0.50		ug/L	



Lab BV Job #: B932382 Bureau Veritas Laboratories
Report Date: 2019/07/25 Client Project #: B9J7249

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			3,4,5,6-Tetrachioroveratrol	2019/07/23	< 0.50		ug/L	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination,

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Jean-Frederic Lamy, B.Sc., Chemist, Scientific Service Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau.Veritas Laboratories

360 Bluewater Road

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Bedford, Nova Scotia, 848 169 (902) 420-0203

(902) 420-8612

19-Jul-19 09:00 Sophic Retailleau

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DV MTL-001



1/1

	Northern Pulp N.S
11	BV Labs PM : Maryann Comea

Yes Un	o Special Pro	otocol (if ye	s, Protocol						
Sample ID			Matrix	Test(s) Required		C	ntainer	Date Sampled	Date Requires
0H008-13RV	Point C 17-JUL		W	Phenois in Pulp and	i Paper Mill Efflue	nts 2	-DPHE	2019/07/17	2019/07/25
	Temp. 1	Temp. 2	Temp. 3	1					
ooler#1	le:	Li	L	Custody Seal Present. Custody Seal Intact		ES ES	NO U		
	4	-1		Ice Present Upon Rece		ES U	NO		
poler #2				Custody Seal Present		ES	NO		
		1		Custody Seal Intact		ES	NO		
				ice Present Upon Rece	ipt	ES	NO		
Cooler #3				Custody Seal Present		ES	NO		
		1		Custody Seal Intact		ES	NO:		
		-		Ice Present Upon Rece	ipe p	ES	NO:		
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Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant Site Location: POINT C, EFFLUENT SAMPLING

Your C.O.C. #: 725413-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report #: R5840663

Version: 5 - Partial

CERTIFICATE OF ANALYSIS - PARTIAL RESULTS

BV LABS JOB #: 89J7249 Received: 2019/07/17, 12:43

Sample Matrix: Water # Samples Received: 1

Š	Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Ŗ,	Carbonate, Bicarbonate and Hydroxide	1	N/A	2019/07/22	N/A	SM 23 4500-CO2 D
*	Alkalinity	1	N/A	2019/07/23	ATL SOP 00013	EPA 310.2 R1974 m
Ħ	Benzo(b/j)fluoranthene Sum (water)	1	N/A	2019/07/22	N/A	Auto Calc.
٠	Carbonaceous BOD	1	2019/07/18	2019/07/23	ATL SOP 00041	SM 23 5210B m
ű.	Chloride	1	N/A	2019/07/23	ATL SOP 00014	SM 23 4500-CI- E m
ħ.	Chemical Oxygen Demand (COD)	1	N/A	2019/07/18	ATL SOP 00042	SM 23 5220D m
	Colour	1	N/A	2019/07/23	ATL SOP 00020	SM 23 2120C m
V.	Total Cyanide (1)	1	2019/07/19	2019/07/19	CAM SOP-00457	OMOE E3015 5 m
1	Conductance - water	1	N/A	2019/07/22	ATL SOP 00004	SM 23 2510B m
a.	TEH in Water (PIRI)	1	2019/07/29	2019/07/29	ATL SOP 00113	Atl, RBCA v3.1 m
ő.	Sulphide as H2S (1)	1	N/A	2019/07/23		
7	Hardness (calculated as CaCO3)	1	N/A	2019/07/23	ATL SOP 00048	Auto Calc
ĭ	Mercury - Total (CVAA,LL)	1	2019/07/18	2019/07/19	ATL SOP 00026	EPA 245.1 R3 m
*	Metals Water Total MS	1	2019/07/19	2019/07/22	ATL SOP 00058	EPA 6020B R2 m
>	ion Balance (% Difference)	1	N/A	2019/07/24	N/A	Auto Calc.
m	Anion and Cation Sum	1	N/A	2019/07/23	N/A	Auto Calc.
	Organic Halogen (Adsorbable) (2)	1	2019/07/22	2019/07/22	PTC SOP-00056	Coulometric - Titr.
	Chlorate and Chlorite by IC (3)	1	N/A	2019/07/25	CAL 5OP-00040	SM 23 41100 m
	Resin and Fatty Acids (3)	1	2019/07/21	2019/07/22	CAL SOP-00099	AE129.0
	Nitrogen Ammonia - water	1	N/A	2019/07/22	ATL SOP 00015	EPA 350.1 R2 m
	Nitrogen - Nitrate + Nitrite	1	N/A	2019/07/23	ATL SOP 00016	USGS I-2547-11m
	Nitrogen - Nitrite	1	N/A	2019/07/23	ATL SOP 00017	SM 23 4500-NO2- B m
	Nitrogen - Nitrate (as N)	1	N/A	2019/07/24	ATL SOP 00018	ASTM D3867-16
	PAH in Water by GC/MS (SIM)	1	2019/07/19	2019/07/19	ATL SOP 00103	EPA 8270E R6 m
	PCBs in water by GC/ECD	1	2019/07/22	2019/07/23	ATL SOP 00107	EPA 8082A m
	PCB Aroclor sum (water)	1	N/A	2019/07/23	N/A	Auto Calc
	Phenois in Pulp and Paper Mill Effluents (4)	1	2019/07/23	2019/07/24		
	pH (5)	1	N/A	2019/07/22	ATL SOP 00003	SM 23 4500-H+ 8 m
	Phosphorus - ortho	1	N/A	2019/07/24	ATL SOP 00021	SM 23 4500-P E m
	Salinity (6)	.1	N/A	2019/07/18		SM 22 2520B
	Sat. pH and Langelier Index (@ 20C)	1	N/A	2019/07/24	ATL SOP 00049	Auto Calc.



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant Site Location: POINT C, EFFLUENT SAMPLING

Your C.O.C. #: 725413-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/08/15

Report #: R5840663 Version: 5 - Partial

CERTIFICATE OF ANALYSIS - PARTIAL RESULTS

BV LABS JOB #: 89J7249 Received: 2019/07/17, 12:43

Sample Matrix: Water # Samples Received: 1

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Reference
Sat. pH and Langelier Index (@ 4C)	1	N/A	2019/07/24	ATL SOP 00049	Auto Calc
Reactive Silica	1	N/A	2019/07/23	ATL SOP 00022	EPA 366.0 m
Sulphate	1	N/A	2019/07/24	ATL SOP 00023	ASTM D516-16 m
Sulphide (1)	1	N/A	2019/07/22	CAM SOP-00455	SM 23 4500-S G m
Total Dissolved Solids (TDS calc)	1	N/A	2019/07/24	N/A	Auto Calc.
Total Kjeldahl Nitrogen in Water (1)	1	2019/07/20	2019/07/22	CAM SOP-00938	OMOE E3516 m
Organic carbon - Total (TOC) (7)	1	N/A	2019/07/23	ATL SOP 00203	SM 23 53108 m
ModTPH (T1) Calc. for Water	1	N/A	2019/07/29	N/A	Atl. RBCA v3 m
Phosphorus Total Colourimetry	1	2019/07/18	2019/07/22	ATL SOP 00057	EPA 365.1 R2 m
Total Suspended Solids	1	2019/07/19	2019/07/19	ATL SOP 00007	SM 23 2540D m
Turbidity	1	N/A	2019/07/23	ATL SOP 00011	EPA 180.1 R2 m
Volatile Organic Compounds in Water	1	N/A	2019/07/18	ATL SOP 00133	EPA 8260D R4 m
VPH in Water (PIRI)	1	N/A	2019/07/18	ATL SOP 00130	Atl. RBCA v3.1 m
Volatile Suspended Solids	1	N/A	2019/07/24	ATL SOP 00008	EPA 160.4 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant Site Location: POINT C, EFFLUENT SAMPLING

Your C.O.C. #: 725413-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/08/15

Report #: R5840663 Version: 5 - Partial

CERTIFICATE OF ANALYSIS - PARTIAL RESULTS

BV LABS JOB #: 89J7249 Received: 2019/07/17, 12:43

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

- * RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
- (1) This test was performed by Bureau Ventas Laboratories Mississauga
- (2) This test was performed by Bedford to Edm Petrol Offsite
- (3) This test was performed by Bedford to Calgary Offsite
- (4) This test was performed by Bedford to Montreal Subcontrac
- (5) The APHA Standard Method require pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.
- (6) Non-accredited test method
- (7) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.

Encryption Key

Project Manager Assistant 18 Aug 2018 17(20:42

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Maryann Comeau, Project Manager Email: Maryann, COMEAU@bylabs.com

Phone# (902)420-0203 Ext: 298

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

RESULTS OF ANALYSES OF WATER

BV Labs ID		KHI008			
Sampling Date		2019/07/17			
COC Number		725413-01-01)	
Sample #		POINT C 17-JUL			
	UNITS	Point C 17-JUL	RDL	MDL	QC Batch
Calculated Parameters					
Anion Sum	me/L	16.0	N/A	N/A	6234206
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	310	1.0	0.20	6234203
Calculated TDS	mg/L	950	1.0	0.20	6234210
Carb. Alkalinity (calc. as CaCO3)	mg/L	1.4	1.0	0.20	6234203
Cation Sum	me/L	14.9	N/A	N/A	6234206
Hardness (CaCO3)	mg/L	100	1.0	1.0	6234204
Ion Balance (% Difference)	%	3.66	N/A	N/A	6234205
Langelier Index (@ 20C)	N/A	0.141			6234208
Langelier Index (@ 4C)	N/A	-0.105			6234209
Nitrate (N)	mg/L	ND	0.050	N/A	6234207
Saturation pH (@ 20C)	N/A	7.54			6234208
Saturation pH (@ 4C)	N/A	7.79			6234209
Sulphide (as H2S)	mg/L	1.7	0.021	0.011	6234421
Inorganics					
Total Alkalinity (Total as CaCO3)	mg/L	310	25	N/A	6241631
Carbonaceous BOD	mg/L	.22	7.4	N/A	6234155
Total Chemical Oxygen Demand	mg/L	490	20	N/A	6234153
Dissolved Chlorate (CIO3-)	mg/L	ND.	0.10	N/A	6253454
Dissolved Chloride (CI-)	mg/L	170	5.0	N/A	6241634
Dissolved Chlorite (CLO2-)	mg/L	ND	0.10	N/A	6253454
Colour	TCU	870	250	N/A	6241637
Total Kjeldahi Nitrogen (TKN)	mg/L	3.0	1.0	0.60	6239143
Nitrate + Nitrite (N)	mg/L	ND	0.050	N/A	6241639
Nitrite (N)	mg/L	ND	0.010	N/A	6241640
Nitrogen (Ammonia Nitrogen)	mg/L	1.1	0.050	N/A	6236999
Total Organic Carbon (C)	mg/L	160 (1)	5.0	N/A	6241755
Orthophosphate (P)	mg/L	0.17	0.010	N/A	6241638
pH	pН	7.68	N/A	N/A	6237212
Total Phosphorus	mg/L	1.1	0.040	N/A	6235069

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected

(1) Elevated reporting limit due to turbidity.

Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

RESULTS OF ANALYSES OF WATER

BV Labs ID		KHI008			
Sampling Date		2019/07/17			
COC Number		725413-01-01) ,	
Sample #		POINT C 17-JUL			
	UNITS	Point C 17-JUL	RDL	MDL	QC Batch
Salinity	N/A	ND	2.0	N/A	6234708
Reactive Silica (SiO2)	mg/L	9.1	0.50	N/A	6241636
Total Suspended Solids	mg/L	35	5.0	N/A	6236491
Dissolved Sulphate (SO4)	mg/L	240	10	N/A	6241635
Sulphide	mg/L	1.6	0.020	0.010	6240740
Total Cyanide (CN)	mg/L	ND	0.0050	0.00010	6237819
Turbidity	NTU	27	0.10	0.10	6241629
Volatile Suspended Solids	mg/L	33	10	N/A	6244973
Conductivity	uS/cm	1500	1.0	N/A	6237312
Organic Halogens					
Adsorbable Organic Halogen	mg/L	1.15	0.25	N/A	6242775
Subcontracted Analysis					
Subcontract Parameter	N/A	ATTACHED	N/A	N/A	6242834
RDL = Reportable Detection Lim QC Batch = Quality Control Batc ND = Not detected N/A = Not Applicable					

Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

MERCURY BY COLD VAPOUR AA (WATER)

BV Labs ID		KH1008			
Sampling Date		2019/07/17			
COC Number		725413-01-01			
Sample #		POINT C 17-JUL			
	UNITS	Point C 17-JUL	RDL	MDL	QC Batch
Metals					
Total Mercury (Hg)	ug/L	0.027	0.013	N/A	6234908
RDL = Reportable Detect	ion Limit		-		
QC Batch = Quality Cont	rol Batch				
N/A = Not Applicable					

Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

ELEMENTS BY ICP/MS (WATER)

BV Labs ID		KH1008			
Sampling Date		2019/07/17			
COC Number		725413-01-01			
Sample #		POINT C 17-JUL			
	UNITS	Point C 17-JUL	RDL	MDL	QC Batch
Metals		_			
Total Aluminum (AI)	ug/L	1300	5.0	N/A	6237086
Total Antimony (Sb)	ug/L	ND	1.0	N/A	6237086
Total Arsenic (As)	ug/L	1.1	1.0	N/A	6237086
Total Barium (Ba)	ug/L	330	1.0	N/A	6237086
Total Beryllium (Be)	ug/L	ND	1.0	N/A	6237086
Total Bismuth (8i)	ug/L	ND	2.0	N/A	6237086
Total Boron (B)	ug/L	56	50	N/A	6237086
Total Cadmium (Cd)	ug/L	0.73	0.010	N/A	6237086
Total Calcium (Ca)	ug/L	32000	100	N/A	6237086
Total Chromium (Cr)	ug/L	2.3	1.0	N/A	6237086
Total Cobalt (Co)	ug/L	0.45	0.40	N/A	6237086
Total Copper (Cu)	ug/L	5.7	0.50	N/A	6237086
Total Iron (Fe)	ug/L	380	50	N/A	6237086
Total Lead (Pb)	ug/L	1.9	0.50	N/A	6237086
Total Magnesium (Mg)	ug/L	4500	100	N/A	6237086
Total Manganese (Mn)	ug/L	2200	2.0	N/A	6237086
Total Molybdenum (Mo)	ug/L	ND	2.0	N/A	6237086
Total Nickel (Ni)	ug/L	2.3	2.0	N/A	6237086
Total Phosphorus (P)	ug/L	1100	100	N/A	6237086
Total Potassium (K)	ug/L	13000	100	N/A	6237086
Total Selenium (Se)	ug/L	ND	1.0	N/A	6237086
Total Silver (Ag)	ug/L	0.28	0.10	N/A	6237086
Total Sodium (Na)	ug/L	290000	100	N/A	6237086
Total Strontium (Sr)	ug/L	130	2.0	N/A	6237086
Total Thallium (TI)	ug/L	ND	0.10	N/A	6237086
Total Tin (Sn)	ug/L	ND	2.0	N/A	6237086
Total Titanium (Ti)	ug/L	8.7	2.0	N/A	6237086
Total Uranium (U)	ug/L	0.31	0.10	N/A	6237086
Total Vanadium (V)	ug/L	2.3	2.0	N/A	6237086
Total Zinc (Zn)	ug/L	91	5.0	N/A	6237086

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected

Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		KH1008	(
Sampling Date		2019/07/17			
COC Number		725413-01-01			
Sample #		POINT C 17-JUL			
	UNITS	Point C 17-JUL	RDL	MDL	QC Batch
Polyaromatic Hydrocarbor	15				
1-Methylnaphthalene	ug/L	ND	0.050	N/A	6236588
2-Methylnaphthalene	ug/L	ND	0.050	N/A	6236588
Acenaphthene	ug/L	ND	0.010	N/A	6236588
Acenaphthylene	ug/L	ND	0.010	N/A	6236588
Anthracene	ug/L	ND	0.010	N/A	6236588
Benzo(a)anthracene	ug/L	ND	0.010	N/A	6236588
Benzo(a)pyrene	ug/L	ND	0.010	N/A	6236588
Benzo(b)fluoranthene	ug/L	ND	0.010	N/A	6236588
Benzo(b/j)fluoranthene	ug/L	ND	0.020	N/A	6234426
Benzo(g,h,i)perylene	ug/L	ND	0.010	N/A	6236588
Benzo(j)fluoranthene	ug/L	ND	0.010	N/A	6236588
Benzo(k)fluoranthene	ug/L	ND	0.010	N/A	6236588
Chrysene	ug/L	ND	0.010	N/A	6236588
Dibenz(a,h)anthracene	ug/L	ND	0.010	N/A	6236588
Fluoranthene	ug/L	0.050	0.010	N/A	6236588
Fluorene	ug/L	ND (1)	0.090	N/A	6236588
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.010	N/A	6236588
Naphthalene	ug/L	ND	0.20	N/A	6236588
Perylene	ug/L	ND	0.010	N/A	6236588
Phenanthrene	ug/L	0.048	0.010	N/A	6236588
Pyrene	ug/L	ND (1)	0.020	N/A	6236588
Surrogate Recovery (%)		- 11			
D10-Anthracene	.96	85			6236588
D14-Terphenyl	%	79			6236588
D8-Acenaphthylene	%	85			6236588

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		KHI008			
Sampling Date		2019/07/17			
COC Number		725413-01-01			
Sample #		POINT C 17-JUL			
	UNITS	Point C 17-JUL	RDL	MDL	QC Batch
Volatile Organics					
1,1-Dichloroethane	ug/L	ND	2.0	N/A	6234863
1,1-Dichloroethylene	ug/L	ND (1)	4.8	9.6	6234863
1,1,1-Trichloroethane	ug/L	ND	1.0	N/A	6234863
1,1,2-Trichloroethane	ug/L	ND	1.0	N/A	6234863
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	N/A	6234863
Ethylene Dibromide	ug/L	ND	0.20	0.50	6234863
1,2-Dichlorobenzene	ug/L	ND	0.50	N/A	6234863
1,2-Dichloroethane	ug/L	ND	1.0	N/A	6234863
cis-1,2-Dichloroethylene	ug/L	ND:	0.50	N/A	6234863
trans-1,2-Dichloroethylene	ug/L	ND:	0.50	N/A	6234863
1,2-Dichloropropane	ug/L	ND	0.50	N/A	6234863
1,3-Dichlorobenzene	ug/L	ND	1.0	N/A	6234863
cis-1,3-Dichloropropene	ug/L	ND	0.50	N/A	6234863
trans-1,3-Dichloropropene	ug/L	ND	0.50	N/A	6234863
1,4-Dichlorobenzene	ug/L	ND	1.0	N/A	6234863
Benzene	ug/L	ND	1.0	N/A	6234863
Bromodichloromethane	ug/L	ND	1.0	0.20	6234863
Bramoform	ug/L	ND:	1.0	0.20	6234863
Bromomethane	ug/L	ND	0.50	N/A	6234863
Carbon Tetrachloride	ug/L	ND	0.50	N/A	6234863
Chiorobenzene	ug/L	ND:	1.0	N/A	6234863
Chloroethane	ug/L	ND:	8.0	N/A	6234863
Chloroform	ug/L	ND:	1.0	0.20	6234863
Chloromethane	ug/L	ND	8.0	N/A	6234863
Dibromochloromethane	ug/L	ND	1.0	0.20	6234863
Methylene Chloride(Dichloromethane)	ug/L	ND	3.0	N/A	6234863
Ethylbenzene	ug/L	ND	1.0	N/A	6234863
Methyl t-butyl ether (MTBE)	ug/L	ND	2.0	N/A	6234863
Styrene	ug/L	ND	1.0	N/A	6234863

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

(1) Elevated VOC RDL(s) due to matrix interference.

Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		KHI008			
Sampling Date		2019/07/17			
COC Number		725413-01-01			
Sample #		POINT C 17-JUL			
	UNITS	Point C 17-JUL	RDL	MDL	QC Batch
Tetrachloroethylene	ug/L	ND	1.0	N/A	6234863
Toluene	ug/L	ND	1.0	N/A	6234863
Trichloroethylene	ug/L	ND	1.0	N/A	6234863
Trichlorofluoromethane (FREON 11)	ug/L	ND	8.0	N/A	6234863
Vinyl Chloride	ug/L	ND	0.50	2.0	6234863
o-Xylene	ug/L	ND	1.0	N/A	6234863
p+m-Xylene	ug/L	ND	2.0	N/A	6234863
Total Xylenes	ug/L	ND	1.0	1.0	6234863
Total Trihalomethanes	ug/L	ND	1.0	N/A	6234863
Surrogate Recovery (%)					
4-Bromofluorobenzene	%	97			6234863
D4-1,2-Dichloroethane	%	103			6234863
D8-Toluene	%	100			6234863

ROL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

ATLANTIC RBCA HYDROCARBONS (WATER)

BV Labs ID		KH1008			
Sampling Date		2019/07/17		J (
COC Number		725413-01-01			
Sample #		POINT C 17-JUL			
	UNITS	Point C 17-JUL	RDL	MDL	QC Batch
Petroleum Hydrocarbons					
Benzene	mg/L	ND	0.0010	N/A	6234163
Toluene	mg/L	ND	0.0010	N/A	6234163
Ethylbenzene	mg/L	ND	0.0010	N/A	6234163
Total Xylenes	mg/L	ND	0.0020	N/A	6234163
C6 - C10 (less BTEX)	mg/L	ND	0.10	N/A	6234163
>C10-C16 Hydrocarbons	mg/L	0.063	0.050	N/A	6252046
>C16-C21 Hydrocarbons	mg/L	0.083	0.050	N/A	6252046
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>0.16</td><td>0.10</td><td>N/A</td><td>6252046</td></c32>	mg/L	0.16	0.10	N/A	6252046
Modified TPH (Tier1)	mg/L	0.31	0.10	N/A	6246481
Reached Baseline at C32	mg/L	Yes	N/A	N/A	6252046
Hydrocarbon Resemblance	mg/L	COMMENT (1)	N/A	N/A	6252046
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	84			6252046
n-Dotriacontane - Extractable	%	74 (2)			6252046
Isobutylbenzene - Volatile	%	91			6234163

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

- (1) One product in fuel / lube range.
- (2) Silica gel clean-up performed prior to analysis as per client request.

Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

BV Labs ID		KH1008			
Sampling Date		2019/07/17			
COC Number		725413-01-01			
Sample #		POINT C 17-JUL			
	UNITS	Point C 17-JUL	RDL	MDL	QC Batch
PCBs					
Aroclor 1016	ug/L	ND	0.050	N/A	6239717
Arocior 1221	ug/L	ND	0.050	N/A	6239717
Aroclor 1232	ug/L	ND	0.050	N/A	6239717
Aroclor 1248	ug/L	ND	0.050	N/A	6239717
Aroclor 1242	ug/L	ND	0.050	N/A	6239717
Arocior 1254	ug/L	ND	0.050	N/A	6239717
Aroclor 1260	ug/L	ND	0.050	N/A	6239717
Calculated Total PCB	ug/L	ND	0.050	N/A	6234427
Surrogate Recovery (%)		7			
Decachlorobiphenyl	.%	16(1)			6239717

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

(1) PCB surrogate not within acceptance limits. Insufficient sample to repeat.



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

RESIN AND FATTY ACIDS BY GC-MS (WATER)

BV Labs ID		KHI008			
Sampling Date		2019/07/17			
COC Number		725413-01-01			
Sample #		POINT C 17-JUL			
	UNITS	Point C 17-JUL	RDL	MDL	QC Batch
Calculated Parameters					
Total Fatty Acids	mg/L	0.18	0.072	N/A	6253457
Total Resin Acids	mg/L	0.14	0.060	N/A	6253457
Fatty Acids			-	111111111111	
9,10-Dichlorostearic acid	mg/L	ND	0.0060	N/A	6253457
Decanoic Acid (C10)	mg/L	ND	0.0060	N/A	6253457
Docosanoic acid (C22)	mg/L	0.12	0.0060	N/A	6253457
Dodecanoic acid (C12)	mg/L	ND	0.0060	N/A	6253457
Eicosanoic acid (C20)	mg/L	0.027	0,0060	N/A	6253457
Hexadecanoic acid (C16)	mg/L	0.014	0.0060	N/A	6253457
Linoleic acid (C18:2)	mg/L	ND:	0.0060	N/A	6253457
Linolenic acid (C18:3)	mg/L	ND (1)	0.0060	N/A	6253457
Octadecanoic acid (C18)	mg/L	0.011	0.0060	N/A	6253457
Oleic acid (C18:1)	mg/L	0.010	0.0060	N/A	6253457
Tetradecanoic acid (C14)	mg/L	ND	0.0060	N/A	6253457
Undecanoic acid (C11)	mg/L	ND	0.0060	N/A	6253457
Resin Acids			•		
12,14-Dichlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6253457
12-Chlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6253457
14-Chlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6253457
Abietic acid	mg/L	0.025	0.0060	N/A	6253457
Dehydroabietic acid	mg/L	0.035 (1)	0.0060	N/A	6253457
Isopimaric acid	mg/L	0.042	0.0060	N/A	6253457
Neoabietic acid	mg/L	ND (1)	0.0060	N/A	6253457
Palustric acid	mg/L	ND (1)	0.0060	N/A	6253457
Pimaric acid	mg/L	0.025	0.0060	N/A	6253457
Sandaracopimaric acid	mg/L	0.0096	0.0060	N/A	6253457

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected

(1) Matrix spike exceeds acceptance limits due to probable matrix interference.

BV Labs - Partial/Rush Resu

Northern Pulp N.S.

Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

GENERAL COMMENTS

Each tem	perature is the	average of up	a three coaler	emperature	es taken a	at receipt			
	Package 1	4.7°C							
Note: Sar	nple is not Seav	vater							
Results r	elate only to th	e items teste							



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QUALITY ASSURANCE REPORT

QA/QC	2757	222	21 29	E-0 27 47 12	0.00	25	W. CZ207	22000
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6234153	22H	Matrix Spike	Total Chemical Oxygen Demand	2019/07/18		99	76	80 - 120
6234153	ZZH	QC Standard	Total Chemical Oxygen Demand	2019/07/18		.99	94	80 - 120
6234153	ZZH	Spiked Blank	Total Chemical Oxygen Demand	2019/07/18	A	102	96	80 - 120
6234153	ZZH	Method Blank	Total Chemical Oxygen Demand	2019/07/18	ND, RDL=20		mg/L	
6234153	ZZH	RPD	Total Chemical Oxygen Demand	2019/07/18	NC		96	25
6234155	EBR	QC Standard	Carbonaceous BOD	2019/07/23		142 (1)	96	80 - 120
6234155	EBR	Spiked Blank	Carbonaceous BOD	2019/07/23		145 (2)	%	80 - 120
6234155	EBR	Method Blank	Carbonaceous BOD	2019/07/23	ND, RDL=5.0		mg/L	
6234155	EBR	RPD:	Carbonaceous BOD	2019/07/23	0.18		. %	25
5234163	THL	Matrix Spike	isobutylbenzene - Volatile	2019/07/18		101	%	70 - 130
			Benzene	2019/07/18		103	%	70 - 130
			Toluene	2019/07/18		106	76	70 - 130
			Ethylbenzene	2019/07/18		107	. 14	70 - 130
			Total Xylenes	2019/07/18		102	16	70 - 130
6234163	THE	Spiked Blank	Isobutylbenzene - Volatile	2019/07/18		102	96	70 - 130
			Benzene .	2019/07/18		106	76	70 - 130
			Toluene	2019/07/18		108	14	70 - 130
			Ethylbenzene	2019/07/18		107	76	70 - 130
			Total Xylenes	2019/07/18		104	94	70 - 130
6234163	THL	Method Blank	isobutylbenzene - Volatile	2019/07/18		102	96	70 - 130
			Benzene	2019/07/18	ND, RDL=0.0010		mg/L	
			Toluene	2019/07/18	ND, RDL=0.0010		% mg/L % % % % mg/L mg/L mg/L mg/L % % % % % % % % % % % % % % % % % % %	
			Ethylbenzene	2019/07/18	ND, RDL=0.0010		mg/L	
			Total Xylenes	2019/07/18	ND, RDL=0.0020		mg/L	
			C6 - C10 (less BTEX)	2019/07/18	ND. RDL=0.10		mg/L	
6234163	THIL	RPD	Benzene	2019/07/18	NC		%	40
			Toluene	2019/07/18	NC		16	40
			Ethylbenzene	2019/07/18	NC			40
			Total Xylenes	2019/07/18	NC		16	40
			C6 - C10 (less BTEX)	2019/07/18	NC		94	40
6234708	BBD	QC Standard	Salinity	2019/07/18		99	16	80 - 120
6234708	BBD	Method Blank	Salinity	2019/07/18	ND, RDL=2.0		N/A	
6234708	BBD	RPD (KHI008-06)	Salinity	2019/07/18	NC		76	25
6234863	ASL	Matrix Spike	4-Bromofluorobenzene	2019/07/18		99 (3)		70 - 130
		LE SANSELL ATTENDED	D4-1,2-Dichloroethane	2019/07/18		107		70 - 130
			D8-Toluene	2019/07/18		95	36	70 - 130
			1,1-Dichloroethane	2019/07/18		105	%.	70 - 130
			1,1-Dichloroethylene	2019/07/18		101	16	70 - 130
			1,1,1-Trichloroethane	2019/07/18		102	96	70 - 130
			1,1.2-Trichloroethane	2019/07/18		110	%	70 - 130
			1,1,2,2-Tetrachloroethane	2019/07/18		110	14.	70 - 130
			Ethylene Dibromide	2019/07/18		113	%.	70 - 130
			1,2-Dichlorobenzene	2019/07/18		97	96	70 - 130
			1,2-Dichloroethane	2019/07/18		102	%	70 - 130
			cis-1,2-Dichloroethylene	2019/07/18		101	-0.4003	70 - 130



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC	6.74	007		man 4 14 14	64.76		2.24 months	40000
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			trans-1,2-Dichloroethylene	2019/07/18		106	76	70 - 13
			1,2-Dichloropropane	2019/07/18		106	34	70 - 13
			1,3-Dichlorobenzene	2019/07/18		93	%	70 - 13
			cis-1,3-Dichloropropene	2019/07/18		114	N	70 - 13
			trans-1,3-Dichloropropene	2019/07/18		121	16.	70 - 13
			1,4-Dichlorobenzene	2019/07/18		94	%	70 - 13
			Benzene	2019/07/18		95	76	70 - 13
			Bromodichloromethane	2019/07/18		98	N	70 - 13
			Bromoform	2019/07/18		103	16	70 - 13
			Bromomethane	2019/07/18		93	%	60 - 14
			Carbon Tetrachloride	2019/07/18		97	76	70 - 13
			Chlorobenzene	2019/07/18		99	14	70 - 13
			Chloroethane	2019/07/18		87	76	60 - 14
			Chloroform	2019/07/18		97	96	70 - 13
			Chloromethane	2019/07/18		73	76	60 - 14
			Dibromochloromethane	2019/07/18		106	76	70 - 1
			Methylene Chloride(Dichloromethane)	2019/07/18		107	%	70 - 1
			Ethylbenzene	2019/07/18		101	36	70 - 1
			Methyl t-butyl ether (MT8E)	2019/07/18		101	%	70 - 1
			Styrene	2019/07/18		110	76	70 - 1
			Tetrachloroethylene	2019/07/18		97	%	70 - 1
			Toluene	2019/07/18		100	%.	70 - 1
			Trichloroethylene	2019/07/18		97	96	70 - 1
			Trichlorofluoromethane (FREON 11)	2019/07/18		83	%	60 - 1
			Vinyl Chloride	2019/07/18		64	%.	60 - 1
			p-Xylene	2019/07/18		99	%.	70 - 1
			p+m-Xylene	2019/07/18		97	3%	70 - 1
234863	ASL	Spiked Blank	4-Bromafluorobenzene	2019/07/18		101	%	70 - 1
			D4-1,2-Dichloroethane	2019/07/18		100	74	70 - 1
			D8-Toluene	2019/07/18		98	36	70 - 1
			1,1-Dichloroethane	2019/07/18		104	96	70 - 1
			1,1-Dichloroethylene	2019/07/18		102	. %	70 - 1
			1,1,1-Trichloroethane	2019/07/18		104	16	70 - 1
			1,1,2-Trichlorgethane	2019/07/18		105	%	70 - 1
			1,1,2,2-Tetrachioroethane	2019/07/18		102	76	70 - 1
			Ethylene Dibromide	2019/07/18		106	%	70 - 1
			1,2-Dichlorobenzene	2019/07/18		97	16	70 - 1
			1,2-Dichloroethane	2019/07/18		96	%	70 - 1
			cis-1,2-Dichloroethylene	2019/07/18		99	76	70 - 1
			trans-1,2-Dichloroethylene	2019/07/18		106	14	70 - 1
			1,2-Dichloropropane	2019/07/18		105	16	70 - 1
			1,3-Dichlorobenzene	2019/07/18		95	96	70 - 1
			cis-1,3-Dichloropropene	2019/07/18		106	76	70 - 1
			trans-1,3-Dichloropropene	2019/07/18		106	16	70 - 1
			1,4-Dichlorobenzene	2019/07/18		95	%	70 - 1
			Benzene	2019/07/18		95	36	70 - 1
			Bromodichloromethane	2019/07/18		96	%	70 - 1
			Bromoform	2019/07/18		97	% %	70 - 1
			Bromomethane	2019/07/18		88		60 - 1
			Carbon Tetrachloride	2019/07/18		99	94	70 - 1
			Chlorobenzene	2019/07/18		99	96	70 - 1
			Chloroethane	2019/07/18		87	96	60 - 1
				2019/07/18		96	%	70 - 1



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
Batch	Inut.	QC Type	Chloromethane	- I AND	varue			60 - 140
			Dibromochloromethane	2019/07/18		71 103	%. %	70 - 130
			Methylene Chloride(Dichloromethane)	2019/07/18		102		70 - 130
			Ethylbenzene	2019/07/18		104	% %	70 - 130
			Methyl I-butyl ether (MTBE)	2019/07/18		99	16	70 - 130
				2019/07/18		111	%	70 - 130
			Styrene	2019/07/18		101	76	70 - 130
			Tetrachioroethylene Toluene			101		70 - 130
			Trichloroethylene	2019/07/18		99	N	70 - 130
			Trichlorofluoromethane (FREON 11)	2019/07/18		85	%	60 - 140
						63		60 - 140
			Vinyl Chloride	2019/07/18		101	76	Sept. 10.000 at
			o-Xylene	2019/07/18			14	70 - 130
234863	461	Method Blank	p+m-Xylene 4-Bromofluorobenzene	2019/07/18		99 97	% %	70 - 130
234863	ASL	:Wethod Blank		2019/07/18				70 - 130
			D4-1,2-Dichloroethane	2019/07/18		100	76	70 - 130
			D8-Toluene	2019/07/18	10000	101	16	70 - 130
			1,1-Dichloroethane	2019/07/18	ND, RDL=2.0		ug/L	
			1,1-Dichloroethylene	2019/07/18	ND, RDL=0.50		ug/L	
			1,1,1-Trichloroethane	2019/07/18	ND, RDL=1.0		ug/L	
			1,1,2-Trichloroethane	2019/07/18	ND, RDL=1.0		ug/t	
			1,1,2,2-Tetrachioroethane	2019/07/18	ND, RDL=0.50		ug/L	
			Ethylene Dibromide	2019/07/18	ND, RDL=0.20		ug/L	
			1,2-Dichlorobenzene	2019/07/18	ND, RDL=0.50		ug/L	
			1,2-Dichloroethane	2019/07/18	ND, RDL=1.0		ug/L	
			cis-1,2-Dichloroethylene	2019/07/18	ND, RDL=0.50		ug/L	
			trans-1,2-Dichloroethylene	2019/07/18	ND, ROL=0.50		ug/L	
			1,2-Dichloropropane	2019/07/18	ND, RDL=0.50		ug/L	
			1,3-Dichlorobenzene	2019/07/18	ND, RDL=1.0		ug/L	
			cis-1,3-Dichloropropene	2019/07/18	ND, RDL=0.50		ug/L	
			trans-1,3-Dichloropropene	2019/07/18	ND, RDL=0.50		ug/L	
			1,4-Dichlorobenzene	2019/07/18	ND, RDL=1.0		ug/L	
			Benzene	2019/07/18	ND, RDL=1.0		ug/L	
			Bromodichloromethane	2019/07/18	ND, RDL=1.0		ug/L	
			Bromoform	2019/07/18	ND, RDL=1.0		ug/L	
			Bromomethane	2019/07/18	ND, RDL=0.50		ug/L	

Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch Init QCType	Parameter	Date Analyzed	Value	Recovery (UNITS	QCLimit
5000 1 100 1	Carbon Tetrachloride	2019/07/18	ND.		ug/L	Sec titilli
	Carrier Commence		RDL=0.50			
	Chlorobenzene	2019/07/18	NO.		ug/L	
	1 Company of the State of the S		ROL=1.0			
	Chloroethane	2019/07/18	ND,		ug/L	
			RDL=8.0		77.	
	Chloroform	2019/07/18	ND,		ug/L	
			RDL=1.0			
	Chloromethane	2019/07/18	ND,		ug/L	
			RDL=8.0			
	Dibromochloromethane	2019/07/18	ND,		ug/L	
	1079/F01280/_D140000195749/777	F2898 DUFAS NSS	RDL=1.0			
	Methylene Chloride(Ωichloromethane)	2019/07/18	ND,		ug/L	
	and the second second		RDL=3.0			
	Ethylbenzene	2019/07/18	ND,		ug/L	
	221000 00000000000000000000000000000000	2010/07/20	ROL=1.0		Otto W	
	Methyl t-butyl ether (MTBE)	2019/07/18	ND,		ug/L	
	Sharana	2010/03/40	RDL=2.0		un Ti	
	Styrene	2019/07/18	ND, RDL=1.0		ug/L	
	Tetrachloroethylene	2010/07/19	ND,		ug/L	
	retracisioroetnysene	2019/07/18	RDL=1.0		OB11	
	Toluene	2019/07/18	NO.		ug/L	
	7,010,0110	2013/01/10	ROL=1.0		08/ E	
	Trichlorgethylene	2019/07/18	ND,		ug/L	
		3000	RDL=1.0		og,	
	Trichlorofluoromethane (FREON 11)	2019/07/18	ND,		ug/L	
		0.02520.0822	RDL=8.0		1361	
	Vinyl Chloride	2019/07/18	ND,		ug/L	
			RDL=0.50			
	o-Xylene	2019/07/18	ND,		ug/L	
			BDL=1.0			
	p+m-Xylene	2019/07/18	ND,		ug/L	
			RDL=2.0			
	Total Xylenes	2019/07/18	ND,		ug/L	
			RDL=1.0		Charles VI	
	Total Trihalomethanes	2019/07/18	ND.		ug/L	
	550200 0	455 U.S. 100	RDL=1.0			100
234863 ASL RPD	I,I-Dichloroethane	2019/07/18	NC		76	40
	I,I-Dichloroethylene	2019/07/18	NC		% %	40
	1,1,1-Trichloroethane	2019/07/18	NC			40
	1,1,2-Trichloroethane	2019/07/18	NC		%	40
	1,1,2,2-Tetrachiorgethane	2019/07/18	NC		%	40
	Ethylene Dibromide	2019/07/18	NC		14	40
	1,2-Dichlorobenzene	2019/07/18	NC		%	40
	1,2-Dichloroethane	2019/07/18	NC		96	40
	cis-1,2-Dichloroethylene	2019/07/18	NC		96	40
	trans-1,2-Dichloroethylene	2019/07/18	NC		N	40
	1,2-Dichloropropane	2019/07/18	NC		%	40
	1,3-Dichlorobenzene	2019/07/18	NC		94	40
	cis-1,3-Dichloropropene	2019/07/18	NC		%	40
	trans-1,3-Dichloropropene	2019/07/18	NC		%	40
	1,4-Dichlorobenzene	2019/07/18	NC		96.	40
	Benzene	2019/07/18	NC		16	40



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	Init	QC Type	Parameter:	Date Analyzed	Value	Recovery	UNITS	QC Limit
A100001		anizal de la companya	Bromodichloromethane	2019/07/18	NC		16	40
			Bromoform	2019/07/18	NC		36	40
			Bromomethane	2019/07/18	NC		96	40
			Carbon Tetrachloride	2019/07/18	NC		%	40
			Chlorobenzene	2019/07/18	NC		%	40
			Chloroethane	2019/07/18	NC		%	40
			Chloroform	2019/07/18	6.2		76	40
			Chloromethane	2019/07/18	NC		N	40
			Dibromochloromethane	2019/07/18	NC		16	40
			Methylene Chloride(Dichloromethane)	2019/07/18	NC		96	40
			Ethylbenzene	2019/07/18	NC		76	40
			Methyl t-butyl ether (MTBE)	2019/07/18	NC		14	40
			Styrene	2019/07/18	NC		%	40
			Tetrachloroethylene	2019/07/18	NC		96	40
			Toluene	2019/07/18	2.1		76	40
			Trichlorgethylene	2019/07/18	NC		16	40
			Trichlorofluoromethane (FREON 11)	2019/07/18	NC		%	40
			Vinyl Chloride	2019/07/18	NC		36	40
			o-Xylene	2019/07/18	NC		%	40
			p+m-Xylene	2019/07/18	NC		%	40
			Total Xylenes	2019/07/18	NC		%	40
			Total Trihalomethanes	2019/07/18	6.2		%	40
234908	AYN	Matrix Spike	Total Mercury (Hg)	2019/07/19	0.2	103	36	80 - 120
234908	AYN	Spiked Blank	Total Mercury (Hg)	2019/07/19		101	%	80 - 120
234908	AYN	Method Blank	Total Mercury (Hg)	2019/07/19	ND, RDL=0.013	101	ug/L	50-120
234908	AYN	RPD	Total Mercury (Hg)	2019/07/19	NC		%	20
235069	MCN	Matrix Spike	Total Phosphorus	2019/07/22		113	N	80 - 120
235069	MCN	Spiked Blank	Total Phosphorus	2019/07/22		107	%	80 - 120
235069	MCN	Method Blank	Total Phosphorus	2019/07/22	ND, RDL+0.020	.75%	mg/L	NEW COL
5235069	MCN	RPD	Total Phosphorus	2019/07/22	5.0		N.	25
236491	AM6	QC Standard	Total Suspended Solids	2019/07/19	3.0	99	%	80 - 120
236491	AM6	Method Blank	Total Suspended Solids	2019/07/19	ND, RDL=1.0		mg/L	00 32
236491	AM6	ppn (vuinge na)	Total Surgended Solids	2019/07/19	Call Control of the Call Control		160	20
236588	KKE	RPD (KHI008-01) Matrix Spike	Total Suspended Solids D10-Anthracene		9.0	82	% 34	50 - 130
220300	KKE	Watrix Spike		2019/07/19		81	36	
			D14-Terphenyl D8-Acenaphthylene	2019/07/19			2000	50 - 130
				2019/07/19		84	%	50 - 130
			1-Methylnaphthalene	2019/07/19		82	%	50 - 130
			2-Methylnaphthalene	2019/07/19		84	96	50 - 130
			Acenaphthene	2019/07/19		83	96	50 - 130
			Acenaphthylene	2019/07/19		94	96	50 - 130
			Anthracene	2019/07/19		85	96	50 - 130
			Benzo(a)anthracene	2019/07/19		88	96	50 - 130
			Benzo(a)pyrene	2019/07/19		80	%	50 - 130
			Benzo(b)fluoranthene	2019/07/19		85	%	50 - 130
			Benzo(g,h,l)perylene	2019/07/19		74	96	50 - 130
			Benzo(j)fluoranthene	2019/07/19		79	94	50 - 130
			Benzo(k)fluoranthene	2019/07/19		75	%	50 - 130
			Chrysene	2019/07/19		95	YL.	50 - 130
			Dibenz(a,h)anthracene	2019/07/19		73	96.	50 - 130
			Fluoranthene	2019/07/19		93	96	50 - 130



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QCLimit
Daten	nut	No. Type	Fluorene	2019/07/19	varue	92	%.	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/07/19		73	26	50 - 13
			Naphthalene	2019/07/19		87	96	50 - 13
			Perylene	2019/07/19		78	%	50 - 13
			Phenanthrene	2019/07/19		91	16	50 - 13
			Pyrene	2019/07/19		91	%	50 - 13
5236588	KKE	Spiked Blank	D10-Anthracene	2019/07/19		85		50 - 13
0230308	NAE	эрікес віапк	D14-Terphenyl	2019/07/19		87	76	50 - 13
				- 1 - 537 576 C. 574 - 525		83		50 - 13
			08-Acenaphthylene	2019/07/19		96	%	50 - 13
			1-Methylnaphthalene	2019/07/19		99		50 - 13
			2-Methylnaphthalene	2019/07/19			76	
			Acenaphthene	2019/07/19		100	14	50 - 13
			Acenaphthylene	2019/07/19		101	%	50 - 13
			Anthracene	2019/07/19		94	96	50 - 13
			Benzo(a)anthracene	2019/07/19		90	76	50 - 13
			Benzo(a)pyrene	2019/07/19		92	16	50 - 13
			Benzo(b)fluoranthene	2019/07/19		98	%	50 - 13
			Benzo(g,h,i)perylene	2019/07/19		93	96	50 - 13
			Benzo(j)fluoranthene	2019/07/19		91	%	50 - 13
			Benzo(k)fluoranthene	2019/07/19		86	76	50 - 13
			Chrysene	2019/07/19		103	%	50 - 13
			Dibenz(a,h)anthracene	2019/07/19		75	%.	50 - 13
			Fluoranthene	2019/07/19		100	%	50 - 13
			Fluorene	2019/07/19		105	%	50 - 13
			Indeno(1,2,3-cd)pyrene	2019/07/19		88	%.	50 - 13
			Naphthalene	2019/07/19		103	%	50 - 13
			Perylene	2019/07/19		90	36	50 - 13
			Phenanthrene	2019/07/19		109	%	50 - 13
			Pyrene	2019/07/19		100	76	50 - 13
5236588	KKE	Method Blank	D10-Anthracene	2019/07/19		92	34	50 - 13
			D14-Terphenyl	2019/07/19		93	76	50 - 13
			D8-Acenaphthylene	2019/07/19		89	%	50 - 13
			1-Methylnaphthalene	2019/07/19	ND, RDL=0.050		ug/L	
			2-Methylnaphthalene	2019/07/19	ND, RDL=0.050		ug/L	
			Acenaphthene	2019/07/19	ND, RDL=0.010		ug/L	
			Acenaphthylene	2019/07/19	ND, RDL=0.010		ug/L	
			Anthracene	2019/07/19	ND, RDL+0.010		ug/L	
			Benzo(a)anthracene	2019/07/19	ND, RDL=0.010		ug/L	
			Benzo(a)pyrene	2019/07/19	ND, RDL=0.010		ug/L	
			Benzo(b)fluoranthene	2019/07/19	ND, RDL=0.010		ug/L	
			Benzo(g,h,i)perylene	2019/07/19	ND, RDL=0.010		ug/L	
			Benzo(j)fluoranthene	2019/07/19	ND, RDL=0.010		ug/L	

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Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QCLimit
			Benzo(k)fluoranthene	2019/07/19	ND, RDL=0.010		ug/L	
			Chrysene	2019/07/19	NO.		ug/L	
			entrance delication and a	2010/02/12	RDL=0.010		751546	
			Dibenz(a,h)anthracene	2019/07/19	ND, RDL=0.010		ug/L	
			Fluoranthene	2019/07/19	ND, RDL=0.010		ug/L	
			Fluorene	2019/07/19	ND, RDL=0.010		ug/L	
			indeno(1,2,3-cd)pyrene	2019/07/19	ND, RDL=0.010		ug/L	
			Naphthalene	2019/07/19	ND, RDL=0.20		ug/L	
			Perylen∈	2019/07/19	ND,		ug/L	
			Phenanthrene	2019/07/19	RDL=0.010 ND, RDL=0.010		ug/L	
			Pyrene	2019/07/19	ND, RDL=0.010		ug/L	
236588	KKE	RPD [KHI008-08]	1-Methylnaphthalene	2019/07/19	NC.		16	40
230300	en Prince	III D (MINOCO DO)	2-Methylnaphthalene	2019/07/19	NC		94	40
			Acenaphthene	2019/07/19	NC		76	40
			Acenaphthylene	2019/07/19	NC		96	40
			Anthracene	2019/07/19	NC		%	40
			Benzo(a)anthracene	2019/07/19	NC		%	40
			Benzo(a)pyrene	2019/07/19	NC		76	40
			Benzo(b)fluoranthene	2019/07/19	NC		36	40
			Benzo(g,h,i)perylene	2019/07/19	NC		16	40
			Benzo(j)fluoranthene	2019/07/19	NC		96	40
			Benzo(k)fluoranthene	2019/07/19	NC		%	40
			Chrysene	2019/07/19	NC		16	40
			Dibenz(a,h)anthracene	2019/07/19	NC		%	40
			Fluoranthene	2019/07/19	3.1		96	40
			Fluorene	2019/07/19	NC (4)		96	40
			Indeno(1,2,3-cd)pyrene	2019/07/19	NC		16	40
			Naphthalene	2019/07/19	NC		%	40
			Perylene	2019/07/19	NC		96	40
			Phenanthrene	2019/07/19	0.21		96	40
			Pyrene	2019/07/19	NC (4)		96	40
236999	MCN	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2019/07/22	LIND REPORT	94	%	80 - 120
236999	MCN	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2019/07/22		96	94	80 - 120
236999	MCN	Method Blank	Nitrogen (Ammonia Nitrogen)	2019/07/22	ND, RDL=0.050		mg/L	
236999	MCN	RPD	Nitrogen (Ammonia Nitrogen)	2019/07/22	NC		%	20
237086	BAN	Matrix Spike	Total Aluminum (AI)	2019/07/22	7.00	102	96	80 - 120
			Total Antimony (Sb)	2019/07/22		104	%	80 - 120
			Total Arsenic (As)	2019/07/22		100	%	80 - 120
			Total Barium (Ba)	2019/07/22		NC.	94	80 - 120
			Total Beryllium (Be)	2019/07/22		103	76	80 - 120
			Total Bismuth (Bi)	2019/07/22		102	%	80 - 120
			Total Boron (B)	2019/07/22		106	%	80 - 120
			Total Cadmium (Cd)	2019/07/22		102	96	80 - 120



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Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC	200	r250-1	25 94	44-5 ST - 7 ST	A701	25	679,000	(2)25737
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Total Calcium (Ca)	2019/07/22		NC	16	80 - 120
			Total Chromium (Cr)	2019/07/22		99	26	80 - 120
			Total Cobalt (Co)	2019/07/22		100	96	80 - 120
			Total Copper (Cu)	2019/07/22		99	%	80 - 120
			Total Iron (Fe)	2019/07/22		106	16	80 - 120
			Total Lead (Pb)	2019/07/22		103	%	80 - 120
			Total Magnesium (Mg)	2019/07/22		102	76	80 - 120
			Total Manganese (Mn)	2019/07/22		NC	N	80 - 120
			Total Molybdenum (Mo)	2019/07/22		104	16	80 - 120
			Total Nickel (Ni)	2019/07/22		101	%	80 - 120
			Total Phosphorus (P)	2019/07/22		108	76	80 - 120
			Total Potassium (K)	2019/07/22		107	14	80 - 120
			Total Selenium (Se)	2019/07/22		101	76	80 - 120
			Total Silver (Ag)	2019/07/22		102	96	80 - 120
			Total Sodium (Na)	2019/07/22		101	76	80 - 120
			Total Strontium (5r)	2019/07/22		NC	16	80 - 120
			Total Thallium (TI)	2019/07/22		104	%	80 - 120
			Total Tin (Sn)	2019/07/22		104	96	80 - 120
			Total Titanium (Ti)	2019/07/22		102	%	80 - 120
			Total Uranium (U)	2019/07/22		108	%	80 - 120
			Total Vanadism (V)	2019/07/22		100	%	80 - 120
			Total Zinc (Zn)	2019/07/22		99	%.	80 - 120
237086	BAN	Spiked Blank	Total Aluminum (Al)	2019/07/22		105	96	80 - 120
			Total Antimony (Sb)	2019/07/22		104	%	80 - 120
			Total Arsenic (As)	2019/07/22		99	%	80 - 120
			Total Barium (Ba)	2019/07/22		101	96	80 - 120
			Total Beryllium (Be)	2019/07/22		102	36	80 - 120
			Total Bismuth (Bi)	2019/07/22		101	56	80 - 120
			Total Boron (B)	2019/07/22		111	14.	80 - 120
			Total Cadmium (Cd)	2019/07/22		98	26	80 - 120
			Total Calcium (Ca)	2019/07/22		107	96	80 - 120
			Total Chromium (Cr)	2019/07/22		99	%	80 - 120
			Total Cobalt (Co)	2019/07/22		100	%	80 - 120
			Total Copper (Cu)	2019/07/22		100	%	80 - 120
			Total Iron (Fe)	2019/07/22		106	76	80 - 120
			Total Lead (Pb)	2019/07/22		102	%	80 - 120
			Total Magnesium (Mg)	2019/07/22		105	16	80 - 120
			Total Manganese (Mn)	2019/07/22		102	96	80 - 120
			Total Molybdenum (Mo)	2019/07/22		104	76	80 - 120
			Total Nickel (Ni)	2019/07/22		102	16	80 - 120
			Total Phosphorus (P)	2019/07/22		105		80 - 120
			Total Potassium (K)	2019/07/22		106	96	80 - 120
			Total Selenium (Se)					
				2019/07/22		100	76	80 - 120
			Total Silver (Ag)	2019/07/22		101	76	80 - 120
			Total Sodium (Na)	2019/07/22		102	36	80 - 120
			Total Strontium (Sr)	2019/07/22		99	36	80 - 120
			Total Thallium (TI)	2019/07/22		104	%	80 - 120
			Total Tin (Sn)	2019/07/22		104	16	80 - 120
			Total Titanium (Ti)	2019/07/22		101	%	80 - 120
			Total Uranium (U)	2019/07/22		107	96	80 - 120
			Total Vanadium (V)	2019/07/22		100	96	80 - 120
			Total Zinc (Zn)	2019/07/22		99	14	80 - 120

Client Project #: Effluent Treatment Plant Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5237086	BAN	Method Blank	Total Aluminum (AI)	2019/07/22	ND,	RECOVERY	ug/L	- GC LIMITS
			Total Antimony (Sb)	2019/07/22	RDL=5.0 ND, RDL=1.0		ug/L	
			Total Arsenic (As)	2019/07/22	ND, RDL=1.0		ug/L	
			Total Barium (Ba)	2019/07/22	ND, RDL=1.0		ug/L	
			Total Beryllium (Be)	2019/07/22	ND, RDL=1.0		ug/L	
			Total Bismuth (Bi)	2019/07/22	ND, RDL=2.0		ug/L	
			Total Boron (B)	2019/07/22	ND, RDL=50		ug/L	
			Total Cadmium (Cd)	2019/07/22	ND, RDL=0.010		ug/L	
			Total Calcium (Ca)	2019/07/22	ND, RDL=100		ug/L	
			Total Chromium (Cr)	2019/07/22	ND, RDL=1.0		ug/L	
			Total Cobalt (Co)	2019/07/22	ND, RDL=0.40		ug/L	
			Total Copper (Cu)	2019/07/22	ND, RDL=0.50		ug/L	
			Total Iron (Fe)	2019/07/22	ND, RDL=50		ug/L	
			Total Lead (Pb)	2019/07/22	ND, RDL=0.50		ug/L	
			Total Magnesium (Mg)	2019/07/22	ND, RDL=100		ug/L	
			Total Manganese (Mn)	2019/07/22	ND, RDL=2.0		ug/L	
			Total Molybdenum (Mo)	2019/07/22	ND, RDL=2.0		ug/t	
			Total Nickel (NI)	2019/07/22	ND, RDL=2.0		ug/L	
			Total Phosphorus (P)	2019/07/22	ND, RDL=100		ug/L	
			Total Potassium (K)	2019/07/22	ND, RDL=100		ug/L	
			Total Selenium (Se)	2019/07/22	ND, RDL=1.0		ug/L	
			Total Silver (Ag)	2019/07/22	ND, RDL=0.10		ug/L	
			Total Sodium (Na)	2019/07/22	ND, RDL=100		ug/L	
			Total Strontium (Sr)	2019/07/22	ND, RDL=2.0		ug/L	
			Total Thallium (TI)	2019/07/22	ND, RDL=0.10		ug/L	
			Total Tin (Sn)	2019/07/22	NO, RDL=2.0		ug/L	
			Total Titanium (Ti)	2019/07/22	ND, RDL=2.0		ug/L	



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Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	fnit	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Total Uranium (U)	2019/07/22	ND, RDL=0.10	33433414	ug/L	300
			Total Vanadium (V)	2019/07/22	ND, RDL=2.0		ug/L	
			Total Zinc (Zn)	2019/07/22	ND, RDL=5.0		ug/L	
6237086	BAN	RPD	Total Aluminum (AI)	2019/07/22	6.9		16	20
	9/0		Total Antimony (Sb)	2019/07/22	NC		%	20
			Total Arsenic (As)	2019/07/22	2.2		94	20
			Total Barium (Ba)	2019/07/22	2.6		96	20
			Total Boron (B)	2019/07/22	NC		56	20
			Total Cadmium (Cd)	2019/07/22	NC		%	20
			Total Chromium (Cr)	2019/07/22	16		96	20
			Total fron (Fe)	2019/07/22	0.52		96	20
			Total Lead (Pb)	2019/07/22	NC		96	20
			Total Manganese (Mn)	2019/07/22	0.60		%	20
			Total Selenium (Se)	2019/07/22	NC		96	20
			Total Sodium (Na)	2019/07/22	0.44		%	20
			Total Uranium (U)	2019/07/22	NC		%	20
			Total Zinc (Zn)	2019/07/22	16		16	20
6237212	EMT	QC Standard	pH	2019/07/22		100	94	97 - 103
6237212	EMT	RPD	pH	2019/07/22	0.57		76	N/A
6237312	EMT	Spiked Blank	Conductivity	2019/07/22		103	%	80 - 120
6237312	EMT	Method Blank	Conductivity	2019/07/22	ND, RDL=1.0		u\$/cm	
6237312	EMT	RPD	Conductivity	2019/07/22	1.2		%	10
6237819	GTO	Matrix Spike	Total Cyanide (CN)	2019/07/19		97	74	80 - 120
6237819	GTO	Spiked Blank	Total Cyanide (CN)	2019/07/19		98	%	80 - 120
6237819	GTO	Method Blank	Total Cyanide (CN)	2019/07/19	ND, RDL=0.0050		mg/L	
6237819	GTO	RPD	Total Cyanide (CN)	2019/07/19	NC		16	20
6239143	SSV	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2019/07/22		104	. %	80 - 120
6239143	SSV	QC Standard	Total Kjeldahl Nitrogen (TKN)	2019/07/22		105	76	80 - 120
6239143	SSV	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2019/07/22		100	%	80 - 120
6239143	SSV	Method Blank	Total Kjeldahl Nitrogen (TKN)	2019/07/22	ND, RDL=0.10		mg/L	
6239143	SSV	RPD	Total Kjeldahl Nitrogen (TKN)	2019/07/22	2.2		%	20
6239717	RGE	Spiked Blank	Decachlorobiphenyl	2019/07/23		63	%.	30 - 130
			Aroclar 1254	2019/07/23		88	16	70 - 130
6239717	RGE	Method Blank	Decachlorobiphenyl	2019/07/23		91	96	30 - 130
			Aroclor 1016	2019/07/23	ND, RDL=0.050		ug/L	
			Areclor 1221	2019/07/23	ND, RDL=0.050		ug/L	
			Aroclar 1232	2019/07/23	ND, RDL=0.050		ug/L	
			Aroclor 1248	2019/07/23	ND, RDL±0.050		ug/L	
			Aroclor 1242	2019/07/23	ND, RDL=0.050		ug/L	
			Aroclar 1254	2019/07/23	ND, RDL=0.050		ug/t	



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC Batch	init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
Getteri	HU4.	No. 17pc	Aroclar 1260	2019/07/23	ND.	NECOVETY	ug/L	GC-LITTE
			Arocial 1200	2013/07/23	RDL=0.050		ug/c	
6239717	RGE	RPD [KHI008-09]	Aroclor 1016	2019/07/23	NC		96	40
			Arocior 1221	2019/07/23	NC		%	40
			Aroclor 1232	2019/07/23	NC		%	40
			Aroclor 1248	2019/07/23	NC		96	40
			Aroclor 1242	2019/07/23	NC		96	40
			Aroclor 1254	2019/07/23	NC		95	40
			Aroclor 1260	2019/07/23	NC		%	40
6240740	NYS	Matrix Spike	Sulphide	2019/07/22		89	96	80 - 120
6240740	NYS	Spiked Blank	Sulphide	2019/07/22		96	%	80 - 120
6240740	NYS	Method Blank	Sulphide	2019/07/22	ND, RDL=0.020		mg/L	
6240740	NYS	RPD	Sulphide	2019/07/22	NC		76	20
6241629	EMT	QC Standard	Turbidity	2019/07/23		104	N.	80 - 120
6241629	EMT	Spiked Blank	Turbidity	2019/07/23		102	%	80 - 120
6241629	EMT	Method Blank	Turbidity	2019/07/23	ND, RDL=0.10		NTU	
C244 C20	EMT	RPD	W. Call Calvary	2019/07/23			7963	20
6241629	Calendar	WANTE	Turbidity		NC	97	% %	80 - 120
6241631 6241631	SRM	Matrix Spike Spiked Blank	Total Alkalinity (Total as CaCO3)	2019/07/23		110	24	80 - 120
		Method Blank	Total Alkalinity (Total as CaCO3)	2019/07/23	NID	110		80-120
6241631	SRM		Total Alkalinity (Total as CaCO3)	2019/07/23	ND, RDL≃5.0		mg/L	
6241631	SRM	RPD	Total Alkalinity (Total as CaCO3)	2019/07/23	9.1		96	25
6241634	SRM	Matrix Spike	Dissolved Chloride (CI-)	2019/07/23		99	76	80 - 120
6241634	SRM	Spiked Blank	Dissolved Chloride (CI-)	2019/07/23	7052371	100	%	80 - 120
6241634	SRM	Method Blank	Dissolved Chloride (CI-)	2019/07/23	ND, RDL=1.0		mg/L	
6241634	SRM	RPD	Dissolved Chloride (CI-)	2019/07/23	0.25		76	25
6241635	SRM	Matrix Spike	Dissolved Sulphate (SO4)	2019/07/23		NC	96	80 - 120
6241635	SRM	Spiked Blank	Dissolved Sulphate (SO4)	2019/07/23		99	76	80 - 120
6241635	SRM	Method Blank	Dissolved Sulphate (SO4)	2019/07/23	ND, ROL=2.0		mg/L	
6241635	SRM	RPD	Dissolved Sulphate (SO4)	2019/07/23	0.94		74	25
6241636	SRM	Matrix Spike	Reactive Silica (SiO2)	2019/07/23		94	96.	80 - 120
6241636	SRM	Spiked Blank	Reactive Silica (SiO2)	2019/07/23		99	.96	80 - 120
6241636	SRM	Method Blank	Reactive Silica (SiO2)	2019/07/23	ND, RDL=0.50		mg/L	
6241636	SRM	RPD	Reactive Silica (SiO2)	2019/07/23	1.1		. %	25
6241637	SRM	Spiked Blank	Colour	2019/07/23		104	76	80 - 120
6241637	SRM	Method Blank	Colour	2019/07/23	ND, RDL=5.0		TCU	
6241637	SRM	RPD	Colour	2019/07/23	3,4		96	20
6241638	SRM	Matrix Spike	Orthophosphate (P)	2019/07/24		88	96	80 - 120
6241638	SRM	Spiked Blank	Orthophosphate (P)	2019/07/24		94	%.	80 - 120
6241638	SRM	Method Blank	Orthophosphate (P)	2019/07/24	ND, RDL=0.010		mg/L	
6241638	SRM	RPO	Orthophosphate (P)	2019/07/24	NC		%	25
6241639	SRM	Matrix Spike	Nitrate + Nitrite (N)	2019/07/23		86	76	80 - 120
5241639	SRM	Spiked Blank	Nitrate + Nitrite (N)	2019/07/23		88	96	80 - 120
6241639	SRM	Method Blank	Nitrate + Nitrite (N)	2019/07/23	ND, RDL=0.050		mg/L	
6241639	SRM	RPD	Nitrate + Nitrite (N)	2019/07/23	NC		%	25



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC	2010	007	95	man de la la cal	0.00		1111000	0011
Batch 6241640	Init.	QC Type Matrix Spike	Parameter	Date Analyzed 2019/07/23	Value	Recovery 91	UNITS	QC Limits 80 - 120
6241640	SRM	Spiked Blank	Nitrite (N) Nitrite (N)	2019/07/23		91	74	80 - 120
6241640	SRM	Method Blank	Nitrite (N)		ND,	98		80-120
0241040	2880	Wethod blank	Nitrite (N)	2019/07/23	RDL=0.010		mg/L	
6241640	SRM	RPD	Nitrite (N)	2019/07/23	NC		%	20
6241755	SSI	Matrix Spike	Total Organic Carbon (C)	2019/07/23	300	102	96	85 - 115
6241755	SSI	Spiked Blank	Total Organic Carbon (C)	2019/07/23		102	%	80 - 120
6241755	SSI	Method Blank	Total Organic Carbon (C)	2019/07/23	ND.	(#HA)	mg/L	00 100
	241	Treatment of the control of the cont	(otal organic carson (of	200000000000000000000000000000000000000	RDL=0.50		TO BY	
6241755	SSI	RPD	Total Organic Carbon (C)	2019/07/23	NC		36	15
6244973	AM6	QC Standard	Volatile Suspended Solids	2019/07/24		87	%	80 - 120
6244973	AM6	Method Blank	Volatile Suspended Solids	2019/07/24	ND,	10.000	rog/L	2200 300
CONTRACTOR	100000	MINTERSON	ASSTRUCTURACION VICTORIO DE LA VICTORIO DEL VICTORIO DEL VICTORIO DE LA VICTORIO DEL VICTORIO DEL VICTORIO DE LA VICTORIO DEL VICTORIO DELI VICTORIO DEL VICTORIO DEL VICTORIO DELI VIC		8DL=2.0		0.00	
6244973	AM6	RPD [KHI008-01]	Volatile Suspended Solids	2019/07/24	3.0		%	25
6252046	MGN	Spiked Blank	Isobutylbenzene - Extractable	2019/07/29		86	%	70 - 130
			n-Dotriacontane - Extractable	2019/07/29		84	%	70 - 130
			>C10-C16 Hydrocarbons	2019/07/29		99	96	70 - 130
			>C16-C21 Hydrocarbons	2019/07/29		88	%	70 - 130
			>C21-cC32 Hydrocarbons	2019/07/29		103	%	70 - 130
6252046	MGN	Method Blank	Isobutylbenzene - Extractable	2019/07/29		79	16	70 - 130
			n-Dotriacontane - Extractable	2019/07/29		71	%	70 - 130
			>C10-C16 Hydrocarbons	2019/07/29	ND, RDL+0.050		mg/L	
			>C16-C21 Hydrocarbons	2019/07/29	ND. RDL=0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2019/07/29</td><td>ND, RDL=0.10</td><td></td><td>mg/L</td><td></td></c32>	2019/07/29	ND, RDL=0.10		mg/L	
6253454	PR6	Matrix Spike	Dissolved Chlorate (CIO3-)	2019/07/25		110	36	80 - 120
			Dissolved Chlorite (CLO2-)	2019/07/25		107	96	80 - 120
6253454	PR6	Spiked Blank	Dissolved Chlorate (ClO3-)	2019/07/25		100	%	80 - 120
			Dissolved Chlorite (CLO2-)	2019/07/25		99	%	80 - 120
6253454	PR6	Method Blank	Dissolved Chlorate (CIO3-)	2019/07/25	ND, RDL=0.10		mg/L	
			Dissolved Chlorite (CLO2-)	2019/07/25	ND, RDL=0.10		mg/L	
6253454	PR6	RPD	Dissolved Chlorate (CIO3-)	2019/07/25	NC		96	20
			Dissolved Chlorite (CLO2-)	2019/07/25	NC		96	20
6253457	SJI	Matrix Spike [KHI008-21]	9,10-Dichlorostearic acid	2019/07/22		98	%	50 - 130
			Decanoic Acid (C10)	2019/07/22		81	76	50 - 130
			Docosanoic acid (C22)	2019/07/22		NC	%	50 - 130
			Dodecanoic acid (C12)	2019/07/22		85	14	50 - 130
			Eicosanoic acid (C20)	2019/07/22		90	%	50 - 130
			Hexadecanoic acid (C16)	2019/07/22		86	96	50 - 130
			Linoleic acid (C18:2)	2019/07/22		57	%	50 - 130
			Linolenic acid (C18:3)	2019/07/22		44 (2)	YL.	50 - 130
			Octadecanoic acid (C18)	2019/07/22		87	16	50 - 130
			Oleic acid (C18:1)	2019/07/22		77	36	50 - 130
			Tetradecanoic acid (C14)	2019/07/22		85	%	50 - 130
			Undecanoic acid (C11)	2019/07/22		91	74.	50 - 130
			12,14-Dichlorodehydroabietic acid	2019/07/22		104	%.	50 - 130
			12-Chlorodehydroabietic acid	2019/07/22		99	96	50 - 130
			14-Chlorodehydroabietic acid	2019/07/22		102	%	50 - 130
			Abietic acid	2019/07/22		71	%	50 - 130



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC	fee!#	OCTune	Parameter	Date Analysed	Value	Possesses	LIMITE	OC House
Batch	Init	QC Type	Parameter Dehydroabietic acid	Date Analyzed 2019/07/22	value	Recovery 140 (2)	UNITS %	QC Limit 50 - 130
			Isopimaric acid	2019/07/22		86	26	50 - 13
			Neoabietic acid	2019/07/22		26 (2)		50 - 13
			Palustric acid	2019/07/22		0.16(2)	96	50 - 13
							%	
			Pimaric acid	2019/07/22		91	%	50 - 13
		T. W. 1881.	Sandaracopimaric acid	2019/07/22		85	%	50 - 13
5253457	511	Spiked Blank	9,10-Dichlorostearic acid	2019/07/22		93	76	50 - 13
			Decanoic Acid (C10)	2019/07/22		84	N	50 - 13
			Docosanoic acid (C22)	2019/07/22		87	16	50 - 13
			Dodecanoic acid (C12)	2019/07/22		85	%	50 - 13
			Eicosanoic acid (C20)	2019/07/22		91	76	50 - 13
			Hexadecannic acid (C16)	2019/07/22		91	14	50 - 13
			Linoleic acid (C18:2)	2019/07/22		87	%	50 - 13
			Linolenic acid (C18:3)	2019/07/22		84	96	50 - 13
			Octadecanoic acid (C18)	2019/07/22		98	76	50 - 13
			Oleic acid (C18:1)	2019/07/22		93	16	50 - 13
			Tetradecanoic acid (C14)	2019/07/22		85	%	50 - 13
			Undecanoic acid (C11)	2019/07/22		93	36	50 - 13
			12,14-Dichlorodehydroabietic acid	2019/07/22		99	%	50 - 13
			12-Chlorodehydroabletic acid	2019/07/22		94	%	50 - 13
			14-Chlorodehydroabietic acid	2019/07/22		98	%	50 - 13
			Abietic acid	2019/07/22		82	%.	50 - 13
			Dehydroabietic acid	2019/07/22		112	96	50 - 13
			Isopimaric acid	2019/07/22		102	%	50 - 13
			Nepabletic acid	2019/07/22		63	%	50 - 13
			Palustric acid	2019/07/22		81	96	50 - 13
			Pimaric acid	2019/07/22		94	36	50 - 13
			Sandaracopimaric acid	2019/07/22		91	36	50 - 13
253457	SJI	Method Blank	Total Fatty Acids	2019/07/22	ND, RDL=0.072		mg/L	750-55
			Total Resin Acids	2019/07/22	ND, RDL=0.060		mg/L	
			9,10-Dichlorostearic acid	2019/07/22	ND, RDL=0.0060		mg/L	
			Decanoic Acid (C10)	2019/07/22	ND, RDL=0.0060		mg/L	
			Docosanoic acid (C22)	2019/07/22	ND, RDL=0.0060		mg/L	
			Dodecanoic acid (C12)	2019/07/22	ND, RDL=0,0060		mg/L	
			Eicosanoic acid (C20)	2019/07/22	ND, RDL=0.0060		mg/L	
			Hexadecanoic acid (C16)	2019/07/22	ND, RDL=0.0060		mg/L	
			Linoleic acid (C18:2)	2019/07/22	ND, RDL=0.0060		mg/L	
			Linolenic acid (C18:3)	2019/07/22	ND, RDL=0.0060		mg/L	
			Octadecanoic acid (C18)	2019/07/22	ND, RDL=0.0060		mg/L	
			Oleic acid (C18:1)	2019/07/22	ND, RDL=0.0060		mg/L	



Client Project #: Effluent Treatment Plant Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QA/QC	2000	12037	25 00	29-0 07-10 07	Arge	25	056750F	2222
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Tetradecandic acid (C14)	2019/07/22	ND, RDL=0.0060		mg/L	
			Undecanoic acid (C11)	2019/07/22	ND, RDL=0.0060		mg/L	
			12,14-Dichlorodehydroabietic acid	2019/07/22	ND, RDL=0.0060		mg/L	
			12-Chlorodehydroabietic acid	2019/07/22	ND, RDL=0.0060		mg/L	
			14-Chlorodehydroabletic acid	2019/07/22	ND, RDL=0.0060		mg/L	
			Abietic acid	2019/07/22	ND, RDL=0.0060		mg/L	
			Dehydroabletic acid	2019/07/22	ND, RDL=0.0060		mg/L	
			Isopimaric acid	2019/07/22	ND, RDL=0.0060		mg/L	
			Neoabietic acid	2019/07/22	ND, RDL=0.0060		mg/L	
			Palustric acid	2019/07/22	ND, RDL=0.0060		mg/L	
			Pimaric acid	2019/07/22	ND, RDL=0.0060		mg/L	
			Sandaracopimaric acid	2019/07/22	ND, RDL=0.0060		mg/L	
253457	SJI	RPD [KHI008-21]	Total Fatty Acids	2019/07/22	2.2		%	30
			Total Resin Acids	2019/07/22	0.51		76	30
			9,10-Dichlorostearic acid	2019/07/22	NC		56	30
			Decanoic Acid (C10)	2019/07/22	NC		%	30
			Docosanoic acid (C22)	2019/07/22	3.3		94	30
			Dodecanoic acid (C12)	2019/07/22	NC		76	30
			Eicosanoic acid (C20)	2019/07/22	2.6		96	30
			Hexadecanoic acid (C16)	2019/07/22	3.7		%	30
			Linoleic acid (C18:2)	2019/07/22	NC		56	30
			Linolenic acid (C18:3)	2019/07/22	NC		76.	30
			Octadecanoic acid (C18)	2019/07/22	0		%	30
			Oleic acid (C18:1)	2019/07/22	0.97		%	30
			Tetradecanoic acid (C14)	2019/07/22	NC		%	30
			Undecanoic acid (C11)	2019/07/22	NC		%	30
			12,14-Dichlorodehydroabietic acid	2019/07/22	NC		14	30
			12-Chlorodehydroabietic acid	2019/07/22	NC		%	30
			14-Chlorodehydroabietic acid	2019/07/22	NC		96	30
			Abietic acid	2019/07/22	2.4		96	30
			Dehydroabletic acid	2019/07/22	0.28		16	30
			Isopimaric acid	2019/07/22	0.48		%	30
			Neoabietic acid	2019/07/22	NC		96	30
			Palustric acid	2019/07/22	NC		96	30
			Pimaric acid	2019/07/22	0.41		36	30



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Sandaracopimaric acid	2019/07/22	1.0		- 15	30

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

- (1) BOD Analysis: Reference Material and Second source QC recoveries were high which may indicate a high bias in results.
- (2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.
- (3) VOC sample contained sediment.
- (4) Elevated PAH RDL(s) due to matrix / co-extractive interference.



Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

=======================================
Brad Newman, Scientific Service Specialist
Teny hung
Harry (Peng) Llang, Senior Analyst
1 pronica felt
Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics
Gayle Simpson, Senior Analyst
UkDiaima
Eric Dearman, Scientific Specialist
White The Stilley
Mike MacGillivray, Scientific Specialist (Inorganics)

Rosemarie MacDonald, Scientific Specialist (Organics)

Kosmanie MacDonald



Report Date: 2019/08/15

Northern Pulp N.S.

Client Project #: Effluent Treatment Plant

Site Location: POINT C, EFFLUENT SAMPLING

Your P.O. #: 43013552

VALIDATION SIGNATURE PAGE(CONT'D)

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

For Service Group specific validation please refer to the Validation Signature Page.

Page 1 of 2

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Barnes Vertax Commit (2010) (no.

Caribou Seawater





Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant

Your C.O.C. #: 715282-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/06/27

Report #: R5774605 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9E4451 Received: 2019/05/29, 12:45

Sample Matrix: Water # Samples Received: 1

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Reference
Carbonate, Bicarbonate and Hydroxide	1	N/A	2019/06/20	N/A	SM 23 4500-CO2 D
Alkalinity	1	N/A	2019/06/18	ATL SOP 00013	EPA 310.2 R1974 m
Benzo(b/j)fluoranthene Sum (water)	1	N/A	2019/06/03	N/A	Auto Calc.
Carbonaceous BOD	1	2019/05/30	2019/06/04	ATL SOP 00041	SM 23 5210B m
Chloride	1	N/A	2019/06/19	ATL SOP 00014	SM 23 4500-Cl- E m
Chemical Oxygen Demand (COD)	1	N/A	2019/05/30	ATL SOP 00042	SM 23 5220D m
Colour	1	N/A	2019/06/18	ATL SOP 00020	SM 23 2120C m
Total Cyanide (1)	1	2019/06/05	2019/06/07	CAM SOP-00457	OMOE E3015 5 m
Dioxins/Furans in Water (EPS 1/RM/23) (1, 5)	1	2019/06/06	2019/06/12	BRL SOP-00406 (mod)	EPS 1/RM/23 m
Organic carbon - Diss (DOC) (6)	1	N/A	2019/06/05	ATL SOP 00203	SM 23 5310B m
Conductance - water	1	N/A	2019/06/19	ATL SOP 00004	SM 23 2510B m
TEH in Water (PIRI)	1	2019/05/30	2019/05/30	ATL SOP 00113	Atl. RBCA v3.1 m
Sulphide as H2S (1)	1	N/A	2019/06/03		
Hardness (calculated as CaCO3)	1	N/A	2019/05/31	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	1	2019/05/31	2019/05/31	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total MS	1	2019/05/30	2019/05/31	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	1	N/A	2019/06/20	N/A	Auto Calc.
Anion and Cation Sum	1	N/A	2019/06/20	N/A	Auto Calc.
Chlorate and Chlorite by IC (2)	1	N/A	2019/06/06	CAL SOP-00040	SM 23 4110D m
Nitrogen (Total) (3)	1	N/A	2019/06/03	BBY6SOP-00016	SM 22 4500-N C m
Resin and Fatty Acids (2)	1	2019/05/31	2019/06/01	CAL SOP-00099	AE129.0
Nitrogen Ammonia - water	1	N/A	2019/06/06	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2019/06/18	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	1	N/A	2019/06/18	ATL SOP 00017	SM 23 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2019/06/19	ATL SOP 00018	ASTM D3867-16
PAH in Water by GC/MS (SIM)	1	2019/05/31	2019/06/01	ATL SOP 00103	EPA 8270E R6 m
PCBs in water by GC/ECD	1	2019/06/04	2019/06/05	ATL SOP 00107	EPA 8082A m
PCB Aroclor sum (water)	1	N/A	2019/06/05	N/A	Auto Calc.
Phenols in Pulp and Paper Mill Effluents (4)	1	2019/06/01	2019/06/05		
pH (7)	1	N/A	2019/06/19	ATL SOP 00003	SM 23 4500-H+ B m
Phosphorus - ortho	1	N/A	2019/06/18	ATL SOP 00021	SM 23 4500-P E m



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant

Your C.O.C. #: 715282-01-01

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CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9E4451 Received: 2019/05/29, 12:45

Sample Matrix: Water # Samples Received: 1

" Samples Neceivea. 1		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Reference
VPH in Water (PIRI)	1	N/A	2019/06/02	ATL SOP 00118	Atl. RBCA v3.1 m
Salinity (8)	1	N/A	2019/06/18		SM 22 2520B
Sat. pH and Langelier Index (@ 20C)	1	N/A	2019/06/20	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	1	N/A	2019/06/20	ATL SOP 00049	Auto Calc.
Reactive Silica	1	N/A	2019/06/19	ATL SOP 00022	EPA 366.0 m
Sulphate	1	N/A	2019/06/19	ATL SOP 00023	ASTM D516-16 m
Sulphide (1)	1	N/A	2019/06/03	CAM SOP-00455	SM 23 4500-S G m
Total Dissolved Solids (TDS calc)	1	N/A	2019/06/19	N/A	Auto Calc.
Total Kjeldahl Nitrogen in Water (1)	1	2019/06/01	2019/06/04	CAM SOP-00938	OMOE E3516 m
Organic carbon - Total (TOC) (6)	1	N/A	2019/06/07	ATL SOP 00203	SM 23 5310B m
ModTPH (T1) Calc. for Water	1	N/A	2019/06/03	N/A	Atl. RBCA v3 m
Phosphorus Total Colourimetry	1	2019/06/05	2019/06/06	ATL SOP 00057	EPA 365.1 R2 m
Total Suspended Solids	1	2019/05/31	2019/06/03	ATL SOP 00007	SM 23 2540D m
Turbidity	1	N/A	2019/06/19	ATL SOP 00011	EPA 180.1 R2 m
Volatile Organic Compounds in Water	1	N/A	2019/05/30	ATL SOP 00133	EPA 8260D R4 m
Volatile Suspended Solids	1	N/A	2019/06/04	ATL SOP 00008	EPA 160.4 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant

Your C.O.C. #: 715282-01-01

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dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

- * RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
- (1) This test was performed by Bureau Veritas Laboratories Mississauga
- (2) This test was performed by Bedford to Calgary Offsite
- (3) This test was performed by Bedford to Burnaby Offsite
- (4) This test was performed by Bedford to Montreal Subcontrac
- (5) Confirmatory runs for 2,3,7,8-TCDF are performed only if the primary result is greater than the RDL.
- (6) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.
- (7) The APHA Standard Method require pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.
- (8) Non-accredited test method

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Maryann Comeau, Project Manager

Email: Maryann.COMEAU@bvlabs.com Phone# (902)420-0203 Ext:298

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Northern Pulp N.S. Client Project #: Effluent Treatment Plant Your P.O. #: 43013552

RESULTS OF ANALYSES OF WATER

BV Labs ID		JVR046			
Sampling Date		2019/05/25			
Sumpling Dute		17:00			
COC Number		715282-01-01			
	UNITS	CARIBOU SEA WATER 1	RDL	MDL	QC Batch
Calculated Parameters					
Anion Sum	me/L	480	N/A	N/A	6147444
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	89	1.0	0.20	6147433
Calculated TDS	mg/L	27000	1.0	0.20	6147453
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND	1.0	0.20	6147433
Cation Sum	me/L	465	N/A	N/A	6147444
Hardness (CaCO3)	mg/L	5000	1.0	1.0	6147440
Ion Balance (% Difference)	%	1.62	N/A	N/A	6147442
Langelier Index (@ 20C)	N/A	0.162			6147449
Langelier Index (@ 4C)	N/A	-0.0760			6147451
Nitrate (N)	mg/L	ND	0.050	N/A	6147446
Saturation pH (@ 20C)	N/A	7.39			6147449
Saturation pH (@ 4C)	N/A	7.63			6147451
Sulphide (as H2S)	mg/L	ND	0.021	0.011	6147649
Inorganics					
Total Alkalinity (Total as CaCO3)	mg/L	90	5.0	N/A	6182160
Carbonaceous BOD	mg/L	ND (1)	10	N/A	6148701
Total Chemical Oxygen Demand	mg/L	1500	200	N/A	6148620
Dissolved Chlorate (ClO3-)	mg/L	ND (2)	5.0	N/A	6165901
Dissolved Chloride (Cl-)	mg/L	16000	500	N/A	6182167
Dissolved Chlorite (CLO2-)	mg/L	ND (2)	5.0	N/A	6165901
Colour	TCU	7.6	5.0	N/A	6182170
Total Kjeldahl Nitrogen (TKN)	mg/L	0.19	0.10	0.060	6153709
Nitrate + Nitrite (N)	mg/L	ND	0.050	N/A	6182172
Nitrite (N)	mg/L	ND	0.010	N/A	6182173
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	N/A	6159706
Dissolved Organic Carbon (C)	mg/L	2.3	0.50	N/A	6158927
Total Organic Carbon (C)	mg/L	2.5	0.50	N/A	6163938
Orthophosphate (P)	mg/L	ND	0.010	N/A	6182171
рН	рН	7.56	N/A	N/A	6184783

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected

(1) Sample integrity may have been compromised, the sample exceeded it's hold time prior to being analyzed.

(2) Detection limits raised due to matrix interference.



Northern Pulp N.S. Client Project #: Effluent Treatment Plant Your P.O. #: 43013552

RESULTS OF ANALYSES OF WATER

BV Labs ID		JVR046			
Sampling Date		2019/05/25 17:00			
COC Number		715282-01-01			
	UNITS	CARIBOU SEA WATER 1	RDL	MDL	QC Batch
Total Phosphorus	mg/L	ND	0.020	N/A	6158894
Salinity	N/A	29	2.0	N/A	6181990
Reactive Silica (SiO2)	mg/L	ND	0.50	N/A	6182169
Total Suspended Solids	mg/L	1.8	1.0	N/A	6151063
Dissolved Sulphate (SO4)	mg/L	1900	40	N/A	6182168
Sulphide	mg/L	ND	0.020	0.010	6154726
Total Cyanide (CN)	mg/L	ND	0.0050	0.00010	6159669
Turbidity	NTU	1.2	0.10	0.10	6184399
Volatile Suspended Solids	mg/L	ND	2.0	N/A	6157072
Conductivity	uS/cm	42000	1.0	N/A	6184788
Nutritional Parameters					
Total Nitrogen (N)	mg/L	0.158	0.020	N/A	6157791
Subcontracted Analysis					
Subcontract Parameter	N/A	ATTACHED	N/A	N/A	6153390
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					
ND = Not detected					
N/A = Not Applicable					



Northern Pulp N.S. Client Project #: Effluent Treatment Plant Your P.O. #: 43013552

MERCURY BY COLD VAPOUR AA (WATER)

BV Labs ID		JVR046					
Sampling Date		2019/05/25 17:00					
COC Number		715282-01-01					
	UNITS	CARIBOU SEA WATER 1	RDL	MDL	QC Batch		
Metals							
Total Mercury (Hg)	ug/L	ND	0.013	N/A	6149403		
RDL = Reportable Detection L	imit						
QC Batch = Quality Control Batch							
ND = Not detected							



ELEMENTS BY ICP/MS (WATER)

	JVR046			
	2019/05/25			
	17:00			
	715282-01-01			
UNITS	CARIBOU SEA WATER 1	RDL	MDL	QC Batch
ug/L	ND	50	N/A	6148971
ug/L	ND	10	N/A	6148971
ug/L	ND	10	N/A	6148971
ug/L	13	10	N/A	6148971
ug/L	ND	10	N/A	6148971
ug/L	ND	20	N/A	6148971
ug/L	3500	500	N/A	6148971
ug/L	ND	0.10	N/A	6148971
ug/L	320000	1000	N/A	6148971
ug/L	ND	10	N/A	6148971
ug/L	ND	4.0	N/A	6148971
ug/L	ND	5.0	N/A	6148971
ug/L	ND	500	N/A	6148971
ug/L	ND	5.0	N/A	6148971
ug/L	1000000	1000	N/A	6148971
ug/L	ND	20	N/A	6148971
ug/L	ND	20	N/A	6148971
ug/L	ND	20	N/A	6148971
ug/L	ND	1000	N/A	6148971
ug/L	300000	1000	N/A	6148971
ug/L	ND	10	N/A	6148971
ug/L	ND	1.0	N/A	6148971
ug/L	8200000	1000	N/A	6148971
ug/L	6000	20	N/A	6148971
ug/L	ND	1.0	N/A	6148971
ug/L	ND	20	N/A	6148971
ug/L	ND	20	N/A	6148971
ug/L	2.7	1.0	N/A	6148971
ug/L	ND	20	N/A	6148971
ug/L	ND	50	N/A	6148971
	ug/L ug/L	2019/05/25 17:00 715282-01-01 CARIBOU SEA WATER 1		CARIBOU SEA WATER RDL MDL

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable



SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		JVR046			
Sampling Date		2019/05/25			
Sampling Date		17:00			
COC Number		715282-01-01			
	UNITS	CARIBOU SEA WATER 1	RDL	MDL	QC Batch
Polyaromatic Hydrocarbon	ıs				
1-Methylnaphthalene	ug/L	ND	0.050	N/A	6151065
2-Methylnaphthalene	ug/L	ND	0.050	N/A	6151065
Acenaphthene	ug/L	ND	0.010	N/A	6151065
Acenaphthylene	ug/L	ND	0.010	N/A	6151065
Anthracene	ug/L	ND	0.010	N/A	6151065
Benzo(a)anthracene	ug/L	ND	0.010	N/A	6151065
Benzo(a)pyrene	ug/L	ND	0.010	N/A	6151065
Benzo(b)fluoranthene	ug/L	ND	0.010	N/A	6151065
Benzo(b/j)fluoranthene	ug/L	ND	0.020	N/A	6146340
Benzo(g,h,i)perylene	ug/L	ND	0.010	N/A	6151065
Benzo(j)fluoranthene	ug/L	ND	0.010	N/A	6151065
Benzo(k)fluoranthene	ug/L	ND	0.010	N/A	6151065
Chrysene	ug/L	ND	0.010	N/A	6151065
Dibenz(a,h)anthracene	ug/L	ND	0.010	N/A	6151065
Fluoranthene	ug/L	ND	0.010	N/A	6151065
Fluorene	ug/L	ND	0.010	N/A	6151065
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.010	N/A	6151065
Naphthalene	ug/L	ND	0.20	N/A	6151065
Perylene	ug/L	ND	0.010	N/A	6151065
Phenanthrene	ug/L	ND	0.010	N/A	6151065
Pyrene	ug/L	ND	0.010	N/A	6151065
Surrogate Recovery (%)					
D10-Anthracene	%	93			6151065
D14-Terphenyl	%	99			6151065
D8-Acenaphthylene	%	87			6151065
RDL = Reportable Detection	n Limit		•	•	
QC Batch = Quality Control	Batch				
ND = Not detected					
N/A = Not Applicable					



Northern Pulp N.S. Client Project #: Effluent Treatment Plant Your P.O. #: 43013552

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		JVR046			
Sampling Date		2019/05/25			
		17:00			
COC Number		715282-01-01			
	UNITS	CARIBOU SEA WATER 1	RDL	MDL	QC Batch
Volatile Organics					
1,1-Dichloroethane	ug/L	ND	2.0	N/A	6148613
1,1-Dichloroethylene	ug/L	ND	0.50	1.0	6148613
1,1,1-Trichloroethane	ug/L	ND	1.0	N/A	6148613
1,1,2-Trichloroethane	ug/L	ND	1.0	N/A	6148613
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	N/A	6148613
Ethylene Dibromide	ug/L	ND	0.20	0.50	6148613
1,2-Dichlorobenzene	ug/L	ND	0.50	N/A	6148613
1,2-Dichloroethane	ug/L	ND	1.0	N/A	6148613
cis-1,2-Dichloroethylene	ug/L	ND	0.50	N/A	6148613
trans-1,2-Dichloroethylene	ug/L	ND	0.50	N/A	6148613
1,2-Dichloropropane	ug/L	ND	0.50	N/A	6148613
1,3-Dichlorobenzene	ug/L	ND	1.0	N/A	6148613
cis-1,3-Dichloropropene	ug/L	ND	0.50	N/A	6148613
trans-1,3-Dichloropropene	ug/L	ND	0.50	N/A	6148613
1,4-Dichlorobenzene	ug/L	ND	1.0	N/A	6148613
Benzene	ug/L	ND	1.0	N/A	6148613
Bromodichloromethane	ug/L	ND	1.0	0.20	6148613
Bromoform	ug/L	ND	1.0	0.20	6148613
Bromomethane	ug/L	ND	0.50	N/A	6148613
Carbon Tetrachloride	ug/L	ND	0.50	N/A	6148613
Chlorobenzene	ug/L	ND	1.0	N/A	6148613
Chloroethane	ug/L	ND	8.0	N/A	6148613
Chloroform	ug/L	ND	1.0	0.20	6148613
Chloromethane	ug/L	ND	8.0	N/A	6148613
Dibromochloromethane	ug/L	ND	1.0	0.20	6148613
Methylene Chloride(Dichloromethane)	ug/L	ND	3.0	N/A	6148613
Ethylbenzene	ug/L	ND	1.0	N/A	6148613
Methyl t-butyl ether (MTBE)	ug/L	ND	2.0	N/A	6148613
Styrene	ug/L	ND	1.0	N/A	6148613
Tetrachloroethylene	ug/L	ND	1.0	N/A	6148613
Toluene	ug/L	ND	1.0	N/A	6148613
Trichloroethylene	ug/L	ND	1.0	N/A	6148613

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected N/A = Not Applicable



VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		JVR046						
Sampling Date		2019/05/25 17:00						
COC Number		715282-01-01						
	UNITS	CARIBOU SEA WATER 1	RDL	MDL	QC Batch			
Trichlorofluoromethane (FREON 11)	ug/L	ND	8.0	N/A	6148613			
Vinyl Chloride	ug/L	ND	0.50	2.0	6148613			
o-Xylene	ug/L	ND	1.0	N/A	6148613			
p+m-Xylene	ug/L	ND	2.0	N/A	6148613			
Total Xylenes	ug/L	ND	1.0	1.0	6148613			
Total Trihalomethanes	ug/L	ND	1.0	N/A	6148613			
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	98			6148613			
D4-1,2-Dichloroethane	%	116			6148613			
D8-Toluene	%	100			6148613			

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable



Northern Pulp N.S. Client Project #: Effluent Treatment Plant Your P.O. #: 43013552

ATLANTIC RBCA HYDROCARBONS (WATER)

	_		_		
BV Labs ID		JVR046			
Sampling Date		2019/05/25			
		17:00			
COC Number		715282-01-01			
	UNITS	CARIBOU SEA WATER 1	RDL	MDL	QC Batch
Petroleum Hydrocarbons	•	•	•	•	•
Benzene	mg/L	ND	0.0010	N/A	6153412
Toluene	mg/L	ND	0.0010	N/A	6153412
Ethylbenzene	mg/L	ND	0.0010	N/A	6153412
Total Xylenes	mg/L	ND	0.0020	N/A	6153412
C6 - C10 (less BTEX)	mg/L	ND	0.010	N/A	6153412
>C10-C16 Hydrocarbons	mg/L	ND	0.050	N/A	6148915
>C16-C21 Hydrocarbons	mg/L	ND	0.050	N/A	6148915
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>ND</td><td>0.10</td><td>N/A</td><td>6148915</td></c32>	mg/L	ND	0.10	N/A	6148915
Modified TPH (Tier1)	mg/L	ND	0.10	N/A	6146630
Reached Baseline at C32	mg/L	NA	N/A	N/A	6148915
Hydrocarbon Resemblance	mg/L	NA	N/A	N/A	6148915
Surrogate Recovery (%)	•		•		
Isobutylbenzene - Extractable	%	89			6148915
n-Dotriacontane - Extractable	%	104			6148915
Isobutylbenzene - Volatile	%	95			6153412
RDL = Reportable Detection Lim	nit		•		•
QC Batch = Quality Control Batc	ch				
ND = Not detected					
N/A = Not Applicable					



Northern Pulp N.S. Client Project #: Effluent Treatment Plant Your P.O. #: 43013552

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

BV Labs ID		JVR046			
Sampling Date		2019/05/25 17:00			
COC Number		715282-01-01			
	UNITS	CARIBOU SEA WATER 1	RDL	MDL	QC Batch
PCBs					
Aroclor 1016	ug/L	ND	0.050	N/A	6156517
Aroclor 1221	ug/L	ND	0.050	N/A	6156517
Aroclor 1232	ug/L	ND	0.050	N/A	6156517
Aroclor 1248	ug/L	ND	0.050	N/A	6156517
Aroclor 1242	ug/L	ND	0.050	N/A	6156517
Aroclor 1254	ug/L	ND	0.050	N/A	6156517
Aroclor 1260	ug/L	ND	0.050	N/A	6156517
Calculated Total PCB	ug/L	ND	0.050	N/A	6146342
Surrogate Recovery (%)					
Decachlorobiphenyl	%	87			6156517
RDL = Reportable Detection	Limit	_		•	
OC Batch = Quality Control I	Ratch				

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable



Northern Pulp N.S. Client Project #: Effluent Treatment Plant Your P.O. #: 43013552

RESIN AND FATTY ACIDS BY GC-MS (WATER)

BV Labs ID		JVR046			
Compliant Bata		2019/05/25			
Sampling Date		17:00			
COC Number		715282-01-01			
	UNITS	CARIBOU SEA WATER 1	RDL	MDL	QC Batch
Calculated Parameters		·	1		
Total Fatty Acids	mg/L	ND	0.072	N/A	6172547
Total Resin Acids	mg/L	ND	0.060	N/A	6172547
Fatty Acids					I.
9,10-Dichlorostearic acid	mg/L	ND	0.0060	N/A	6172547
Decanoic Acid (C10)	mg/L	ND	0.0060	N/A	6172547
Docosanoic acid (C22)	mg/L	ND	0.0060	N/A	6172547
Dodecanoic acid (C12)	mg/L	ND	0.0060	N/A	6172547
Eicosanoic acid (C20)	mg/L	ND	0.0060	N/A	6172547
Hexadecanoic acid (C16)	mg/L	ND	0.0060	N/A	6172547
Linoleic acid (C18:2)	mg/L	ND	0.0060	N/A	6172547
Linolenic acid (C18:3)	mg/L	ND	0.0060	N/A	6172547
Octadecanoic acid (C18)	mg/L	ND	0.0060	N/A	6172547
Oleic acid (C18:1)	mg/L	ND	0.0060	N/A	6172547
Tetradecanoic acid (C14)	mg/L	ND	0.0060	N/A	6172547
Undecanoic acid (C11)	mg/L	ND	0.0060	N/A	6172547
Resin Acids				•	•
12,14-Dichlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6172547
12-Chlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6172547
14-Chlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6172547
Abietic acid	mg/L	ND	0.0060	N/A	6172547
Dehydroabietic acid	mg/L	ND	0.0060	N/A	6172547
Isopimaric acid	mg/L	ND	0.0060	N/A	6172547
Neoabietic acid	mg/L	ND	0.0060	N/A	6172547
Palustric acid	mg/L	ND	0.0060	N/A	6172547
Pimaric acid	mg/L	ND	0.0060	N/A	6172547
Sandaracopimaric acid	mg/L	ND	0.0060	N/A	6172547
RDL = Reportable Detection Limit	•				
QC Batch = Quality Control Batch					
ND - Not detected					

ND = Not detected

N/A = Not Applicable



DIOXINS AND FURANS BY HRMS (WATER)

BV Labs ID		JVR046							
Sampling Date		2019/05/25 17:00							
COC Number		715282-01-01				TOXIC EQU	IVALENCY	# of	
	UNITS	CARIBOU SEA WATER 1	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Dioxins & Furans			•	-		•			
2,3,7,8-Tetra CDD *	pg/L	ND	1.02	9.48	N/A	1.00	1.02		6170521
1,2,3,7,8-Penta CDD *	pg/L	ND	0.997	9.48	N/A	1.00	0.997		6170521
1,2,3,4,7,8-Hexa CDD *	pg/L	ND	1.12	9.48	N/A	0.100	0.112		6170521
1,2,3,6,7,8-Hexa CDD *	pg/L	ND	0.974	9.48	N/A	0.100	0.0974		6170521
1,2,3,7,8,9-Hexa CDD *	pg/L	ND	0.947	9.48	N/A	0.100	0.0947		6170521
1,2,3,4,6,7,8-Hepta CDD *	pg/L	ND	1.06	9.48	N/A	0.0100	0.0106		6170521
Octa CDD *	pg/L	ND (1)	1.08	94.8	N/A	0.000300	0.000324		6170521
Total Tetra CDD *	pg/L	ND	1.02	9.48	N/A			0	6170521
Total Penta CDD *	pg/L	ND	0.997	9.48	N/A			0	6170521
Total Hexa CDD *	pg/L	ND	1.01	9.48	N/A			0	6170521
Total Hepta CDD *	pg/L	ND	1.06	9.48	N/A			0	6170521
2,3,7,8-Tetra CDF **	pg/L	ND	1.13	9.48	N/A	0.100	0.113		6170521
1,2,3,7,8-Penta CDF **	pg/L	ND	1.11	9.48	N/A	0.0300	0.0333		6170521
2,3,4,7,8-Penta CDF **	pg/L	ND	1.11	9.48	N/A	0.300	0.333		6170521
1,2,3,4,7,8-Hexa CDF **	pg/L	ND	0.806	9.48	N/A	0.100	0.0806		6170521
1,2,3,6,7,8-Hexa CDF **	pg/L	ND	0.672	9.48	N/A	0.100	0.0672		6170521
2,3,4,6,7,8-Hexa CDF **	pg/L	ND	0.760	9.48	N/A	0.100	0.0760		6170521
1,2,3,7,8,9-Hexa CDF **	pg/L	ND	0.842	9.48	N/A	0.100	0.0842		6170521
1,2,3,4,6,7,8-Hepta CDF **	pg/L	ND	0.959	9.48	N/A	0.0100	0.00959		6170521
1,2,3,4,7,8,9-Hepta CDF **	pg/L	ND	1.09	9.48	N/A	0.0100	0.0109		6170521
Octa CDF **	pg/L	ND	1.01	94.8	N/A	0.000300	0.000303		6170521
Total Tetra CDF **	pg/L	ND	1.13	9.48	N/A			0	6170521
Total Penta CDF **	pg/L	ND	1.11	9.48	N/A			0	6170521
Total Hexa CDF **	pg/L	ND	0.765	9.48	N/A			0	6170521

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,

The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

* CDD = Chloro Dibenzo-p-Dioxin

ND = Not detected

N/A = Not Applicable

** CDF = Chloro Dibenzo-p-Furan

(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.



DIOXINS AND FURANS BY HRMS (WATER)

BV Labs ID		JVR046							
Sampling Date		2019/05/25 17:00							
COC Number		715282-01-01				TOXIC EQU	IIVALENCY	# of	
	UNITS	CARIBOU SEA WATER 1	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Hepta CDF **	pg/L	ND	1.02	9.48	N/A			0	6170521
TOTAL TOXIC EQUIVALENCY	pg/L						3.14		
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	101							6170521
C13-1234678 HeptaCDF **	%	99							6170521
C13-123678 HexaCDD *	%	130							6170521
C13-123678 HexaCDF **	%	95							6170521
C13-12378 PentaCDD *	%	78							6170521
C13-12378 PentaCDF **	%	61							6170521
C13-2378 TetraCDD *	%	84							6170521
C13-2378 TetraCDF **	%	65							6170521
C13-OCDD *	%	103							6170521

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,

The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

** CDF = Chloro Dibenzo-p-Furan

ND = Not detected

N/A = Not Applicable

* CDD = Chloro Dibenzo-p-Dioxin



Northern Pulp N.S. Client Project #: Effluent Treatment Plant Your P.O. #: 43013552

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Sample received past the recommended holding time for BOD testing.

Sample VT5932 [JVR264-04R\CARIBOU SEA WATER 1]: Sample matrix (Sea Water) is not suitable for Adsorbable Organic Halogens analysis and is beyond the scope of the method.

Sample JVR046 [CARIBOU SEA WATER 1]: Elevated reporting limits for trace metals due to sample matrix.

Results relate only to the items tested.



Northern Pulp N.S. Client Project #: Effluent Treatment Plant Your P.O. #: 43013552

QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6148613	ASL	Matrix Spike	4-Bromofluorobenzene	2019/05/30		99	%	70 - 130
			D4-1,2-Dichloroethane	2019/05/30		120	%	70 - 130
			D8-Toluene	2019/05/30		96	%	70 - 130
			1,1-Dichloroethane	2019/05/30		108	%	70 - 130
			1,1-Dichloroethylene	2019/05/30		110	%	70 - 130
			1,1,1-Trichloroethane	2019/05/30		109	%	70 - 130
			1,1,2-Trichloroethane	2019/05/30		109	%	70 - 130
			1,1,2,2-Tetrachloroethane	2019/05/30		109	%	70 - 130
			Ethylene Dibromide	2019/05/30		112	%	70 - 130
			1,2-Dichlorobenzene	2019/05/30		91	%	70 - 130
			1,2-Dichloroethane	2019/05/30		112	%	70 - 130
			cis-1,2-Dichloroethylene	2019/05/30		102	%	70 - 130
			trans-1,2-Dichloroethylene	2019/05/30		108	%	70 - 130
			1,2-Dichloropropane	2019/05/30		106	%	70 - 130
			1,3-Dichlorobenzene	2019/05/30		87	%	70 - 130
			cis-1,3-Dichloropropene	2019/05/30		111	%	70 - 130
			trans-1,3-Dichloropropene	2019/05/30		121	%	70 - 130
			1,4-Dichlorobenzene	2019/05/30		87	%	70 - 130
			Benzene	2019/05/30		93	%	70 - 130
			Bromodichloromethane	2019/05/30		102	%	70 - 130
			Bromoform	2019/05/30		104	%	70 - 130
			Bromomethane	2019/05/30		100	%	60 - 140
			Carbon Tetrachloride	2019/05/30		105	%	70 - 130
			Chlorobenzene	2019/05/30		92	%	70 - 130
			Chloroethane	2019/05/30		90	%	60 - 140
			Chloroform	2019/05/30		102	%	70 - 130
			Chloromethane	2019/05/30		94	%	60 - 140
			Dibromochloromethane	2019/05/30		108	%	70 - 130
			Methylene Chloride(Dichloromethane)	2019/05/30		106	%	70 - 130
			Ethylbenzene	2019/05/30		94	%	70 - 130
			Methyl t-butyl ether (MTBE)	2019/05/30		103	%	70 - 130
			Styrene	2019/05/30		99	%	70 - 130
			Tetrachloroethylene	2019/05/30		97	%	70 - 130
			Toluene	2019/05/30		97	%	70 - 130
			Trichloroethylene	2019/05/30		98	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2019/05/30		93	%	60 - 140
			Vinyl Chloride	2019/05/30		91	%	60 - 140
			o-Xylene	2019/05/30		94	%	70 - 130
			p+m-Xylene	2019/05/30		92	%	70 - 130
6148613	ASL	Spiked Blank	4-Bromofluorobenzene	2019/05/30		101	%	70 - 130
			D4-1,2-Dichloroethane	2019/05/30		111	%	70 - 130
			D8-Toluene	2019/05/30		97	%	70 - 130
			1,1-Dichloroethane	2019/05/30		108	%	70 - 130
			1,1-Dichloroethylene	2019/05/30		113	%	70 - 130
			1,1,1-Trichloroethane	2019/05/30		111	%	70 - 130
			1,1,2-Trichloroethane	2019/05/30		103	%	70 - 130
			1,1,2.7Ternoroctione 1,1,2,2-Tetrachloroethane	2019/05/30		103	%	70 - 130
			Ethylene Dibromide	2019/05/30		104	%	70 - 130
			1,2-Dichlorobenzene	2019/05/30		93	%	70 - 130
			1,2-Dichloroethane	2019/05/30		106	%	70 - 130
			cis-1,2-Dichloroethylene	2019/05/30		100	%	70 - 130
			trans-1,2-Dichloroethylene	2019/05/30		100	%	70 - 130 70 - 130
			1,2-Dichloropropane	2019/05/30		105	%	70 - 130 70 - 130
			-, opropunc	2019/05/30		100	,,	. 5 150



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			cis-1,3-Dichloropropene	2019/05/30		104	%	70 - 130
			trans-1,3-Dichloropropene	2019/05/30		108	%	70 - 130
			1,4-Dichlorobenzene	2019/05/30		90	%	70 - 130
			Benzene	2019/05/30		93	%	70 - 130
			Bromodichloromethane	2019/05/30		101	%	70 - 130
			Bromoform	2019/05/30		99	%	70 - 130
			Bromomethane	2019/05/30		95	%	60 - 140
			Carbon Tetrachloride	2019/05/30		108	%	70 - 130
			Chlorobenzene	2019/05/30		94	%	70 - 130
			Chloroethane	2019/05/30		91	%	60 - 140
			Chloroform	2019/05/30		101	%	70 - 130
			Chloromethane	2019/05/30		92	%	60 - 140
			Dibromochloromethane	2019/05/30		104	%	70 - 130
			Methylene Chloride(Dichloromethane)	2019/05/30		101	%	70 - 130
			Ethylbenzene	2019/05/30		99	%	70 - 130
			Methyl t-butyl ether (MTBE)	2019/05/30		101	%	70 - 130
			Styrene	2019/05/30		102	%	70 - 130
			Tetrachloroethylene	2019/05/30		101	%	70 - 130
			Toluene	2019/05/30		99	%	70 - 130
			Trichloroethylene	2019/05/30		101	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2019/05/30		96	%	60 - 140
			Vinyl Chloride	2019/05/30		87	%	60 - 140
			o-Xylene	2019/05/30		98	%	70 - 130
			p+m-Xylene	2019/05/30		96	%	70 - 130
6148613	ASL	Method Blank	4-Bromofluorobenzene	2019/05/30		98	%	70 - 130
0140013	AJL	Wiethou Blank	D4-1,2-Dichloroethane	2019/05/30		111	%	70 - 130
			D8-Toluene	2019/05/30		100	%	70 - 130
			1,1-Dichloroethane	2019/05/30	ND,	100	ug/L	70 - 130
					RDL=2.0			
			1,1-Dichloroethylene	2019/05/30	ND, RDL=0.50		ug/L	
			1,1,1-Trichloroethane	2019/05/30	ND, RDL=1.0		ug/L	
			1,1,2-Trichloroethane	2019/05/30	ND, RDL=1.0		ug/L	
			1,1,2,2-Tetrachloroethane	2019/05/30	ND, RDL=0.50		ug/L	
			Ethylene Dibromide	2019/05/30	ND, RDL=0.20		ug/L	
			1,2-Dichlorobenzene	2019/05/30	ND, RDL=0.50		ug/L	
			1,2-Dichloroethane	2019/05/30	ND, RDL=1.0		ug/L	
			cis-1,2-Dichloroethylene	2019/05/30	ND, RDL=0.50		ug/L	
			trans-1,2-Dichloroethylene	2019/05/30	ND, RDL=0.50		ug/L	
			1,2-Dichloropropane	2019/05/30	ND, RDL=0.50		ug/L	
			1,3-Dichlorobenzene	2019/05/30	ND, RDL=1.0		ug/L	
			cis-1,3-Dichloropropene	2019/05/30	ND, RDL=0.50		ug/L	
			trans-1,3-Dichloropropene	2019/05/30	ND, RDL=0.50		ug/L	



			QUALITY ASSURANCE REP	- (,				
QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,4-Dichlorobenzene	2019/05/30	ND, RDL=1.0		ug/L	
			Benzene	2019/05/30	ND, RDL=1.0		ug/L	
			Bromodichloromethane	2019/05/30	ND, RDL=1.0		ug/L	
			Bromoform	2019/05/30	ND, RDL=1.0		ug/L	
			Bromomethane	2019/05/30	ND, RDL=0.50		ug/L	
			Carbon Tetrachloride	2019/05/30	ND, RDL=0.50		ug/L	
			Chlorobenzene	2019/05/30	ND, RDL=1.0		ug/L	
			Chloroethane	2019/05/30	ND, RDL=8.0		ug/L	
			Chloroform	2019/05/30	ND, RDL=1.0		ug/L	
			Chloromethane	2019/05/30	ND, RDL=8.0		ug/L	
			Dibromochloromethane	2019/05/30	ND, RDL=1.0		ug/L	
			Methylene Chloride(Dichloromethane)	2019/05/30	ND, RDL=3.0		ug/L	
			Ethylbenzene	2019/05/30	ND, RDL=1.0		ug/L	
			Methyl t-butyl ether (MTBE)	2019/05/30	ND, RDL=2.0		ug/L	
			Styrene	2019/05/30	ND, RDL=1.0		ug/L	
			Tetrachloroethylene	2019/05/30	ND, RDL=1.0		ug/L	
			Toluene	2019/05/30	ND, RDL=1.0		ug/L	
			Trichloroethylene	2019/05/30	ND, RDL=1.0		ug/L	
			Trichlorofluoromethane (FREON 11)	2019/05/30	ND, RDL=8.0		ug/L	
			Vinyl Chloride	2019/05/30	ND, RDL=0.50		ug/L	
			o-Xylene	2019/05/30	ND, RDL=1.0		ug/L	
			p+m-Xylene	2019/05/30	ND, RDL=2.0		ug/L	
			Total Xylenes	2019/05/30	ND, RDL=1.0		ug/L	
			Total Trihalomethanes	2019/05/30	ND, RDL=1.0		ug/L	
6148613	ASL	RPD	1,1-Dichloroethane	2019/05/30	NC NC		%	40
0140013	AJL	INFU						
			1,1-Dichloroethylene	2019/05/30	NC		%	40
			1,1,1-Trichloroethane	2019/05/30	NC		%	40
			1,1,2-Trichloroethane	2019/05/30	NC		%	40
			1,1,2,2-Tetrachloroethane	2019/05/30	NC		%	40
			Ethylene Dibromide	2019/05/30	NC		%	40
			1,2-Dichlorobenzene	2019/05/30	NC		%	40



			QUALITY ASSURANCE REP					
QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,2-Dichloroethane	2019/05/30	NC		%	40
			cis-1,2-Dichloroethylene	2019/05/30	NC		%	40
			trans-1,2-Dichloroethylene	2019/05/30	NC		%	40
			1,2-Dichloropropane	2019/05/30	NC		%	40
			1,3-Dichlorobenzene	2019/05/30	NC		%	40
			cis-1,3-Dichloropropene	2019/05/30	NC		%	40
			trans-1,3-Dichloropropene	2019/05/30	NC		%	40
			1,4-Dichlorobenzene	2019/05/30	NC		%	40
			Benzene	2019/05/30	NC		%	40
			Bromodichloromethane	2019/05/30	NC		%	40
			Bromoform	2019/05/30	NC		%	40
			Bromomethane	2019/05/30	NC		%	40
			Carbon Tetrachloride	2019/05/30	NC		%	40
			Chlorobenzene	2019/05/30	NC		%	40
			Chloroethane	2019/05/30	NC		%	40
			Chloroform	2019/05/30	NC		%	40
			Chloromethane	2019/05/30	NC		%	40
			Dibromochloromethane	2019/05/30	NC		%	40
			Methylene Chloride(Dichloromethane)	2019/05/30	NC		%	40
			Ethylbenzene	2019/05/30	NC		%	40
			Methyl t-butyl ether (MTBE)	2019/05/30	NC		%	40
			Styrene	2019/05/30	NC		%	40
			Tetrachloroethylene	2019/05/30	NC		%	40
			Toluene	2019/05/30	NC		%	40
			Trichloroethylene	2019/05/30	NC		%	40
			Trichlorofluoromethane (FREON 11)	2019/05/30	NC		%	40
			Vinyl Chloride	2019/05/30	NC		%	40
			o-Xylene	2019/05/30	NC		%	40
			p+m-Xylene	2019/05/30	NC		%	40
			Total Xylenes	2019/05/30	NC		%	40
			Total Trihalomethanes	2019/05/30	NC		%	40
6148620	ZZH	Matrix Spike	Total Chemical Oxygen Demand	2019/05/30		81	%	80 - 120
6148620	ZZH	QC Standard	Total Chemical Oxygen Demand	2019/05/30		103	%	80 - 120
6148620	ZZH	Spiked Blank	Total Chemical Oxygen Demand	2019/05/30		105	%	80 - 120
6148620	ZZH	Method Blank	Total Chemical Oxygen Demand	2019/05/30	ND, RDL=20	103	mg/L	00 120
6148620	ZZH	RPD	Total Chemical Oxygen Demand	2019/05/30	12		%	25
6148701		QC Standard	Carbonaceous BOD	2019/06/04		111	%	80 - 12 0
6148701	MLW	Spiked Blank	Carbonaceous BOD	2019/06/04		138 (1)	%	80 - 120
6148701	MLW	Method Blank	Carbonaceous BOD	2019/06/04	ND, RDL=2.0	138 (1)	mg/L	00 - 120
6148701	MLW	RPD	Carbonaceous BOD	2019/06/04	3.5		%	25
6148915	BCD	Matrix Spike	Isobutylbenzene - Extractable	2019/05/30	5.5	92	%	70 - 130
0140313	ВСБ	Matrix Spike	n-Dotriacontane - Extractable	2019/05/30		117	%	70 - 130
			>C10-C16 Hydrocarbons	2019/05/30		96	%	70 - 130
			>C16-C21 Hydrocarbons	2019/05/30		87		70 - 130
			>C16-C21 Hydrocarbons >C21- <c32 hydrocarbons<="" td=""><td></td><td></td><td>87 98</td><td>%</td><td>70 - 130 70 - 130</td></c32>			87 98	%	70 - 130 70 - 130
61/10015	DCD.	Snikad Plank	•	2019/05/30			%	
6148915	BCD	Spiked Blank	Isobutylbenzene - Extractable	2019/05/30		92 115	%	70 - 130
			n-Dotriacontane - Extractable	2019/05/30		115	%	70 - 130
			>C10-C16 Hydrocarbons	2019/05/30		111	%	70 - 130
			>C16-C21 Hydrocarbons	2019/05/30		101	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/30</td><td></td><td>115</td><td>%</td><td>70 - 130</td></c32>	2019/05/30		115	%	70 - 130
6148915	BCD	Method Blank	Isobutylbenzene - Extractable	2019/05/30		90	%	70 - 130
			n-Dotriacontane - Extractable	2019/05/30		105	%	70 - 130



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			>C10-C16 Hydrocarbons	2019/05/30	ND, RDL=0.050		mg/L	
			>C16-C21 Hydrocarbons	2019/05/30	ND, RDL=0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/30</td><td>ND,</td><td></td><td>mg/L</td><td></td></c32>	2019/05/30	ND,		mg/L	
C14001F	DCD	RPD [JVR046-11]	> C10, C1C Hardware the ma	2010/05/20	RDL=0.10		0/	40
6148915	BCD	KPD [JVK040-11]	>C10-C16 Hydrocarbons	2019/05/30	NC		%	40
			>C16-C21 Hydrocarbons	2019/05/30 2019/05/30	11 NC		% %	40 40
6148971	DAN	Matrix Caika	>C21- <c32 hydrocarbons<="" td=""><td>2019/05/30</td><td>INC</td><td>102</td><td></td><td>40 80 - 120</td></c32>	2019/05/30	INC	102		40 80 - 120
01469/1	BAN	Matrix Spike	Total Antimony (Sh)			103	%	
			Total Arrania (As)	2019/05/31		110	%	80 - 120
			Total Parium (Ra)	2019/05/31		98	%	80 - 120
			Total Barium (Ba)	2019/05/31		102	%	80 - 120
			Total Beryllium (Be)	2019/05/31		100	%	80 - 120
			Total Bismuth (Bi)	2019/05/31		104	%	80 - 120
			Total Boron (B)	2019/05/31		NC	%	80 - 120
			Total Cadmium (Cd)	2019/05/31		98	%	80 - 120
			Total Calcium (Ca)	2019/05/31		106	%	80 - 120
			Total Chromium (Cr)	2019/05/31		97	%	80 - 120
			Total Cobalt (Co)	2019/05/31		100	%	80 - 120
			Total Copper (Cu)	2019/05/31		98	%	80 - 120
			Total Iron (Fe)	2019/05/31		106	%	80 - 120
			Total Lead (Pb)	2019/05/31		104	%	80 - 120
			Total Magnesium (Mg)	2019/05/31		110	%	80 - 120
			Total Manganese (Mn)	2019/05/31		101	%	80 - 120
			Total Molybdenum (Mo)	2019/05/31		105	%	80 - 120
			Total Nickel (Ni)	2019/05/31		102	%	80 - 120
			Total Phosphorus (P)	2019/05/31		104	%	80 - 120
			Total Potassium (K)	2019/05/31		104	%	80 - 120
			Total Selenium (Se)	2019/05/31		96	%	80 - 120
			Total Silver (Ag)	2019/05/31		101	%	80 - 120
			Total Sodium (Na)	2019/05/31		NC	%	80 - 120
			Total Strontium (Sr)	2019/05/31		103	%	80 - 120
			Total Thallium (TI)	2019/05/31		105	%	80 - 120
			Total Tin (Sn)	2019/05/31		105	%	80 - 120
			Total Titanium (Ti)	2019/05/31		99	%	80 - 120
			Total Uranium (U)	2019/05/31		113	%	80 - 120
			Total Vanadium (V)	2019/05/31		101	%	80 - 120
			Total Zinc (Zn)	2019/05/31		100	%	80 - 120
6148971	BAN	Spiked Blank	Total Aluminum (Al)	2019/05/31		101	%	80 - 120
			Total Antimony (Sb)	2019/05/31		107	%	80 - 120
			Total Arsenic (As)	2019/05/31		99	%	80 - 120
			Total Barium (Ba)	2019/05/31		100	%	80 - 120
			Total Beryllium (Be)	2019/05/31		99	%	80 - 120
			Total Bismuth (Bi)	2019/05/31		105	%	80 - 120
			Total Boron (B)	2019/05/31		98	%	80 - 120
			Total Cadmium (Cd)	2019/05/31		96	%	80 - 120
			Total Calcium (Ca)	2019/05/31		107	%	80 - 120
			Total Chromium (Cr)	2019/05/31		99	%	80 - 120
			Total Cobalt (Co)	2019/05/31		101	%	80 - 120
			Total Copper (Cu)	2019/05/31		99	%	80 - 120
			Total Iron (Fe)	2019/05/31		107	%	80 - 120
			Total Lead (Pb)	2019/05/31		103	%	80 - 120
								0



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Manganese (Mn)	2019/05/31		102	%	80 - 120
			Total Molybdenum (Mo)	2019/05/31		102	%	80 - 120
			Total Nickel (Ni)	2019/05/31		99	%	80 - 120
			Total Phosphorus (P)	2019/05/31		105	%	80 - 120
			Total Potassium (K)	2019/05/31		102	%	80 - 120
			Total Selenium (Se)	2019/05/31		97	%	80 - 120
			Total Silver (Ag)	2019/05/31		100	%	80 - 120
			Total Sodium (Na)	2019/05/31		102	%	80 - 120
			Total Strontium (Sr)	2019/05/31		106	%	80 - 120
			Total Thallium (TI)	2019/05/31		107	%	80 - 120
			Total Tin (Sn)	2019/05/31		106	%	80 - 120
			Total Titanium (Ti)	2019/05/31		98	%	80 - 120
			Total Uranium (U)	2019/05/31		113	%	80 - 120
			Total Vanadium (V)	2019/05/31		102	%	80 - 120
			Total Zinc (Zn)	2019/05/31		101	%	80 - 120
6148971	BAN	Method Blank	Total Aluminum (Al)	2019/05/31	ND,		ug/L	
					RDL=5.0			
			Total Antimony (Sb)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Arsenic (As)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Barium (Ba)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Beryllium (Be)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Bismuth (Bi)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Boron (B)	2019/05/31	ND, RDL=50		ug/L	
			Total Cadmium (Cd)	2019/05/31	ND, RDL=0.010		ug/L	
			Total Calcium (Ca)	2019/05/31	ND, RDL=100		ug/L	
			Total Chromium (Cr)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Cobalt (Co)	2019/05/31	ND, RDL=0.40		ug/L	
			Total Copper (Cu)	2019/05/31	ND, RDL=0.50		ug/L	
			Total Iron (Fe)	2019/05/31	ND, RDL=50		ug/L	
			Total Lead (Pb)	2019/05/31	ND, RDL=0.50		ug/L	
			Total Magnesium (Mg)	2019/05/31	ND, RDL=100		ug/L	
			Total Manganese (Mn)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Molybdenum (Mo)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Nickel (Ni)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Phosphorus (P)	2019/05/31	ND, RDL=100		ug/L	
			Total Potassium (K)	2019/05/31	ND, RDL=100		ug/L	



			Q0/12/11 /1000/10/11/1	LE REPORT(CONT D)				
QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Selenium (Se)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Silver (Ag)	2019/05/31	ND, RDL=0.10		ug/L	
			Total Sodium (Na)	2019/05/31	ND, RDL=100		ug/L	
			Total Strontium (Sr)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Thallium (TI)	2019/05/31	ND, RDL=0.10		ug/L	
			Total Tin (Sn)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Titanium (Ti)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Uranium (U)	2019/05/31	ND, RDL=0.10		ug/L	
			Total Vanadium (V)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Zinc (Zn)	2019/05/31	ND, RDL=5.0		ug/L	
6148971	BAN	RPD	Total Aluminum (Al)	2019/05/31	4.3		%	20
6149403	CCR	Matrix Spike	Total Mercury (Hg)	2019/05/31		102	%	80 - 120
6149403	CCR	Spiked Blank	Total Mercury (Hg)	2019/05/31		102	%	80 - 120
6149403	CCR	Method Blank	Total Mercury (Hg)	2019/05/31	ND, RDL=0.013		ug/L	
6149403	CCR	RPD	Total Mercury (Hg)	2019/05/31	NC		%	20
6151063	AM6	QC Standard	Total Suspended Solids	2019/06/03		100	%	80 - 120
6151063	AM6	Method Blank	Total Suspended Solids	2019/06/03	ND, RDL=1.0		mg/L	
6151063	AM6	RPD	Total Suspended Solids	2019/06/03	0		%	20
6151065	LGE	Matrix Spike	D10-Anthracene	2019/06/01		90	%	50 - 130
			D14-Terphenyl	2019/06/01		70 (2)	%	50 - 130
			D8-Acenaphthylene	2019/06/01		85	%	50 - 130
			1-Methylnaphthalene	2019/06/01		81	%	50 - 130
			2-Methylnaphthalene	2019/06/01		84	%	50 - 130
			Acenaphthene	2019/06/01		87	%	50 - 130
			Acenaphthylene	2019/06/01		84	%	50 - 130
			Anthracene	2019/06/01		79 76	%	50 - 130
			Benzo(a)anthracene	2019/06/01 2019/06/01		76 61	%	50 - 130
			Benzo(a)pyrene Benzo(b)fluoranthene	2019/06/01		61 75	% %	50 - 130 50 - 130
			Benzo(g,h,i)perylene	2019/06/01			% %	50 - 130
			Benzo(j)fluoranthene	2019/06/01		36 (3) 60	% %	50 - 130
			Benzo(k)fluoranthene	2019/06/01		69	%	50 - 130
			Chrysene	2019/06/01		96	%	50 - 130
			Dibenz(a,h)anthracene	2019/06/01		40 (3)	%	50 - 130
			Fluoranthene	2019/06/01		88	%	50 - 130
			Fluorene	2019/06/01		95	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/06/01		33 (3)	%	50 - 130
			Naphthalene	2019/06/01		84	%	50 - 130
			Perylene	2019/06/01		31 (3)	%	50 - 130
			Phenanthrene	2019/06/01		96	%	50 - 130
			Pyrene	2019/06/01		86	%	50 - 130
6151065	LGE	Spiked Blank	D10-Anthracene	2019/06/01		105	%	50 - 130



QA/QC Batch	Init	QC Type	Parameter	Daka Amalina I		_		
				Date Analyzed	Value	Recovery	UNITS	QC Limits
			D14-Terphenyl	2019/06/01		106	%	50 - 130
			D8-Acenaphthylene	2019/06/01		100	%	50 - 130
			1-Methylnaphthalene	2019/06/01		93	%	50 - 130
			2-Methylnaphthalene	2019/06/01		95	%	50 - 130
			Acenaphthene	2019/06/01		100	%	50 - 130
			Acenaphthylene	2019/06/01		98	%	50 - 130
			Anthracene	2019/06/01		93	%	50 - 130
			Benzo(a)anthracene	2019/06/01		86	%	50 - 130
			Benzo(a)pyrene	2019/06/01		94	%	50 - 130
			Benzo(b)fluoranthene	2019/06/01		106	%	50 - 130
			Benzo(g,h,i)perylene	2019/06/01		96	%	50 - 130
			Benzo(j)fluoranthene	2019/06/01		95	%	50 - 130
			Benzo(k)fluoranthene	2019/06/01		101	%	50 - 130
			Chrysene	2019/06/01		107	%	50 - 130
			Dibenz(a,h)anthracene	2019/06/01		96	%	50 - 130
			Fluoranthene	2019/06/01		99	%	50 - 130
			Fluorene	2019/06/01		109	%	50 - 130
			Indeno(1,2,3-cd)pyrene Naphthalene	2019/06/01		94 95	% %	50 - 130 50 - 130
			•	2019/06/01 2019/06/01		95 90	% %	50 - 130
			Perylene Phenanthrene	2019/06/01		111	% %	50 - 130
			Pyrene	2019/06/01		98	% %	50 - 130
6151065	LGE	Method Blank	D10-Anthracene	2019/06/01		108	% %	50 - 130
0131003	LUL	Wethou Blank	D14-Terphenyl	2019/06/01		106	%	50 - 130
			D8-Acenaphthylene	2019/06/01		99	% %	50 - 130
			1-Methylnaphthalene	2019/06/01	ND,	33	ug/L	30 - 130
			1-тиентуппарпипалене	2019/00/01	RDL=0.050		ug/L	
			2-Methylnaphthalene	2019/06/01	ND, RDL=0.050		ug/L	
			Acenaphthene	2019/06/01	ND, RDL=0.010		ug/L	
			Acenaphthylene	2019/06/01	ND, RDL=0.010		ug/L	
			Anthracene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(a)anthracene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(a)pyrene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(b)fluoranthene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(g,h,i)perylene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(j)fluoranthene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(k)fluoranthene	2019/06/01	ND, RDL=0.010		ug/L	
			Chrysene	2019/06/01	ND, RDL=0.010		ug/L	
			Dibenz(a,h)anthracene	2019/06/01	ND, RDL=0.010		ug/L	
			Fluoranthene	2019/06/01	ND, RDL=0.010		ug/L	
			Fluorene	2019/06/01	ND, RDL=0.010		ug/L	



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
Daten	mit	QС ТУРС	Indeno(1,2,3-cd)pyrene	2019/06/01	ND,	Recovery	ug/L	QC LITTIES
			Naphthalene	2019/06/01	RDL=0.010 ND, RDL=0.20		ug/L	
			Perylene	2019/06/01	ND, RDL=0.010		ug/L	
			Phenanthrene	2019/06/01	ND, RDL=0.010		ug/L	
			Pyrene	2019/06/01	ND, RDL=0.010		ug/L	
6151065	LGE	RPD	1-Methylnaphthalene	2019/06/01	NC		%	40
0101000		2	2-Methylnaphthalene	2019/06/01	NC		%	40
			Acenaphthene	2019/06/01	NC		%	40
			Acenaphthylene	2019/06/01	NC		%	40
			Anthracene	2019/06/01	NC		%	40
			Benzo(a)anthracene	2019/06/01	NC		%	40
			Benzo(a)pyrene	2019/06/01	NC		%	40
			Benzo(b)fluoranthene	2019/06/01	NC		%	40
			Benzo(g,h,i)perylene	2019/06/01	NC		%	40
			Benzo(j)fluoranthene	2019/06/01	NC		%	40
			Benzo(k)fluoranthene	2019/06/01	NC		%	40
			Chrysene	2019/06/01	NC		%	40
			Dibenz(a,h)anthracene	2019/06/01	NC		%	40
			Fluoranthene	2019/06/01	13		%	40
			Fluorene	2019/06/01	NC		%	40
			Indeno(1,2,3-cd)pyrene	2019/06/01	NC		%	40
			Naphthalene	2019/06/01	NC		%	40
			Perylene	2019/06/01	NC		%	40
			Phenanthrene	2019/06/01	NC		%	40
			Pyrene	2019/06/01	12		%	40
6153412	THL	Matrix Spike	Isobutylbenzene - Volatile	2019/06/02		94	%	70 - 130
0133412		Width Spike	Benzene	2019/06/02		106	%	70 - 130
			Toluene			108	%	70 - 130
				2019/06/02 2019/06/02				
			Ethylbenzene			117	%	70 - 130
6450440		6 11 151 1	Total Xylenes	2019/06/02		114	%	70 - 130
6153412	THL	Spiked Blank	Isobutylbenzene - Volatile	2019/06/02		107	%	70 - 130
			Benzene	2019/06/02		125	%	70 - 130
			Toluene	2019/06/02		124	%	70 - 130
			Ethylbenzene	2019/06/02		124	%	70 - 130
			Total Xylenes	2019/06/02		121	%	70 - 130
6153412	THL	Method Blank	Isobutylbenzene - Volatile	2019/06/02		105	%	70 - 130
			Benzene	2019/06/02	ND, RDL=0.0010		mg/L	
			Toluene	2019/06/02	ND, RDL=0.0010		mg/L	
			Ethylbenzene	2019/06/02	ND, RDL=0.0010		mg/L	
			Total Xylenes	2019/06/02	ND, RDL=0.0020		mg/L	
			C6 - C10 (less BTEX)	2019/06/02	ND, RDL=0.010		mg/L	
6153412	THL	RPD [JVR046-12]	Benzene	2019/06/02	NC		%	40
3133712		5 [311.070 12]	Toluene	2019/06/02	NC		%	40
			TOTALLIC	2013/00/02	110		/0	70



Northern Pulp N.S.

Client Project #: Effluent Treatment Plant

Your P.O. #: 43013552

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Xylenes	2019/06/02	NC	,	%	40
			C6 - C10 (less BTEX)	2019/06/02	NC		%	40
6153709	SSV	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2019/06/04		99	%	80 - 120
6153709	SSV	QC Standard	Total Kjeldahl Nitrogen (TKN)	2019/06/04		102	%	80 - 120
6153709	SSV	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2019/06/04		103	%	80 - 120
6153709	SSV	Method Blank	Total Kjeldahl Nitrogen (TKN)	2019/06/04	ND, RDL=0.10		mg/L	
6153709	SSV	RPD	Total Kjeldahl Nitrogen (TKN)	2019/06/04	0		%	20
6154726	GTO	Matrix Spike	Sulphide	2019/06/03		90	%	80 - 120
6154726	GTO	Spiked Blank	Sulphide	2019/06/03		101	%	80 - 120
6154726	GTO	Method Blank	Sulphide	2019/06/03	ND, RDL=0.020		mg/L	
6154726	GTO	RPD	Sulphide	2019/06/03	NC		%	20
6156517	RGE	Matrix Spike [JVR046-09]	Decachlorobiphenyl	2019/06/05		96	%	30 - 130
			Aroclor 1254	2019/06/05		109	%	70 - 130
6156517	RGE	Spiked Blank	Decachlorobiphenyl	2019/06/05		74	%	30 - 130
			Aroclor 1254	2019/06/05		103	%	70 - 130
6156517	RGE	Method Blank	Decachlorobiphenyl	2019/06/05		65	%	30 - 130
			Aroclor 1016	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1221	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1232	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1248	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1242	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1254	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1260	2019/06/05	ND, RDL=0.050		ug/L	
6156517	RGE	RPD	Aroclor 1016	2019/06/05	NC		%	40
			Aroclor 1221	2019/06/05	NC		%	40
			Aroclor 1232	2019/06/05	NC		%	40
			Aroclor 1248	2019/06/05	NC		%	40
			Aroclor 1242	2019/06/05	NC		%	40
			Aroclor 1254	2019/06/05	NC		%	40
			Aroclor 1260	2019/06/05	NC		%	40
6157072	AM6	QC Standard	Volatile Suspended Solids	2019/06/04	*15	98	%	80 - 120
6157072	AM6	Method Blank	Volatile Suspended Solids	2019/06/04	ND, RDL=2.0		mg/L	
6157072	AM6	RPD	Volatile Suspended Solids	2019/06/04	9.5		%	25
6157791	BB3	Matrix Spike	Total Nitrogen (N)	2019/06/03		101	%	80 - 120
6157791	BB3	Spiked Blank	Total Nitrogen (N)	2019/06/03		99	%	80 - 120
6157791	BB3	Method Blank	Total Nitrogen (N)	2019/06/03	ND, RDL=0.020		mg/L	
6157791	BB3	RPD	Total Nitrogen (N)	2019/06/03	3.0		%	20
6158894	NRG	Matrix Spike	Total Phosphorus	2019/06/06		110	%	80 - 120
6158894	NRG	Spiked Blank	Total Phosphorus	2019/06/06		103	%	80 - 120
6158894	NRG	Method Blank	Total Phosphorus	2019/06/06	ND, RDL=0.020		mg/L	
6158894	NRG	RPD	Total Phosphorus	2019/06/06	NC		%	25
6158927	SSI	Matrix Spike	Dissolved Organic Carbon (C)	2019/06/05		95	%	85 - 115



Northern Pulp N.S.
Client Project #: Effluent Treatment Plant

Your P.O. #: 43013552

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6158927	SSI	Spiked Blank	Dissolved Organic Carbon (C)	2019/06/05	74.40	98	%	80 - 120
6158927	SSI	Method Blank	Dissolved Organic Carbon (C)	2019/06/05	ND,		mg/L	
			• , ,		RDL=0.50		.	
6158927	SSI	RPD	Dissolved Organic Carbon (C)	2019/06/05	NC		%	15
6159669	LHA	Matrix Spike	Total Cyanide (CN)	2019/06/07		78 (4)	%	80 - 120
6159669	LHA	Spiked Blank	Total Cyanide (CN)	2019/06/07		97	%	80 - 120
6159669	LHA	Method Blank	Total Cyanide (CN)	2019/06/07	ND,		mg/L	
					RDL=0.0050			
6159669	LHA	RPD	Total Cyanide (CN)	2019/06/07	NC		%	20
6159706	NRG	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2019/06/06		106	%	80 - 120
6159706	NRG	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2019/06/07		100	%	80 - 120
6159706	NRG	Method Blank	Nitrogen (Ammonia Nitrogen)	2019/06/07	ND,		mg/L	
					RDL=0.050			
6159706	NRG	RPD	Nitrogen (Ammonia Nitrogen)	2019/06/06	16		%	20
6163938	KMC	Matrix Spike	Total Organic Carbon (C)	2019/06/07		98	%	85 - 115
6163938	KMC	Spiked Blank	Total Organic Carbon (C)	2019/06/07	ND	99	%	80 - 120
6163938	KMC	Method Blank	Total Organic Carbon (C)	2019/06/07	ND, RDL=0.50		mg/L	
6163938	кмс	RPD	Total Organic Carbon (C)	2019/06/07	3.7		%	15
6165901	KD9	Matrix Spike	Dissolved Chlorate (ClO3-)	2019/05/31	5.7	94	%	80 - 120
0103301	KD3	Matrix Spike	Dissolved Chlorate (ClO3-)	2019/05/31		94	%	80 - 120
			Dissolved Chlorate (ClO3-)	2019/05/31		94	%	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		92	%	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		92	%	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		92	%	80 - 120
6165901	KD9	Spiked Blank	Dissolved Chlorate (ClO3-)	2019/05/31		88	%	80 - 120
		-r	Dissolved Chlorate (ClO3-)	2019/05/31		88	%	80 - 120
			Dissolved Chlorate (ClO3-)	2019/05/31		88	%	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		85	%	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		85	%	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		85	%	80 - 120
6165901	KD9	Method Blank	Dissolved Chlorate (ClO3-)	2019/05/31	ND,		mg/L	
					RDL=0.10			
			Dissolved Chlorate (ClO3-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorate (ClO3-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorite (CLO2-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorite (CLO2-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorite (CLO2-)	2019/05/31	ND, RDL=0.10		mg/L	
6170521	OBC	Spiked Blank	C13-1234678 HeptaCDD	2019/06/11		123	%	30 - 130
			C13-1234678 HeptaCDF	2019/06/11		99	%	30 - 130
			C13-123678 HexaCDD	2019/06/11		127	%	30 - 130
			C13-123678 HexaCDF	2019/06/11		88	%	30 - 130
			C13-12378 PentaCDD	2019/06/11		87	%	30 - 130
			C13-12378 PentaCDF	2019/06/11		66	%	30 - 130
			C13-2378 TetraCDD	2019/06/11		92	%	30 - 130
			C13-2378 TetraCDF	2019/06/11		80	%	30 - 130
			C13-OCDD	2019/06/11		116	%	30 - 130
			2,3,7,8-Tetra CDD	2019/06/11		90	%	80 - 140
			1,2,3,7,8-Penta CDD	2019/06/11		100	%	80 - 140



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,2,3,4,7,8-Hexa CDD	2019/06/11		85	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2019/06/11		97	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2019/06/11		93	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2019/06/11		85	%	80 - 140
			Octa CDD	2019/06/11		81	%	80 - 140
			2,3,7,8-Tetra CDF	2019/06/11		101	%	80 - 140
			1,2,3,7,8-Penta CDF	2019/06/11		126	%	80 - 140
			2,3,4,7,8-Penta CDF	2019/06/11		119	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2019/06/11		113	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2019/06/11		120	%	80 - 140
			2,3,4,6,7,8-Hexa CDF	2019/06/11		123	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2019/06/11		122	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2019/06/11		105	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2019/06/11		99	%	80 - 140
			Octa CDF	2019/06/11		86	%	80 - 140
6170521	OBC	RPD	2,3,7,8-Tetra CDD	2019/06/12	4.3		%	35
			1,2,3,7,8-Penta CDD	2019/06/12	12		%	35
			1,2,3,4,7,8-Hexa CDD	2019/06/12	9.0		%	35
			1,2,3,6,7,8-Hexa CDD	2019/06/12	1.0		%	35
			1,2,3,7,8,9-Hexa CDD	2019/06/12	8.2		%	35
			1,2,3,4,6,7,8-Hepta CDD	2019/06/12	28		%	35
			Octa CDD	2019/06/12	0		%	35
			2,3,7,8-Tetra CDF	2019/06/12	16		%	35
			1,2,3,7,8-Penta CDF	2019/06/12	3.1		%	35
			2,3,4,7,8-Penta CDF	2019/06/12	14		%	35
			1,2,3,4,7,8-Hexa CDF	2019/06/12	2.6		%	35
			1,2,3,6,7,8-Hexa CDF	2019/06/12	0		%	35
			2,3,4,6,7,8-Hexa CDF	2019/06/12	4.8		%	35
			1,2,3,7,8,9-Hexa CDF	2019/06/12	2.5		%	35
			1,2,3,4,6,7,8-Hepta CDF	2019/06/12	4.7		%	35
			1,2,3,4,7,8,9-Hepta CDF	2019/06/12	1.0		%	35
			Octa CDF	2019/06/12	0		%	35
6170521	OBC	Method Blank	C13-1234678 HeptaCDD	2019/06/12		107	%	30 - 130
			C13-1234678 HeptaCDF	2019/06/12		96	%	30 - 130
			C13-123678 HexaCDD	2019/06/12		118	%	30 - 130
			C13-123678 HexaCDF	2019/06/12		82	%	30 - 130
			C13-12378 PentaCDD	2019/06/12		77	%	30 - 130
			C13-12378 PentaCDF	2019/06/12		61	%	30 - 130
			C13-2378 TetraCDD	2019/06/12		85	%	30 - 130
			C13-2378 TetraCDF	2019/06/12		79	%	30 - 130
			C13-OCDD	2019/06/12		113	%	30 - 130
			2,3,7,8-Tetra CDD	2019/06/12	ND,	110	pg/L	30 130
					EDL=1.08		_	
			1,2,3,7,8-Penta CDD	2019/06/12	ND, EDL=1.10		pg/L	
			1,2,3,4,7,8-Hexa CDD	2019/06/12	ND, EDL=1.18		pg/L	
			1,2,3,6,7,8-Hexa CDD	2019/06/12	ND, EDL=1.02		pg/L	
			1,2,3,7,8,9-Hexa CDD	2019/06/12	ND, EDL=0.995		pg/L	
			1,2,3,4,6,7,8-Hepta CDD	2019/06/12	ND, EDL=1.13		pg/L	



QA/QC			QUALITY ASSURANCE N					
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Octa CDD	2019/06/12	ND,	•	pg/L	
					EDL=1.16 (5)			
			Total Tetra CDD	2019/06/12	ND,		pg/L	
					EDL=1.08			
			Total Penta CDD	2019/06/12	ND,		pg/L	
					EDL=1.10		4.	
			Total Hexa CDD	2019/06/12	ND,		pg/L	
			Total Hepta CDD	2019/06/12	EDL=1.13 (5) ND,		pg/L	
			Total Hepta CDD	2019/00/12	EDL=1.13		Pg/ ∟	
			2,3,7,8-Tetra CDF	2019/06/12	ND,		pg/L	
			_,,,,		EDL=1.18		1-01 -	
			1,2,3,7,8-Penta CDF	2019/06/12	ND,		pg/L	
					EDL=1.18			
			2,3,4,7,8-Penta CDF	2019/06/12	ND,		pg/L	
					EDL=1.19			
			1,2,3,4,7,8-Hexa CDF	2019/06/12	ND,		pg/L	
					EDL=1.13			
			1,2,3,6,7,8-Hexa CDF	2019/06/12	ND,		pg/L	
			2.2.4.C.7.9.Have CDF	2010/06/12	EDL=0.939		/I	
			2,3,4,6,7,8-Hexa CDF	2019/06/12	ND, EDL=1.06		pg/L	
			1,2,3,7,8,9-Hexa CDF	2019/06/12	ND,		pg/L	
			1,2,3,7,6,3 110,44 021	2013/00/12	EDL=1.18		MP/ =	
			1,2,3,4,6,7,8-Hepta CDF	2019/06/12	ND,		pg/L	
			,,,,,,		EDL=1.09		10	
			1,2,3,4,7,8,9-Hepta CDF	2019/06/12	ND,		pg/L	
					EDL=1.24			
			Octa CDF	2019/06/12	ND,		pg/L	
					EDL=1.16			
			Total Tetra CDF	2019/06/12	ND,		pg/L	
			T . In	2040/05/42	EDL=1.18		/.	
			Total Penta CDF	2019/06/12	ND, EDL=1.19		pg/L	
			Total Hexa CDF	2019/06/12	ND,		pg/L	
			Total nexa CDF	2019/00/12	EDL=1.07		pg/∟	
			Total Hepta CDF	2019/06/12	ND,		pg/L	
				,,	EDL=1.16		1-07	
6172547	LZ3	Matrix Spike	9,10-Dichlorostearic acid	2019/06/01		96	%	50 - 130
			Decanoic Acid (C10)	2019/06/01		90	%	50 - 130
			Docosanoic acid (C22)	2019/06/01		85	%	50 - 130
			Dodecanoic acid (C12)	2019/06/01		92	%	50 - 130
			Eicosanoic acid (C20)	2019/06/01		98	%	50 - 130
			Hexadecanoic acid (C16)	2019/06/01		85	%	50 - 130
			Linoleic acid (C18:2)	2019/06/01		87	%	50 - 130
			Linolenic acid (C18:3)	2019/06/01		94	%	50 - 130
			Octadecanoic acid (C18)	2019/06/01		94	%	50 - 130
			Oleic acid (C18:1)	2019/06/01		92	%	50 - 130
			Tetradecanoic acid (C14)	2019/06/01		91	%	50 - 130
			Undecanoic acid (C11)	2019/06/01		102	%	50 - 130
			12,14-Dichlorodehydroabietic acid	2019/06/01		111	%	50 - 130
			12-Chlorodehydroabietic acid	2019/06/01		106	%	50 - 130 50 - 130
			14-Chlorodehydroabietic acid Abietic acid	2019/06/01 2019/06/01		111 NC	% %	50 - 130 50 - 130
			Dehydroabietic acid	2019/06/01		NC NC	% %	50 - 130 50 - 130
			Deliyaroabietic acia	2013/00/01		INC	/0	20 - 130



04/00								
QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Isopimaric acid	2019/06/01		NC	%	50 - 130
			Neoabietic acid	2019/06/01		68	%	50 - 130
			Palustric acid	2019/06/01		67	%	50 - 130
			Pimaric acid	2019/06/01		102	%	50 - 130
			Sandaracopimaric acid	2019/06/01		101	%	50 - 130
6172547	LZ3	Spiked Blank	9,10-Dichlorostearic acid	2019/06/01		94	%	50 - 130
			Decanoic Acid (C10)	2019/06/01		94	%	50 - 130
			Docosanoic acid (C22)	2019/06/01		88	%	50 - 130
			Dodecanoic acid (C12)	2019/06/01		94	%	50 - 130
			Eicosanoic acid (C20)	2019/06/01		96	%	50 - 130
			Hexadecanoic acid (C16)	2019/06/01		99	%	50 - 130
			Linoleic acid (C18:2)	2019/06/01		89	%	50 - 130
			Linolenic acid (C18:3)	2019/06/01		86	%	50 - 130
			Octadecanoic acid (C18)	2019/06/01		105	%	50 - 130
			Oleic acid (C18:1)	2019/06/01		99	%	50 - 130
			Tetradecanoic acid (C14)	2019/06/01		94	%	50 - 130
			Undecanoic acid (C11)	2019/06/01		103	%	50 - 130
			12,14-Dichlorodehydroabietic acid	2019/06/01		114	%	50 - 130
			12-Chlorodehydroabietic acid	2019/06/01		108	%	50 - 130
			14-Chlorodehydroabietic acid	2019/06/01		110	%	50 - 130
			Abietic acid	2019/06/01		94	%	50 - 130
			Dehydroabietic acid	2019/06/01		128	%	50 - 130
			Isopimaric acid	2019/06/01		115	%	50 - 130
			Neoabietic acid	2019/06/01		63	%	50 - 130
			Palustric acid	2019/06/01		74	%	50 - 130
			Pimaric acid	2019/06/01		107	%	50 - 130
			Sandaracopimaric acid	2019/06/01		105	%	50 - 130
6172547	LZ3	Method Blank	Total Fatty Acids	2019/06/01	ND, RDL=0.072		mg/L	
			Total Resin Acids	2019/06/01	ND, RDL=0.060		mg/L	
			9,10-Dichlorostearic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Decanoic Acid (C10)	2019/06/01	ND, RDL=0.0060		mg/L	
			Docosanoic acid (C22)	2019/06/01	ND, RDL=0.0060		mg/L	
			Dodecanoic acid (C12)	2019/06/01	ND, RDL=0.0060		mg/L	
			Eicosanoic acid (C20)	2019/06/01	ND, RDL=0.0060		mg/L	
			Hexadecanoic acid (C16)	2019/06/01	ND, RDL=0.0060		mg/L	
			Linoleic acid (C18:2)	2019/06/01	ND, RDL=0.0060		mg/L	
			Linolenic acid (C18:3)	2019/06/01	ND, RDL=0.0060		mg/L	
			Octadecanoic acid (C18)	2019/06/01	ND, RDL=0.0060		mg/L	
			Oleic acid (C18:1)	2019/06/01	ND, RDL=0.0060		mg/L	
			Tetradecanoic acid (C14)	2019/06/01	ND, RDL=0.0060		mg/L	
			Undecanoic acid (C11)	2019/06/01	ND, RDL=0.0060		mg/L	



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			12,14-Dichlorodehydroabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			12-Chlorodehydroabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			14-Chlorodehydroabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Abietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Dehydroabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Isopimaric acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Neoabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Palustric acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Pimaric acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Sandaracopimaric acid	2019/06/01	ND, RDL=0.0060		mg/L	
6172547	LZ3	RPD [JVR046-21]	Total Fatty Acids	2019/06/01	NC		%	30
			Total Resin Acids	2019/06/01	NC		%	30
			9,10-Dichlorostearic acid	2019/06/01	NC		%	30
			Decanoic Acid (C10)	2019/06/01	NC		%	30
			Docosanoic acid (C22)	2019/06/01	NC		%	30
			Dodecanoic acid (C12)	2019/06/01	NC		%	30
			Eicosanoic acid (C20)	2019/06/01	NC		%	30
			Hexadecanoic acid (C16)	2019/06/01	NC		%	30
			Linoleic acid (C18:2)	2019/06/01	NC		%	30
			Linolenic acid (C18:3)	2019/06/01	NC		%	30
			Octadecanoic acid (C18)	2019/06/01	NC		%	30
			Oleic acid (C18:1)	2019/06/01	NC		%	30
			Tetradecanoic acid (C14)	2019/06/01	NC		%	30
			Undecanoic acid (C11)	2019/06/01	NC		%	30
			12,14-Dichlorodehydroabietic acid	2019/06/01	NC		%	30
			12-Chlorodehydroabietic acid	2019/06/01	NC		%	30
			14-Chlorodehydroabietic acid	2019/06/01	NC		%	30
			Abietic acid	2019/06/01	NC		%	30
			Dehydroabietic acid	2019/06/01	NC		%	30
			Isopimaric acid	2019/06/01	NC		%	30
			Neoabietic acid	2019/06/01	NC		%	30
			Palustric acid	2019/06/01	NC		%	30
			Pimaric acid	2019/06/01	NC		%	30
			Sandaracopimaric acid	2019/06/01	NC		%	30
6181990	BBD	QC Standard	Salinity	2019/06/18		101	%	80 - 120
6181990	BBD	Method Blank	Salinity	2019/06/18	ND, RDL=2.0		N/A	
6181990	BBD	RPD	Salinity	2019/06/18	0		%	25
6182160	SRM	Matrix Spike	Total Alkalinity (Total as CaCO3)	2019/06/18		101	%	80 - 120
6182160	SRM	Spiked Blank	Total Alkalinity (Total as CaCO3)	2019/06/18		107	%	80 - 120
6182160	SRM	Method Blank	Total Alkalinity (Total as CaCO3)	2019/06/18	ND, RDL=5.0		mg/L	
6182160	SRM	RPD	Total Alkalinity (Total as CaCO3)	2019/06/18	0.41		%	25
6182167	SRM	Matrix Spike	Dissolved Chloride (Cl-)	2019/06/19		101	%	80 - 120



Northern Pulp N.S. Client Project #: Effluent Treatment Plant Your P.O. #: 43013552

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6182167	SRM	Spiked Blank	Dissolved Chloride (Cl-)	2019/06/19		100	%	80 - 120
6182167	SRM	Method Blank	Dissolved Chloride (Cl-)	2019/06/19	ND,		mg/L	
					RDL=1.0			
6182167	SRM	RPD	Dissolved Chloride (Cl-)	2019/06/19	3.0		%	25
6182168	SRM	Matrix Spike	Dissolved Sulphate (SO4)	2019/06/19		100	%	80 - 120
6182168	SRM	Spiked Blank	Dissolved Sulphate (SO4)	2019/06/19		108	%	80 - 120
6182168	SRM	Method Blank	Dissolved Sulphate (SO4)	2019/06/19	ND,		mg/L	
					RDL=2.0			
6182168	SRM	RPD	Dissolved Sulphate (SO4)	2019/06/19	5.3		%	25
6182169	SRM	Matrix Spike	Reactive Silica (SiO2)	2019/06/19		97	%	80 - 120
6182169	SRM	Spiked Blank	Reactive Silica (SiO2)	2019/06/19		101	%	80 - 120
6182169	SRM	Method Blank	Reactive Silica (SiO2)	2019/06/19	ND, RDL=0.50		mg/L	
6182169	SRM	RPD	Reactive Silica (SiO2)	2019/06/19	1.4		%	25
6182170	SRM	Spiked Blank	Colour	2019/06/18		98	%	80 - 120
6182170	SRM	Method Blank	Colour	2019/06/18	ND, RDL=5.0		TCU	
6182170	SRM	RPD	Colour	2019/06/18	NC		%	20
6182171	SRM	Matrix Spike	Orthophosphate (P)	2019/06/18		NC	%	80 - 120
6182171	SRM	Spiked Blank	Orthophosphate (P)	2019/06/18		97	%	80 - 120
6182171	SRM	Method Blank	Orthophosphate (P)	2019/06/18	ND, RDL=0.010		mg/L	
6182171	SRM	RPD	Orthophosphate (P)	2019/06/18	0.12		%	25
6182172	SRM	Matrix Spike	Nitrate + Nitrite (N)	2019/06/18		95	%	80 - 120
6182172	SRM	Spiked Blank	Nitrate + Nitrite (N)	2019/06/18		95	%	80 - 120
6182172	SRM	Method Blank	Nitrate + Nitrite (N)	2019/06/18	ND,		mg/L	
					RDL=0.050			
6182172	SRM	RPD	Nitrate + Nitrite (N)	2019/06/18	NC		%	25
6182173	SRM	Matrix Spike	Nitrite (N)	2019/06/18		95	%	80 - 120
6182173	SRM	Spiked Blank	Nitrite (N)	2019/06/18		99	%	80 - 120
6182173	SRM	Method Blank	Nitrite (N)	2019/06/18	ND, RDL=0.010		mg/L	
6182173	SRM	RPD	Nitrite (N)	2019/06/18	NC		%	20
6184399	EMT	QC Standard	Turbidity	2019/06/19		107	%	80 - 120
6184399	EMT	Spiked Blank	Turbidity	2019/06/19		100	%	80 - 120
6184399	EMT	Method Blank	Turbidity	2019/06/19	ND, RDL=0.10		NTU	
6184399	EMT	RPD	Turbidity	2019/06/19	6.7		%	20
6184783	EMT	QC Standard	рН	2019/06/19		100	%	97 - 103
6184783	EMT	RPD	pH	2019/06/19	0.76		%	N/A
6184788	EMT	Spiked Blank	Conductivity	2019/06/19		103	%	80 - 120
6184788	EMT	Method Blank	Conductivity	2019/06/19	1.4, RDL=1.0		uS/cm	



Northern Pulp N.S. Client Project #: Effluent Treatment Plant Your P.O. #: 43013552

QUALITY ASSURANCE REPORT(CONT'D)

(QA/QC								
	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6	184788	EMT	RPD	Conductivity	2019/06/19	0.0059		%	10

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

- (1) BOD Analysis: Second source QC recovery high. Reference Material recovery and all other QC acceptable.
- (2) PAH sample contained sediment.
- (3) Matrix Spike: results are outside acceptance limit. Probable matrix interference.
- (4) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.
- (5) EMPC / NDR Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.



Northern Pulp N.S. Report Date: 2019/06/27 Client Project #: Effluent Treatment Plant Your P.O. #: 43013552

VALIDATION SIGNATURE PAGE

ed and validated by the following individual(s).

The analytical data and all QC contained in this report were reviewed
-51
Brad Newman, Scientific Service Specialist
Tany Day
Harry (Peng) Liang, Senior Analyst
Sprinicafelk
Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics
Mike The Gillia
Mike MacGillivray, Scientific Specialist (Inorganics)
Staly
Owen Cosby, BSc.C.Chem, Supervisor, HRMS Services
Kosimarie MacDonald
Rosemarie MacDonald, Scientific Specialist (Organics)

Rob Reinert, B.Sc., Scientific Specialist



Your Project #: 89E4451 Your C.O.C. #: N-A

Attention: BEDFORD CUSTOMER SERVICE

Bureau Veritas Laboratories 200 Bluewater road Bedford, NS CANADA B4B 1G9

Report Date: 2019/06/21

Report #: R2449985 Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: 8920967 Received: 2019/05/31, 09:29

Sample Matrix: Water # Samples Received: 1

	Date	Date		
Analyses	Quantity Extracted	Analyzed	Laboratory Method	Primary Reference
Phenols in Pulp & Paper mill effluents	1 2019/06/0	3 2019/06/0	5 STL SOP-00121	MA.400-Phé 1.0 R3 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Note: All parameters included in the present certificate are accredited by the MELCC unless stated otherwise:



Your Project #: 89E4451 Your C.O.C. #: N-A

Attention: BEDFORD CUSTOMER SERVICE

Bureau Veritas Laboratories 200 Bluewater road Bedford, NS CANADA 84B 1G9

Report Date: 2019/06/21

Report #: R2449985

Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: 8920967 Received: 2019/05/31, 09:29

Encryption Key

Sumin detailless Trajent Manager 71 Jun JOLA [6:06:18

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Sophie Retailfeau, Project Manager Email: Sophie RETAILLEAU@bvlabs.com Phone# (514)448-9001 Ext:7066232

This report has been generated and distributed using a secure automated process.

Lab BV has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025;2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

PHENOLS BY GCMS (WATER)

Lab BV ID		GM5627	- 1	
Sampling Date		2019/05/25		
sampling Date		17:00		
COC Number		N-A		
	Units	JVR046-13R\CARIBOU SEA WATER 1	RDL	QC Batch
PHENOLS				
Total of Regl. P&P Phenols †	ug/L	<10	10	1994633
Phenol	ug/L	<1.0	1.0	1994633
2-Chlorophenol	ug/L	<1.0	1.0	1994633
3-Chlorophenol	ug/L	<1.0	1.0	1994633
4-Chlorophenol	ug/L	<1.0	1.0	1994633
o-Cresol	ug/L	<1.0	1.0	1994633
m-Cresol	ug/L	<1.0	1.0	1994633
p-Cresol	ug/L	<1.0	1.0	1994633
Guaiacol	ug/L	<1.0	1.0	1994633
Catechol	ug/L	<1.0	1.0	1994633
Eugenol	ug/L	<1.0	1.0	1994633
Isoeugenol	ug/L	<1.0	1.0	1994633
6-Chlorovanillin	ug/L	<1.0	1.0	199463
5,6-Dichlorovanillin	ug/L	<1.0	1.0	1994633
3,4,5-Trichlorosyringol	ug/L	<1.0	1.0	1994633
2,4-Dimethylphenol	ug/L	<1.0	1.0	1994633
2,6-Dichlorophenol	ug/L	<1.0	1.0	1994633
3,5-Dichlorophenol	ug/L	<1.0	1.0	1994633
2,3-Dichlorophenal	ug/L	<1.0	1.0	1994633
3,4-Dichlorophenol	ug/L	<1.0	1.0	199463
2,4 + 2,5-Dichlorophenol	ug/L	<1.0	1.0	1994633
2-Nitrophenol	ug/L	<2.0	2.0	1994633
4-Nitrophenal	ug/L	<10	10	1994633
2,4,6-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,3,5-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,3,6-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,4,5-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,3,4-Trichlorophenol	ug/L	<1.0	1.0	1994633
3,4,5-Trichlorophenol	ug/L	<1,0	1.0	1994633
4-Chloroguaiacol	ug/L	<1.0	1.0	1994633
4,5-Dichloroguaiacol	ug/L	<1.0	1.0	1994633
4,6-Dichloroguaiacol	ug/L	<1.0	1.0	1994633
2,3,5,6-Tetrachlorophenol	ug/L	<1.0	1.0	1994633
2,3,4,6-Tetrachlorophenol	ug/L	<1.0	1.0	1994633



PHENOLS BY GCMS (WATER)

Lab BV ID		GM5627		
Sampling Date		2019/05/25 17:00		
COC Number		N-A		
-	Units	JVR046-13R\CARIBOU SEA WATER 1	RDL	QC Batch
2,3,4,5-Tetrachlorophenol	ug/L	<1.0	1.0	1994633
4-Chlorocatechol	ug/L	<1.0	1.0	1994633
3,5-Dichlorocatechol	ug/L	<1.0	1.0	1994633
4,5-Dichlorocatechol	ug/L	<1.0	1.0	1994633
3,4,5-Trichloroguaiacol	ug/L	<1.0	1.0	1994633
4,5,6-Trichloroguaiacol	ug/L	<1.0	1.0	1994633
Pentachlorophenol	ug/L	<1.0	1.0	1994633
3,4,5-Trichlorocatechol	ug/L	<1.0	1.0	1994633
Tetrachlorocatechol	ug/L	<1.0	1.0	1994633
Tetrachloroguaiacol	ug/L	<1.0	1.0	1994633
4,5-Dichloroveratrol	ug/L	<1.0	1.0	1994633
3,4,5-Trichloroveratrol	ug/L	<1.0	1.0	1994633
3,4,5,6-Tetrachloroveratrol	ug/L	<1.0	1.0	1994633
Surrogate Recovery (%)				
D6-Phenol	%	113	N/A	1994633
Tribromophenol-2,4,6	%	72	N/A	1994633
Trifluoro-m-cresol	%	-88	N/A	1994633

N/A = Not Applicable



GENERAL COMMENTS

PHENOLS BY GCMS (WATER)

Un-rounded results are used in the total "Total Phenois (RFPP)" calculation. This total result is then rounded to two significant figures.

The total indicated is calculated only for the requested parameters.

Reported detection limits are modified according to the volume of sample received.

Results relate only to the items tested.



Report Date: 2019/06/21

Bureau Veritas Laboratories Client Project #: B9E4451

QUALITY ASSURANCE REPORT

QA/QC	V2342	CHEROLICA	world contact	walking anytheres	Water	#40 CARCESTO	1000000	CONTRACT OF THE PARTY OF THE PA
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limit
994633	GDL	Spiked Blank	D6-Phenol	2019/06/04		107	76	50 - 13
			Tribromophenol-2,4,6	2019/06/04		95	14	50 - 13
			Trifluoro-m-cresol	2019/06/04		105	%	50 - 13
			Phenol	2019/06/04		100	96	50 - 13
			Z-Chlorophenol	2019/06/04		95	76.	50 - 13
			3-Chlorophenol	2019/06/04		96	16	50 - 13
			4-Chlorophenol	2019/06/04		99	%	50 - 130
			o-Cresol	2019/06/04		104	36	50 - 130
			m-Cresol	2019/06/04		101	%	50 - 13
			p-Cresol	2019/06/04		101	%	50 - 13
			2,4-Dimethylphenol	2019/06/04		95	%	50 - 130
			2,6-Dichlorophenol	2019/06/04		105	96	50 - 130
			3,5-Dichlorophenol	2019/06/04		95	96	50 - 136
			2,3-Dichlorophenol	2019/06/04		100	%	50 - 130
			3,4-Dichlorophenol	2019/06/04		106	%	50 - 130
			2,4 + 2,5-Dichlorophenol	2019/06/04		100	76	50 - 13
			2-Nitrophenol	2019/06/04		94	%	50 - 13
			4-Nitrophenol	2019/06/04		92	94	50 - 13
			2,4,6-Trichlorophenol	2019/06/04		104	%	50 - 13
			2,3,5-Trichlorophenol	2019/06/04		94	96	50 - 13
			2,3,6-Trichlorophenol	2019/06/04		107	%	50 - 13
			2,4,5-Trichlarophenol	2019/06/04		109	26	50 - 13
			2,3,4-Trichlorophenol	2019/06/04		102	76	50 - 13
			3,4,5-Trichlorophenol	2019/06/04		108	%	50 - 13
			2,3,5,6-Tetrachlorophenol	2019/06/04		95	76	50 - 13
			2,3,4,6-Tetrachlorophenol	2019/06/04		107	N	50 - 13
			2,3,4,5-Tetrachlorophenol	2019/06/04		96	16	50 - 13
			Pentachlorophenol	2019/06/04		90	%	50 - 13
994633	GDL	Spiked Blank DUP	D6-Phenol	2019/06/04		105	76	50 - 13
			Tribromophenol-2,4,6	2019/06/04		91	14	50 - 13
			Trifluoro-m-cresol	2019/06/04		101	76	50 - 13
			Phenol	2019/06/04		98	96	50 - 13
			Z-Chiorophenol	2019/06/04		93	76	50 - 130
			3-Chlorophenol	2019/06/04		95	14	50 - 130
			4-Chlorophenol	2019/06/04		93	%	50 - 13
			o-Cresol	2019/06/04		102	36	50 - 13
			m-Cresol	2019/06/04		100	%	50 - 13
			p-Cresol	2019/06/04		98	%	50 - 13
			2,4-Dimethylphenol	2019/06/04		91	%	50 - 130
			2,6-Dichlorophenol	2019/06/04		100	36	50 - 13
			3,5-Dichlorophenoi	2019/06/04		91	96	50 - 13
			2,3-Dichlorophenol	2019/06/04		94	96	50 - 13
			3,4-Dichlorophenol	2019/06/04		100	%	50 - 13
			2,4 + 2,5-Dichlorophenol	2019/06/04		96	36	50 - 13
			2-Nitrophenol	2019/06/04		87	%	50 - 130
			4-Nitrophenol	2019/06/04		89	94	50 - 130
			2,4,6-Trichlorophenol	2019/06/04		97	96.	50 - 13
			2,3,5-Trichlorophenol	2019/06/04		87	96	50 - 13
			2,3,6-Trichlorophenol	2019/06/04		98	%	50 - 13
			2,4,5-Trichlorophenol	2019/06/04		104	%	50 - 13
			2,3,4-Trichlorophenol	2019/06/04		95	16	50 - 13
			3,4,5-Trichlorophenol	2019/06/04		95	96	50 - 13
			2,3,5,6-Tetrachlorophenol	2019/06/04		88	%	50 - 13



Lab BV Job #: B920967

Report Date: 2019/06/21

Bureau Veritas Laboratories
Client Project #: B9E4451

QA/QC	1000	DC Tone	December	Barrier Administration of	Water	1000	E facilities	OC Unit
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limit
			2,3,4,6-Tetrachiorophenol	2019/06/04		103	76	50 - 13
			2,3,4,5-Tetrachlorophenol	2019/06/04		92	14	50 - 13
004522	(20)	CHARLES AND	Pentachlorophenol	2019/06/04		87	%	50 - 13
994633	GDL	Method Blank	D6-Phenol	2019/06/04	5.0	99	96	50 - 13
			Total of Regl. P&P Phenols	2019/06/04	<5.0	91	ug/L	60.4
			Tribromophenol-2,4,6	2019/06/04			16	50 - 13
			Triffuoro-m-cresol	2019/06/04		101	76	50 - 1
			Phenol	2019/06/04	<0.50		ug/L	
			2-Chlorophenol	2019/06/04	<0.50		ug/L	
			3-Chlorophenol	2019/06/04	<0.50		ug/L	
			4-Chlorophenol	2019/06/04	<0.50		ug/L	
			o-Cresol	2019/06/04	<0.50		ug/L	
			m-Cresol	2019/06/04	<0.50		ug/L	
			p-Cresol	2019/06/04	<0.50		ug/t	
			Gualacol	2019/06/04	< 0.50		ug/L	
			Catechol	2019/06/04	<0.50		ug/L	
			Eugenol	2019/06/04	< 0.50		ug/L	
			Isoeugenal	2019/06/04	<0.50		ug/L	
			6-Chlorovanillin	2019/06/04	< 0.50		ug/L	
			5,6-Dichlorovanillin	2019/06/04	<0.50		ug/L	
			3,4,5-Trichlorosyringol	2019/06/04	< 0.50		ug/L	
			2,4-Dimethylphenol	2019/06/04	<0.50		ug/L	
			2,6-Dichlorophenol	2019/06/04	< 0.50		ug/L	
			3,5-Dichlorophenol	2019/06/04	< 0.50		ug/L	
			2,3-Dichlorophenol	2019/06/04	< 0.50		ug/t	
			3,4-Dichlorophenol	2019/06/04	<0.50		ug/t	
			2,4 + 2,5-Dichlorophenal	2019/06/04	< 0.50		ug/L	
			2-Nitrophenol	2019/06/04	<1.0		ug/L	
			4-Nitrophenol	2019/06/04	<5.0		ug/L	
			2,4,6-Trichlorophenol	2019/06/04	< 0.50		ug/L	
			2.3,5-Trichlorophenol	2019/06/04	< 0.50		ug/L	
			2,3,6-Trichlorophenol	2019/06/04	< 0.50		ug/L	
			2,4,5-Trichlorophenol	2019/06/04	< 0.50		ug/L	
			2,3,4-Trichlorophenol	2019/06/04	< 0.50		ug/L	
			3,4,5-Trichlorophenol	2019/06/04	< 0.50		ug/L	
			4-Chloroguaiacol	2019/06/04	< 0.50		ug/L	
			4,5-Dichloroguaiscol	2019/06/04	< 0.50		ug/L	
			4,6-Dichlorogualacol	2019/06/04	<0.50		ug/L	
			2,3,5,6-Tetrachlorophenol	2019/06/04	< 0.50		ug/L	
			2,3,4,6-Tetrachlorophenol	2019/06/04	<0.50		ug/L	
			2,3,4,5-Tetrachiorophenoi	2019/06/04	<0.50		ug/L	
			4-Chiorocatechol	2019/06/04	<0.50		ug/L	
			3.5-Dichlorocatechol	2019/06/04	<0.50		ug/L	
			4,5-Dichlorocatechol	2019/06/04	<0.50		100	
			3,4,5-Trichlorogualacol	100 CO 10	<0.50		ug/L	
			4,5,6-Trichlorogualacol	2019/06/04	<0.50		ug/L	
			1	2019/06/04			ug/L	
			Pentachlorophenol	2019/06/04	<0.50		ug/L	
			3,4,5-Trichlorocatechol	2019/06/04	<0.50		ug/L	
			Tetrachlorocatechol	2019/06/04	<0.50		ug/L	
			Tetrachloroguaiacol	2019/06/04	<0.50		ug/L	
			4,5-Dichloroveratrol	2019/06/04	<0.50		ug/L	
			3,4,5-Trichloroveratrol	2019/06/04	< 0.50		ug/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			3,4,5,6-Tetrachioroveratrol	2019/06/04	< 0.50		ug/L	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

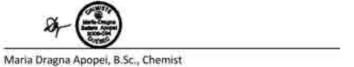
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination,

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Lab BV has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005 (E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

MAXXAM ANALYTICS

200 Bluewater Road Bedford, Neva Scotia, 848 1G9 (902) 420-0203 (902) 420-8612



Northern Pulp N.S. Maxsam PM: Maryann Comeau

SUBCONTRACTING REQUEST FORM

To: De	s internatio	onal Sample	/BroHazard (d yes, add copy of Movem	ant Cert., heat th	eat is requ	ired prior t		B9E4451
Sample ID			Matrix	Test(o Required		C	ontainer	Date Sampled	Date Required
VR046-13RV	ARIBOU SEA	WATER 1	w	Phenois in Fulp and P	aper Mill Effluere		OPHE		00 2019/06/20
	Temp.1	Temp. 2	Itemp. 1				_		
cooler #1		-	10.4.5	Custody Seal Present	brs:	S : .	(HIS)		
	3	1	1.6	Custody Seal Intact	NE:		KO'		
	2	1.0	1	ice Present Upon Receipt	6)	NO		
óoler #2				Custody Seal Present	Nr.		NO		
				Custody Seal Intact	VE:		NO		
				Ice Present Upon Receipt	. NE	1	NO		
poler #3				Custody Seal Present	YE		740		
				Custody Seal Intact	VE		NO		
				Ice Present Upon Receipt	VE		NO		
SOTES:									09:10
Please ca	Il us if due	date canno	t be met. Pl	ease reference Sample I	O on your repor				
MComes Mcomes Reporting Re	opy of this su@maxxar equirements	completed m.ca		perform the requested a st COC & signed final rep					
Vational: N	001			31-May-19 09:2	9			065202583	
Regional:			S	ophic Retailleau		Ų	IIMX	2000年	
				B920967		8	920967_	coc	



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant

Your C.O.C. #: 715281-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/06/24

Report #: R5768478 Version: 3 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89E4487 Received: 2019/05/29, 12:45

Sample Matrix: Water # Samples Received: 1

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Reference
Carbonate, Bicarbonate and Hydroxide	1	N/A	2019/06/05		SM 23 4500-CO2 D
Alkalinity	1	N/A	2019/06/05	ATL SOP 00013	EPA 310.2 R1974 m
Benzo(b/j)fluoranthene Sum (water)	1	N/A	2019/06/03	N/A	Auto Calc.
Carbonaceous BOD	1	2019/05/30	2019/06/04	ATL SQP 00041	SM 23 52108 m
Chloride	1	N/A	2019/06/06	ATL SOP 00014	SM 23 4500-CI- E m
Chemical Oxygen Demand (COD)	1	N/A	2019/05/30	ATL SOP 00042	SM 23 5220D m
Colour	1	N/A	2019/05/31	ATL SOP 00020	SM 23 2120C m
Total Cyanide (1)	1	2019/06/05	2019/06/08	CAM SOP-00457	OMOE E3015 5 m
Dioxins/Furans in Water (EPS 1/RM/23) (1, 5)	1	2019/06/06	2019/06/12	BRL SOP-00406 (mod)	EPS 1/RM/23 m
Organic carbon - Diss (DOC) (6)	1	N/A	2019/06/04	ATL SOP 00203	SM 23 53108 m
Conductance - water	1	N/A	2019/06/05	ATL SOP 00004	SM 23 2510B m
TEH in Water (PIRI)	1	2019/05/30	2019/05/30	ATL SOP 00113	Atl. RBCA v3.1 m
Sulphide as H2S (1)	1	N/A	2019/06/03		
Hardness (calculated as CaCO3)	1	N/A	2019/05/31	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	1	2019/05/31	2019/05/31	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total MS	1	2019/05/30	2019/05/31	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	1	N/A	2019/06/06	N/A	Auto Calc
Anion and Cation Sum	1	N/A	2019/06/05	N/A	Auto Calc.
Chlorate and Chlorite by IC (2)	1	N/A	2019/06/06	CAL SOP-00040	SM 23 4110D m
Nitrogen (Total) (3)	1	N/A	2019/06/03	BBY6SOP-00016	SM 22 4500-N C m
Resin and Fatty Acids (2)	1	2019/05/31	2019/06/02	CAL SOP-00099	AE129.0
Nitrogen Ammonia - water	1	N/A	2019/06/04	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2019/06/05	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	1	N/A	2019/06/05	ATL SOP 00017	SM 23 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2019/06/06	ATL SOP 00018	ASTM D3867-16
PAH in Water by GC/MS (SIM)	1	2019/05/31	2019/06/01	ATL SOP 00103	EPA 8270E R6 m
PCBs in water by GC/ECD	1	2019/06/04	2019/06/05	ATL SOP 00107	EPA 8082A m
PCB Aroclor sum (water)	1	N/A	2019/06/05	N/A	Auto Calc.
Phenols in Pulp and Paper Mill Effluents (4)	1	2019/06/01	2019/06/05		
pH (7)	.1	N/A	2019/06/05	ATL SOP 00003	SM 23 4500-H+ B m
Phosphorus - ortho	1	N/A	2019/06/05	ATL SOP 00021	SM 23 4500-P E m



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant

Your C.O.C. #: 715281-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/06/24

Report #: R5768478 Version: 3 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89E4487 Received: 2019/05/29, 12:45

Sample Matrix: Water # Samples Received: 1

# Samples Received: 1					
Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
VPH in Water (PIRI)	1	N/A	2019/06/02	ATL SOP 00118	Atl RBCA v3.1 m
Salinity (8)	1	N/A	2019/06/04		SM 22 2520B
Sat. pH and Langelier Index (@ 20C)	1	N/A	2019/06/06	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	1	N/A	2019/06/06	ATL SOP 00049	Auto Calc
Reactive Silica	1	N/A	2019/06/06	ATL SOP 00022	EPA 366.0 m
Sulphate	1	N/A	2019/06/06	ATL SOP 00023	ASTM D516-16 m
Sulphide (1)	1	N/A	2019/06/03	CAM SOP-00455	SM 23 4500-S G m
Total Dissolved Solids (TDS calc)	1	N/A	2019/06/06	N/A	Auto Calc.
Total Kjeldahl Nitrogen in Water (1)	1	2019/06/01	2019/06/04	CAM SOP-00938	OMOE E3516 m
Organic carbon - Total (TOC) (6)	1	N/A	2019/05/31	ATL SOP 00203	SM 23 53108 m
ModTPH (T1) Calc. for Water	1	N/A	2019/06/03	N/A	Atl. RBCA v3 m
Phosphorus Total Colourimetry	1	2019/06/03	2019/06/04	ATL SOP 00057	EPA 365.1 R2 m
Total Suspended Solids	1	2019/05/31	2019/06/03	ATL SOP 00007	5M 23 2540D m
Turbidity	1	N/A	2019/06/05	ATL SOP 00011	EPA 180.1 R2 m
Volatile Organic Compounds in Water	1	N/A	2019/05/30	ATL SOP 00133	EPA 82600 R4 m
Volatile Suspended Solids	1	N/A	2019/06/04	ATL SOP 00008	EPA 160.4 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant

Your C.O.C. #: 715281-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/06/24

Report #: R5768478 Version: 3 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89E4487 Received: 2019/05/29, 12:45

dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

- * RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
- (1) This test was performed by Bureau Veritas Laboratories Mississauga
- (2) This test was performed by Bedford to Calgary Offsite
- (3) This test was performed by Bedford to Burnaby Offsite
- (4) This test was performed by Bedford to Montreal Subcontrac
- (5) Confirmatory runs for 2,3,7,8-TCDF are performed only if the primary result is greater than the RDL.
- (6) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.
- (7) The APHA Standard Method require pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.

(8) Non-accredited test method

Encryption Key

Beyonsha (Danlescrett) Fredect Manager Arrivtant

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Maryann Comeau, Project Manager Email: Maryann COMEAU@bvlabs.com Phone# (902)420-0203 Ext:298

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



RESULTS OF ANALYSES OF WATER

BV Labs ID		JVR264			
Sampling Date		2019/05/24 13:30			
COC Number		715281-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-1	RDL	MDL	QC Batch
Calculated Parameters					
Anion Sum	me/L	494	N/A	N/A	6147444
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	90	1.0	0.20	6147433
Calculated TDS	mg/L	29000	1.0	0.20	6147453
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND	1.0	0.20	6147433
Cation Sum	me/L	496	N/A	N/A	6147444
Hardness (CaCO3)	mg/L	5300	1.0	1.0	6147440
ton Balance (% Difference)	96	0.190	N/A	N/A	6147442
Langelier Index (@ 20C)	N/A	0.448			6147449
Langelier Index (@ 4C)	N/A	0.210			6147451
Nitrate (N)	mg/L	ND	0.050	N/A	6147446
Saturation pH (@ 20C)	N/A	7.35			6147449
Saturation pH (@ 4C)	N/A	7.59			6147451
Sulphide (as H2S)	mg/L	ND	0.021	0.011	6147649
Inorganics		11.01	-		
Total Alkalinity (Total as CaCO3)	mg/L	91	5.0	N/A	6158831
Carbonaceous BOD	mg/L	ND (1)	10	N/A	6148701
Total Chemical Oxygen Demand	mg/L	940	200	N/A	6148620
Dissolved Chlorate (CIO3-)	mg/L	ND (2)	5.0	N/A	6165901
Dissolved Chloride (CI-)	mg/l.	16000	500	N/A	6158832
Dissolved Chlorite (CLO2-)	mg/t	ND (2)	5.0	N/A	6165901
Colour	TCU	ND	5.0	N/A	6151471
Total Kjeldahl Nitrogen (TKN)	mg/L	0.20	0.10	0.060	6153711
Nitrate + Nitrite (N)	mg/L	ND	0.050	N/A	6158840
Nitrite (N)	mg/L	ND	0.010	N/A	6158842
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	N/A	6156546
Dissolved Organic Carbon (C)	mg/L	1.8	0.50	N/A	6155176
Total Organic Carbon (C)	mg/L	2.1	0.50	N/A	6151090
Orthophosphate (P)	mg/L	ND	0.010	N/A	6158838
рН	pH	7.80	N/A	N/A	6158767

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected

- Sample integrity may have been compromised, the sample exceeded it's hold time prior to being analyzed.
- (2) Detection limits raised due to matrix interference.



RESULTS OF ANALYSES OF WATER

BV Labs ID		JVR264			
Sampling Date		2019/05/24 13:30			
COC Number		715281-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-1	RDL	MDL	QC Batch
Total Phosphorus	mg/L	ND	0.020	N/A	6154440
Salinity	N/A	27	2.0	N/A	6156521
Reactive Silica (SiO2)	mg/L	0.54	0.50	N/A	6158837
Total Suspended Solids	mg/L	2.2	1.0	N/A	6151063
Dissolved Sulphate (SO4)	mg/L	2000	40	N/A	6158834
Sulphide	mg/L	ND	0.020	0.010	6154879
Total Cyanide (CN)	mg/L	ND	0.0050	0.00010	6160103
Turbidity	NTU	1.0	0.10	0.10	6158813
Volatile Suspended Solids	mg/L	ND	2.0	N/A	6157072
Conductivity	uS/cm	42000	1.0	N/A	6158768
Nutritional Parameters					
Total Nitrogen (N)	mg/L	0.147	0.020	N/A	6157791
Subcontracted Analysis					
Subcontract Parameter	N/A	ATTACHED	N/A	N/A	6153392
RDL = Reportable Detection Li QC Batch = Quality Control Ba ND = Not detected					

N/A = Not Applicable



MERCURY BY COLD VAPOUR AA (WATER)

BV Labs ID		JVR264			
Sampling Date		2019/05/24 13:30			
COC Number		715281-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-1	RDL	MDL	QC Batch
Metals					
Total Mercury (Hg)	ug/L	ND	0.013	N/A	6148649
RDL = Reportable Detect	tion Limit		- Balance and a state of		
QC Batch = Quality Cont	rol Batch				
ND = Not detected					
N/A = Not Applicable					

ELEMENTS BY ICP/MS (WATER)

BV Labs ID		JVR264			
Sampling Date		2019/05/24 13:30			
COC Number		715281-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-1	RDL	MDL	QC Batcl
Metals					
Total Aluminum (AI)	ug/L	5700	50	N/A	614897
Total Antimony (Sb)	ug/L	ND	10	N/A	614897
Total Arsenic (As)	ug/L	ND	10	N/A	614897
Total Barium (Ba)	ug/L	13	10	N/A	614897
Total Beryllium (Be)	ug/L	ND	10	N/A	614897
Total Bismuth (Bi)	ug/L	ND	20	N/A	614897
Total Boron (B)	ug/L	3700	500	N/A	614897
Total Cadmium (Cd)	ug/L	0.12	0.10	N/A	614897
Total Calcium (Ca)	ug/L	340000	1000	N/A	614897
Total Chromium (Cr)	ug/L	ND	10	N/A	614897
Total Cobalt (Co)	ug/L	ND	4.0	N/A	614897
Total Copper (Cu)	ug/L	ND	5.0	N/A	614897
Total Iron (Fe)	ug/L	ND	500	N/A	614897
Total Lead (Pb)	ug/L	ND	5.0	N/A	614897
Total Magnesium (Mg)	ug/L	1100000	1000	N/A	614897
Total Manganese (Mn)	ug/L	ND:	20	N/A	614897
Total Molybdenum (Mo)	ug/L	ND	20	N/A	614897
Total Nickel (Ni)	ug/L	ND	20	N/A	614897
Total Phosphorus (P)	ug/L	ND	1000	N/A	614897
Total Potassium (K)	ug/L	320000	1000	N/A	614897
Total Selenium (Se)	ug/L	ND:	10	N/A	614897
Total Silver (Ag)	ug/L	ND	1.0	N/A	614897
Total Sodium (Na)	ug/L	8800000	1000	N/A	614897
Total Strontium (Sr)	ug/L	6300	20	N/A	614897
Total Thallium (TI)	ug/L	ND	1.0	N/A	614897
Total Tin (Sn)	ug/L	ND	20	N/A	614897
Total Titanium (Ti)	ug/L	ND	20	N/A	614897
Total Uranium (U)	ug/L	2.8	1.0	N/A	614897
Total Vanadium (V)	ug/L	ND	20	N/A	614897
Total Zinc (Zn)	ug/L	ND	50	N/A	614897

ND = Not detected

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		JVR264			
Sampling Date		2019/05/24 13:30			
COC Number		715281-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-1	RDL	MDL	QC Batch
Polyaromatic Hydrocarbor	ns				
1-Methylnaphthalene	ug/L	ND	0.050	N/A	6151065
2-Methylnaphthalene	ug/L	ND	0.050	N/A	6151065
Acenaphthene	ug/L	ND	0.010	N/A	6151065
Acenaphthylene	ug/L	ND	0.010	N/A	6151065
Anthracene	ug/L	ND	0.010	N/A	6151065
Benzo(a)anthracene	ug/L	ND	0.010	N/A	6151065
Benzo(a)pyrene	ug/t.	ND	0.010	N/A	6151065
Benzo(b)fluoranthene	ug/L	ND	0.010	N/A	6151065
Benzo(b/j)fluoranthene	ug/L	ND	0.020	N/A	6146340
Benzo(g,h,i)perylene	ug/L	ND :	0.010	N/A	6151065
Benzo(j)fluoranthene	ug/L	ND	0.010	N/A	6151065
Benzo(k)fluoranthene	ug/L	ND	0.010	N/A	6151065
Chrysene	ug/L	ND	0.010	N/A	6151065
Dibenz(a,h)anthracene	ug/L	ND	0.010	N/A	6151065
Fluoranthene	ug/L	ND	0.010	N/A	6151065
Fluorene	ug/L	ND	0.010	N/A	6151065
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.010	N/A	6151065
Naphthalene	ug/L	ND	0.20	N/A	6151065
Perylene	ug/t.	ND	0.010	N/A	6151065
Phenanthrene	ug/t	ND	0.010	N/A	6151065
Pyrene	ug/L	ND	0.010	N/A	6151065
Surrogate Recovery (%)					
D10-Anthracene	96	88		Ŋ	6151065
D14-Terphenyl	%	95			6151065
D8-Acenaphthylene	%	83			6151065
ROL = Reportable Detection QC Batch = Quality Control ND = Not detected N/A = Not Applicable					



VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		JVR264			
Sampling Date		2019/05/24 13:30			
COC Number		715281-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-1	RDL	MDL	QC Batch
Volatile Organics					
1,1-Dichloroethane	ug/L	ND:	2.0	N/A	6148613
1,1-Dichloroethylene	ug/L	ND:	0.50	1.0	6148613
1,1,1-Trichloroethane	ug/L	ND	1.0	N/A	6148613
1,1,2-Trichloroethane	ug/L	ND	1.0	N/A	6148613
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	N/A	6148613
Ethylene Dibromide	ug/L	ND:	0.20	0.50	6148613
1,2-Dichlorobenzene	ug/L	ND.	0.50	N/A	6148613
1,2-Dichloroethane	ug/L	ND:	1.0	N/A	6148613
cis-1,2-Dichloroethylene	ug/L	ND	0.50	N/A	6148613
trans-1,2-Dichloroethylene	ug/L	ND	0.50	N/A	6148613
1,2-Dichloropropane	ug/L	ND	0.50	N/A	6148613
1,3-Dichlorobenzene	ug/L	ND	1.0	N/A	6148613
cis-1,3-Dichloropropene	ug/L	ND	0.50	N/A	6148613
trans-1,3-Dichloropropene	ug/L	ND	0.50	N/A	6148613
1,4-Dichlorobenzene	ug/L	ND	1.0	N/A	6148613
Benzene	ug/L	ND	1.0	N/A	6148613
Bromodichloromethane	ug/L	ND	1.0	0.20	6148613
Bromoform	ug/L	ND	1.0	0.20	6148613
Bromomethane	ug/L	ND	0.50	N/A	6148613
Carbon Tetrachloride	ug/L	ND	0.50	N/A	6148613
Chlorobenzene	ug/L	ND	1.0	N/A	6148613
Chloroethane	ug/L	ND	8.0	N/A	6148613
Chloroform	ug/L	ND	1.0	0.20	6148613
Chloromethane	ug/L	ND:	8.0	N/A	6148613
Dibromochloromethane	ug/L	ND	1.0	0.20	6148613
Methylene Chloride(Dichloromethane)	ug/L	ND	3.0	N/A	6148613
Ethylbenzene	ug/L	ND	1.0	N/A	6148613
Methyl t-butyl ether (MTBE)	ug/L	ND:	2.0	N/A	6148613
Styrene	ug/L	ND	1.0	N/A	6148613
Tetrachloroethylene	ug/L	ND	1.0	N/A	6148613
Toluene	ug/L	ND	1.0	N/A	6148613
Trichloroethylene	ug/L	ND	1.0	N/A	6148613

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		JVR264			
Sampling Date		2019/05/24 13:30			
COC Number		715281-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-1	RDL	MDL	QC Batch
Trichlorofluoromethane (FREON 11)	ug/L	ND	8.0	N/A	6148613
Vinyl Chloride	ug/L	ND	0.50	2.0	6148613
o-Xylene	ug/L	ND	1.0	N/A	6148613
p+m-Xylene	ug/L	ND	2.0	N/A	6148613
Total Xylenes	ug/t	ND	1.0	1.0	6148613
Total Trihalomethanes	ug/L	ND:	1.0	N/A	6148613
Surrogate Recovery (%)					
4-Bromofluorobenzene	%	98			6148613
D4-1,2-Dichloroethane	%	116			6148613
D8-Toluene	96	100			6148613

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

ATLANTIC RBCA HYDROCARBONS (WATER)

BV Labs ID		JVR264			
Sampling Date		2019/05/24 13:30			
COC Number		715281-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-1	RDL	MDL	QC Batch
Petroleum Hydrocarbons					
Benzene	mg/L	ND	0.0010	N/A	6153411
Toluene	mg/L	ND	0.0010	N/A	6153411
Ethylbenzene	mg/L	ND	0.0010	N/A	6153411
Total Xylenes	mg/L	ND	0.0020	N/A	6153411
C6 - C10 (less BTEX)	mg/L	ND	0.010	N/A	6153411
>C10-C16 Hydrocarbons	mg/L	ND	0.050	N/A	6148915
>C16-C21 Hydrocarbons	mg/L	ND	0.050	N/A	6148915
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>ND</td><td>0.10</td><td>N/A</td><td>6148915</td></c32>	mg/L	ND	0.10	N/A	6148915
Modified TPH (Tier1)	mg/L	ND	0.10	N/A	6146630
Reached Baseline at C32	mg/L	NA.	N/A	N/A	6148915
Hydrocarbon Resemblance	mg/L	NA.	N/A	N/A	6148915
Surrogate Recovery (%)	-				
Isobutylbenzene - Extractable	%	89			6148915
n-Dotriacontane - Extractable	%	103			6148915
Isobutylbenzene - Volatile	%	93			6153411
RDL = Reportable Detection Lin QC Batch = Quality Control Bate ND = Not detected N/A = Not Applicable					

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

BV Labs ID		JVR264			
Sampling Date		2019/05/24 13:30			
COC Number		715281-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-1	RDL	MDL	QC Batch
PCBs					
Aroclor 1016	ug/L	ND	0.050	N/A	6156517
Aroclor 1221	ug/L	ND	0.050	N/A	6156517
Arocior 1232	ug/L	ND	0.050	N/A	6156517
Aroclor 1248	ug/L	ND	0.050	N/A	6156517
Aroclor 1242	ug/L	ND	0.050	N/A	6156517
Aroclor 1254	ug/L	ND	0.050	N/A	6156517
Aroclor 1260	ug/L	ND	0.050	N/A	6156517
Calculated Total PCB	ug/L	ND	0.050	N/A	6146342
Surrogate Recovery (%)			-		
Decachlorobiphenyl	%	91			6156517
RDL = Reportable Detecti	on Limit				
QC Batch = Quality Contr	ol Batch				
ND = Not detected					
N/A = Not Applicable					

RESIN AND FATTY ACIDS BY GC-MS (WATER)

BV Labs ID		JVR264			
Sampling Date		2019/05/24 13:30			
COC Number		715281-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-1	RDL	MDL	QC Batch
Calculated Parameters					
Total Fatty Acids	mg/L	ND:	0.072	N/A	6172547
Total Resin Acids	mg/L	ND	0.060	N/A	6172547
Fatty Acids					
9,10-Dichlorostearic acid	mg/L	ND	0.0060	N/A	6172547
Decanoic Acid (C10)	mg/L	ND	0.0060	N/A	6172547
Docosanoic acid (C22)	mg/L	ND	0.0060	N/A	6172547
Dodecanoic acid (C12)	mg/L	ND	0.0060	N/A	6172547
Eicosanoic acid (C20)	mg/L	ND:	0.0060	N/A	6172547
Hexadecanoic acid (C16)	mg/L	ND:	0.0060	N/A	6172547
Linoleic acid (C18:2)	mg/L	ND	0.0060	N/A	6172547
Linolenic acid (C18:3)	mg/L	ND	0.0060	N/A	6172547
Octadecanoic acid (C18)	mg/L	ND	0.0060	N/A	6172547
Oleic acid (C18:1)	mg/L	ND:	0.0060	N/A	6172547
Tetradecanoic acid (C14)	mg/L	ND	0.0060	N/A	6172547
Undecanoic acid (C11)	mg/L	ND.	0.0060	N/A	6172547
Resin Acids					
12,14-Dichlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6172547
12-Chlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6172547
14-Chlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6172547
Abietic acid	mg/L	ND:	0.0060	N/A	6172547
Dehydroabietic acid	mg/L	ND	0.0060	N/A	6172547
Isopimaric acid	mg/L	ND	0.0060	N/A	6172547
Neoabietic acid	mg/L	ND	0.0060	N/A	6172547
Palustric acid	mg/L	ND	0.0060	N/A	6172547
Pimaric acid	mg/L	ND	0.0060		6172547
Sandaracopimaric acid	mg/L	ND	0.0060	N/A	6172547
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not detected N/A = Not Applicable					



DIOXINS AND FURANS BY HRMS (WATER)

BV Labs ID		JVR264							
Sampling Date		2019/05/24 13:30							
COC Number		715281-01-01				TOXIC EQUIVALENCY		# of	
	UNITS	CARIBOU SEA WATER CH-BOF 1-1	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Dioxins & Furans				-					
2,3,7,8-Tetra CDD *	pg/L	ND	1.11	9.76	N/A	1.00	1.11		6170521
1,2,3,7,8-Penta CDD *	pg/L	ND	0.988	9.76	N/A	1.00	0.988		6170521
1,2,3,4,7,8-Hexa CDD *	pg/L	ND	1.18	9.76	N/A	0.100	0.118		6170521
1,2,3,6,7,8-Hexa CDD *	pg/L	ND	1.02	9.76	N/A	0.100	0.102		6170521
1,2,3,7,8,9-Hexa CDD *	pg/L	ND.	0.992	9.76	N/A	0.100	0.0992		6170521
1,2,3,4,6,7,8-Hepta CDD *	pg/L	ND	1.16	9.76	N/A	0.0100	0.0116		6170521
Octa CDD *	pg/L	ND (1)	1.79	97.6	N/A	0.000300	0.000537		6170521
Total Tetra CDD *	pg/L	ND	1.11	9.76	N/A			a	6170521
Total Penta CDD *	pg/L	ND:	0.988	9.76	N/A			0	6170521
Total Hexa CDD.*	pg/L	ND:	1.06	9.76	N/A			0	6170521
Total Hepta CDD *	pg/L	ND	1.16	9.76	N/A			0	6170521
2,3,7,8-Tetra CDF **	pg/L	ND	1.06	9.76	N/A	0.100	0.106		6170521
1,2,3,7,8-Penta CDF **	pg/L	ND	1.09	9.76	N/A	0.0300	0.0327		6170521
2,3,4,7,8-Penta CDF **	pg/L	ND	1.10	9.76	N/A	0.300	0.330		6170521
1,2,3,4,7,8-Hexa CDF **	pg/L	ND	0.960	9.76	N/A	0.100	0.0960		6170521
1,2,3,6,7,8-Hexa CDF **	pg/L	ND	0.800	9.76	N/A	0.100	0.0800		6170521
2,3,4,6,7,8-Hexa CDF **	pg/L	ND	0.906	9.76	N/A	0.100	0.0906		6170521
1,2,3,7,8,9-Hexa CDF **	pg/L	ND	1.00	9.76	N/A	0.100	0.100		6170521
1,2,3,4,6,7,8-Hepta CDF **	pg/L	ND:	0.968	9.76	N/A	0.0100	0.00968		6170521
1,2,3,4,7,8,9-Hepta CDF **	pg/L	ND	1.10	9.76	N/A	0.0100	0.0110		6170521
Octa CDF **	pg/L	ND	0.553	97.6	N/A	0.000300	0.000166		6170521
Total Tetra CDF **	pg/L	ND:	1.06	9.76	N/A			0	6170521
Total Penta CDF **	pg/L	ND:	1.09	9.76	N/A			0	6170521
Total Hexa CDF **	pg/L	ND	0.911	9.76	N/A			0	6170521

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,

The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

* CDD = Chloro Dibenzo-p-Dioxin

ND = Not detected

N/A = Not Applicable

** CDF = Chloro Dibenzo-p-Furan

(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.



DIOXINS AND FURANS BY HRMS (WATER)

BV Labs ID		JVR264							
Sampling Date		2019/05/24 13:30							
COC Number		715281-01-01 CARIBOU SEA WATER CH-BOF 1-1			MDL	TOXIC EQUIVALENCY		# of	
	UNITS		EDL	RDL		TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Hepta CDF **	pg/L	ND	1.03	9.76	N/A			0	6170521
TOTAL TOXIC EQUIVALENCY	pg/L						3.29		
Surrogate Recovery (%)				_			741.5		
C13-1234678 HeptaCDD *	96	104							6170521
C13-1234678 HeptaCDF **	%	110							6170521
C13-123678 HexaCDD *	%	125							6170521
C13-123678 HexaCDF **	%	86							6170521
C13-12378 PentaCDD *	%	69							6170521
C13-12378 PentaCDF **	%	51							6170521
C13-2378 TetraCDD *	96	94							6170521
C13-2378 TetraCDF **	%	72						1	6170521
C13-OCDD *	%	113							6170521

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit.

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,

The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

** CDF = Chloro Dibenzo-p-Furan

ND = Not detected

N/A = Not Applicable

* CDD = Chloro Dibenzo-p-Dioxin



GENERAL COMMENTS

Each temperature is the	average of up to	three cooler temperatures taken at receipt
Package 1	7.7°C	
Sample JVR264 [CARIBO	OU SEA WATER CH	-BOF 1-1]: Elevated reporting limits for trace metals due to sample matrix.
Results relate only to th	ne items tested.	



QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6148613	ASL	Matrix Spike	4-Bromafluorobenzene	2019/05/30		99	74	70 - 130
			D4-1,2-Dichloroethane	2019/05/30		120	76	70 - 130
			D8-Toluene	2019/05/30		96	34	70 - 130
			I,1-Dichloroethane	2019/05/30		108	%	70 - 130
			1,1-Dichloroethylene	2019/05/30		110	%	70 - 130
			1,1,1-Trichloroethane	2019/05/30		109	%	70 - 130
			1,1,2-Trichloroethane	2019/05/30		109	%	70 - 130
			1,1,2,2-Tetrachloroethane	2019/05/30		109	%	70 - 130
			Ethylene Dibromide	2019/05/30		112	%	70 - 130
			1,2-Dichlorobenzene	2019/05/30		91	%	70 - 130
			1,2-Dichloroethane	2019/05/30		112	96	70 - 130
			cis-1,2-Dichloroethylene	2019/05/30		102	%	70 - 130
			trans-1,2-Dichloroethylene	2019/05/30		108	%	70 - 130
			1,2-Dichloropropane	2019/05/30		106	%	70 - 130
			1,3-Dichlorobenzene	2019/05/30		87	96	70 - 130
			cis-1,3-Dichloropropene	2019/05/30		111	76	70 - 130
			trans-1,3-Dichloropropene	2019/05/30		121	YL.	70 - 130
			1,4-Dichlorobenzene	2019/05/30		87	96.	70 - 130
			Benzene	2019/05/30		93	36	70 - 130
			Bromodichloromethane	2019/05/30		102	76	70 - 130
			Bromafarm	2019/05/30		104	N	70 - 130
			Bromomethane	2019/05/30		100	76	60 - 140
			Carbon Tetrachloride	2019/05/30		105	%	70 - 130
			Chlorobenzene	2019/05/30		92	76	70 - 130
			Chloroethane	2019/05/30		90	14	60 - 140
			Chloroform	2019/05/30		102	76	70 - 130
			Chloromethane	2019/05/30		94	96.	60 - 140
			Dibromochloromethane	2019/05/30		108	76	70 - 130
			Methylene Chloride(Dichloromethane)	2019/05/30		106	×	70 - 130
			Ethylbenzene	2019/05/30		94	%	70 - 130
			Methyl t-butyl ether (MTBE)	2019/05/30		103	34	70 - 130
			Styrene	2019/05/30		99	96	70 - 130
			Tetrachloroethylene	2019/05/30		97	%	70 - 130
			Toluene	2019/05/30		97	%	70 - 130
			Trichloroethylene	2019/05/30		98	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2019/05/30		93	%	60 - 140
			Vinyl Chloride	2019/05/30		91	%	60 - 140
			o-Xylene	2019/05/30		94	%	70 - 130
			p+m-Xylene	2019/05/30		92	76	70 - 130
6148613	ASL	Spiked Blank	4-Bromofluorobenzene	2019/05/30		101	%	70 - 130
			D4-1,2-Dichloroethane	2019/05/30		111	76	70 - 130
			D8-Toluene	2019/05/30		97	56	70 - 130
			1,1-Dichloroethane	2019/05/30		108	96	70 - 130
			1,1-Dichlorgethylene	2019/05/30		113	%	70 - 130
			1,1,1-Trichloroethane	2019/05/30		111	%	70 - 130
			1,1,2-Trichloroethane	2019/05/30		103	96.	70 - 130
			1,1,2,2-Tetrachloroethane 2019/05/30			103	36	70 - 130
		Ethylene Dibromide	2019/05/30		104	*	70 - 130	
			1,2-Dichlorobenzene	2019/05/30		93	14	70 - 130
		1,2-Dichloroethane	2019/05/30		106	%.	70 - 130	
			cis-1,2-Dichloroethylene	2019/05/30		100	96	70 - 130
			trans-1,2-Dichloroethylene	2019/05/30		109	%	70 - 130
			1,2-Dichloropropane	2019/05/30		105	%	70 - 130
			1.3-Dichlorobenzene	2019/05/30		91	%	70 - 130



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			cis-1,3-Dichloropropene	2019/05/30		104	- 14	70 - 130
			trans-1,3-Dichloropropene	2019/05/30		108	%	70 - 130
			1,4-Dichlorobenzene	2019/05/30		90	34	70 - 130
			Benzene	2019/05/30		93	%	70 - 130
			Bromodichloromethane	2019/05/30		101	96	70 - 130
			Bromoform	2019/05/30		99	%	70 - 130
			Bromomethane	2019/05/30		95	96	60 - 140
			Carbon Tetrachloride	2019/05/30		108	96	70 - 130
			Chlorobenzene	2019/05/30		94	%	70 - 130
			Chloroethane	2019/05/30		91	%	60 - 140
			Chloroform	2019/05/30		101	96	70 - 130
			Chloromethane	2019/05/30		92	%	60 - 140
			Dibromochloromethane	2019/05/30		104	%	70 - 130
			Methylene Chloride(Dichloromethane)	2019/05/30		101	%	70 - 130
			Ethylbenzene	2019/05/30		99	96	70 - 130
			Methyl t-butyl ether (MTBE)	2019/05/30		101	%	70 - 130
			Styrene	2019/05/30		102	Y-	70 - 130
			Tetrachloroethylene	2019/05/30		101	16.	70 - 130
			Toluene	2019/05/30		99	%	70 - 130
			Trichloroethylene	2019/05/30		101	%	70 - 130
			Trichlarofluoromethane (FREON 11)	2019/05/30		96	K	60 - 140
			Vinyl Chloride			87		60 - 140
			0.07 1, 87 (2.54) (2.50) (3.50)	2019/05/30		98	% %	70 - 130
			p-Xylene	2019/05/30				
*****	250	44-46-480-4	p+m-Xylene	2019/05/30		96	76	70 - 130
148613	148613 ASL Method Blank	Method Blank	4-Bromafluorobenzene	2019/05/30		98	14	70 - 130
			D4-1,2-Dichloroethane	2019/05/30		111	%	70 - 130
			D8-Toluene	2019/05/30	100	100	36.	70 - 130
			1,1-Dichloroethane	2019/05/30	ND, RDL=2.0		ug/L	
			1,1-Dichloroethylene	2019/05/30	ND, RDL=0.50		ug/L	
			1,1,1-Trichloroethane	2019/05/30	ND, RDL=1.0		ug/t	
			1,1,2-Trichloroethane	2019/05/30	ND, RDL=1.0		ug/L	
			1,1,2,2-Tetrachloroethane	2019/05/30	ND, RDL=0.50		ug/L	
			Ethylene Dibromide	2019/05/30	ND, RDL=0.20		ug/L	
			1,2-Dichlorobenzene	2019/05/30	ND, RDL=0.50		ug/L	
			1,2-Dichloroethane	2019/05/30	ND, RDL=1.0		ug/L	
			cis-1,2-Dichloroethylene	2019/05/30	ND, RDL=0.50		ug/L	
			trans-1,2-Dichloroethylene	2019/05/30	ND, RDL=0.50		ug/L	
			1,2-Dichloropropane	2019/05/30	ND, RDL=0.50		ug/t	
			1,3-Dichlorobenzene	2019/05/30	ND, RDL=1.0		ug/L	
			cis-1,3-Dichloropropene	2019/05/30	ND, RDL=0.50		ug/L	
			trans-1,3-Dichloropropene	2019/05/30	ND, RDL=0.50		ug/L	

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
		. seed of particular to the seed of the se	1,4-Dichlorobenzene	2019/05/30	ND, RDL=1.0		ug/L	
			Benzene	2019/05/30	ND, RDL=1.0		ug/L	
			Bromodichloromethane	2019/05/30	ND, RDL=1.0		ug/L	
			Bromoform	2019/05/30	ND, RDL=1.0		ug/L	
			Bromomethane	2019/05/30	ND, RDL=0.50		ug/L	
			Carbon Tetrachloride	2019/05/30	ND, RDL=0.50		ug/L	
			Chlorobenzene	2019/05/30	ND, RDL=1.0		ug/L	
			Chloroethane	2019/05/30	ND, RDL=8.0		ug/L	
			Chloroform	2019/05/30	ND, RDL=1.0		ug/L	
			Chloromethane	2019/05/30	ND, RDL=8.0		ug/L	
			Dibromochloromethane	2019/05/30	ND, RDL=1.0		ug/L	
			Methylene Chloride(Dichloromethane)	2019/05/30	ND, RDL=3.0		ug/L	
			Ethylbenzene	2019/05/30	ND, RDL=1.0		ug/L	
			Methyl t-butyl ether (MTBE)	2019/05/30	ND, RDL=2.0		ug/L	
			Styrene	2019/05/30	ND, RDL=1.0		ug/L	
			Tetrachloroethylene	2019/05/30	ND, RDL=1.0		ug/L	
			Toluene	2019/05/30	ND, RDL=1.0		ug/L	
			Trichloraethylene	2019/05/30	ND, RDL=1.0		ug/L	
			Trichlorofluoromethane (FREON 11)	2019/05/30	ND, RDL=8.0		ug/L	
			Vinyl Chloride	2019/05/30	ND, RDL=0.50		ug/L	
			o-Xylene	2019/05/30	ND, RDL=1.0		ug/L	
			p+m-Xylene	2019/05/30	ND, RDL=2.0		ug/L	
			Total Xylenes	2019/05/30	NO, RDL=1.0		ug/L	
			Total Trihalomethanes	2019/05/30	ND, RDL=1.0		ug/t	
148613	ASL	RPD	1,1-Dichloroethane	2019/05/30	NC		76	40
			1,1-Dichloroethylene	2019/05/30	NC		%	40
			1.1.1-Trichloroethane	2019/05/30	NC		N.	40
			1,1,2-Trichloroethane		NC		%	40
				2019/05/30				
			1,1,2,2-Tetrachioroethane	2019/05/30	NC		76	40
			Ethylene Dibromide	2019/05/30	NC		N	40
			1,2-Dichlorobenzene	2019/05/30	NC		%	40



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,2-Dichloroethane	2019/05/30	NC		- %	40
			cis-1,2-Dichlaroethylene	2019/05/30	NC		%	40
			trans-1,2-Dichloroethylene	2019/05/30	NC		36	40
			1.2-Dichloropropane	2019/05/30	NC		%	40
			1,3-Dichlorobenzene	2019/05/30	NC		%	40
			cis-1,3-Dichloropropene	2019/05/30	NC		%	40
			trans-1,3-Dichloropropene	2019/05/30	NC		96	40
			1,4-Dichlorobenzene	2019/05/30	NC		%	40
			Benzene	2019/05/30	NC		95	40
			Bromodichloromethane	2019/05/30	NC		96	40
			Bromoform	2019/05/30	NC		96	40
			Bromomethane	2019/05/30	NC		%	40
			Carbon Tetrachloride	2019/05/30	NC		%	40
			Chlorobenzene	2019/05/30	NC		%	40
			Chloroethane	2019/05/30	NC		36	40
			Chloroform	2019/05/30	NC		%	40
			Chloromethane	2019/05/30	NC		ν.	40
			Dibromochloromethane	2019/05/30	NC		%	40
			Methylene Chloride(Dichloromethane)	2019/05/30	NC		%	40
			Ethylbenzene	2019/05/30	NC		%	40
			Methyl t-butyl ether (MTBE)	2019/05/30	NC		N	40
			Styrene	2019/05/30	NC		%	40
			Tetrachloroethylene	2019/05/30	NC		%	40
			Toluene	2019/05/30	NC		76	40
			Trichloroethylene	2019/05/30	NC		44	40
			Trichlorofluoromethane (FREON 11)	2019/05/30	NC		36	40
			Vinyl Chloride		NC		36	40
			7.70	2019/05/30			26	40
			o-Xylene	2019/05/30	NC			
			p+m-Xylene	2019/05/30	NC		%	40
			Total Xylenes	2019/05/30	NC		%	40
			Total Trihalomethanes	2019/05/30	NC		34	40
6148620	ZZH	Matrix Spike	Total Chemical Oxygen Demand	2019/05/30		81	%	80 - 120
6148620	ZZH	QC Standard	Total Chemical Oxygen Demand	2019/05/30		103	%	80 - 120
6148620	ZZH	Spiked Blank	Total Chemical Oxygen Demand	2019/05/30		105	%	80 - 120
6148620	ZZH	Method Blank	Total Chemical Oxygen Demand	2019/05/30	ND, RDL=20		mg/L	
6148620	ZZH	RPD	Total Chemical Oxygen Demand.	2019/05/30	12		74	25
6148649	CCR	Matrix Spike	Total Mercury (Hg)	2019/05/31		101	34	80 - 120
6148649	CCR	Spiked Blank	Total Mercury (Hg)	2019/05/31		102	96	80 - 120
6148649	CCR	Method Blank	Total Mercury (Hg)	2019/05/31	ND, RDL=0.013		ug/L	
6148649	CCR	RPD	Total Mercury (Hg)	2019/05/31	NC		%	20
6148701	MLW	QC Standard	Carbonaceous BOD	2019/06/04		111	%	80 - 120
6148701	MLW	Spiked Blank	Carbonaceous BOD	2019/06/04		138 (1)	%	80 - 120
6148701	MLW	Method Blank	Carbonaceous BOD	2019/06/04	ND, RDL=2.0	00/25/20//	mg/L	DEN HER FO
6149701	****	PDG.	Carbonaceous BOD	2010/04/04			44	25
6148701	WFM	RPD	Isobutylbenzene - Extractable	2019/06/04	3.5	.00	%	25
6148915	BCD	Matrix Spike		2019/05/30		92	76	70 - 130
			n-Dotriacontane - Extractable	2019/05/30		117	%	70 - 130
			>C10-C16 Hydrocarbons	2019/05/30		96	76	70 - 130
			>C16-C21 Hydrocarbons	2019/05/30		87	N	70 - 130
******		Carconal Carlos Anno Company	>C21- <c32 hydrocarbons<="" td=""><td>2019/05/30</td><td></td><td>98</td><td>%</td><td>70 - 130</td></c32>	2019/05/30		98	%	70 - 130
6148915	BCD	Spiked Blank	Isobutylbenzene - Extractable	2019/05/30		92	%	70 - 130
			n-Dotriacontane - Extractable	2019/05/30		115	96	70 - 130



QA/QC		(285)	Q	34 543 6	10.00	39		
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			>C10-C16 Hydrocarbons	2019/05/30		111	74	70 - 130
			>C16-C21 Hydrocarbons	2019/05/30		101	76	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/30</td><td></td><td>115</td><td>34</td><td>70 - 130</td></c32>	2019/05/30		115	34	70 - 130
6148915	BCD	Method Blank	Isobutylbenzene - Extractable	2019/05/30		90	%	70 - 130
			n-Dotriacontane - Extractable	2019/05/30		105	%	70 - 130
			>C10-C16 Hydrocarbons	2019/05/30	ND. RDL=0.050		mg/L	
			>C16-C21 Hydrocarbons	2019/05/30	ND, RDL=0.050		rng/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/30</td><td>ND, RDL=0.10</td><td></td><td>mg/L</td><td></td></c32>	2019/05/30	ND, RDL=0.10		mg/L	
6148915	BCD	RPD	>C10-C16 Hydrocarbons	2019/05/30	NC		16.	40
			>C16-C21 Hydrocarbons	2019/05/30	11.		%	40
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/30</td><td>NC</td><td></td><td>76</td><td>40</td></c32>	2019/05/30	NC		76	40
5148971	BAN	Matrix Spike	Total Aluminum (Al)	2019/05/31		103	56	80 - 120
		Construction Property	Total Antimony (Sb)	2019/05/31		110	76	80 - 120
			Total Arsenic (As)	2019/05/31		98	34	80 - 120
			Total Barium (Ba)	2019/05/31		102	76	80 - 120
			Total Beryllium (Be)	2019/05/31		100	%	80 - 120
			Total Bismuth (Bi)	2019/05/31		104	%	80 - 120
			Total Boron (B)	2019/05/31		NC	%	80 - 120
			Total Cadmium (Cd)	2019/05/31		98	96	80 - 120
			Total Calcium (Ca)	2019/05/31		106	96	80 - 120
			Total Chromium (Cr)	2019/05/31		97	96	80 - 120
			Total Cobalt (Co)	2019/05/31		100	%	80 - 120
			Total Copper (Cu)	2019/05/31		98	36	80 - 120
			Total fron (Fe)	2019/05/31		106		80 - 120
			Total Lead (Pb)	1 TARAGED (1994)		104	%	80 - 120
				2019/05/31			74	
			Total Magnesium (Mg)	2019/05/31		110	96.	80 - 120
			Total Manganese (Mn)	2019/05/31		101	96	80 - 120
			Total Molybdenum (Mo)	2019/05/31		105	%	80 - 120
			Total Nickel (Ni)	2019/05/31		102	%	80 - 120
			Total Phosphorus (P)	2019/05/31		104	%	80 - 120
			Total Potassium (K)	2019/05/31		104	96	80 - 120
			Total Selenium (Se)	2019/05/31		96	76	80 - 120
			Total Silver (Ag)	2019/05/31		101	76.	80 - 120
			Total Sodium (Na)	2019/05/31		NC.	26.	80 - 120
			Total Strontium (Sr)	2019/05/31		103	96	80 - 120
			Total Thallium (TI)	2019/05/31		105	%	80 - 120
			Total Tin (Sn)	2019/05/31		105	76	80 - 120
			Total Titanium (Ti)	2019/05/31		99	%	80 - 120
			Total Uranium (U)	2019/05/31		113	76	80 - 120
			Total Vanadium (V)	2019/05/31		101	%	80 - 120
			Total Zinc (Zn)	2019/05/31		100	76	80 - 120
6148971	BAN	Spiked Blank	Total Aluminum (Al)	2019/05/31		101	34	80 - 120
			Total Antimony (5b)	2019/05/31		107	76	80 - 120
			Total Arsenic (As)	2019/05/31		99	94	80 - 120
			Total Barlum (Ba)	2019/05/31		100	%	80 - 120
			Total Beryllium (Be)	2019/05/31		99	36	80 - 120
			Total Bismuth (Bi)	2019/05/31		105	76	80 - 120
			Total Boron (B)	2019/05/31		98	%	80 - 120
			Total Cadmium (Cd)	2019/05/31		96	16	80 - 120
			Total Calcium (Ca)	2019/05/31		107	%	80 - 120
			Total Chromium (Cr)	2019/05/31		99	96	80 - 120



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
- HARRIS			Total Cobalt (Co)	2019/05/31	A 200 Mark	101	76	80 - 12
			Total Copper (Cu)	2019/05/31		99	%	80 - 12
			Total iron (Fe)	2019/05/31		107	36	80 - 120
			Total Lead (Pb)	2019/05/31		103	%	80 - 12
			Total Magnesium (Mg)	2019/05/31		110	%	80 - 120
			Total Manganese (Mn)	2019/05/31		102	%	80 - 120
			Total Molybdenum (Mo)	2019/05/31		102	%	80 - 120
			Total Nickel (Ni)	2019/05/31		99	%	80 - 120
			Total Phosphorus (P)	2019/05/31		105	%	80 - 120
			Total Potassium (K)	2019/05/31		102	%	80 - 120
			Total Selenium (Se)	2019/05/31		97	%	80 - 120
			Total Silver (Ag)	2019/05/31		100	%	80 - 120
			Total Sodium (Na)	2019/05/31		102	%	80 - 120
			Total Strontium (Sr)	2019/05/31		106	%	80 - 120
			Total Thallium (TI)	2019/05/31		107	36	80 - 120
			Total Tin (Sn)	2019/05/31		106	%	80 - 120
			Total Titanium (Ti)	2019/05/31		98	%.	80 - 120
			Total Uranium (U)	2019/05/31		113	96.	80 - 120
			Total Vanadium (V)	2019/05/31		102	%	80 - 120
			Total Zinc (Zn)	2019/05/31		101	%	80 - 120
148971 BAN	BAN	Method Blank	Total Aluminum (AI)	2019/05/31	ND, RDL=5.0		ug/L	1972, 4757
			Total Antimony (Sb)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Arsenic (As)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Barium (Ba)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Beryllium (Be)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Bismuth (Bi)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Boron (B)	2019/05/31	ND, RDL=50		ug/t	
			Total Cadmium (Cd)	2019/05/31	ND. RDL=0.010		ug/L	
			Total Calcium (Ca)	2019/05/31	ND, RDL=100		ug/t	
			Total Chromium (Cr)	2019/05/31	ND, RDL=1.0		ug/t	
			Total Cobalt (Co)	2019/05/31	ND, RDL=0.40		ug/L	
	Total Copper (Cu)	Total Copper (Cu)	2019/05/31	ND, RDL=0.50		ug/L		
		Total Iron (Fe)	Total Iron (Fe)	2019/05/31	ND, RDL=50		ug/L	
			Total Lead (Pb)	2019/05/31	ND, RDL=0.50		ug/t	
			Total Magnesium (Mg)	2019/05/31	ND, RDL=100		ug/L	
			Total Manganese (Mn)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Molybdenum (Mo)	2019/05/31	ND, RDL=2.0		ug/L	

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Total Nickel (Ni)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Phosphorus (P)	2019/05/31	ND, RDL=100		ug/L	
			Total Potassium (K)	2019/05/31	ND, RDL=100		ug/L	
			Total Selenium (Se)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Silver (Ag)	2019/05/31	ND, RDL=0.10		ug/t	
			Total Sodium (Na)	2019/05/31	ND, RDL=100		ug/L	
			Total Strontium (Sr)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Thallium (TI)	2019/05/31	ND, RDL=0.10		ug/L	
			Total Tin (Sn)	2019/05/31	ND, RDL=2.0		ug/t	
			Total Titanium (Ti)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Uranium (U)	2019/05/31	ND, RDL=0.10		ug/L	
			Total Vanadium (V)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Zinc (Zn)	2019/05/31	ND, RDL=5.0		ug/L	
5148971	BAN	RPD	Total Aluminum (Al)	2019/05/31	4.3		%	20
5151063	AM6	QC Standard	Total Suspended Solids	2019/06/03	2.07411	100	16	80 - 12
5151063	AM6	Method Blank	Total Suspended Solids	2019/06/03	ND, RDL=1.0		mg/L	
5151063	AM6	RPO	Total Suspended Solids	2019/06/03	0		14	20
151065	LGE	Matrix Spike	D10-Anthracene	2019/06/01		90	%	50 - 130
		VANCASANTA SA	D14-Terphenyl	2019/06/01		70 (2)	36	50 - 136
			D8-Acenaphthylene	2019/06/01		85	96	50 - 130
			1-Methylnaphthalene	2019/06/01		81	%	50 - 130
			2-Methylnaphthalene	2019/06/01		84	%	50 - 130
			Acenaphthene	2019/06/01		87	36	50 - 130
			Acenaphthylene	2019/06/01		84	%	50 - 130
			Anthracene	2019/06/01		79	96	50 - 130
			Benzo(a)anthracene	2019/06/01		76	%	50 - 130
			Benzo(a)pyrene	2019/06/01		61	96	50 - 130
			Benzo(b)fluoranthene	2019/06/01		75	36	50 - 130
			Benzo(g,h,i)perylene	2019/06/01		36 (3)	96	50 - 130
			Benzo(j)fluoranthene	2019/06/01		60	16	50 - 130
			Benzo(k)fluoranthene	2019/06/01		69	76	50 - 130
			Chrysene	2019/06/01		96	76	50 - 130
			Dibenz(a,h)anthracene	2019/06/01		40 (3)	%	50 - 130
			Fluoranthene	2019/06/01		88	%.	50 - 130
			Fluorene	2019/06/01		95	96	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/06/01		33 (3)	%	50 - 130
			Naphthalene	2019/06/01		84	%	50 - 130
			Perylene	2019/06/01		31 (3)	96.	50 - 130
			Phenanthrene	2019/06/01		96	36	50 - 130
			Pyrene	2019/06/01		86	%	50 - 130
5151065	LGE	Spiked Blank	D10-Anthracene	2019/06/01		105	76	50 - 130



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			D14-Terphenyl	2019/06/01		106	- %	50 - 130
			D8-Acenaphthylene	2019/06/01		100	%	50 - 130
			1-Methylnaphthalene	2019/06/01		93	34	50 - 130
			2-Methylnaphthalene	2019/06/01		95	%	50 - 130
			Acenaphthene	2019/06/01		100	%	50 - 130
			Acenaphthylene	2019/06/01		98	%	50 - 130
			Anthracene	2019/06/01		93	96	50 - 130
			Benzo(a)anthracene	2019/06/01		86	96	50 - 130
			Benzo(a)pyrene	2019/06/01		94	%	50 - 130
			Benzo(b)fluoranthene	2019/06/01		106	%	50 - 130
			Benzo(g,h,i)perylene	2019/06/01		96	96	50 - 130
			Benzo(j)fluoranthene	2019/06/01		95	%	50 - 130
			Benzo(k)fluoranthene	2019/06/01		101	%	50 - 130
			Chrysene	2019/06/01		107	96	50 - 130
			Dibenz(a,h)anthracene	2019/06/01		96	34	50 - 130
			Fluoranthene	2019/06/01				
			Fluorente Fluorente			99	%	50 - 130
			1913 1 period	2019/06/01		109	%.	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/06/01		94	96.	50 - 130
			Naphthalene	2019/06/01		95	36	50 - 130
			Perylene	2019/06/01		90	*	50 - 130
			Phenanthrene	2019/06/01		111	N	50 - 130
			Pyrene	2019/06/01		98	76	50 - 130
151065	LGE	Method Blank	D10-Anthracene	2019/06/01		108	%	50 - 130
			D14-Terphenyl 2019/06/01 106	106	76	50 - 130		
			D8-Acenaphthylene	2019/06/01		99	14	50 - 130
			1-Methylnaphthalene	2019/06/01	ND, RDL=0.050		ug/L	
			2-Methylnaphthalene	2019/06/01	ND, RDL=0.050		ug/L	
			Acenaphthene	2019/06/01	ND, RDL=0.010		ug/t	
			Acenaphthylene	2019/06/01	ND, RDL=0.010		ug/L	
			Anthracene	2019/06/01	ND, RDL+0.010		ug/L	
			Benzo(a)anthracene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(a)pyrene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(b)fluoranthene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(g,h,i)perylene 2019/06/01	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(j)fluoranthene	2019/06/01	ND, RDL=0.010		ug/l	
			Benzo(k)fluoranthene	2019/06/01	ND, RDL=0.010		ug/L	
			Chrysene	2019/06/01	ND, RDL=0.010		ug/L	
			Dibenz(a,h)anthracene	2019/06/01	ND, RDL=0.010		ug/L	
			Fluoranthene	2019/06/01	ND, RDL=0.010		ug/L	
			Fluorene	2019/06/01	ND, RDL=0.010		ug/t	



QA/QC				3 5 7 6				
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Indeno(1,2,3-cd)pyrene	2019/06/01	ND, RDL=0.010		ug/L	
			Naphthalene	2019/06/01	ND, RDL=0.20		ug/L	
			Peryline	2019/06/01	ND, RDL=0.010		ug/L	
			Phenanthrene	2019/06/01	ND, RDL=0.010		ug/L	
			Pyrene	2019/06/01	ND, RDL=0.010		ug/L	
6151065	LGE	RPO	1-Methylnaphthalene	2019/06/01	NC		%	40
1000	777	110	2-Methylnaphthalene	2019/06/01	NC		26	40
			Acenaphthene	2019/06/01	NC		96	40
			Acenaphthylene	2019/06/01	NC.		76	40
			Anthracene	2019/06/01	NC		16.	40
				2019/06/01	NC		26.	40
			Benzo(a)anthracene		NC		26	40
			Benzo(a)pyrene	2019/06/01				
			Benzo(b)fluoranthene	2019/06/01	NC		%	40
			Benzo(g.h,i)perylene	2019/06/01	NC		76	40
			Benzolj)fluoranthene	2019/06/01	NC		96.	40
			Benzo(k)fluoranthene	2019/06/01	NC		96 -	40
			Chrysene	2019/06/01	NC		76	40
			Dibenz(a,h)anthracene	2019/06/01	NC		16	40
			Fluoranthene	2019/06/01	13		%	40
			Fluorene	2019/06/01	NC		96	40
			Indeno(1,2,3-cd)pyrene	2019/06/01	NC		%	40
			Naphthalene	2019/06/01	NC		%	40
			Perylene	2019/06/01	NC		%	40
			Phenanthrene	2019/06/01	NC		36	40
			Pyrene	2019/06/01	12		96	40
6151090	551	Matrix Spike [JVR264-16]	Total Organic Carbon (C)	2019/05/31		96	%	85 - 115
6151090	SSI	Spiked Blank	Total Organic Carbon (C)	2019/05/31		102	%	80 - 120
6151090	SSI	Method Blank	Total Organic Carbon (C)	2019/05/31	ND, RDL=0.50		mg/L	
6151090	SSI	RPD [JVR264-16]	Total Organic Carbon (C)	2019/05/31	6.2		16	15
6151471	NRG	Spiked Blank	Colour	2019/05/31		103	56	80 - 120
6151471	NRG	Method Blank	Colour	2019/05/31	ND, RDL=5.0		TCU	
6151471	NRG	RPD	Colour	2019/05/31	NC		%	20
6153411	THL	Matrix Spike	Isobutylbenzene - Volatile	2019/06/02		90	96	70 - 130
			Benzene	2019/06/02		106	%	70 - 130
			Toluene	2019/06/02		108	96	70 - 130
			Ethylbenzene	2019/06/02		112	96.	70 - 130
			Total Xylenes	2019/06/02		109	96	70 - 130
6153411	THE	Spiked Blank	Isobutylbenzene - Volatile	2019/06/02		103	96	70 - 130
0000000	1020	C-Mission activity	Benzene	2019/06/02		117	%	70 - 130
			Toluene	2019/06/02		118	16	70 - 130
			Ethylbenzene	2019/06/02		118	96	70 - 130
			Total Xylenes	2019/06/02		117	76	70 - 130
6153411	THE	Method Blank	Isobutylbenzene - Volatile	2019/06/02		102	16.	70 - 130
	1616	THE STATE OF THE S	Benzene	2019/06/02	ND, RDL=0.0010	102	mg/L	100
			Toluene	3010/06/03	ND,		madi	
			Toluene	2019/06/02	RDL=0.0010		mg/L	



QA/QC	Levis.	OC Tune	Basamatas	Date Sankard	Makes	Open	TIMUTE	OCT INC
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Ethylbenzene	2019/06/02	ND, RDL=0.0010		mg/L	
			Total Xylenes	2019/06/02	ND, RDL=0.0020		mg/L	
			C6 - C10 (less BTEX)	2019/06/02	ND, RDL=0.010		mg/L	
6153411	THE	RPD	Benzene	2019/06/02	NC		%	40
	14,170		Toluene	2019/06/02	NC		16.	40
			Ethylbenzene	2019/06/02	NC		%.	40
			Total Xylenes	2019/06/02	NC		96	40
			C6 - C10 (less BTEX)	2019/06/02	NC		%	40
6153711	SSV	Matrix Spike [JVR264-05]	Total Kjeldahl Nitrogen (TKN)	2019/06/04		104	16	80 - 120
6153711	SSV	QC Standard	Total Kjeldahi Nitrogen (TKN)	2019/06/04		98	%	80 - 120
6153711	SSV	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2019/06/04		103	76	80 - 120
6153711	SSV	Method Blank	Total Kjeldahl Nitrogen (TKN)	2019/06/04	ND.	103	mg/L	00 - 420
		CONTRACTOR CRIME	- or or - with our last a success of regression	PERSONAL PROPERTY.	RDL=0.10			
6153711	SSV	RPD [JVR264-05]	Total Kjeldahl Nitrogen (TKN)	2019/06/04	16	505630.7	36	20
6154440	NRG	Matrix Spike	Total Phosphorus	2019/06/04		123 (4)	%	80 - 120
6154440	NRG	Spiked Blank	Total Phosphorus	2019/06/04		102	%	80 - 120
6154440	NRG	Method Blank	Total Phosphorus	2019/06/04	ND. RDL=0.020		mg/L	
6154440	NRG	RPD	Total Phosphorus	2019/06/04	NC		76	25
6154879	GTO	Matrix Spike	Sulphide	2019/06/03		83	16	80 - 120
6154879	GTO	Spiked Blank	Sulphide	2019/06/03		90	76	80 - 120
6154879	GTO	Method Blank	Sulphide	2019/06/03	ND, RDL=0.020		mg/L	
6154879	GTO	RPD	Sulphide	2019/06/03	NC		76	20
6155176	551	Matrix Spike	Dissolved Organic Carbon (C)	2019/06/04		94	%.	85 - 115
6155176	SSI	Spiked Blank	Dissolved Organic Carbon (C)	2019/06/04		100	96	80 - 120
6155176	SSI	Method Blank	Dissolved Organic Carbon (C)	2019/06/04	ND, RDL=0.50		mg/L	
6155176	SSI	RPD	Dissolved Organic Carbon (C)	2019/06/04	0.90		36	15
6156517	RGE	Matrix Spike	Decachlorobiphenyl	2019/06/05		96	%	30 - 130
			Aroclor 1254	2019/06/05		109	%	70 - 130
6156517	RGE	Spiked Blank	Decachlorobiphenyl	2019/06/05		74	%	30 - 130
	A Section		Aroclor 1254	2019/06/05		103	96	70 - 130
6156517	RGE	Method Blank	Decachlorobiphenyl	2019/06/05		65	96	30 - 130
	13.50	1.11,410,004,8140,01	Arocior 1016	2019/06/05	ND, RDL=0.050		ug/L	2010
			Arocior 1221	2019/06/05	ND, RDL+0.050		ug/t	
			Aroclor 1232	2019/06/05	ND. RDL=0.050		ug/L	
			Aroclor 1248	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1242	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclar 1254	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1260	2019/06/05	NO, RDL=0.050		ug/t	
6156517	RGE	RPD	Aroclor 1016	2019/06/05	NC		%.	40
	-		Arocior 1221	2019/06/05	NC		36	40
			Aroclor 1232	2019/06/05	NC		%	40
			Aroclor 1248	2019/06/05	NC		N	40



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Aroclor 1242	2019/06/05	NC		- 14	40
			Aroclor 1254	2019/06/05	NC		%	40
			Aroclor 1260	2019/06/05	NC		34	40
6156521	BBD	QC Standard	Salinity	2019/06/04		100	%	80 - 120
6156521	BBD	Method Blank	Salinity	2019/06/04	ND, RDL=2.0		N/A	
6156521	BBD	RPD	Salinity	2019/06/04	0		36	25
6156546	NRG	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2019/06/04		105	%	80 - 120
6156546	NRG	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2019/06/04		107	76.	80 - 120
6156546	NRG	Method Blank	Nitrogen (Ammonia Nitrogen)	2019/06/04	ND, RDL=0.050		mg/L	
6156546	NRG	RPD	Nitrogen (Ammonia Nitrogen)	2019/06/04	9.2		96	20
6157072	AM6	QC Standard	Volatile Suspended Solids	2019/06/04		98	%	80 - 120
6157072	AM6	Method Blank	Volatile Suspended Solids	2019/06/04	ND, RDL=2.0		mg/L	
6157072	AM6	RPD	Volatile Suspended Solids	2019/06/04	9.5		16	25
6157791	883	Matrix Spike	Total Nitrogen (N)	2019/06/03		101	34	80 - 120
6157791	883	Spiked Blank	Total Nitrogen (N)	2019/06/03		99	76	80 - 120
6157791	883	Method Blank	Total Nitrogen (N)	2019/06/03	ND, RDL=0.020		mg/L	
6157791	883	RPD	Total Nitrogen (N)	2019/06/03	3.0		16	20
6158767	EMT	QC Standard	pH	2019/06/05		101	36	97 - 103
5158767	EM7	RPD	pH	2019/06/05	1.7		%	N/A
6158768	EMT	Spiked Blank	Conductivity	2019/06/05		106	16.	80 - 120
6158768	EMT	Method Blank	Conductivity	2019/06/05	110, RDL=1.0		uS/cm	
6158768	EMT	RPD	Conductivity	2019/06/05	0.94		96	10
6158813	EMT	QC Standard	Turbidity	2019/06/05		105	%	88 - 120
6158813	EMT	Spiked Blank	Turbidity	2019/06/05		97	%	80 - 120
6158813	EMT	Method Blank	Turbidity	2019/06/05	ND, RDL=0.10		NTU	
6158813	EMT	RPD	Turbidity	2019/06/05	37 (5)		%	20
6158831	SRM	Matrix Spike	Total Alkalinity (Total as CaCO3)	2019/06/06	2.000	NC	76	80 - 120
6158831	SRM	Spiked Blank	Total Alkalinity (Total as CaCO3)	2019/06/05		103	%	80 - 120
6158831	SRM	Method Blank	Total Alkalinity (Total as CaCO3)	2019/06/05	ND, RDL=5.0		mg/L	
6158831	SRM	RPD	Total Alkalinity (Total as CaCO3)	2019/06/06	2.5		96	25
6158832	SRM	Matrix Spike	Dissolved Chloride (CI-)	2019/06/05		99	95	80 - 120
6158832	SRM	Spiked Blank	Dissolved Chloride (CI-)	2019/06/05		99	%	80 - 120
6158832	SRM	Method Blank	Dissolved Chloride (CI-)	2019/06/05	ND, RDL=1.0		mg/L	
6158832	SRM	RPD	Dissolved Chloride (CI-)	2019/06/05	2.4		16	25
6158834	SRM	Matrix Spike	Dissolved Sulphate (\$O4)	2019/06/05	57554	100	96	80 - 120
6158834	SRM	Spiked Blank	Dissolved Sulphate (SO4)	2019/06/05		99	76	80 - 120
6158834	SRM	Method Blank	Dissolved Sulphate (SO4)	2019/06/05	ND, RDL=2.0		mg/L	
6158834	SRM	RPD	Dissolved Sulphate (SO4)	2019/06/05	6.4		76	25
6158837	SRM	Matrix Spike	Reactive Silica (SiO2)	2019/06/06		NC	%	80 - 120
6158837	SRM	Spiked Blank	Reactive Silica (SiO2)	2019/06/06		98	14	80 - 120
6158837	SRM	Method Blank	Reactive Silica (SiO2)	2019/06/06	ND, RDL=0.50	1 077	mg/L	2016352
6158837	SRM	RPD	Reactive Silica (SiO2)	2019/06/06	4.8		%	25
6158838	SRM	Matrix Spike	Orthophosphate (P)	2019/06/05	100000	95	16	80 - 120
6158838	SRM	Spiked Blank	Orthophosphate (P)	2019/06/05		94	96	80 - 120



QA/QC		244	2	3 7 7 2	1000		*******	and a
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
6158838	SRM	Method Blank	Orthophosphate (P)	2019/06/05	ND, RDL=0.010		mg/L	
6158838	SRM	RPD	Orthophosphate (P)	2019/06/05	1.8		96	25
6158840	SRM	Matrix Spike	Nitrate + Nitrite (N)	2019/06/05		101	%	80 - 120
6158840	SRM	Spiked Blank	Nitrate + Nitrite (N)	2019/06/05		93	%	80 - 120
6158840	SRM	Method Blank	Nitrate + Nitrite (N)	2019/06/05	ND,		mg/L	
					RDL=0.050			
6158840	SRM	RPD	Nitrate + Nitrite (N)	2019/06/05	NC		14	25
6158842	SRM	Matrix Spike	Nitrite (N)	2019/06/05		45 (6)	%	80 - 120
6158842	SRM	Spiked Blank	Nitrite (N)	2019/06/05		99	34	80 - 120
6158842	SRM	Method Blank	Nitrite (N)	2019/06/05	ND, RDL=0.010		mg/L	
6158842	SRM	RPD	Nitrite (N)	2019/06/05	NC		%	20
6160103	BKE	Matrix Spike	Total Cyanide (CN)	2019/06/08		92	76	80 - 120
5160103	BKE	Spiked Blank	Total Cyanide (CN)	2019/06/08		100	%	80 - 120
6160103	BKE	Method Blank	Total Cyanide (CN)	2019/06/08	ND, RDL=0.0050		mg/L	
6160103	BKE	RPD	Total Cyanide (CN)	2019/06/08	NC -		%	20
6165901	KD9	Matrix Spike	Dissolved Chlorate (CIO3-)	2019/05/31		94	%	80 - 120
			Dissolved Chlorate (CIO3-)	2019/05/31		94	%	80 - 120
			Dissolved Chlorate (CIO3-)	2019/05/31		94	%	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		92	96	80 - 120
			Dissalved Chlorite (CLO2-)	2019/05/31		92	%	80 - 120
			Dissolved Chlarite (CLO2-)	2019/05/31		92	76	80 - 120
6165901	KD9	Spiked Blank	Dissolved Chlorate (ClO3-)	2019/05/31		88	%	80 - 120
			Dissolved Chlorate (CIO3-)	2019/05/31		88	96	80 - 120
			Dissolved Chlorate (CIO3-)	2019/05/31		88	%	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		85	16	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		85	%	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		85	76	80 - 120
6165901	KD9	Method Blank	Dissolved Chlorate (CIO3-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorate (CIO3-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorate (CIO3-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorite (CLO2-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlarite (CLO2-)	2019/05/31	ND, RDL=0.10		mg/L	
	_	70000	Dissalved Chlorite (CLO2-)	2019/05/31	ND, RDL=0.10		mg/L	
6170521	OBC	Spiked Blank	C13-1234678 HeptaCDD	2019/06/11		123	96	30 - 130
			C13-1234678 HeptaCDF	2019/06/11		99	%	30 - 130
			C13-123678 HexaCDD	2019/06/11		127	16	30 - 130
			C13-123678 HexaCDF	2019/06/11		88	%	30 - 130
			C13-12378 PentaCDD	2019/06/11		87	76	30 - 130
			C13-12378 PentaCDF	2019/06/11		66	%	30 - 130
			C13-2378 TetraCDD	2019/06/11		92	16	30 - 130
			C13-2378 TetraCDF	2019/06/11		80	34	30 - 130
			C13-OCDD	2019/06/11		116	76	30 - 130
			2,3,7,8-Tetra CDD	2019/06/11		90	N	80 - 140
			1,2,3,7,8-Penta CDD	2019/06/11		100	1/6	80 - 140
			1,2,3,4,7,8-Hexa CDD	2019/06/11		85	%	80 - 140



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
posen	mue.	Sec. 1 fire	1.2,3,6,7,8-Hexa CDD	2019/06/11	Turke	97	76	80 - 140
			1,2,3,7,8,9-Hexa CDD	2019/06/11		93	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2019/06/11		85	34	80 - 140
			Octa CDD	2019/06/11		81	%	80 - 140
			2,3,7,8-Tetra CDF	2019/06/11		101	%	80 - 140
			1,2,3,7,8-Penta CDF	2019/06/11		126	%	80 - 140
			2,3,4,7,8-Penta CDF	2019/06/11		119	96	80 - 140
			1,2,3,4,7,8-Hexa CDF	2019/06/11		113	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2019/06/11		120	96	80 - 140
			2,3,4,6,7,8-Hexa CDF	2019/06/11		123	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2019/06/11		122	96	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2019/06/11		105	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2019/06/11		99	76	80 - 140
			Octa CDF	2019/06/11		86	%	80 - 140
170521	OBC	RPD	2,3,7,8-Tetra CDD	2019/06/12	4.3	08	96	35
			1, 2, 3, 7, 8-Penta CDD	2019/06/12	12		%	35
			1,2,3,4,7,8-Hexa CDD	2019/06/12	9.0		76.	35
			1,2,3,6,7,8-Hexa CDD	2019/06/12	1.0		96.	35
			1,2,3,7,8,9-Hexa CDD	2019/06/12	8.2		96	35
			1,2,3,4,6,7,8-Hepta CDD	2019/06/12	28		%	35
			Octa CDD	2019/06/12	Ō		76	35
			2,3,7,8-Tetra CDF	2019/06/12	16		%	35
			1,2,3,7,8-Penta CDF	2019/06/12	3.1		%	35
			2,3,4,7,8-Penta CDF	2019/06/12	14		76	35
			1,2,3,4,7,8-Hexa CDF	2019/06/12	2.6		74	35
			1,2,3,6,7,8-Hexa CDF	2019/06/12	0		%	35
			2,3,4,6,7,8-Hexa CDF	2019/06/12	4.8		36	35
			1,2,3,7,8,9-Hexa CDF	2019/06/12	2.5		%	35
			1,2,3,4,6,7,8-Hepta CDF	2019/06/12	4.7		%	35
			1,2,3,4,7,8,9-Hepta CDF	2019/06/12	1.0		%	35
			Octa CDF	2019/06/12	0		36	35
170521	OBC	Method Blank	C13-1234678 HeptaCDD	2019/06/12		107	%	30 - 130
			C13-1234678 HeptaCDF	2019/06/12		96	%	30 - 130
			C13-123678 HexaCDD	2019/06/12		118	%	30 - 130
			C13-123678 HexaCDF	2019/06/12		82	96	30 - 130
			C13-12378 PentaCDD	2019/06/12		77	96	30 - 130
			C13-12378 PentaCDF	2019/06/12		61	35	30 - 130
			C13-2378 TetraCDD	2019/06/12		85	96.	30 - 130
			C13-2378 TetraCDF	2019/06/12		79	96	30 - 130
			C13-OCOD	2019/06/12		113	%	30 - 130
			2,3,7,8-Tetra CDD	2019/06/12	ND, EDL=1.08		pg/L	
			1,2,3,7,8-Penta CDD	2019/06/12	ND, EDL=1.10		pg/t	
			1,2,3,4,7,8-Hexa CDD	2019/06/12	ND, EDL=1.18		pg/L	
			1,2,3,6,7,8-Hexa CDD	2019/06/12	ND, EDL=1.02		pg/L	
			1,2,3,7,8,9-Hexa CDD	2019/06/12	ND, EDL=0.995		pg/L	
			1,2,3,4,6,7,8-Hepta CDD	2019/06/12	ND, EDL=1.13		pg/L	
			Octa CDD	2019/06/12	ND, EDL=1.16 (7)		pg/L	

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
posen	nue	Sec. (Spe	Total Tetra CDD	2019/06/12	ND,	HELDYGIY	pg/L	300 1011110
					EDL=1.08			
			Total Penta CDD	2019/06/12	ND, EDL=1.10		pg/t	
			Total Hexa CDD	2019/06/12	ND,		pg/L	
			Total Nexa CDO	2013/100/12	EDL=1.13 (7)		PRIT	
			Total Hepta CDD	2019/06/12	ND,		pg/L	
			in william nam.		EDL=1.13		F-64	
			2,3,7,8-Tetra CDF	2019/06/12	ND,		pg/t	
					EDL=1.18			
			1,2,3,7,8-Penta CDF	2019/06/12	ND.		pg/L	
					EDL=1.18			
			2,3,4,7,8-Penta CDF	2019/06/12	NO,		pg/L	
				7 A 2110 M 2 100	EDL=1.19		ECO-STATE	
			1,2,3,4,7,8-Hexa CDF	2019/06/12	ND,		pg/L	
			122620000000000000000000000000000000000	2010/06/12	EDL=1.13			
			1,2,3,6,7,8-Hexa CDF	2019/06/12	ND, EDL=0.939		pg/t	
			2,3,4,6,7,8-Hexa CDF	2019/06/12	ND,		pg/L	
			A.S. A.O. F. G. FIELD COT.	2015/00/12	EDL=1.06		PR1 c	
			1,2,3,7,8,9-Hexa CDF	2019/06/12	ND,		pg/L	
				Demonstrated Contract	EDL=1.18		1.01	
			1,2,3,4,6,7,8-Hepta CDF	2019/06/12	ND,		pg/L	
					EDL=1.09			
			1,2,3,4,7,8,9-Hepta CDF	2019/06/12	ND,		pg/L	
					EDL=1.24			
			Octa CDF	2019/06/12	ND,		pg/L	
					EDL=1.16			
			Total Tetra CDF	2019/06/12	ND,		pg/t	
			water market and	2010/05/22	EDL=1.18		0.255W	
			Total Penta CDF	2019/06/12	ND, EDL=1.19		pg/L	
			Total Hexa CDF	2019/06/12	ND,		pg/L	
			Total flexa Cur	2013/00/12	EDL=1.07		PB/ C	
			Total Hepta CDF	2019/06/12	ND,		pg/L	
			A111-11100-111	18 14 15 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	EDL=1.16		6.00	
172547	123	Matrix Spike	9,10-Dichlorostearic acid	2019/06/01		96	%	50 - 130
		ASSOCIABLE DIO	Decanoic Acid (C10)	2019/06/01		90	%	50 - 130
			Docosanoic acid (C22)	2019/06/01		85	.96	50 - 130
			Dodecanoic acid (C12)	2019/06/01		92	76	50 - 130
			Eicosannic acid (C20)	2019/06/01		98	%	50 - 130
			Hexadecanoic acid (C16)	2019/06/01		85	%	50 - 130
			Linoleic acid (C18:2)	2019/06/01		87	%	50 - 130
			Linolenic acid (C18:3)	2019/06/01		94	%	50 - 130
			Octadecanoic acid (C18)	2019/06/01		94	74	50 - 130
			Oleic acid (C18:1)	2019/06/01		92	%	50 - 130
			Tetradecanoic acid (C14)	2019/06/01		91	96.	50 - 130
			Undecanoic acid (C11)	2019/06/01		102	96	50 - 130
			12,14-Dichlorodehydroabietic acid	2019/06/01		111	74	50 - 130
			12-Chlorodehydroabletic acid	2019/06/01		106	%	50 - 130
			14-Chlorodehydroabietic acid	2019/06/01		111	94	50 - 130
			Abietic acid	2019/06/01		NC	%	50 - 130
			Dehydroabletic acid	2019/06/01		NC	%	50 - 130
			isopimaric acid	2019/06/01		NC	36.	50 - 130
			Neoabietic acid	2019/06/01		68	16	50 - 130



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
paren	inte	систуре	Palustric acid	2019/06/01	value	67		50 - 130
			Pimaric acid	2019/06/01		102	%	50 - 130
			Sandaracopimaric acid	2019/06/01		101	36	50 - 130
5172547	123	Spiked Blank	9.10-Dichlorostearic acid	2019/06/01		94	%	50 - 130
one entere	A.C.	Spince biann	Decanoic Acid (C10)	2019/06/01		94	%	50 - 130
			Docosanoic acid (C22)	2019/06/01		88	%	50 - 130
			Dodecanoic acid (C12)	2019/06/01		94	96	50 - 130
			Eicosanoic acid (C20)	2019/06/01		96	%	50 - 130
			Hexadecanoic acid (C16)	2019/06/01		99	96	50 - 130
			Linoleic acid (C18:2)	2019/06/01		89	96	50 - 130
			Linolenic acid (C18:3)	2019/06/01		86	%	50 - 130
			Octadecanoic acid (C18)	2019/06/01		105	%	50 - 130
			Oleic acid (C18:1)	2019/06/01		99	%	50 - 130
			Tetradecanoic acid (C14)	2019/06/01		94	%	50 - 130
			Undecanoic acid (C11)	2019/06/01		103	34	50 - 130
			12,14-Dichlorodehydroabietic acid	2019/06/01		114	*	50 - 130
			12-Chlorodehydroabietic acid	2019/06/01		108	N.	50 - 130
			14-Chlorodehydroabletic acid	2019/06/01		110	26.	50 - 130
			Abietic acid	2019/06/01		94	%	50 - 130
			Dehydroabletic acid	2019/06/01		128	%	50 - 130
			Isopimaric acid	2019/06/01		115		50 - 130
			Neoabietic acid	2019/06/01		63	% %	50 - 130
			Palustric acid	2019/06/01		74	36	50 - 130
			Pirmaric acid	2019/06/01		107		50 - 130
			Sandaracopimaric acid	2019/06/01		105	76	50 - 130
6172547	123	Method Blank			14170	103		30 - 130
51/254/	123	Method blank	Total Fatty Acids	2019/06/01	ND, RDL=0.072		mg/L	
			Total Resin Acids	2019/06/01	ND, RDL=0.060		mg/L	
			9,10-Dichlorostearic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Decanoic Acid (C10)	2019/06/01	ND, RDL=0.0060		mg/L	
			Docosanoic acid (C22)	2019/06/01	ND, RDL=0.0060		mg/L	
			Dodecanoic acid (C12)	2019/06/01	ND, RDL=0.0060		mg/L	
			Eicosanoic acid (C20)	2019/06/01	ND, RDL=0.0060		mg/L	
			Hexadecanoic acid (C16)	2019/06/01	ND, RDL=0.0060		mg/L	
			Linoleic acid (C18:2)	2019/06/01	ND, RDL=0.0060		mg/L	
			Linolenic acid (C18:3)	2019/06/01	ND, RDL=0.0060		mg/L	
			Octadecanoic acid (C18)	2019/06/01	ND, RDL=0.0060		mg/L	
			Oleic acid (C18:1)	2019/06/01	ND, RDL=0.0060		mg/L	
			Tetradecanoic acid (C14)	2019/06/01	ND, RDL=0.0060		mg/L	
			Undecanoic acid (C11)	2019/06/01	ND, RDL=0.0060		mg/L	
			12,14-Dichlorodehydroabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			12-Chlorodehydroabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			14-Chlorodehydroabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Abietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Dehydroabletic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Isopimaric acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Neoabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Palustric acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Pimaric acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Sandaracopimaric acid	2019/06/01	ND, RDL=0.0060		mg/L	
172547	123	RPD	Total Fatty Acids	2019/06/01	NC		76	:30
			Total Resin Acids	2019/06/01	NC		%	30
			9,10-Dichlorostearic acid	2019/06/01	NC		36	30
			Decanoic Acid (C10)	2019/06/01	NC		14.	30
			Docosanoic acid (C22)	2019/06/01	NC		36	30
			Dodecanoic acid (C12)	2019/06/01	NC		96	30
			Eicosanoic acid (C20)	2019/06/01	NC		%	30
			Hexadecanoic acid (C16)	2019/06/01	NC		%	30
			Linoleic acid (C18:2)	2019/06/01	NC		%	30
			Linolenic acid (C18:3)	2019/06/01	NC		76	30
			Octadecanoic acid (C18)	2019/06/01	NC		N.	30
			Oleic acid (C18:1)	2019/06/01	NC		16	30
			Tetradecanoic acid (C14)	2019/06/01	NC		%	30
			Undecanoic acid (C11)	2019/06/01	NC		76	30
			12,14-Dichlorodehydroabietic acid	2019/06/01	NC		16	30
			12-Chlorodehydroabietic acid	2019/06/01	NC		%	30
			14-Chlorodehydroabietic acid	2019/06/01	NC .		96	30
			Abietic acid	2019/06/01	NC		76	30
			Dehydroabletic acid	2019/06/01	NC		16	30
			Isopimaric acid	2019/06/01	NC		%	30
			Neoabietic acid	2019/06/01	NC		36	30
			Palustric acid	2019/06/01	NC		%	30
			Pimaric acid	2019/06/01	NC		15	30



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC			5 (25) 9 3					
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Sandaracopimaric acid	2019/06/01	NC		- %	30

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference-

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency,

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

- (1) BOD Analysis: Second source QC recovery high. Reference Material recovery and all other QC acceptable.
- (2) PAH sample contained sediment.
- (3) Matrix Spike: results are outside acceptance limit. Probable matrix interference.
- (4) Elevated spike recovery due to sample matrix, result confirmed by repeat analysis.
- (5) Poor duplicate agreement due to sample inhomogeneity, insufficient sample available to confirm results.
- (6) Poor spike recovery due to sample matrix, result confirmed by repeat analysis.
- (7) EMPC / NDR Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.



VALIDATION SIGNATURE PAGE

ed and validated by the following individual(s).

The analytical data and all QC contained in this report were re	viewe
-Ede	
Brad Newman, Scientific Service Specialist	
Teny Wany	
Harry (Peng) Liang, Senior Analyst	
1/prinicafelk	
Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics	
Uk Diacona	
Eric Dearman, Scientific Specialist	
Con Property Service S	
Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist	
White The Galley	
Mike MacGillivray, Scientific Specialist (Inorganics)	
Ich	
Owen Cosby, BSc.C.Chem, Supervisor, HRMS Services	



VALIDATION SIGNATURE PAGE(CONT'D)

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Kosmarie MacDonald	970
Rosemarie MacDonald, Scientific Specialist (Organics	6)
4735	
Rob Reinert, B.Sc., Scientific Specialist	

6V Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Your Project #: 89E4487 Your C.O.C. #: N-A

Attention: BEDFORD CUSTOMER SERVICE

Bureau Veritas Laboratories 200 Bluewater road Bedford, NS CANADA B4B 1G9

Report Date: 2019/06/21

Report #: R2449981 Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: 8920963 Received: 2019/06/01, 09:16

Sample Matrix: Water # Samples Received: 1

	Date	Date		
Analyses	Quantity Extracted	Analyzed	Laboratory Method	Primary Reference
Phenols in Pulp & Paper mill effluents	1 2019/06/0	3 2019/06/0	5 STL SOP-00121	MA.400-Phé 1.0 R3 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Note: All parameters included in the present certificate are accredited by the MELCC unless stated otherwise:



Your Project #: 89E4487 Your C.O.C. #: N-A

Attention: BEDFORD CUSTOMER SERVICE

Bureau Veritas Laboratories 200 Bluewater road Bedford, NS CANADA 84B 1G9

Report Date: 2019/06/21

Report #: R2449981 Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: 8920963 Received: 2019/06/01, 09:16

Encryption Key

Sumin detailless Trajent Manager 71 Jun 3014 [6:05:13

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Sophie Retailfeau, Project Manager Email: Sophie RETAILLEAU@bvlabs.com Phone# (514)448-9001 Ext:7066232

This report has been generated and distributed using a secure automated process.

Lab BV has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025;2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

PHENOLS BY GCMS (WATER)

Lab BV ID		GM5618	-	
Sampling Date		2019/05/24		
CACOMINA DEL COME		13:30		
COC Number		N-A		
	Units	JVR264-13R\CARIBOU SEA WATER CH-BOF 1-1	RDL	QC Batch
PHENOLS				
Total of Regl. P&P Phenols †	ug/L	<10	10	1994633
Phenol	ug/L	<1.0	1.0	1994633
2-Chlorophenol	ug/L	<1.0	1.0	1994633
3-Chlorophenol	ug/L	<1.0	1.0	1994633
4-Chlorophenol	ug/L	<1.0	1.0	1994633
o-Cresol	ug/L	<1.0	1.0	1994633
m-Cresol	ug/L	<1.0	1.0	1994633
p-Cresol	ug/L	<1.0	1.0	1994633
Guaiacol	ug/L	<1.0	1.0	1994633
Catechol	ug/L	<1.0	1.0	1994633
Eugenol	ug/L	<1.0	1.0	1994633
Isoeugenol	ug/L	<1.0	1.0	1994633
6-Chlorovanillin	ug/L	<1.0	1.0	1994633
5,6-Dichlorovanillin	ug/L	<1.0	1.0	1994633
3,4,5-Trichlorosyringol	ug/L	<1.0	1.0	1994633
2,4-Dimethylphenol	ug/L	<1.0	1.0	1994633
2,6-Dichlorophenal	ug/L	<1.0	1.0	1994633
3,5-Dichlorophenol	ug/L	<1.0	1.0	1994633
2,3-Dichlorophenol	ug/L	<1.0	1.0	1994633
3,4-Dichlorophenol	ug/L	<1.0	1.0	1994633
2,4 + 2,5-Dichlorophenol	ug/L	<1.0	1.0	1994633
2-Nitrophenol	ug/L	<2.0	2.0	1994633
4-Nitrophenol	ug/L	<10	10	1994633
2,4,6-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,3,5-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,3,6-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,4,5-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,3,4-Trichlorophenol	ug/L	<1.0	1.0	1994633
3,4,5-Trichlorophenol	ug/L	<1.0	1.0	1994633
4-Chloroguaiacol	ug/L	<1.0	1.0	1994633
4,5-Dichloroguaiacol	ug/L	<1.0	1.0	1994633
4,6-Dichloroguaiacol	ug/L	<1.0	1.0	1994633
	ug/L	<1.0	1.0	1994633



PHENOLS BY GCMS (WATER)

Lab BV ID		GM5618	- 1	
Sampling Date		2019/05/24 13:30		
COC Number		N-A		
	Units	JVR264-13R\CARIBOU SEA WATER CH-BOF 1-1	RDL	QC Batch
2,3,4,6-Tetrachlorophenol	ug/L	<1.0	1.0	1994633
2,3,4,5-Tetrachlorophenol	ug/L	<1.0	1.0	1994633
4-Chlorocatechol	ug/L	<1.0	1.0	1994633
3,5-Dichlorocatechol	ug/L	<1.0	1.0	1994633
4,5-Dichlorocatechol	ug/L	<1.0	1.0	1994633
3,4,5-Trichloroguaiacol	ug/L	<1.0	1.0	1994633
4,5,6-Trichloroguaiacol	ug/L	<1.0	1.0	1994633
Pentachlorophenol	ug/L	<1.0	1.0	1994633
3,4,5-Trichlorocatechol	ug/L	<1.0	1.0	1994633
Tetrachlorocatechol	ug/L	<1.0	1.0	1994633
Tetrachloroguaiacol	ug/L	<1.0	1.0	1994633
4,5-Dichloroveratrol	ug/L	<1.0	1.0	1994633
3,4,5-Trichloroveratrol	ug/L	<1.0	1.0	1994633
3,4,5,6-Tetrachloroveratrol	ug/L	<1.0	1.0	1994633
Surrogate Recovery (%)				
D6-Phenol	%	122	N/A	1994633
Tribromophenol-2,4,6	96	76	N/A	1994633
Trifluoro-m-cresol	%	92	N/A	1994633

N/A = Not Applicable



GENERAL COMMENTS

PHENOLS BY GCMS (WATER)

Un-rounded results are used in the total "Total Phenols (RFPP)" calculation. This total result is then rounded to two significant figures.

The total indicated is calculated only for the requested parameters.

Reported detection limits are modified according to the volume of sample received.

Results relate only to the items tested.



Report Date: 2019/06/21

Bureau Veritas Laboratories Client Project #: B9E4487

QUALITY ASSURANCE REPORT

QA/QC	V2342	CHEROLICA	world contact and	walking anytheres	Water	#40 CARCESTO	1000000	CONTRACT OF THE PARTY OF THE PA
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limit
994633	GDL	Spiked Blank	D6-Phenol	2019/06/04		107	76	50 - 13
			Tribromophenol-2,4,6	2019/06/04		95	14	50 - 13
			Trifluoro-m-cresol	2019/06/04		105	%	50 - 13
			Phenol	2019/06/04		100	96	50 - 13
			Z-Chlorophenol	2019/06/04		95	76.	50 - 13
			3-Chlorophenol	2019/06/04		96	16	50 - 13
			4-Chlorophenol	2019/06/04		99	%	50 - 130
			o-Cresol	2019/06/04		104	36	50 - 130
			m-Cresol	2019/06/04		101	%	50 - 13
			p-Cresol	2019/06/04		101	%	50 - 13
			2,4-Dimethylphenol	2019/06/04		95	%	50 - 130
			2,6-Dichlorophenol	2019/06/04		105	96	50 - 130
			3,5-Dichlorophenol	2019/06/04		95	96	50 - 136
			2,3-Dichlorophenol	2019/06/04		100	%	50 - 130
			3,4-Dichlorophenol	2019/06/04		106	%	50 - 130
			2,4 + 2,5-Dichlorophenol	2019/06/04		100	76	50 - 13
			2-Nitrophenol	2019/06/04		94	%	50 - 13
			4-Nitrophenol	2019/06/04		92	94	50 - 13
			2,4,6-Trichlorophenol	2019/06/04		104	%	50 - 13
			2,3,5-Trichlorophenol	2019/06/04		94	96	50 - 13
			2,3,6-Trichlorophenol	2019/06/04		107	%	50 - 13
			2,4,5-Trichlarophenol	2019/06/04		109	26	50 - 13
			2,3,4-Trichlorophenol	2019/06/04		102	76.	50 - 13
			3,4,5-Trichlorophenol	2019/06/04		108	%	50 - 13
			2,3,5,6-Tetrachlorophenol	2019/06/04		95	76	50 - 13
			2,3,4,6-Tetrachlorophenol	2019/06/04		107	N	50 - 13
			2,3,4,5-Tetrachlorophenol	2019/06/04		96	16	50 - 13
			Pentachlorophenol	2019/06/04		90	%	50 - 13
994633	GDL	Spiked Blank DUP	D6-Phenol	2019/06/04		105	76	50 - 13
			Tribromophenol-2,4,6	2019/06/04		91	14	50 - 13
			Trifluoro-m-cresol	2019/06/04		101	76	50 - 13
			Phenol	2019/06/04		98	96	50 - 13
			Z-Chiorophenol	2019/06/04		93	76	50 - 130
			3-Chlorophenol	2019/06/04		95	14	50 - 130
			4-Chlorophenol	2019/06/04		93	%	50 - 13
			o-Cresol	2019/06/04		102	36	50 - 13
			m-Cresol	2019/06/04		100	%	50 - 13
			p-Cresol	2019/06/04		98	%	50 - 13
			2,4-Dimethylphenol	2019/06/04		91	%	50 - 130
			2,6-Dichlorophenol	2019/06/04		100	36	50 - 13
			3,5-Dichlorophenoi	2019/06/04		91	96	50 - 13
			2,3-Dichlorophenol	2019/06/04		94	96	50 - 13
			3,4-Dichlorophenol	2019/06/04		100	%	50 - 13
			2,4 + 2,5-Dichlorophenol	2019/06/04		96	36	50 - 13
			2-Nitrophenol	2019/06/04		87	%	50 - 130
			4-Nitrophenol	2019/06/04		89	94	50 - 130
			2,4,6-Trichlorophenol	2019/06/04		97	96.	50 - 13
			2,3,5-Trichlorophenol	2019/06/04		87	96	50 - 13
			2,3,6-Trichlorophenol	2019/06/04		98	%	50 - 13
			2,4,5-Trichlorophenol	2019/06/04		104	%	50 - 13
			2,3,4-Trichlorophenol	2019/06/04		95	16	50 - 13
			3,4,5-Trichlorophenol	2019/06/04		95	96	50 - 13
			2,3,5,6-Tetrachlorophenol	2019/06/04		88	%	50 - 13



Report Date: 2019/06/21

Bureau Veritas Laboratories Client Project #: B9E4487

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limit
			2,3,4,6-Tetrachlorophenol	2019/06/04		103	76	50 - 13
			2,3,4,5-Tetrachlorophenol	2019/06/04		92	14	50 - 13
			Pentachlorophenol	2019/06/04		87	76	50 - 13
994633	GDL	Method Blank	D6-Phenol	2019/06/04		99	96	50 - 13
			Total of Regi. P&P Phenois	2019/06/04	<5.0		ug/L	
			Tribromophenol-2,4,6	2019/06/04		91	14	50 - 13
			Trifluoro-m-cresol	2019/06/04		101	76	50 - 13
			Phenol	2019/06/04	< 0.50		ug/L	
			2-Chlorophenol	2019/06/04	< 0.50		ug/L	
			3-Chlorophenol	2019/06/04	<0.50		ug/L	
			4-Chlorophenol	2019/06/04	< 0.50		ug/L	
			o-Cresol	2019/06/04	< 0.50		ug/L	
			m-Cresol	2019/06/04	< 0.50		ug/L	
			p-Cresol	2019/06/04	<0.50		ug/L	
			Gualacol	2019/06/04	< 0.50		ug/L	
			Catechol	2019/06/04	< 0.50		ug/L	
			Eugenol	2019/06/04	< 0.50		ug/L	
			Isoeugenal	2019/06/04	< 0.50		ug/L	
			6-Chlorovanillin	2019/06/04	< 0.50		ug/L	
			5,6-Dichlorovanillin	2019/06/04	< 0.50		ug/L	
			3,4,5-Trichlorosyringol	2019/06/04	< 0.50		ug/L	
			2,4-Dimethylphenol	2019/06/04	<0.50		ug/L	
			2,6-Dichlorophenol	2019/06/04	< 0.50		ug/L	
			3,5-Dichlorophenol	2019/06/04	< 0.50		ug/L	
			2,3-Dichlorophenol	2019/06/04	< 0.50		ug/t	
			3,4-Dichlorophenol	2019/06/04	<0.50		ug/L	
			2,4 + 2,5-Dichlorophenal	2019/06/04	< 0.50		ug/L	
			2-Nitrophenol	2019/06/04	<1.0		ug/L	
			4-Nitrophenol	2019/06/04	<5.0		ug/L	
			2,4,6-Trichlorophenol	2019/06/04	< 0.50		ug/L	
			2,3,5-Trichlorophenol	2019/06/04	< 0.50		ug/L	
			2,3,6-Trichlorophenol	2019/06/04	< 0.50		ug/L	
			2,4,5-Trichlorophenol	2019/06/04	< 0.50		ug/L	
			2,3,4-Trichlorophenol	2019/06/04	< 0.50		ug/L	
			3,4,5-Trichlorophenol	2019/06/04	< 0.50		ug/L	
			4-Chlorogualacol	2019/06/04	< 0.50		ug/L	
			4,5-Dichloroguaiacol	2019/06/04	< 0.50		ug/L	
			4,6-Dichlorogualacol	2019/06/04	< 0.50		ug/L	
			2,3,5,6-Tetrachlorophenol	2019/06/04	< 0.50		ug/L	
			2,3,4,6-Tetrachlorophenol	2019/06/04	< 0.50		ug/L	
			2,3,4,5-Tetrachiorophenoi	2019/06/04	< 0.50		ug/L	
			4-Chlorocatechol	2019/06/04	<0.50		ug/L	
			3.5-Dichlorocatechol	2019/06/04	< 0.50		ug/L	
			4,5-Dichlorocatechol	2019/06/04	<0.50		ug/L	
			3,4,5-Trichloroguaiacol	2019/06/04	<0.50		ug/L	
			4,5,6-Trichloroguaiacol	2019/06/04	<0.50		ug/L	
			Pentachlorophenol	2019/06/04	<0.50		ug/L	
			3,4,5-Trichlorocatechol	2019/06/04	<0.50		ug/L	
			Tetrachlorocatechol	2019/06/04	<0.50		ug/L	
			Tetrachloroguaiacol	2019/06/04	<0.50		ug/L	
			4,5-Dichloroveratrol	2019/06/04	<0.50		ug/L	
			3,4,5-Trichloroveratrol	2019/06/04	<0.50		ug/L	



Report Date: 2019/06/21

Bureau Veritas Laboratories Client Project #: B9E4487

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			3,4,5,6-Tetrachioroveratrol	2019/06/04	< 0.50		ug/L	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

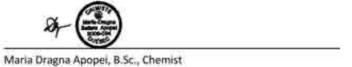
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination,

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



VALIDATION SIGNATURE PAGE

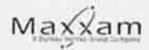
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Lab BV has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005 (E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

CXAM ANALYTICS

200 Bluewater Road Bedford, Nova Scotia, 848 1G9 (902) 420-0203 (902) 420-8612



Northern Pulp N.S. Maxxam PM : Maryann Comean

SUBCONTRACTING REQUEST FORM

10. 00	dford t	o Mon	treal S	ubcontrac			Job#	B9E4487
∏Yes ⊘%				f yes, add copy of Movemen	t Cert., heat treat is	required prior t	o disposal).	
Yes ZNo	Special Pro	stocol (if ye	s, Protocol					
Sample ID			Matrix	Test(s) Required		Container	Date Sampled	Date Required
WR264-13RVC BOF 1-1	ARIBOU SEA	WATER CH-	W	Phenois in Pulp and Pap	er Mili Efficents	Z-DPHI	2019/05/24 13:	30 3019/06/06
	Temp. 1	Temp. 2	Temp. 3					
Cooler #1	-			Custody Seal Present	VES	60		
	3		- (:	Custody Seal Intact	VES	NO		
				Ice Present Upon Receipt	(15)	WO		
boler #2				Custody Seal Present	YES	NO		
				Custody Seal Moset	YES	NO		
				ice Present Upon Receipt	YES	NO		
obler #3				Custody Seal Present	YES	NO		
				Custody Seal Intact	YES	NO		
				sce Present Upon Receipt	VES	NO		
hecewed by (3	ign) S	X0		(print) V-se	pens des	1	Date and Time 2	
SOTES:								09:00
Please ca	I us if due d	ate cannot	be met. Pi	ease reference Sample ID o	n your report.			
Please ad	vise us if you	ur laborato	ry cannot ;	perform the requested ana	lysis or must subc	ontract to a 3rd	party lab	
	A THE SERVICE SHAPE SHAP	ompleted f	orm Clien			A THE RESERVE AND A SECURITY OF A PARTY OF THE PARTY OF T		
CONTRACTOR AND ADDRESS OF THE PARTY OF THE P	u@maxxam		are true arrests	t COC & signed final repor	t to BClientSvcSu	bContr@maxx	am.ca and to	
MComea		.ca	ar my como	t COC & signed final repor				
MComea Reporting Re	quirements	.ca	ar ing arrest	t COC & signed final repor		Jun-19 09:10		
MComea Reporting Re National No	quirements	.ca	array Conta	t COC & signed final repor	01×	Jun-19 09:10		
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MComea Reporting Re National NO	quirements				01- Sophic R	Jun-19 09:16 etailleau		
MComea Reporting Re National NO	quirements:				01- Sophic R	Jun-19 09:10 etailleau 		
MComea Reporting Re National NO Regional	quirements:	892096	3_coc		Sophie R	Jun-19 09:10 etailleau III III III III III 1963		
MComea Reporting Re National NO Regional	guirements: 01 structions dately (highli	892096	3_coc	Ship Cold Ship Room Temp	O1- Sophie R I il I III IIII B920 Shipping Departm	Jun-19 09:10 etailleau III III III D963 ment Checklist ocation s (Paperwork vs	Sottles)	
MComea Reporting Re National No Regional: Shipping In	guirements: 01 structions diately (highli	892096	3_coc	Ship Cold Ship Room Temp	O1- Sophie R I il I II I I I I I I I I I I I I I I I	Jun-19 09:10 etailleau III III III 1963 nent Checklist ocation s (Paperwork vs	Bottles) Tape-custody seal,	
MComea Reporting Re National NO Regional: Shipping In Ship Imme Requires 9 Requires 9	structions diately (highliam at Delivery p next availab	B92096	3_coc	Ship Cold Ship Room Temp Ship France COC Must be Attached	O1- Sophie R I il I III IIII B920 Shipping Departm	Jun-19 09:10 etailleau III III III 1963 nent Checklist ocation s (Paperwork vs	Sottles)	



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant

Your C.O.C. #: 715280-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/06/24

Report #: R5768479 Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89E4914 Received: 2019/05/29, 12:53

Sample Matrix: Water # Samples Received: 1

A-1-1-8-00-10*		Date	Date		THE CORPORATION AND THE
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Reference
Carbonate, Bicarbonate and Hydroxide	1	N/A	2019/06/05		SM 23 4500-CO2 D
Alkalinity	1	N/A	2019/06/05	ATL SOP 00013	EPA 310.2 R1974 m
Benzo(b/j)fluoranthene Sum (water)	1	N/A	2019/06/03	40.7000	Auto Calc.
Carbonaceous BOD	1	2019/05/30	2019/06/04	ATL SOP 00041	SM 23 5210B m
Chloride	1	N/A	2019/06/06	ATL SOP 00014	SM 23 4500-CI- E m
Chemical Oxygen Demand (COD)	1	N/A	2019/05/30	ATL SOP 00042	SM 23 5220D m
Colour	1	N/A	2019/05/31	ATL SOP 00020	SM 23 2120C m
Total Cyanide (1)	1	2019/06/05	2019/06/08	CAM SOP-00457	OMOE E3015 5 m
Organic carbon - Diss (DOC) (6)	1	N/A	2019/06/04	ATL SOP 00203	SM 23 53108 m
Conductance - water	1	N/A	2019/06/05	ATL SOP 00004	SM 23 2510B m
TEH in Water (PIRI)	1	2019/06/06	2019/06/06	ATL SOP 00113	Atl. RBCA v3.1 m
Sulphide as H2S (1)	1	N/A	2019/06/03		
Hardness (calculated as CaCO3)	1	N/A	2019/05/31	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	1	2019/05/31	2019/05/31	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total M5	1	2019/05/30	2019/05/31	ATL SOP 00058	EPA 6020B R2 m
on Balance (% Difference)	1	N/A	2019/06/06	N/A	Auto Calc.
Anion and Cation Sum	1	N/A	2019/06/05	N/A	Auto Calc
Chlorate and Chlorite by IC (2)	1	N/A	2019/06/06	CAL 5OP-00040	SM 23 41100 m
Nitrogen (Total) (3)	1	N/A	2019/06/03	BBY6SOP-00016	SM 22 4500-N C m
Resin and Fatty Acids (2)	1	2019/05/31	2019/06/02	CAL SOP-00099	AE129.0
Nitrogen Ammonia - water	1	N/A	2019/06/04	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2019/06/05	ATL SOP 00016	USGS 1-2547-11m
Nitrogen - Nitrite	1	N/A	2019/06/05	ATL SOP 00017	SM 23 4500-NO2-B r
Nitrogen - Nitrate (as N)	1	N/A	2019/06/06	ATL SOP 00018	ASTM D3867-16
PAH in Water by GC/MS (SIM)	1	2019/05/31	2019/06/01	ATL SOP 00103	EPA 8270E R6 m
PCBs in water by GC/ECD	1	2019/06/04	2019/06/05	ATL SOP 00107	EPA 8082A m
PCB Aroclor sum (water)	1	N/A	2019/06/05		Auto Calc.
Phenois in Pulp and Paper Mill Effluents (4)	1	2019/06/01	2019/06/05	Vo.	
oH (7)	1	N/A		ATL SOP 00003	SM 23 4500-H+ B m
Phosphorus - ortho	1	N/A	2019/06/05	ATL SOP 00021	SM 23 4500-P E m
VPH in Water (PIRI)	1	N/A		ATL SOP 00118	Atl. RBCA v3.1 m



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant

Your C.O.C. #: 715280-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/06/24

Report #: R5768479 Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89E4914 Received: 2019/05/29, 12:53

Sample Matrix: Water # Samples Received: 1

# Samples Received: 1					
Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Salinity (8)	1	N/A	2019/06/04		SM 22 2520B
Sat. pH and Langelier Index (@ 20C)	1	N/A	2019/06/06	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	1	N/A	2019/06/06	ATL SOP 00049	Auto Calc.
Reactive Silica	1	N/A	2019/06/06	ATL SOP 00022	EPA 366.0 m
Sulphate	1	N/A	2019/06/06	ATL SOP 00023	ASTM D516-16 m
Particle Size (Olly W)(Sub from Bedford) (5)	1	2019/06/01	2019/06/17		
Sulphide (1)	1	N/A	2019/06/03	CAM SOP-00455	SM 23 4500-5 G m
Total Dissolved Solids (TDS calc)	1	N/A	2019/06/06	N/A	Auto Calc.
Total Kjeldahl Nitrogen in Water (1)	1	2019/06/01	2019/06/04	CAM SOP-00938	OMOE E3516 m
Organic carbon - Total (TOC) (6)	1	N/A	2019/06/03	ATL SOP 00203	SM 23 53108 m
ModTPH (T1) Calc. for Water	1	N/A	2019/06/07	N/A	Atl. RBCA v3 m
Phosphorus Total Colourimetry	1	2019/06/03	2019/06/04	ATL SOP 00057	EPA 365.1 R2 m
Total Suspended Solids	1	2019/05/31	2019/06/03	ATL SOP 00007	5M 23 2540D m
Turbidity	1	N/A	2019/06/06	ATL SOP 00011	EPA 180.1 R2 m
Volatile Organic Compounds in Water	1	N/A	2019/05/30	ATL SOP 00133	EPA 8260D R4 m
Volatile Suspended Solids	1	N/A	2019/06/04	ATL SOP 00008	EPA 160.4 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant

Your C.O.C. #: 715280-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/06/24

Report #: R5768479 Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89E4914 Received: 2019/05/29, 12:53

dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

- * RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
- (1) This test was performed by Bureau Veritas Laboratories Mississauga
- (2) This test was performed by Bedford to Calgary Offsite
- (3) This test was performed by Bedford to Burnaby Offsite
- (4) This test was performed by Bedford to Montreal Subcontrac
- (5) This test was performed by Bedford to Lex Subcontract
- (6) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.
- (7) The APHA Standard Method require pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.

(8) Non-accredited test method

Encryption Key

Heysonia (Danlesreck) Fraject Manager Arsistant

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Maryann Comeau, Project Manager Email: Maryann COMEAU@bylabs.com Phone# (902)420-0203 Ext:298

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

RESULTS OF ANALYSES OF WATER

BV Labs ID		JVU441			
Sampling Date		2019/05/24 13:00			
COC Number		715280-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-2	RDL	MDL	QC Batch
Calculated Parameters					
Anion Sum	me/L	489	N/A	N/A	6148659
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	92	1.0	0.20	6148652
Calculated TDS	mg/L	28000	1.0	0.20	6148671
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND	1.0	0.20	6148652
Cation Sum	me/L	495	N/A	N/A	6148659
Hardness (CaCO3)	mg/L	5300	1.0	1.0	6148656
Ion Balance (% Difference)	96	0,570	N/A	N/A	6148657
Langelier Index (@ 20C)	N/A	0.265			6148667
Langelier Index (@ 4C)	N/A	0.0270			6148669
Nitrate (N)	mg/L	ND	0.050	N/A	6148661
Saturation pH (@ 20C)	N/A	7.35			6148667
Saturation pH (@ 4C)	N/A	7.58			6148669
Sulphide (as H2S)	mg/L	ND	0.021	0.011	6148642
Inorganics		11.01			
Total Alkalinity (Total as CaCO3)	mg/L	92	5.0	N/A	6158831
Carbonaceous 800	mg/L	ND (1)	10	N/A	6148701
Total Chemical Oxygen Demand	mg/L	990	200	N/A	6148620
Dissolved Chlorate (CIO3-)	mg/L	ND (2)	5.0	N/A	6165901
Dissolved Chloride (CI-)	mg/l.	16000	500	N/A	6158832
Dissolved Chlorite (CLO2-)	mg/t	ND (2)	5.0	N/A	6165901
Colour	TCU	ND	5.0	N/A	6151471
Total Kjeldahl Nitrogen (TKN)	mg/L	0.14	0.10	0.060	6153709
Nitrate + Nitrite (N)	mg/L	ND	0.050	N/A	6158840
Nitrite (N)	mg/L	ND	0.010	N/A	6158842
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	N/A	6156546
Dissolved Organic Carbon (C)	mg/L	1.7	0.50	N/A	6155176
Total Organic Carbon (C)	mg/L	2.3	0.50	N/A	6154507
Orthophosphate (P)	mg/L	ND	0.010	N/A	6158838
pH	pH	7.61	N/A	N/A	6158767

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected

- Sample integrity may have been compromised, the sample exceeded it's hold time prior to being analyzed.
- (2) Detection limits raised due to matrix interference.



RESULTS OF ANALYSES OF WATER

BV Labs ID		JVU441			
Sampling Date		2019/05/24 13:00			
COC Number		715280-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-2	RDL	MDL	QC Batch
Total Phosphorus	mg/L	ND	0.020	N/A	6154440
Salinity	N/A	26	2.0	N/A	6156521
Reactive Silica (SiO2)	mg/L	ND	0.50	N/A	6158837
Total Suspended Solids	mg/L	4.8	1.0	N/A	6151063
Dissolved Sulphate (SO4)	mg/L	2000	40	N/A	6158834
Sulphide	mg/L	ND:	0.020	0.010	6154879
Total Cyanide (CN)	mg/L	ND	0.0050	0.00010	6160103
Turbidity	NTU	0.75	0.10	0.10	6161254
Volatile Suspended Solids	mg/L	2.6	2.0	N/A	6157072
Conductivity	uS/cm	42000	1.0	N/A	6158768
Nutritional Parameters					
Total Nitrogen (N)	mg/L	0.176	0.020	N/A	6157791
Subcontracted Analysis			•		-
Subcontract Parameter	N/A	ATTACHED	N/A	N/A	6153395
RDL = Reportable Detection Li QC Batch = Quality Control Ba ND = Not detected					

N/A = Not Applicable



MERCURY BY COLD VAPOUR AA (WATER)

BV Labs ID		JVU441			
Sampling Date		2019/05/24 13:00			
COC Number		715280-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-2	RDL	MDL	QC Batch
Metals					
Total Mercury (Hg)	ug/L	ND	0.013	N/A	6148649
RDL = Reportable Detec	tion Limit				
QC Batch = Quality Cont	rol Batch				
ND = Not detected					

ELEMENTS BY ICP/MS (WATER)

BV Labs ID		JVU441			
Sampling Date		2019/05/24 13:00			
COC Number		715280-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-2	RDL	MDL	QC Batci
Metals					
Total Aluminum (Al)	ug/L	ND	50	N/A	6148971
Total Antimony (Sb)	ug/L	ND	10	N/A	6148971
Total Arsenic (As)	ug/L	ND	10	N/A	614897
Total Barium (Ba)	ug/L	12	10	N/A	614897
Total Beryllium (Be)	ug/L	ND	10	N/A	614897
Total Bismuth (Bi)	ug/L	ND	20	N/A	614897
Total Boron (B)	ug/L	3700	500	N/A	614897
Total Cadmium (Cd)	ug/L	ND	0.10	N/A	614897
Total Calcium (Ca)	ug/L	340000	1000	N/A	614897
Total Chromium (Cr)	ug/L	ND	10	N/A	614897
Total Cobalt (Co)	ug/L	ND	4.0	N/A	614897
Total Copper (Cu)	ug/L	ND	5.0	N/A	614897
Total Iron (Fe)	ug/L	ND	500	N/A	614897
Total Lead (Pb)	ug/L	ND	5.0	N/A	614897
Total Magnesium (Mg)	ug/L	1100000	1000	N/A	614897
Total Manganese (Mn)	ug/L	ND	20	N/A	614897
Total Molybdenum (Mo)	ug/L	ND	20	N/A	614897
Total Nickel (Ni)	ug/L	ND	20	N/A	614897
Total Phosphorus (P)	ug/L	ND	1000	N/A	614897
Total Potassium (K)	ug/L	320000	1000	N/A	614897
Total Selenium (Se)	ug/L	ND	10	N/A	614897
Total Silver (Ag)	ug/L	ND	1.0	N/A	614897
Total Sodium (Na)	ug/L	8800000	1000	N/A	614897
Total Strontium (Sr)	ug/L	6200	20	N/A	614897
Total Thallium (TI)	ug/L	ND	1.0	N/A	614897
Total Tin (Sn)	ug/L	ND	20	N/A	614897
Total Titanium (Ti)	ug/L	ND	20	N/A	614897
Total Uranium (U)	ug/L	2.8	1.0	N/A	614897
Total Vanadium (V)	ug/L	ND	20	N/A	614897
Total Zinc (Zn)	ug/L	ND	50	N/A	614897
RDL = Reportable Detection QC Batch = Quality Control ND = Not detected N/A = Not Applicable					

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		JVU441			
Sampling Date		2019/05/24 13:00			
COC Number		715280-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-2	RDL	MDL	QC Batch
Polyaromatic Hydrocarbor	15				
1-Methylnaphthalene	ug/L	ND	0.050	N/A	6151065
2-Methylnaphthalene	ug/L	ND	0.050	N/A	6151065
Acenaphthene	ug/L	ND	0.010	N/A	6151065
Acenaphthylene	ug/L	ND	0.010	N/A	6151065
Anthracene	ug/L	ND	0.010	N/A	6151065
Benzo(a)anthracene	ug/L	ND	0.010	N/A	6151065
Benzo(a)pyrene	ug/t	ND	0.010	N/A	6151065
Benzo(b)fluoranthene	ug/L	ND	0.010	N/A	6151065
Benzo(b/j)fluoranthene	ug/L	ND	0.020	N/A	6148653
Benzo(g,h,i)perylene	ug/L	ND	0.010	N/A	6151065
Benzo(j)fluoranthene	ug/L	ND	0.010	N/A	6151065
Benzo(k)fluoranthene	ug/L	ND	0.010	N/A	6151065
Chrysene	ug/L	ND	0.010	N/A	6151065
Dibenz(a,h)anthracene	ug/L	ND	0.010	N/A	6151065
Fluoranthene	ug/L	ND	0.010	N/A	6151065
Fluorene	ug/L	ND	0.010	N/A	6151065
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.010	N/A	6151065
Naphthalene	ug/L	ND	0.20	N/A	6151065
Perylene	ug/t	ND:	0.010	N/A	6151065
Phenanthrene	ug/L	ND	0.010	N/A	6151065
Pyrene	ug/L	ND	0.010	N/A	6151065
Surrogate Recovery (%)					
D10-Anthracene	96	83			6151065
D14-Terphenyl	%	97			6151065
D8-Acenaphthylene	%	84			6151065
ROL = Reportable Detection QC Batch = Quality Control ND = Not detected N/A = Not Applicable					

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		JVU441				
Sampling Date		2019/05/24 13:00				
COC Number		715280-01-01				
	UNITS	CARIBOU SEA WATER CH-BOF 1-2	RDL	MDL	QC Batch	
Volatile Organics						
1,1-Dichloroethane	ug/L	ND:	2.0	N/A	6148613	
1,1-Dichloroethylene	ug/L	ND:	0.50	1.0	6148613	
1,1,1-Trichloroethane	ug/L	ND	1.0	N/A	6148613	
1,1,2-Trichloroethane	ug/L	ND	1.0	N/A	6148613	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	N/A	6148613	
Ethylene Dibromide	ug/L	ND:	0.20	0.50	6148613	
1,2-Dichlorobenzene	ug/L	ND.	0.50	N/A	6148613	
1,2-Dichloroethane	ug/L	ND:	1.0	N/A	6148613	
cis-1,2-Dichloroethylene	ug/L	ND	0.50	N/A	6148613	
trans-1,2-Dichloroethylene	ug/L	ND	0.50	N/A	6148613	
1,2-Dichloropropane	ug/L	ND	0.50	N/A	6148613	
1,3-Dichlorobenzene	ug/L	ND	1.0	N/A	6148613	
cis-1,3-Dichloropropene	ug/L	ND	0.50	N/A	6148613	
trans-1,3-Dichloropropene	ug/L	ND	0.50	N/A	6148613	
1,4-Dichlorobenzene	ug/L	ND	1.0	N/A	6148613	
Benzene	ug/L	ND	1.0	N/A	6148613	
Bromodichloromethane	ug/L	ND	1.0	0.20	6148613	
Bromoform	ug/L	ND	1.0	0.20	6148613	
Bromomethane	ug/L	ND	0.50	N/A	6148613	
Carbon Tetrachloride	ug/L	ND	0.50	N/A	6148613	
Chlorobenzene	ug/L	ND	1.0	N/A	6148613	
Chloroethane	ug/L	ND	8.0	N/A	6148613	
Chloroform	ug/L	ND	1.0	0.20	6148613	
Chloromethane	ug/L	ND	8.0	N/A	6148613	
Dibromochloromethane	ug/L	ND:	1.0	0.20	6148613	
Methylene Chloride(Dichloromethane)	tig/L	ND	3.0	N/A	6148613	
Ethylbenzene	ug/L	ND	1.0	N/A	6148613	
Methyl t-butyl ether (MTBE)	ug/L	ND	2.0	N/A	6148613	
Styrene	ug/L	ND	1.0	N/A	6148613	
Tetrachloroethylene	ug/t.	ND	1.0	N/A	6148613	
Toluene	ug/L	ND	1.0	N/A	6148613	
Trichloroethylene	ug/L	ND	1.0	N/A	6148613	

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		JVU441			
Sampling Date		2019/05/24 13:00			
COC Number		715280-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-2	RDL.	MDL	QC Batch
Trichlorofluoromethane (FREON 11)	ug/L	ND	8.0	N/A	6148613
Vinyl Chloride	ug/L	ND	0.50	2.0	6148613
o-Xylene	ug/L	ND	1.0	N/A	6148613
p+m-Xylene	ug/L	ND	2.0	N/A	6148613
Total Xylenes	ug/t.	ND	1.0	1.0	6148613
Total Trihalomethanes	ug/L	ND:	1.0	N/A	6148613
Surrogate Recovery (%)					
4-Bromofluorobenzene	96	97			6148613
D4-1,2-Dichloroethane	%	119			6148613
D8-Toluene	96	100			6148613

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

ATLANTIC RBCA HYDROCARBONS (WATER)

BV Labs ID		JVU441			
Sampling Date		2019/05/24 13:00			
COC Number		715280-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-2	RDL	MDL	QC Batch
Petroleum Hydrocarbons					
Benzene	mg/L	ND	0.0010	N/A	6153411
Toluene	mg/L	ND	0.0010	N/A	6153411
Ethylbenzene	mg/L	ND	0.0010	N/A	6153411
Total Xylenes	mg/L	ND	0.0020	N/A	6153411
C6 - C10 (less BTEX)	mg/L	ND	0.010	N/A	6153411
>C10-C16 Hydrocarbons	mg/L	ND	0.050	N/A	6159674
>C16-C21 Hydrocarbons	mg/L	ND	0.050	N/A	6159674
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>ND</td><td>0.10</td><td>N/A</td><td>6159674</td></c32>	mg/L	ND	0.10	N/A	6159674
Modified TPH (Tier1)	mg/L	ND	0.10	N/A	6148673
Reached Baseline at C32	mg/L	NA.	N/A	N/A	6159674
Hydrocarbon Resemblance	mg/L	NA:	N/A	N/A	6159674
Surrogate Recovery (%)	-				
Isobutylbenzene - Extractable	%	97			6159674
n-Dotriacontane - Extractable	%	97			6159674
Isobutylbenzene - Volatile	%	93			6153411
RDL = Reportable Detection Lin QC Batch = Quality Control Bate ND = Not detected N/A = Not Applicable					

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

BV Labs ID		JVU441			
Sampling Date		2019/05/24 13:00			
COC Number		715280-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-2	RDL	MDL	QC Batch
PCBs					
Aroclor 1016	ug/L	ND	0.060	N/A	6156517
Aroclor 1221	ug/L	ND	0.060	N/A	6156517
Aroclor 1232	ug/L	ND	0.060	N/A	6156517
Aroclor 1248	ug/L	ND	0.060	N/A	6156517
Aroclor 1242	ug/L	ND	0.060	N/A	6156517
Aroclor 1254	ug/L	ND	0.060	N/A	6156517
Aroclor 1260	ug/L	ND	0.060	N/A	6156517
Calculated Total PCB	ug/L	ND	0.060	N/A	6148663
Surrogate Recovery (%)					
Decachlorobiphenyl	%	89 (1)			6156517
DDI - Basastahla Datast	ZO V florida				

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

(1) Elevated PCB RDL due to limited sample.

RESIN AND FATTY ACIDS BY GC-MS (WATER)

BV Labs ID		JVU441			
Sampling Date		2019/05/24 13:00			
COC Number		715280-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 1-2	RDL	MDL	QC Batch
Calculated Parameters					
Total Fatty Acids	mg/L	ND:	0.072	N/A	6172547
Total Resin Acids	mg/L	ND	0.060	N/A	6172547
Fatty Acids					
9,10-Dichlorostearic acid	mg/L	ND	0.0060	N/A	6172547
Decanoic Acid (C10)	mg/L	ND	0.0060	N/A	6172547
Docosanoic acid (C22)	mg/L	ND	0.0060	N/A	6172547
Dodecanoic acid (C12)	mg/L	ND	0.0060	N/A	6172547
Eicosanoic acid (C20)	mg/L	ND:	0.0060	N/A	6172547
Hexadecanoic acid (C16)	mg/L	ND:	0.0060	N/A	6172547
Linoleic acid (C18:2)	mg/L	ND	0.0060	N/A	6172547
Linolenic acid (C18:3)	mg/L	ND	0.0060	N/A	6172547
Octadecanoic acid (C18)	mg/L	ND	0.0060	N/A	6172547
Oleic acid (C18:1)	mg/L	ND:	0.0060	N/A	6172547
Tetradecanoic acid (C14)	mg/L	ND	0.0060	N/A	6172547
Undecanoic acid (C11)	mg/L	ND.	0.0060	N/A	6172547
Resin Acids					
12,14-Dichlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6172547
12-Chlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6172547
14-Chlorodehydroabietic acid	mg/L	ND.	0.0060	N/A	6172547
Abietic acid	mg/L	ND:	0.0060	N/A	6172547
Dehydroabietic acid	mg/L	ND.	0.0060	N/A	6172547
Isopimaric acid	mg/L	ND	0.0060	N/A	6172547
Neoabietic acid	mg/L	ND	0.0060	N/A	6172547
Palustric acid	mg/L	ND	0.0060	N/A	6172547
Pimaric acid	mg/L	ND	0.0060	N/A	6172547
Sandaracopimaric acid	mg/L	ND	0.0060	N/A	6172547
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not detected N/A = Not Applicable			1		



GENERAL COMMENTS

ockage 1	6.3°C
elved nast the	recommended
IVU441 CARIBO	



QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6148613	ASL	Matrix Spike	4-Bromafluorobenzene	2019/05/30		99	74	70 - 130
			D4-1,2-Dichloroethane	2019/05/30		120	76	70 - 130
			D8-Toluene	2019/05/30		96		70 - 130
			I,1-Dichloroethane	2019/05/30		108		70 - 130
			1,1-Dichloroethylene	2019/05/30		110		70 - 130
			1,1,1-Trichloroethane	2019/05/30		109		70 - 130
			1,1,2-Trichloroethane	2019/05/30		109		70 - 130
			1,1,2,2-Tetrachloroethane	2019/05/30		109		70 - 130
			Ethylene Dibromide	2019/05/30		112		70 - 130
	1,2-Dichlorobenzene	2019/05/30		91		70 - 130		
			1,2-Dichloroethane	2019/05/30		112		70 - 130
			cis-1,2-Dichloroethylene	2019/05/30		102		70 - 130
			trans-1,2-Dichloroethylene	2019/05/30		108		70 - 130
			1,2-Dichloropropane	2019/05/30		106		70 - 130
			1,3-Dichlorobenzene	2019/05/30		87		70 - 130
			cis-1,3-Dichloropropene	2019/05/30		111		70 - 130
			trans-1,3-Dichloropropene	2019/05/30		121		70 - 130
			1,4-Dichlorobenzene	2019/05/30		87		70 - 130
			Benzene	2019/05/30		93		70 - 130
			Bromodichloromethane	2019/05/30		102		70 - 130
			Bromafarm	2019/05/30		104		70 - 130
			Bromomethane	2019/05/30		100		60 - 140
			Carbon Tetrachloride	2019/05/30		105		70 - 130
			Chlorobenzene	2019/05/30		92		70 - 130
			Chloroethane	2019/05/30		90		60 - 140
			Chloroform	2019/05/30		102	96	70 - 130
			Chloromethane	2019/05/30		94		60 - 140
			Dibromochloromethane	2019/05/30		108		70 - 130
			Methylene Chloride(Dichloromethane)	2019/05/30		106		70 - 130
			Ethylbenzene	2019/05/30		94		70 - 130
			Methyl t-butyl ether (MTBE)	2019/05/30		103		70 - 130
			Styrene	2019/05/30		99		70 - 130
			Tetrachloroethylene	2019/05/30		97		70 - 130
			Toluene	2019/05/30		97	%	70 - 130
			Trichloroethylene	2019/05/30		98	***************	70 - 130
			Trichlorofluoromethane (FREON 11)	2019/05/30		93		60 - 140
			Vinyl Chloride	2019/05/30		91		60 - 140
			o-Xylene	2019/05/30		94		70 - 130
			p+m-Xylene	2019/05/30		92	%	70 - 130
6148613	ASL	Spiked Blank	4-Bromofluorobenzene	2019/05/30		101	%	70 - 130
			D4-1,2-Dichloroethane	2019/05/30		111	%	70 - 130
			D8-Toluene	2019/05/30		97	96	70 - 130
			1,1-Dichloroethane	2019/05/30		108		70 - 130
			1,1-Dichlorgethylene	2019/05/30		113	%	70 - 130
			1,1,1-Trichloroethane	2019/05/30		111		70 - 130
			1,1,2-Trichloroethane	2019/05/30		103	96.	70 - 130
			1,1,2,2-Tetrachloroethane	2019/05/30		103		70 - 130
			Ethylene Dibromide	2019/05/30		104	%	70 - 130
			1,2-Dichlorobenzene	2019/05/30		93	74	70 - 130
			1,2-Dichloroethane	2019/05/30		106	%.	70 - 130
			cis-1,2-Dichloroethylene	2019/05/30		100	96	70 - 130
			trans-1,2-Dichloroethylene	2019/05/30		109		70 - 130
			1,2-Dichloropropane	2019/05/30		105		70 - 130
			1,3-Dichlorobenzene	2019/05/30		91	%	70 - 130

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			cis-1,3-Dichloropropene	2019/05/30		104	- 14	70 - 130
			trans-1,3-Dichloropropene	2019/05/30		108	%	70 - 130
			1,4-Dichlorobenzene	2019/05/30		90	34	70 - 130
			Benzene	2019/05/30		93	%	70 - 130
			Bromodichloromethane	2019/05/30		101	96	70 - 130
			Bromoform	2019/05/30		99	%	70 - 130
			Bromomethane	2019/05/30		95	96	60 - 140
			Carbon Tetrachloride	2019/05/30		108	96	70 - 130
			Chlorobenzene	2019/05/30		94	%	70 - 130
			Chloroethane	2019/05/30		91	%	60 - 140
			Chloroform	2019/05/30		101	96	70 - 130
			Chloromethane	2019/05/30		92	%	60 - 140
			Dibromochloromethane	2019/05/30		104	%	70 - 130
			Methylene Chloride(Dichloromethane)	2019/05/30		101	%	70 - 130
			Ethylbenzene	2019/05/30		99	96	70 - 130
			Methyl t-butyl ether (MTBE)	2019/05/30		101	%	70 - 130
			Styrene	2019/05/30		102	Y-	70 - 130
			Tetrachloroethylene	2019/05/30		101	16.	70 - 130
			Toluene	2019/05/30		99	%	70 - 130
			Trichloroethylene	2019/05/30		101	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2019/05/30		96	K	60 - 140
			Vinyl Chloride	2019/05/30		87	%	60 - 140
			00° 1° 10° 10° 10° 10° 10° 10° 10° 10° 1			98	36	70 - 130
			o-Xylene	2019/05/30		96		
* 40047	400	Administration of the second	p+m-Xylene	2019/05/30		1 2 2 2	76	70 - 130
148613	48613 ASL Method Blank	Method Blank	4-Bromafluorobenzene	2019/05/30		98	14	70 - 130
			D4-1,2-Dichloroethane	2019/05/30		111	%	70 - 130
			D8-Toluene	2019/05/30	100	100	96.	70 - 130
			I,I-Dichloroethane	2019/05/30	ND, RDL=2.0		ug/L	
			1,1-Dichloroethylene	2019/05/30	ND, RDL=0.50		ug/L	
			1,1,1-Trichloroethane	2019/05/30	ND, RDL=1.0		ug/t	
			1,1,2-Trichloroethane	2019/05/30	ND, RDL=1.0		ug/L	
			1,1,2,2-Tetrachloroethane	2019/05/30	ND, RDL=0.50		ug/L	
			Ethylene Dibromide	2019/05/30	ND, RDL=0.20		ug/L	
			1,2-Dichlorobenzene	2019/05/30	ND, RDL=0.50		ug/L	
			1,2-Dichloroethane	2019/05/30	ND, RDL=1.0		ug/L	
			cis-1,2-Dichloroethylene	2019/05/30	ND, RDL=0.50		ug/L	
		trans-1,2-Dichloroethylene	2019/05/30	ND, RDL=0.50		ug/L		
			1,2-Dichloropropane	2019/05/30	ND, RDL=0.50		ug/L	
			1,3-Dichlorobenzene	2019/05/30	ND, RDL=1.0		ug/L	
			cis-1,3-Dichloropropene	2019/05/30	ND, RDL=0.50		ug/L	
			trans-1,3-Dichloropropene	2019/05/30	ND, RDL=0.50		ug/L	

A/QC latch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limi
			1,4-Dichlarobenzene	2019/05/30	ND, RDL=1.0		ug/L	
			Benzene	2019/05/30	ND, RDL=1.0		ug/L	
			Bromodichloromethane	2019/05/30	ND, RDL=1.0		ug/L	
			Bromoform	2019/05/30	ND, RDL=1.0		ug/L	
			Bromomethane	2019/05/30	ND, RDL=0.50		ug/t	
			Carbon Tetrachloride	2019/05/30	ND, RDL=0.50		ug/L	
			Chlorobenzene	2019/05/30	ND, RDL=1.0		ug/L	
			Chloroethane	2019/05/30	ND, RDL=8.0		ug/L	
			Chloroform	2019/05/30	ND, RDL=1.0		ug/L	
			Chloromethane	2019/05/30	ND, RDL=8.0		ug/L	
			Dibromochloromethane	2019/05/30	ND, RDL=1.0		ug/L	
			Methylene Chloride(Dichloromethane)	2019/05/30	ND, RDL=3.0		ug/L	
			Ethylbenzene	2019/05/30	ND, RDL=1.0		ug/L	
			Methyl t-butyl ether (MTBE)	2019/05/30	ND, RDL=2.0		ug/L	
			Styrene	2019/05/30	ND, RDL=1.0		ug/t	
			Tetrachloroethylene	2019/05/30	ND, RDL=1.0		ug/L	
			Toluene	2019/05/30	ND, RDL=1.0		ug/L	
			Trichloroethylene	2019/05/30	ND, RDL=1.0		ug/L	
			Trichlorofluoromethane (FREON 11)	2019/05/30	ND, RDL=8.0		ug/t	
			Vinyl Chloride	2019/05/30	ND, RDL=0.50		ug/L	
			o-Xylene	2019/05/30	ND, RDL=1.0		ug/L	
			p+m-Xylene	2019/05/30	ND, RDL=2.0		ug/L	
			Total Xylenes	2019/05/30	ND, RDL=1.0		ug/L	
			Total Trihalomethanes	2019/05/30	ND. RDL=1.0		ug/t	
48613	ASL	RPD	1,1-Dichloroethane	2019/05/30	NC		96	40
			1,1-Dichloroethylene	2019/05/30	NC		96	40
			1.1.1-Trichlorgethane	2019/05/30	NC		N.	40
			1.1.2-Trichloroethane		NC		36	40
								40
			- 14 人語 (2 M 2.75) (1 M. 1 M					40
			1,1,2-Trichloroethane 1,1,2,2-Tetrachloroethane Ethylene Dibromide 1,2-Dichlorobenzene	2019/05/30 2019/05/30 2019/05/30 2019/05/30	NC NC NC		% % % %	



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,2-Dichloroethane	2019/05/30	NC		- %	40
			cis-1,2-Dichloroethylene	2019/05/30	NC		%	40
			trans-1,2-Dichloroethylene	2019/05/30	NC		36	40
			1,2-Dichloropropane	2019/05/30	NC		%	40
			1,3-Dichlorobenzene	2019/05/30	NC		%	40
			cis-1,3-Dichloropropene	2019/05/30	NC		%	40
			trans-1,3-Dichloropropene	2019/05/30	NC		96	40
			1,4-Dichlorobenzene	2019/05/30	NC		%	40
			Benzene	2019/05/30	NC		96	40
			Bromodichloromethane	2019/05/30	NC		96	40
			Bromoform	2019/05/30	NC		96	40
			Bromomethane	2019/05/30	NC		%	40
			Carbon Tetrachloride	2019/05/30	NC		%	40
			Chlorobenzene	2019/05/30	NC		%	40
			Chloroethane	2019/05/30	NC		36	40
			Chloroform	2019/05/30	NC		%	40
			Chloromethane	2019/05/30	NC		N-	40
			Dibromochloromethane	2019/05/30	NC		16.	40
			Methylene Chloride(Dichloromethane)	2019/05/30	NC		%	40
			Ethylbenzene	2019/05/30	NC		%	40
			Methyl t-butyl ether (MT8E)	2019/05/30	NC			40
			The state of the s	2019/05/30	NC		76 76	40
			Styrene Tetrachloroethylene	2019/05/30	NC		%	40
			Toluene					
			731274 A. Charles	2019/05/30	NC		76	40
			Trichloroethylene	2019/05/30	NC		16	40
			Trichlorofluoromethane (FREON 11)	2019/05/30	NC		76	40
			Vinyl Chloride	2019/05/30	NC		36	40
			o-Xylene	2019/05/30	NC		76	40
			p+m-Xylene	2019/05/30	NC		16	40
			Total Xylenes	2019/05/30	NC		76	40
		004DIG %	Total Trihalomethanes	2019/05/30	NC		34	40
6148620	ZZH	Matrix Spike	Total Chemical Oxygen Demand	2019/05/30		81	%	80 - 120
6148620	ZZH	QC Standard	Total Chemical Oxygen Demand	2019/05/30		103	%	80 - 120
6148620	ZZH	Spiked Blank	Total Chemical Oxygen Demand	2019/05/30		105	%	80 - 120
6148620	ZZH	Method Blank	Total Chemical Oxygen Demand	2019/05/30	ND, RDL=20		mg/L	
6148620	ZZH	RPD	Total Chemical Oxygen Demand.	2019/05/30	12		14	25
6148649	CCR	Matrix Spike	Total Mercury (Hg)	2019/05/31		101	34	80 - 120
6148649	CCR	Spiked Blank	Total Mercury (Hg)	2019/05/31		102	96	80 - 120
6148649	CCR	Method Blank	Total Mercury (Hg)	2019/05/31	ND, RDL=0.013		ug/L	
6148649	CCR	RPD	Total Mercury (Hg)	2019/05/31	NC		%	20
6148701	MLW	QC Standard	Carbonaceous BOD	2019/06/04		111	96	80 - 120
6148701	MLW	Spiked Blank	Carbonaceous BOD	2019/06/04		138 (1)	%	80 - 120
6148701	MLW	Method Blank	Carbonaceous BOD	2019/06/04	ND, ROL=2.0	3009690	mg/L	
6148701	MLW	RPD	Carbonaceous BOD	2019/06/04	3.5		%	25
6148971	BAN	Matrix Spike	Total Aluminum (Al)	2019/05/31	. 5.50	103	%	80 - 120
	-11/11		Total Antimony (Sb)	2019/05/31		110	%	80 - 120
			Total Arsenic (As)	2019/05/31		98	76.	80 - 120
			Total Barium (Ba)	2019/05/31		102	%	80 - 120
			Total Beryllium (Be)	2019/05/31		100	16	80 - 120
			Total Bismuth (Bi)	2019/05/31		104	96	80 - 120
			Total Boron (B)	2019/05/31		NC	96	80 - 120



QA/QC		067	Š	Part Fredrick	NO.		VINUTE.	novie a
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Cadmium (Cd)	2019/05/31		98	74	80 - 120
			Total Calcium (Ca)	2019/05/31		106	%	80 - 120
			Total Chromium (Cr)	2019/05/31		97	34	80 - 120
			Total Cobalt (Co)	2019/05/31		100	96	80 - 120
			Total Copper (Cu)	2019/05/31		98	%	80 - 120
			Total Iron (Fe)	2019/05/31		106	%	80 - 120
			Total Lead (Pb)	2019/05/31		104	96	80 - 120
			Total Magnesium (Mg)	2019/05/31		110	96	80 - 120
			Total Manganese (Mn)	2019/05/31		101	96	80 - 120
			Total Molybdenum (Mo)	2019/05/31		105	96	80 - 120
			Total Nickel (NI)	2019/05/31		102	96	80 - 120
			Total Phosphorus (P)	2019/05/31		104	%	80 - 120
			Total Potassium (K)	2019/05/31		104	76	80 - 120
			Total Selenium (Se)	2019/05/31		96	56	80 - 120
			Total Silver (Ag)	2019/05/31		101	96	80 - 120
			Total Sodium (Na)	2019/05/31		NC	%	80 - 120
			Total Strontium (Sr)	2019/05/31		103	%	80 - 120
			Total Thallium (TI)	2019/05/31		105	%.	80 - 120
			Total Tin (Sn)	2019/05/31		105	96	80 - 120
			Total Titanium (Ti)	2019/05/31		99	%	80 - 120
			Total Uranium (U)	2019/05/31		113	N	80 - 120
			Total Vanadium (V)	2019/05/31		101	%	80 - 120
			Total Zinc (Zn)	2019/05/31		100	%	80 - 120
148971	BAN	Spiked Blank	Total Aluminum (Al)	2019/05/31		101	76	80 - 120
			Total Antimony (5b)	2019/05/31		107	14	80 - 120
			Total Arsenic (As)	2019/05/31		99	% %	80 - 120
			Total Barium (Ba)	2019/05/31		100		80 - 120
			Total Beryllium (Be)	2019/05/31		99	%	80 - 120
			Total Bismuth (Bi)	2019/05/31		105	N	80 - 120
			Total Boron (B)	2019/05/31		98	%	80 - 120
			Total Cadmium (Cd)	2019/05/31		96	94	80 - 120
			Total Calcium (Ca)	2019/05/31		107	%	80 - 120
			Total Chromium (Cr)	2019/05/31		99	%	80 - 120
			Total Cobalt (Co)	2019/05/31		101	%	80 - 120
			Total Copper (Cu)	2019/05/31		99	96	80 - 120
			Total fron (Fe)	2019/05/31		107	96	80 - 120
			Total Lead (Pb)	2019/05/31		103	96	80 - 120
			Total Magnesium (Mg)	2019/05/31		110	94	80 - 120
			Total Manganese (Mn)	2019/05/31		102	96	80 - 120
			Total Molybdenum (Mo)	2019/05/31		102	%	80 - 120
			Total Nickel (NI)	2019/05/31		99	%	80 - 120
			Total Phosphorus (P)	2019/05/31		105	%	80 - 120
			Total Potassium (K)	2019/05/31		102	96	80 - 120
			Total Selenium (Se)	2019/05/31		97	%	80 - 120
			Total Silver (Ag)	2019/05/31		100	N.	80 - 120
			Total Sodium (Na)	2019/05/31		102	96.	80 - 120
			Total Strontium (Sr)	2019/05/31		106	96	80 - 120
			Total Thallium (Ti)	2019/05/31		107	76	80 - 120
			Total Tin (Sn)	2019/05/31		106	14.	80 - 120
			Total Titanium (Ti)	2019/05/31		98	%	80 - 120
			Total Uranium (U)	2019/05/31		113	96	80 - 120
			Total Vanadium (V)	2019/05/31		102	*	80 - 120
			rocar variounum (4)	2019/05/31		444	N.	00-120



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6148971	BAN	Method Blank	Total Aluminum (AI)	2019/05/31	ND, RDL=5.0		ug/L	
			Total Antimony (5b)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Arsenic (As)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Barium (Ba)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Beryllium (Be)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Bismuth (Bi)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Boron (B)	2019/05/31	ND, RDL=50		ug/L	
			Total Cadmium (Cd)	2019/05/31	ND, RDL=0.010		ug/L	
			Total Calcium (Ca)	2019/05/31	ND, RDL=100		ug/t	
			Total Chromium (Cr)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Cobalt (Co)	2019/05/31	ND, RDL=0.40		ug/L	
		Total Copper (Cu)	2019/05/31	ND, RDL=0.50		ug/L		
		Total Iron (Fe)	2019/05/31	ND. RDL=50		ug/L		
			Total Lead (Pb)	2019/05/31	ND, RDL=0.50		ug/L	
			Total Magnesium (Mg)	2019/05/31	ND, RDL=100		ug/L	
			Total Manganese (Mn) 2019/05/31 ND, RDL=2.0		ug/L			
			Total Molybdenum (Mo)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Nickel (Ni)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Phosphorus (P)	2019/05/31	ND, RDL=100		ug/t	
			Total Potassium (K)	2019/05/31	ND, RDL=100		ug/L	
			Total Selenium (Se)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Silver (Ag)	2019/05/31	NO, RDL=0.10		ug/L	
			Total Sodium (Na)	2019/05/31	ND, RDL=100		ug/L	
			Total Strontium (Sr)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Thallium (TI)	2019/05/31	ND, RDL=0.10		ug/L	
			Total Tin (Sn)	2019/05/31	ND. RDL=2.0		ug/L	
			Total Titanium (Ti)	2019/05/31	ND, RDL=2.0		ug/t	



QA/QC	1.00	244	2	31.1.71.0	10.00			acre a
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Total Uranium (U)	2019/05/31	ND, RDL=0.10		ug/L	
			Total Vanadium (V)	2019/05/31	ND, 8DL=2.0		ug/L	
			Total Zinc (Zn)	2019/05/31	ND, RDL=5.0		ug/L	
6148971	BAN	RPD	Total Aluminum (Al)	2019/05/31	4.3		%	20
6151063	AM6	QC Standard	Total Suspended Solids	2019/06/03	2.004.0	100	14.	80 - 120
6151063	AM6	Method Blank	Total Suspended Solids	2019/06/03	ND, RDL=1.0		mg/L	
6151063	AM6	RPO	Total Suspended Solids	2019/06/03	0		74	20
6151065	LGE	Matrix Spike	D10-Anthracene	2019/06/01		90	%	50 - 130
		NACTO AND ASSESSMENT	D14-Terphenyl	2019/06/01		70 (2)	96	50 - 130
			D8-Acenaphthylene	2019/06/01		85	%	50 - 130
			1-Methylnaphthalene	2019/06/01		81	16	50 - 130
			2-Methylnaphthalene	2019/06/01		84	%	50 - 130
			Acenaphthene	2019/06/01		87	36	50 - 130
			Acenaphthylene	2019/06/01		84	%	50 - 130
			Anthracene	2019/06/01		79	%	50 - 130
			Benzo(a)anthracene	2019/06/01		76	%	50 - 130
			Benzo(a)pyrene	2019/06/01		61	96	50 - 130
			Benzo(b)fluoranthene	2019/06/01		75	36	50 - 130
			Benzo(g,h,i)perylene	2019/06/01		36 (3)	%	50 - 130
			Benzo(j)fluoranthene	2019/06/01		60	74.	50 - 130
			Benzo(k)fluoranthene	2019/06/01		69	96	50 - 130
		Chrysene	2019/06/01		96	96	50 - 130	
		Dibenz(a,h)anthracene	2019/06/01		40 (3)	%	50 - 130	
			Fluoranthene	2019/06/01		88	16.	50 - 130
			Fluorene	2019/06/01		95	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/06/01		33 (3)	76	50 - 130
			Naphthalene	2019/06/01		84	%	50 - 130
			Perylene	2019/06/01		31 (3)	76	50 - 130
			Phenanthrene	2019/06/01		96	. %	50 - 130
			Pyrene	2019/06/01		86	76	50 - 130
6151065	LGE	Spiked Blank	D10-Anthracene	2019/06/01		105	%	50 - 130
			D14-Terphenyl	2019/06/01		106	76	50 - 130
			D8-Acenaphthylene	2019/06/01		100	%	50 - 130
			1-Methylnaphthalene	2019/06/01		93	76	50 - 130
			2-Methylnaphthalene	2019/06/01		95	74	50 - 130
			Acenaphthene	2019/06/01		100	76	50 - 130
			Acenaphthylene	2019/06/01		98	96.	50 - 130
			Anthracene	2019/06/01		93	%	50 - 130
			Benzo(a)anthracene	2019/06/01		86	76	50 - 130
			Benzo(a)pyrene	2019/06/01		94	%	50 - 130
			Benzo(b)fluoranthene	2019/06/01		106	36	50 - 130
			Benzo(g,h,i)perylene	2019/06/01		96	%	50 - 130
			Benzo(j)fluoranthene	2019/06/01		95	76	50 - 130
			Benzo(k)fluoranthene	2019/06/01		101	%	50 - 130
			Chrysene	2019/06/01		107	96	50 - 130
			Dibenz(a,h)anthracene	2019/06/01		96	96	50 - 130
			Fluoranthene	2019/06/01		99	%	50 - 130
			Fluorene	2019/06/01		109	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/06/01		94	96	50 - 130
			Naphthalene	2019/06/01		99	36	50 - 130



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
5-M3-012		The state of the s	Perylene	2019/06/01	14 (4) (6)	90	76	50 - 130
			Phenanthrene	2019/06/01		111	%	50 - 13
			Pyrene	2019/06/01		98	94	50 - 130
151065	LGE	Method Blank	D10-Anthracene	2019/06/01		108	96	50 - 13
	0.00	LATIN CASP CHARLES	D14-Terphenyl	2019/06/01		106	56	50 - 13
			D8-Acenaphthylene	2019/06/01		99	%	50 - 13
			1-Methylnaphthalene	2019/06/01	ND,	138	ug/L	25-077
					RDL=0.050			
			2-Methylnaphthalene	2019/06/01	ND,		ug/L	
					RDL=0.050			
			Acenaphthene	2019/06/01	ND, RDL=0.010		ug/L	
			Acesaphthylene	2019/06/01	ND, RDL=0.010		ug/L	
			Anthracene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(a)anthracene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(a)pyrene	2019/06/01	ND.		ug/L	
			pentographiene	2023/00/01	RDL=0.010		OBJE	
			Benzo(b)fluoranthene	2019/06/01	ND,		ug/L	
					RDL=0.010			
			Benzo(g,h,l)perylene	2019/06/01	ND. RDL=0.010		ug/L	
			Benzo(j)fluoranthene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(k)fluoranthene	2019/06/01	ND, RDL=0.010		ug/L	
			Chrysene	2019/06/01	ND, RDL=0.010		ug/L	
			Dibenz(a,h)anthracene	2019/06/01	ND, RDL=0.010		ug/L	
			Fluoranthene	2019/06/01	ND,		ug/L	
			Fluorene	2010/06/01	RDL=0.010		Com N	
				2019/06/01	ND, RDL=0.010		ug/L	
			Indeno(1,2,3-cd)pyrene	2019/06/01	ND, RDL=0.010		ug/L	
			Naphthalene	2019/06/01	ND. RDL=0.20		ug/L	
			Perylena	2019/06/01	ND, RDL=0.010		ug/t	
			Phenanthrene	2019/06/01	ND, RDL=0.010		ug/L	
			Pyrené	2019/06/01	ND, RDL=0.010		ug/L	
151065	LGE	RPD	I-Methylnaphthalene	2019/06/01	NC		%	40
	1.0		2-Methylnaphthalene	2019/06/01	NC		16	40
			Acenaphthene	2019/06/01	NC		16	40
			Acenaphthylene	2019/06/01	NC		96	40
			Anthracene	2019/06/01	NC		%	40
			Benzo(a)anthracene	2019/06/01	NC		36	40
			Benzo(a)pyrene	2019/06/01	NC		%	40
			Benzo(b)fluoranthene	2019/06/01	NC		96	40
			Benzo(g.h.i)perylene	2019/06/01	NC		96	40



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzo(j)fluoranthene	2019/06/01	NC		- 14	40
			Benzo(k)fluoranthene	2019/06/01	NC		%	40
			Chrysene	2019/06/01	NC		94	40
			Dibenz(a,h)anthracene	2019/06/01	NC		%	40
			Fluoranthene	2019/06/01	13		%	40
			Fluorene	2019/06/01	NC		%	40
			Indeno(1,2,3-cd)pyrene	2019/06/01	NC		96	40
			Naphthalene	2019/06/01	NC		96	40
			Perylene	2019/06/01	NC		96	40
			Phenanthrene	2019/06/01	NC		96	40
			Pyrene	2019/06/01	12		96	40
5151471	NRG	Spiked Blank	Colour	2019/05/31		103	%	80 - 120
5151471	NRG	Method Blank	Colour	2019/05/31	ND, RDL=5.0		TCU	
5151471	NRG	RPD [JVU441-06]	Colour	2019/05/31	NC		76	20
5153411	THE	Matrix Spike	Isobutylbenzene - Volatile	2019/06/02		90	N	70 - 130
			Benzene	2019/06/02		106	%	70 - 130
			Toluene	2019/06/02		108	96	70 - 130
			Ethylbenzene	2019/06/02		112	76	70 - 130
			Total Xylenes	2019/06/02		109	14	70 - 130
5153411	THE	Spiked Blank	Isobutylbenzene - Volatile	2019/06/02		103	%	70 - 130
			Benzene	2019/06/02		117	96	70 - 130
			Toluene	2019/06/02		118	96	70 - 130
			Ethylbenzene	2019/06/02		118	%	70 - 130
			Total Xylenes	2019/06/02		117	56	70 - 130
153411	THE	Method Blank	Isobutylbenzene - Volatile	2019/06/02		102	16	70 - 130
			Benzene	2019/06/02	ND, RDL=0.0010		mg/L	
			Toluene	2019/06/02	ND, RDL=0.0010		mg/L	
			Ethylbenzene	2019/06/02	ND, RDL=0.0010		mg/L	
			Total Xylenes	2019/06/02	ND, RDL=0.0020		mg/L	
			C6 - C10 (less BTEX)	2019/06/02	ND, RDL=0.010		rng/L	
5153411	THE	RPD	Benzene	2019/06/02	NC		76	40
			Toluene	2019/06/02	NC		. %	40
			Ethylbenzene	2019/06/02	NC		16	40
			Total Xylenes	2019/06/02	NC		. %	40
			C6 - C10 (less BTEX)	2019/06/02	NC		76	40
5153709	SSV	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2019/06/04		99	%	80 - 120
5153709	SSV	QC Standard	Total Kjeldahl Nitrogen (TKN)	2019/06/04		102	76	80 - 120
6153709	SSV	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2019/06/04		103	%	80 - 120
6153709	SSV	Method Blank	Total Kjeldahl Nitrogen (TKN)	2019/06/04	ND, RDL=0.10		mg/L	
5153709	SSV	RPD	Total Kjeldahl Nitrogen (TKN)	2019/06/04	0		16	20
5154440	NRG	Matrix Spike	Total Phosphorus	2019/06/04		123 (4)	96	80 - 120
5154440	NRG	Spiked Blank	Total Phosphorus	2019/06/04		102	%	80 - 120
5154440	NRG	Method Blank	Total Phosphorus	2019/06/04	ND, RDL=0.020		mg/L	
2154440	NRG	RPD	Total Dhosehawa	2010/05/04	NC.		96	25
6154440	SSI	Matrix Spike	Total Phosphorus Total Organic Carbon (C)	2019/06/04 2019/06/03	(AC	105	96 16	85 - 115
6154507				43/13/00/05				



QA/QC	1.27	222	2	2 2 2 2 2	10.00	-		A 411 1
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
6154507	SSI	Method Blank	Total Organic Carbon (C)	2019/06/03	ND, RDL=0.50		mg/L	
6154507	SSI	RPD	Total Organic Carbon (C)	2019/06/03	1.1		%	15
6154879	GTO	Matrix Spike	Sulphide	2019/06/03		83	%	80 - 120
6154879	GTO	Spiked Blank	Sulphide	2019/06/03		90	%	80 - 120
6154879	GTO	Method Blank	Sulphide	2019/06/03	ND, RDL=0.020		mg/L	
6154879	GTO	RPD	Sulphide	2019/06/03	NC		*	20
5155176	SSI	Matrix Spike	Dissolved Organic Carbon (C)	2019/06/04		94	76	85 - 115
5155176	SSI	Spiked Blank	Dissolved Organic Carbon (C)	2019/06/04		100	94	80 - 120
6155176	SSI	Method Blank	Dissolved Organic Carbon (C)	2019/06/04	ND, RDL=0.50		mg/L	
6155176	SSI	RPD	Dissolved Organic Carbon (C)	2019/06/04	0.90		%	15
5156517	RGE	Matrix Spike	Decachlorobiphenyl	2019/06/05		96	76	30 - 130
			Aroclor 1254	2019/06/05		109	%	70 - 130
5156517	RGE	Spiked Blank	Decachlorobiphenyl	2019/06/05		74	16	30 - 130
			Aroclor 1254	2019/06/05		103	34	70 - 130
5156517	RGE	Method Blank	Decachlorobiphenyl	2019/06/05		65	76	30 - 130
			Areclor 1016	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1221	2019/06/05	ND, RDL≃0.050		ug/L	
			Araclar 1232	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1248	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1242	2019/06/05	ND, RDL=0.050		ug/L	
			Arocfor 1254	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1260	2019/06/05	ND, RDL=0.050		ug/L	
5156517	RGE	RPD	Aroclor 1016	2019/06/05	NC		%	40
			Aroclor 1221	2019/06/05	NC		%	40
			Aroclor 1232	2019/06/05	NC		96	40
			Arocfor 1248	2019/06/05	NC.		%	40
			Aroclar 1242	2019/06/05	NC		%	40
			Aroclor 1254	2019/06/05	NC		16.	40
			Aroclar 1260	2019/06/05	NC		36	40
5156521	BBD	QC Standard	Salinity	2019/06/04		100	*	80 - 120
5156521	BBD	Method Blank	Salinity	2019/06/04	ND, RDL=2.0		N/A	
6156521	BBD	RPD	Salinity	2019/06/04	0		%	25
5156546	NRG	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2019/06/04		105	16	80 - 120
5156546	NRG	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2019/06/04		107	%	80 - 120
6156546	NRG	Method Blank	Nitrogen (Ammonia Nitrogen)	2019/06/04	ND, RDL=0.050		mg/L	
5156546	NRG	RPD	Nitrogen (Ammonia Nitrogen)	2019/06/04	9.2		76	20
5157072	AM6	QC Standard	Volatile Suspended Solids	2019/06/04		98	%	80 - 120
5157072	AM6	Method Blank	Volatile Suspended Solids	2019/06/04	ND, RDL=2.0		mg/L	
5157072	AM6	RPD	Volatile Suspended Solids	2019/06/04	9.5		%	25
6157791	883	Matrix Spike	Total Nitrogen (N)	2019/06/03		101	36	80 - 120
5157791	883	Spiked Blank	Total Nitrogen (N)	2019/06/03		99	%	80 - 120



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6157791	883	Method Blank	Total Nitrogen (N)	2019/06/03	ND, RDL=0.020		mg/L	
6157791	883	RPD	Total Nitrogen (N)	2019/06/03	3.0		36	20
6158767	EMT	QC Standard	pH	2019/06/05	3.0	101	%	97 - 103
6158767	EMT	RPD [JVU441-06]	pH	2019/06/05	1.7	404	N.	N/A
6158768	EMT	Spiked Blank	Conductivity	2019/06/05	2400	106	%	80 - 120
6158768	EMT	Method Blank	Conductivity	2019/06/05	110,	100	uS/cm	00 100
0.007.00	J. (200)	Tricking Grants	Constitution of the Consti	***************************************	RDL=1.0		03/011	
6158768	EMT	RPD (JVU441-06)	Conductivity	2019/06/05	0.94		%	10
6158831	SRM	Matrix Spike	Total Alkalinity (Total as CaCO3)	2019/06/06	Cartes	NC	94	80 - 120
6158831	SRM	Spiked Blank	Total Alkalinity (Total as CaCO3)	2019/06/05		103	96	80 - 120
6158831	SRM	Method Blank	Total Alkalinity (Total as CaCO3)	2019/06/05	ND,	1,000,000	mg/L	
eranda.) T. S. S. C. C.	- New York Committee	A TOTAL ISSUED AND A LOCAL CONCENTRAL	13/2/2014/00/00/2015	RDL=5.0		177	
6158831	SRM	RPD	Total Alkalinity (Total as CaCO3)	2019/06/06	2.5		76	25
6158832	SRM	Matrix Spike	Dissolved Chloride (CI-)	2019/06/05		99	56	80 - 120
6158832	SRM	Spiked Blank	Dissolved Chloride (CI-)	2019/06/05		99	16	80 - 120
6158832	SRM	Method Blank	Dissolved Chloride (CI-)	2019/06/05	ND, RDL=1.0		mg/L	
6158832	SRM	RPD	Dissolved Chloride (CI-)	2019/06/05	2.4		96	25
6158834	SRM	Matrix Spike	Dissolved Sulphate (SO4)	2019/06/05	2.0	100	%	80 - 120
6158834	SRM	Spiked Blank	Dissolved Sulphate (SO4)	2019/06/05		99	96	80 - 120
6158834	SRM	Method Blank	Dissolved Sulphate (SO4)	2019/06/05	ND,	23	mg/L	00-120
					8DL=2.0		1.00	
6158834	SRM	RPD	Dissolved Sulphate (SO4)	2019/06/05	6.4		%	25
6158837	SRM	Matrix Spike	Reactive Silica (SiO2)	2019/06/06		NC	96	80 - 120
6158837	SRM	Spiked Blank	Reactive Silica (SiO2)	2019/06/06		98	%	80 - 120
6158837	SRM	Method Blank	Reactive Silica (SiO2)	2019/06/06	ND, RDL=0.50		mg/L	
6158837	SRM	RPD	Reactive Silica (SiOZ)	2019/06/05	4.8		96	25
5158838	SRM	Matrix Spike	Orthophosphate (P)	2019/06/05		95	%	80 - 120
6158838	SRM	Spiked Blank	Orthophosphate (P)	2019/06/05		94	%	80 - 120
6158838	SRM	Method Blank	Orthophosphate (P)	2019/06/05	ND, RDL=0.010		mg/L	
6158838	SRM	RPD	Orthophosphate (P)	2019/06/05	HERET THE SECOND		96	25
6158840	SRM	Matrix Spike	Nitrate + Nitrite (N)	2019/06/05	1.8	101	%	80 - 120
6158840	SRM	Spiked Blank	Nitrate + Nitrite (N)	2019/06/05		93	96	80 - 120
6158840	SRM	Method Blank	Nitrate + Nitrite (N)	2019/06/05	NO.	93	mg/L	00-120
0130040	anne	Method blank	The state of the s	2019/00/03	RDL=0.050		mgrc	
6158840	SRM	RPD	Nitrate + Nitrite (N)	2019/06/05	NC		%	25
6158842	SRM	Matrix Spike	Nitrite (N)	2019/06/05		45 (5)	76	80 - 120
6158842	SRM	Spiked Blank	Nitrite (N)	2019/06/05		99	%	80 - 120
6158842	SRM	Method Blank	Nitrite (N)	2019/06/05	ND, RDL=0.010		mg/L	
6158842	SRM	RPD	Nitrite (N)	2019/06/05	NC		96	20
6159674	BCD	Matrix Spike	Isobutylbenzene - Extractable	2019/06/06		98	96	70 - 130
			n-Dotriacontane - Extractable	2019/06/06		106	%	70 - 130
			>C10-C16 Hydrocarbons	2019/06/06		83	96	70 - 130
			>C16-C21 Hydrocarbons	2019/06/06		81	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2019/06/06</td><td></td><td>93</td><td>94</td><td>70 - 130</td></c32>	2019/06/06		93	94	70 - 130
6159674	BCD	Spiked Blank	Isobutylbenzene - Extractable	2019/06/06		98	96.	70 - 130
		23 Miles America	n-Dotriacontane - Extractable	2019/06/06		107	96	70 - 130
			>C10-C16 Hydrocarbons	2019/06/06		84	96	70 - 130
			>C16-C21 Hydrocarbons	2019/06/06		81	%.	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2019/06/06</td><td></td><td>98</td><td>16</td><td>70 - 130</td></c32>	2019/06/06		98	16	70 - 130



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6159674	BCD	Method Blank	Isobutylbenzene - Extractable	2019/06/06	3.0000	97	- %	70 - 130
2000	9,910	Trialities (Smith)	n-Dotriacontane - Extractable	2019/06/06		104	%	70 - 130
			>C10-C16 Hydrocarbons	2019/06/06	ND,		mg/L	100
				4010,00,00	RDL+0.050			
			>C16-C21 Hydrocarbons	2019/06/06	ND, RDL=0.050		mg/L	
			>C2I- <c32 hydrocarbons<="" td=""><td>2019/06/06</td><td>ND, RDL=0.10</td><td></td><td>mg/L</td><td></td></c32>	2019/06/06	ND, RDL=0.10		mg/L	
6159674	BCD	RPD	>C10-C16 Hydrocarbons	2019/06/06	NC		%	40
			>C16-C21 Hydrocarbons	2019/06/05	NC		96	40
			>C21- <c32 hydrocarbons<="" td=""><td>2019/06/06</td><td>NC</td><td></td><td>%</td><td>40</td></c32>	2019/06/06	NC		%	40
6160103	BKE	Matrix Spike [JVU441-20]	Total Cyanide (CN)	2019/06/08		92	16	80 - 120
6160103	BKE	Spiked Blank	Total Cyanide (CN)	2019/06/08		100	%	80 - 120
6160103	BKE	Method Blank	Total Cyanide (CN)	2019/06/08	ND,		mg/L	
					RDL=0.0050			
6160103	BKE	RPD [JVU441-20]	Total Cyanide (CN)	2019/06/08	NC		%	20
6161254	EMT	QC Standard	Turbidity	2019/06/06		106	36	80 - 120
6161254	EMT	Spiked Blank	Turbidity	2019/06/06		96	%	80 - 120
6161254	EMT	Method Blank	Turbidity	2019/06/06	ND,		NTU	
					RDL=0.10			
6161254	EMT	RPD [JVU441-06]	Turbidity	2019/06/06	4.1		36	-20
6165901	KD9	Matrix Spike	Dissolved Chlorate (CIO3-)	2019/05/31		94	76	80 - 120
			Dissolved Chlorate (ClO3-)	2019/05/31		94	16	80 - 120
			Dissolved Chlorate (ClO3-)	2019/05/31		94	%	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		92	36	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		92	%	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		92	%	80 - 120
6165901	KD9	Spiked Blank	Dissolved Chlorate (ClO3-)	2019/05/31		88	%	88 - 120
			Dissolved Chlorate (CIO3-)	2019/05/31		88	36	80 - 120
			Dissolved Chlorate (ClO3-)	2019/05/31		88	96	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		85	%	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		85	%	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		85	16	80 - 120
6165901	KD9	Method Blank	Dissolved Chlorate (ClO3-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorate (CIO3-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorate (CIO3-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorite (CLO2-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorite (CLO2-)	2019/05/31	ND. RDL=0.10		mg/L	
			Dissalved Chlorite (CLO2-)	2019/05/31	ND, RDL=0.10		rng/L	
6172547	123	Matrix Spike	9,10-Dichlorostearic acid	2019/06/01		96	36	50 - 130
			Decanoic Acid (C10)	2019/06/01		90	%	50 - 130
			Docosanoic acid (C22)	2019/06/01		85	%	50 - 130
			Dodecanoic acid (C12)	2019/06/01		92	96	50 - 130
			Eicosanoic acid (C20)	2019/06/01		98	94	50 - 130
			Hexadecanoic acid (C16)	2019/06/01		85	%	50 - 130
			Linoleic acid (C18:2)	2019/06/01		87	%	50 - 130
			Linolenic acid (C18:3)	2019/06/01		94	56	50 - 130
			Octadecanoic acid (C18)	2019/06/01		94	:56	50 - 130



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
		The second secon	Oleic acid (C18:1)	2019/06/01	(4 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4	92	- %	50 - 130
			Tetradecanoic acid (C14)	2019/06/01		91	%	50 - 130
			Undecanoic acid (C11)	2019/06/01		102	34	50 - 130
			12,14-Dichlorodehydroabietic acid	2019/06/01		111	%	50 - 130
			12-Chlorodehydroabietic acid	2019/06/01		106	%	50 - 130
			14-Chlorodehydroabietic acid	2019/06/01		111	%	50 - 130
			Abietic acid	2019/06/01		NC	96	50 - 130
			Dehydroabietic acid	2019/06/01		NC	%	50 - 130
			Isopimaric acid	2019/06/01		NC	96	50 - 130
			Neoabietic acid	2019/06/01		68	%	50 - 130
			Palustric acid	2019/06/01		67	%	50 - 130
			Pimaric acid	2019/06/01		102	%	50 - 130
			Sandaracopimaric acid	2019/06/01		101	%	50 - 130
6172547	L23	Spiked Blank	9,10-Dichlorosteatic acid	2019/06/01		94	%	50 - 130
			Decanoic Acid (C10)	2019/06/01		.94	%	50 - 130
			Docosanoic acid (C22)	2019/06/01		88	%	50 - 130
			Dodecanoic acid (C12)	2019/06/01		94	%	50 - 130
			Eicosangic acid (C20)	2019/06/01		96	16.	50 - 130
			Hexadecanoic acid (C16)	2019/06/01		99	36	50 - 130
			Linoleic acid (C18:2)	2019/06/01		89	%	50 - 130
			Linolenic acid (C18:3)	2019/06/01		86	N	50 - 130
			Octadecanoic acid (C18)	2019/06/01		105	76	50 - 130
			Oleic acid (C18:1)	2019/06/01		99	%	50 - 130
			Tetradecangic acid (C14)	2019/06/01		94	76	50 - 130
			Undecanoic acid (C11)	2019/06/01		103	14	50 - 130
			12,14-Dichlorodehydroabietic acid	2019/06/01		114	%	50 - 130
			12-Chlorodehydroabietic acid	2019/06/01		108	36	50 - 130
			14-Chlorodehydroabietic acid	2019/06/01		110	76	50 - 130
			Abjetic acid	2019/06/01		94	*	50 - 130
			Dehydroabietic acid	2019/06/01		128	%	50 - 130
			Isopimaric acid	2019/06/01		115	34	50 - 130
			Neoabietic acid	2019/06/01		63	%	50 - 130
			Palustric acid	2019/06/01		74	%	50 - 130
			Pimaric acid	2019/06/01		107	%	50 - 130
			Sandaracopimaric acid	2019/06/01		105	%	50 - 130
6172547	123	Method Blank	Total Fatty Acids	2019/06/01	ND, RDL=0.072		mg/L	
			Total Resin Acids	2019/06/01	ND, RDL=0.060		mg/L	
			9,10-Dichlorostearic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Decanoic Acid (C10)	2019/06/01	ND, RDL=0.0060		mg/L	
			Docosanoic acid (C22)	2019/06/01	ND. RDL=0.0060		mg/L	
			Dodecanoic acid (C12)	2019/06/01	ND, RDL=0.0060		mg/L	
			Eicosanoic acid (C20)	2019/06/01	ND, RDL=0.0060		mg/L	
			Hexadecanoic acid (C16)	2019/06/01	ND, RDL=0.0060		mg/L	
			Linoleic acid (C18:2)	2019/06/01	ND, RDL=0.0060		mg/L	



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
parch	init	MALITYPE	Linolenic acid (C18:3)	2019/06/01	ND,	necovery	mg/L	AC LIMIT
				2022 (27.10.	RDL=0.0060			
			Octadecanoic acid (C18)	2019/06/01	ND, RDL=0.0060		mg/L	
			Oleic acid (C18:1)	2019/06/01	ND, RDL=0,0060		mg/L	
			Tetradecanoic acid (C14)	2019/06/01	ND, RDL=0.0060		mg/L	
			Undecanoic acid (C11)	2019/06/01	ND, RDL=0.0060		mg/L	
			12,14-Dichlorodéhydroabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			12-Chlorodehydroabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			14-Chlorodehydroabletic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Abietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Dehydroabletic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Isopimaric acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Neoabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Palustric acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Pimaric acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Sandaracopimaric acid	2019/06/01	ND, RDL=0.0060		mg/L	
5172547	123	RPO	Total Fatty Acids	2019/06/01	NC		%	30
			Total Resin Acids	2019/06/01	NC		16	30
			9,10-Dichlorostearic acid	2019/06/01	NC		96	30
			Decanoic Acid (C10)	2019/06/01	NC		%	30
			Docosanoic acid (C22)	2019/06/01	NC		14.	30
			Dodecanoic acid (C12)	2019/06/01	NC		%.	30
			Eicosanoic acid (C20)	2019/06/01	NC		.96	30
			Hexadecanoic acid (C16)	2019/06/01	NC		%	30
			Linoleic acid (C18:2)	2019/06/01	NC		16	30
			Linolenic acid (C18:3)	2019/06/01	NC		96.	30
			Octadecanoic acid (C18)	2019/06/01	NC		76	30
			Oleic acid (C18:1)	2019/06/01	NC		%	30
			Tetradecandic acid (C14)	2019/06/01	NC		16	30
			Undecanoic acid (C11)	2019/06/01	NC		94	30
			12,14-Dichlorodehydroabietic acid	2019/06/01	NC		76	30
			12-Chlorodehydroabletic acid	2019/06/01	NC		. %	30
			14-Chlorodehydroabietic acid	2019/06/01	NC		%	30
			Abietic acid	2019/06/01	NC		%	30
			Dehydroabietic acid	2019/06/01	NC		76	30
			tsopimaric acid	2019/06/01	NC		%	30
			Neoabietic acid	2019/06/01	NC		16	30
			Palustric acid	2019/06/01	NC		96	30
			Pimaric acid	2019/06/01	NC		26	30



BV Labs Job #: 89E4914 Northern Pulp N.S.
Report Date: 2019/06/24 Client Project #: Effluent Treatment Plant
Your P.O. #: 43013552

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Sandaracopimaric acid	2019/06/01	NC		76	30

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference-

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

- (1) BOD Analysis: Second source QC recovery high. Reference Material recovery and all other QC acceptable.
- (2) PAH sample contained sediment.
- (3) Matrix Spike: results are outside acceptance limit. Probable matrix interference.
- (4) Elevated spike recovery due to sample matrix, result confirmed by repeat analysis.
- (5) Poor spike recovery due to sample matrix, result confirmed by repeat analysis.



VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Brad Newman, Scientific Service Specialist Harry (Peng) Liang, Senior Analyst Vermicafelk Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics Eric Dearman, Scientific Specialist Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist Ostmarie MacDonald Rosemarie MacDonald, Scientific Specialist (Organics)

Rob Reinert, B.Sc., Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC

17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Your Project #: B9E4914 Your C.O.C. #: N-A

Attention: BEDFORD CUSTOMER SERVICE

Bureau Veritas Laboratories 200 Bluewater road Bedford, NS CANADA 848 1G9

Report Date: 2019/06/21

Report #: R2449980 Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: 8920960 Received: 2019/05/31, 09:00

Sample Matrix: Water # Samples Received: 1

	Date	Date		
Analyses	Quantity Extracte	d Analyzed	Laboratory Method	Primary Reference
Phenols in Pulp & Paper mill effluents	1 2019/06	/03 2019/06/0	5 STL SOP-00121	MA.400-Phé 1.0 R3 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Note: All parameters included in the present certificate are accredited by the MELCC unless stated otherwise:



Your Project #: 89E4914 Your C.O.C. #: N-A

Attention: BEDFORD CUSTOMER SERVICE

Bureau Veritas Laboratories 200 Bluewater road Bedford, NS CANADA 84B 1G9

Report Date: 2019/06/21

Report #: R2449980 Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: 8920960 Received: 2019/05/31, 09:00

Encryption Key

Sumin detailless Trajent Manager 71 Jun JOLA Jespeigs

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Sophie Retailfeau, Project Manager Email: Sophie RETAILLEAU@bvlabs.com Phone# (514)448-9001 Ext:7066232

This report has been generated and distributed using a secure automated process.

Lab BV has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025;2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

PHENOLS BY GCMS (WATER)

Lab BV ID		GM5613	-	
Sampling Date		2019/05/24		
Charles and the Control of the Contr		13:00		
COC Number		N-A		
	Units	JVU441-13R\CARIBOU SEA WATER CH-BOF 1-2	RDL	QC Batch
PHENOLS				
Total of Regl. P&P Phenols †	ug/L	<10	10	1994633
Phenol	ug/L	<1.0	1.0	1994633
2-Chlorophenol	ug/L	<1.0	1.0	1994633
3-Chlorophenol	ug/L	<1.0	1.0	1994633
4-Chlorophenol	ug/L	<1.0	1.0	1994633
o-Cresol	ug/L	<1.0	1.0	1994633
m-Cresol	ug/L	<1.0	1.0	1994633
p-Cresol	ug/L	<1.0	1.0	1994633
Guaiacol	ug/L	<1.0	1.0	1994633
Catechol	ug/L	<1.0	1.0	1994633
Eugenol	ug/L	<1.0	1.0	1994633
Isoeugenol	ug/L	<1.0	1.0	1994633
6-Chlorovanillin	ug/L	<1.0	1.0	1994633
5,6-Dichlorovanillin	ug/L	<1.0	1.0	1994633
3,4,5-Trichlorosyringol	ug/L	<1.0	1.0	1994633
2,4-Dimethylphenol	ug/L	<1.0	1.0	1994633
2,6-Dichlorophenal	ug/L	<1.0	1.0	1994633
3,5-Dichlorophenol	ug/L	<1.0	1.0	1994633
2,3-Dichlorophenol	ug/L	<1.0	1.0	1994633
3,4-Dichlorophenol	ug/L	<1.0	1.0	1994633
2,4 + 2,5-Dichlorophenol	ug/L	<1.0	1.0	1994633
2-Nitrophenol	ug/L	<2.0	2.0	1994633
4-Nitrophenol	ug/L	<10	10	1994633
2,4,6-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,3,5-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,3,6-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,4,5-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,3,4-Trichlorophenol	ug/L	<1.0	1.0	1994633
3,4,5-Trichlorophenol	ug/L	<1.0	1.0	1994633
4-Chloroguaiacol	ug/L	<1.0	1.0	1994633
4,5-Dichloroguaiacol	ug/L	<1.0	1.0	1994633
4,6-Dichloroguaiacol	ug/L	<1.0	1.0	1994633
2,3,5,6-Tetrachlorophenol	ug/L	<1.0	1.0	1994633



PHENOLS BY GCMS (WATER)

Lab BV ID		GM5613		
Sampling Date		2019/05/24 13:00		
COC Number		N-A		
	Units	JVU441-13R\CARIBOU SEA WATER CH-BOF 1-2	RDL	QC Batch
2,3,4,6-Tetrachlorophenol	ug/L	<1.0	1.0	1994633
2,3,4,5-Tetrachlorophenol	ug/L	<1.0	1.0	1994633
4-Chlorocatechol	ug/L	<1.0	1.0	1994633
3,5-Dichlorocatechol	ug/L	<1.0	1.0	1994633
4,5-Dichlorocatechol	ug/L	<1.0	1.0	1994633
3,4,5-Trichloroguaiacol	ug/L	<1.0	1.0	1994633
4,5,6-Trichloroguaiacol	ug/L	<1.0	1.0	1994633
Pentachlorophenol	ug/L	<1.0	1.0	1994633
3,4,5-Trichlorocatechol	ug/L	<1.0	1.0	1994633
Tetrachlorocatechol	ug/L	<1.0	1.0	1994633
Tetrachloroguaiacol	ug/L	<1.0	1.0	1994633
4,5-Dichloroveratrol	ug/L	<1.0	1.0	1994633
3,4,5-Trichloroveratrol	ug/L	<1.0	1.0	1994633
3,4,5,6-Tetrachloroveratrol	ug/L	<1.0	1.0	1994633
Surrogate Recovery (%)				
D6-Phenol	%	120	N/A	1994633
Tribromophenol-2,4,6	96	78	N/A	1994633
Trifluoro-m-cresol	%	96	N/A	1994633

QC Batch = Quality Control Batch

N/A = Not Applicable



GENERAL COMMENTS

PHENOLS BY GCMS (WATER)

Un-rounded results are used in the total "Total Phenols (RFPP)" calculation. This total result is then rounded to two significant figures.

The total indicated is calculated only for the requested parameters.

Reported detection limits are modified according to the volume of sample received.

Results relate only to the items tested.



Report Date: 2019/06/21

Bureau Veritas Laboratories Client Project #: B9E4914

QUALITY ASSURANCE REPORT

QA/QC	V2342	CHEROLICA	world contact	ecusiva suamicos:	Warre	#40 CARCESTO	1000000	CONTRACT OF THE PARTY OF THE PA
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limit
994633	GDL	Spiked Blank	D6-Phenol	2019/06/04		107	76	50 - 13
			Tribromophenol-2,4,6	2019/06/04		95	14	50 - 13
		Trifluoro-m-cresol	2019/06/04		105	%	50 - 13	
			Phenol	2019/06/04		100	96	50 - 13
			Z-Chlorophenol	2019/06/04		95	76.	50 - 13
			3-Chlorophenol	2019/06/04		96	16	50 - 13
			4-Chlorophenol	2019/06/04		99	%	50 - 13
			o-Cresol	2019/06/04		104	36	50 - 13
			m-Cresol	2019/06/04		101	%	50 - 13
			p-Cresol	2019/06/04		101	%	50 - 13
			2,4-Dimethylphenol	2019/06/04		95	%	50 - 13
			2,6-Dichlorophenol	2019/06/04		105	96	50 - 13
			3,5-Dichlorophenol	2019/06/04		95	96	50 - 13
			2,3-Dichlorophenol	2019/06/04		100	%	50 - 13
			3,4-Dichlorophenol	2019/06/04		106	%	50 - 13
			2,4 + 2,5-Dichlorophenol	2019/06/04		100	76	50 - 13
			2-Nitrophenol	2019/06/04		94	%	50 - 13
			4-Nitrophenol	2019/06/04		92	94	50 - 13
			2,4,6-Trichlorophenol	2019/06/04		104	%	50 - 13
			2,3,5-Trichlorophenol	2019/06/04		94	96	50 - 13
	2,3,6-Trichlorophenol	2019/06/04		107	%	50 - 13		
		2,4,5-Trichlorophenol	2019/06/04		109	26	50 - 13	
		2,3,4-Trichlorophenol	2019/06/04		102	76	50 - 13	
	3,4,5-Trichlorophenol	2019/06/04		108	%	50 - 13		
	2,3,5,6-Tetrachlorophenol	2019/06/04		95	76	50 - 13		
	2,3,4,6-Tetrachlorophenol	2019/06/04		107	N	50 - 13		
			2,3,4,5-Tetrachlorophenol	2019/06/04		96	%	50 - 13
			Pentachlorophenol	2019/06/04		90	%	50 - 13
994633	GDL	Spiked Blank DUP	D6-Phenol	2019/06/04		105	76	50 - 13
			Tribromophenol-2,4,6	2019/06/04		91	14	50 - 13
			Trifluoro-m-cresol	2019/06/04		101	76	50 - 13
			Phenol	2019/06/04		98	96	50 - 13
			Z-Chiorophenol	2019/06/04		93	76	50 - 13
			3-Chlorophenol	2019/06/04		95	14	50 - 13
			4-Chlorophenol	2019/06/04		93	%	50 - 13
			o-Cresol	2019/06/04		102	36	50 - 13
			m-Cresol	2019/06/04		100	%	50 - 13
			p-Cresol	2019/06/04		98	%	50 - 13
			2,4-Dimethylphenol	2019/06/04		91	%	50 - 13
			2,6-Dichlorophenol	2019/06/04		100	36	50 - 13
			3,5-Dichlorophenoi	2019/06/04		91	96	50 - 13
			2,3-Dichlorophenol	2019/06/04		94	96	50 - 13
			3,4-Dichlorophenol	2019/06/04		100	%	50 - 13
			2,4 + 2,5-Dichlorophenol	2019/06/04		96	76	50 - 13
			2-Nitrophenol	2019/06/04		87	%	50 - 13
			4-Nitrophenol	2019/06/04		89	14	50 - 13
			2,4,6-Trichlorophenol	2019/06/04		97	%	50 - 13
			2,3,5-Trichlorophenol	2019/06/04		87	96	50 - 13
			2,3,6-Trichlorophenol	2019/06/04		98	%	50 - 13
			2,4,5-Trichlorophenol	2019/06/04		104	%	50 - 13
			2,3,4-Trichlaraphenal	2019/06/04		95	16	50 - 13
			3,4,5-Trichlorophenol	2019/06/04		95	96	50 - 13
			2,3,5,6-Tetrachlorophenol	2019/06/04		88	%	50 - 13



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limit
			2,3,4,6-Tetrachlorophenol	2019/06/04		103	16	50 - 13
			2,3,4,5-Tetrachlorophenol	2019/06/04		92	14	50 - 13
			Pentachlorophenol	2019/06/04		87	76	50 - 13
994633	GDL	Method Blank	D6-Phenol	2019/06/04		99	96	50 - 13
			Total of Regi. P&P Phenois	2019/06/04	<5.0		ug/L	
			Tribromophenol-2,4,6	2019/06/04		91	14	50 - 13
			Trifluoro-m-cresol	2019/06/04		101	%	50 - 13
			Phenol	2019/06/04	< 0.50		ug/L	
			2-Chlorophenol	2019/06/04	< 0.50		ug/L	
			3-Chlorophenol	2019/06/04	< 0.50		ug/L	
			4-Chlorophenol	2019/06/04	< 0.50		ug/L	
			o-Cresol	2019/06/04	< 0.50		ug/L	
			m-Cresol	2019/06/04	< 0.50		ug/L	
			p-Cresol	2019/06/04	< 0.50		ug/L	
			Gualacol	2019/06/04	< 0.50		ug/L	
			Catechol	2019/06/04	< 0.50		ug/L	
	Eugenol	2019/06/04	< 0.50		ug/L			
	Isoeugenal	2019/06/04	< 0.50		ug/L			
		6-Chlorovanillin	2019/06/04	< 0.50		ug/L		
			5.6-Dichlorovanillin	2019/06/04	< 0.50		ug/L	
			3,4,5-Trichlorosyringol	2019/06/04	< 0.50		ug/L	
		2,4-Dimethylphenol	2019/06/04	<0.50		ug/L		
		2,6-Dichlorophenol	2019/06/04	<0.50		ug/L		
		3,5-Dichlorophenol	2019/06/04	<0.50		ug/L		
		2,3-Dichlorophenol	2019/06/04	<0.50		ug/t		
			3,4-Dichlorophenol	2019/06/04	<0.50		ug/t	
			2,4 + 2,5-Dichlorophenal	2019/06/04	<0.50		ug/L	
			2-Nitrophenol	2019/06/04	<1.0		ug/L	
			4-Nitrophenol	2019/06/04	<5.0		ug/L	
			2,4,6-Trichlorophenol	2019/06/04	<0.50		ug/L	
			2,3,5-Trichlorophenol	2019/06/04	<0.50		ug/L	
			2,3,6-Trichlorophenol	2019/06/04	<0.50		ug/L	
			2,4,5-Trichlarophenol	2019/06/04	< 0.50			
					<0.50		ug/L	
			2,3,4-Trichlorophenol	2019/06/04			ug/L	
			3,4,5-Trichlorophenol	2019/06/04	<0.50		ug/L	
			4-Chloroguaiacol	2019/06/04	<0.50		ug/L	
			4,5-Dichloroguaiacol	2019/06/04	<0.50		ug/L	
			4,6-Dichlorogualacol	2019/06/04	<0.50		ug/L	
			2,3,5,6-Tetrachlorophenol	2019/06/04	<0.50		ug/L	
			2,3,4,6-Tetrachlorophenol	2019/06/04	<0.50		ug/L	
			2,3,4,5-Tetrachiorophenoi	2019/06/04	<0.50		ug/l	
			4-Chlorocatechol	2019/06/04	<0.50		ug/L	
			3,5-Dichlorocatechol	2019/06/04	<0.50		ug/L	
			4,5-Dichlorocatechol	2019/06/04	<0.50		ug/L	
			3,4,5-Trichlorogualacol	2019/06/04	<0.50		ug/L	
			4,5,6-Trichloroguaiacol	2019/06/04	<0.50		ug/L	
			Pentachlorophenol	2019/06/04	< 0.50		ug/L	
			3,4,5-Trichlorocatechol	2019/06/04	<0.50		ug/L	
			Tetrachlorocatechol	2019/06/04	< 0.50		ug/L	
			Tetrachloroguaiacol	2019/06/04	<0.50		ug/L	
			4,5-Dichloroveratrol	2019/06/04	< 0.50		ug/L	
			3,4,5-Trichloroveratrol	2019/06/04	< 0.50		ug/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			3,4,5,6-Tetrachioroveratrol	2019/06/04	< 0.50		ug/L	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination,

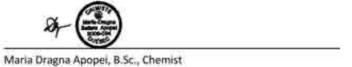
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



Lab BV Job #: B920960 Bureau Veritas Laboratories
Report Date: 2019/06/21 Client Project #: B9E4914

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Lab BV has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005 (E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

MAXXAM ANALYTICS

203 Bluewater Road Bedford, Nova Scotia, 848 169 (902) 420-0203 (902) 420-8612



Northern Pulp N.S. Maxxam PM : Maryann Comeau

SUBCONTRACTING REQUEST FORM

To: Be	Internation	nal Sample/	BioHazard (ubcontrac If yes, add copy of Movem	ent Cert., heat treat is	required poor t	3.334	B9E4914
Sample ID IVU441-138\C 80F 1-2	NRIBOU SEA V	NATER CH-	Matrix W	Test(s) Required Phenois in Pulp and P	aper Mill Effluents	Container 2-DPWE	Date Sampled 2019/05/24 13:	Date Required 00 2019/06/06
	femp.1	Temp. 2	Temp. 3					
Cooler #1	3	3	(Custody Seal Present Custody Seal Intact Ico Present Upon Receipt	V65	(NO)		
Cooler #2				Custody Seal Present Custody Seal Intact	YES	NO NO		
Cooler #3				ice Present Upon Receipt Custody Seal Present Custody Seal Intact Ice Present Upon Receipt	YES YES	NO NO		
2) Please ad 3) Include co	vise us if you	ur laborate ompleted	ory cannot	lease reference Sample I perform the requested a of COC & signed final rep	malysis or must subc			09:00
MComea Reporting Ro National: N0 Regional:	01				Sophie Ret		0	
	- 1	920960	coc		B9209			
Shipping In		ght Yellow)		Ship Cold	Shipping Departe Correct Shipping Correct Sample ic	location is (Paperwork vs		



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant

Your C.O.C. #: 715284-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/06/24

Report #: R5768673 Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89E4476 Received: 2019/05/29, 12:45

Sample Matrix: Water # Samples Received: 1

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Reference
Carbonate, Bicarbonate and Hydroxide	1	N/A	2019/06/20	N/A	SM 23 4500-CO2 D
Alkalinity	1	N/A	2019/06/18	ATL SOP 00013	EPA 310.2 R1974 m
Benzo(b/j)fluoranthene Sum (water)	1	N/A	2019/06/03	N/A	Auto Calc.
Carbonaceous BOD	1	2019/05/30	2019/06/04	ATL SQP 00041	SM 23 5210B m
Chloride	1	N/A	2019/06/19	ATL SOP 00014	SM 23 4500-CI- E m
Chemical Oxygen Demand (COD)	1	N/A	2019/05/30	ATL SOP 00042	SM 23 5220D m
Colour	1	N/A	2019/06/18	ATL SOP 00020	SM 23 2120C m
Total Cyanide (1)	1	2019/06/05	2019/06/07	CAM SOP-00457	OMOE E3015 5 m
Dioxins/Furans in Water (EPS 1/RM/23) (1, 5)	1	2019/06/06	2019/06/12	BRL SOP-00406 (mod)	EPS 1/RM/23 m
Organic carbon - Diss (DOC) (6)	1	N/A	2019/06/05	ATL SOP 00203	SM 23 5310B m
Conductance - water	1	N/A	2019/06/19	ATL SOP 00004	SM 23 2510B m
TEH in Water (PIRI)	1	2019/06/04	2019/06/04	ATL SOP 00113	Atl. RBCA v3.1 m
Sulphide as H2S (1)	1	N/A	2019/06/03		
Hardness (calculated as CaCO3)	1	N/A	2019/05/31	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	1	2019/05/31	2019/05/31	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total MS	1	2019/05/30	2019/05/31	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	1	N/A	2019/06/20	N/A	Auto Calc
Anion and Cation Sum	1	N/A	2019/06/20	N/A	Auto Calc.
Chlorate and Chlorite by IC (2)	1	N/A	2019/06/06	CAL SOP-00040	SM 23 4110D m
Nitrogen (Total) (3)	1	N/A	2019/06/03	BBY6SOP-00016	SM 22 4500-N C m
Resin and Fatty Acids (2)	1	2019/05/31	2019/06/01	CAL SOP-00099	AE129.0
Nitrogen Ammonia - water	1	N/A	2019/06/06	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2019/06/18	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	1	N/A	2019/06/18	ATL SOP 00017	SM 23 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2019/06/19	ATL SOP 00018	ASTM D3867-16
PAH in Water by GC/MS (SIM)	1	2019/05/31	2019/06/01	ATL SOP 00103	EPA 8270E R6 m
PCBs in water by GC/ECD	1	2019/06/04	2019/06/05	ATL SOP 00107	EPA 8082A m
PCB Aroclor sum (water)	1	N/A	2019/06/05	N/A	Auto Calc.
Phenois in Pulp and Paper Mill Effluents (4)	1	2019/06/01	2019/06/05		
pH (7)	.1	N/A	2019/06/19	ATL SOP 00003	SM 23 4500-H+ B m
Phosphorus - ortho	1	N/A	2019/06/18	ATL SOP 00021	SM 23 4500-P E m



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant

Your C.O.C. #: 715284-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/06/24

Report #: R5768673 Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9E4476 Received: 2019/05/29, 12:45

Sample Matrix: Water # Samples Received: 1

# Samples Received: 1					
Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
VPH in Water (PIRI)	1	N/A	2019/06/02	ATL SOP 00118	Atl. RBCA v3.1 m
Salinity (8)	1	N/A	2019/06/18		SM 22 2520B
Sat. pH and Langelier Index (@ 20C)	1	N/A	2019/06/20	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	1	N/A	2019/06/20	ATL SOP 00049	Auto Calc
Reactive Silica	1	N/A	2019/06/19	ATL SOP 00022	EPA 366.0 m
Sulphate	1	N/A	2019/06/19	ATL SOP 00023	ASTM D516-16 m
Sulphide (1)	1	N/A	2019/06/03	CAM SOP-00455	SM 23 4500-5 G m
Total Dissolved Solids (TDS calc)	1	N/A	2019/06/19	N/A	Auto Calc.
Total Kjeldahl Nitrogen in Water (1)	1	2019/06/01	2019/06/04	CAM SOP-00938	OMOE E3516 m
Organic carbon - Total (TOC) (6)	1	N/A	2019/06/04	ATL SOP 00203	SM 23 5310B m
ModTPH (T1) Calc. for Water	1	N/A	2019/06/05	N/A	Atl. RBCA v3 m
Phosphorus Total Colourimetry	1	2019/06/05	2019/06/06	ATL SOP 00057	EPA 365.1 RZ m
Total Suspended Solids	1	2019/05/31	2019/06/03	ATL SOP 00007	5M 23 2540D m
Turbidity	1	N/A	2019/06/10	ATL SOP 00011	EPA 180.1 R2 m
Volatile Organic Compounds in Water	1	N/A	2019/05/30	ATL SOP 00133	EPA 82600 R4 m
Volatile Suspended Solids	1	N/A	2019/06/04	ATL SOP 00008	EPA 160.4 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant

Your C.O.C. #: 715284-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/06/24

Report #: R5768673 Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89E4476 Received: 2019/05/29, 12:45

dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

- * RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
- (1) This test was performed by Bureau Veritas Laboratories Mississauga
- (2) This test was performed by Bedford to Calgary Offsite
- (3) This test was performed by Bedford to Burnaby Offsite
- (4) This test was performed by Bedford to Montreal Subcontrac
- (5) Confirmatory runs for 2,3,7,8-TCDF are performed only if the primary result is greater than the RDL.
- (6) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.
- (7) The APHA Standard Method require pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.

(8) Non-accredited test method

Encryption Key

Heysonia (Danlesreck) Fraject Manager Artistant

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Maryann Comeau, Project Manager Email: Maryann.COMEAU@bvlabs.com Phone# (902)420-0203 Ext:298

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



RESULTS OF ANALYSES OF WATER

BV Labs ID		JVR188			
Sampling Date		2019/05/25 18:15			
COC Number		715284-01-01			
	UNITS	CARIBOU SEA WATER CHB 2-1	RDL	MDL	QC Batch
Calculated Parameters					-
Anion Sum	me/L	509	N/A	N/A	6147444
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	92	1.0	0.20	6147433
Calculated TDS	mg/L	29000	1.0	0.20	6147453
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND	1.0	0.20	6147433
Cation Sum	me/L	481	N/A	N/A	6147444
Hardness (CaCO3)	mg/L	5200	1.0	1.0	6147440
Ion Balance (% Difference)	96	2.82	N/A	N/A	6147442
Langelier Index (@ 20C)	N/A	0.258			6147449
Langelier Index (@ 4C)	N/A	0.0200			6147451
Nitrate (N)	mg/L	ND	0.050	N/A	6147446
Saturation pH (@ 20C)	N/A	7.35			6147449
Saturation pH (@ 4C)	N/A	7.58			6147451
Sulphide (as H2S)	mg/L	ND	0.021	0.011	6147649
Inorganics					
Total Alkalinity (Total as CaCO3)	mg/L	93	5.0	N/A	6182160
Carbonaceous BOD	mg/L	ND (1)	10	N/A	6148701
Total Chemical Oxygen Demand	mg/L	1200	200	N/A	6148620
Dissolved Chlorate (CIO3-)	mg/L	ND (2)	5.0	N/A	6165901
Dissolved Chloride (Cl-)	mg/L	17000	500	N/A	6182167
Dissolved Chlorite (CLO2-)	mg/t	ND (2)	5.0	N/A	6165901
Colour	TCU	ND	5.0	N/A	6182170
Total Kjeldahl Nitrogen (TKN)	mg/L	0.20	0.10	0.060	6153709
Nitrate + Nitrite (N)	mg/L	ND	0.050	N/A	6182172
Nitrite (N)	mg/L	ND	0.010	N/A	6182173
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	N/A	6159706
Dissolved Organic Carbon (C)	mg/L	1.6	0.50	N/A	6158927
Total Organic Carbon (C)	mg/L	2.2	0.50	N/A	6154507
Orthophosphate (P)	mg/L	ND	0.010	N/A	6182171
рН	pH	7.60	N/A	N/A	6184783

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected

- Sample integrity may have been compromised, the sample exceeded it's hold time prior to being analyzed.
- (2) Detection limits raised due to matrix interference.



RESULTS OF ANALYSES OF WATER

BV Labs ID		JVR188			
Sampling Date		2019/05/25 18:15			
COC Number		715284-01-01			
	UNITS	CARIBOU SEA WATER CHB 2-1	RDL	MDL	QC Batch
Total Phosphorus	mg/L	ND	0.020	N/A	6158894
Salinity	N/A	30	2.0	N/A	6181990
Reactive Silica (SiO2)	mg/L	ND	0.50	N/A	6182169
Total Suspended Solids	mg/L	2.0	1.0	N/A	6151063
Dissolved Sulphate (SO4)	mg/L	1900	40	N/A	6182168
Sulphide	mg/L	ND	0.020	0.010	6154879
Total Cyanide (CN)	mg/L	ND	0.0050	0.00010	6159669
Turbidity	NTU	0.82	0.10	0.10	6186832
Volatile Suspended Solids	mg/L	ND	2.0	N/A	6157072
Conductivity	uS/cm	44000	1.0	N/A	6184788
Nutritional Parameters					
Total Nitrogen (N)	mg/L	0.131	0.020	N/A	6157791
Subcontracted Analysis	-		-		-
Subcontract Parameter	N/A	ATTACHED	N/A	N/A	6153391
RDL = Reportable Detection Li QC Batch = Quality Control Bat ND = Not detected					

N/A = Not Applicable



MERCURY BY COLD VAPOUR AA (WATER)

BV Labs ID		JVR188			
Sampling Date		2019/05/25 18:15			
COC Number		715284-01-01			
	UNITS	CARIBOU SEA WATER CHB 2-1	RDL	MDL	QC Batch
Metals					
Total Mercury (Hg)	ug/L	0.013	0.013	N/A	6149403
ROL = Reportable Detect	tion Limit				
QC Batch = Quality Cont N/A = Not Applicable	rol Batch				

ELEMENTS BY ICP/MS (WATER)

BV Labs ID		JVR188			
Sampling Date		2019/05/25 18:15			
COC Number		715284-01-01			
	UNITS	CARIBOU SEA WATER CHB 2-1	RDL	MDL	QC Batcl
Metals					
Total Aluminum (AI)	ug/L	ND	50	N/A	614897
Total Antimony (Sb)	ug/L	ND	10	N/A	614897
Total Arsenic (As)	ug/L	ND	10	N/A	614897
Total Barium (Ba)	ug/L	11	10	N/A	6148971
Total Beryllium (Be)	ug/L	ND	10	N/A	6148971
Total Bismuth (Bi)	ug/L	ND	20	N/A	6148971
Total Boron (B)	ug/L	3600	500	N/A	6148971
Total Cadmium (Cd)	ug/L	ND	0.10	N/A	6148971
Total Calcium (Ca)	ug/L	340000	1000	N/A	614897
Total Chromium (Cr)	ug/L	ND	10	N/A	614897
Total Cobalt (Co)	ug/L	ND	4.0	N/A	614897
Total Copper (Cu)	ug/L	ND	5.0	N/A	614897
Total Iron (Fe)	ug/L	ND	500	N/A	614897
Total Lead (Pb)	ug/L	ND	5.0	N/A	614897
Total Magnesium (Mg)	ug/L	1100000	1000	N/A	614897
Total Manganese (Mn)	ug/L	ND	20	N/A	614897
Total Molybdenum (Mo)	ug/L	ND	20	N/A	614897
Total Nickel (Ni)	ug/L	ND	20	N/A	614897
Total Phosphorus (P)	ug/L	ND	1000	N/A	614897
Total Potassium (K)	ug/L	320000	1000	N/A	614897
Total Selenium (Se)	ug/L	ND	10	N/A	614897
Total Silver (Ag)	ug/L	ND	1.0	N/A	614897
Total Sodium (Na)	ug/L	8500000	1000	N/A	614897
Total Strontium (Sr)	ug/L	6100	20	N/A	614897
Total Thallium (TI)	ug/L	ND	1.0	N/A	614897
Total Tin (Sn)	ug/L	ND	20	N/A	614897
Total Titanium (Ti)	ug/L	ND	20	N/A	614897
Total Uranium (U)	ug/L	2.9	1.0	N/A	614897
Total Vanadium (V)	ug/L	ND	20	N/A	614897
Total Zinc (Zn)	ug/L	ND	50	N/A	614897

ND = Not detected

N/A = Not Applicable

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		JVR188		Ŋ.	
Sampling Date		2019/05/25 18:15			
COC Number		715284-01-01			
	UNITS	CARIBOU SEA WATER CHB 2-1	RDL	MDL	QC Batch
Polyaromatic Hydrocarbor	ns				
1-Methylnaphthalene	ug/L	ND	0.050	N/A	6151065
2-Methylnaphthalene	ug/L	ND	0.050	N/A	6151065
Acenaphthene	ug/L	ND	0.010	N/A	6151065
Acenaphthylene	ug/L	ND	0.010	N/A	6151065
Anthracene	ug/L	ND	0.010	N/A	6151065
Benzo(a)anthracene	ug/L	ND	0.010	N/A	6151065
Benzo(a)pyrene	ug/L	ND	0.010	N/A	6151065
Benzo(b)fluoranthene	ug/L	ND	0.010	N/A	6151065
Benzo(b/j)fluoranthene	ug/L	ND	0.020	N/A	6146340
Benzo(g,h,i)perylene	ug/L	ND	0.010	N/A	6151065
Benzo(j)fluoranthene	ug/L	ND	0.010	N/A	6151065
Benzo(k)fluoranthene	ug/L	ND	0.010	N/A	6151065
Chrysene	ug/L	ND	0.010	N/A	6151065
Dibenz(a,h)anthracene	ug/L	ND	0.010	N/A	6151065
Fluoranthene	ug/L	ND	0.010	N/A	6151065
Fluorene	ug/L	ND	0.010	N/A	6151065
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.010	N/A	6151065
Naphthalene	ug/L	ND	0.20	N/A	6151065
Perylene	ug/t	ND	0.010	N/A	6151065
Phenanthrene	ug/t	ND	0.010	N/A	6151065
Pyrene	ug/L	ND	0.010	N/A	6151065
Surrogate Recovery (%)				-	
D10-Anthracene	%	98			6151065
D14-Terphenyl	%	107			6151065
D8-Acenaphthylene	%	92			6151065
RDL = Reportable Detection QC Batch = Quality Control ND = Not detected N/A = Not Applicable					

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		JVR188			
Sampling Date		2019/05/25 18:15			
COC Number		715284-01-01			
	UNITS	CARIBOU SEA WATER CHB 2-1	RDL	MDL	QC Batch
Volatile Organics					
1,1-Dichloroethane	ug/L	ND	2.0	N/A	6148613
1,1-Dichloroethylene	ug/L	ND	0.50	1.0	6148613
1,1,1-Trichloroethane	ug/L	ND	1.0	N/A	6148613
1,1,2-Trichloroethane	ug/L	ND	1.0	N/A	6148613
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	N/A	6148613
Ethylene Dibromide	ug/L	ND:	0.20	0.50	6148613
1,2-Dichlorobenzene	ug/L	ND.	0.50	N/A	6148613
1,2-Dichloroethane	ug/L	ND:	1.0	N/A	6148613
cis-1,2-Dichloroethylene	ug/L	ND	0.50	N/A	6148613
trans-1,2-Dichloroethylene	ug/L	ND	0.50	N/A	6148613
1,2-Dichloropropane	ug/L	ND	0.50	N/A	6148613
1,3-Dichlorobenzene	ug/L	ND	1.0	N/A	6148613
cis-1,3-Dichloropropene	ug/L	ND	0.50	N/A	6148613
trans-1,3-Dichloropropene	ug/L	ND	0.50	N/A	6148613
1,4-Dichlorobenzene	ug/L	ND	1.0	N/A	6148613
Benzene	ug/L	ND	1.0	N/A	6148613
Bromodichloromethane	ug/L	ND	1.0	0.20	6148613
Bromoform	ug/L	ND:	1.0	0.20	6148613
Bromomethane	ug/L	ND	0.50	N/A	6148613
Carbon Tetrachloride	ug/L	ND:	0.50	N/A	6148613
Chlorobenzene	ug/L	ND	1.0	N/A	6148613
Chloroethane	ug/L	ND	8.0	N/A	6148613
Chloroform	ug/L	ND	1.0	0.20	6148613
Chloromethane	ug/L	ND	8.0	N/A	6148613
Dibromochloromethane	ug/L	ND	1.0	0.20	6148613
Methylene Chloride(Dichloromethane)	ug/L	ND	3.0	N/A	6148613
Ethylbenzene	ug/L	ND	1.0	-	6148613
Methyl t-butyl ether (MTBE)	ug/L	ND	2.0	N/A	6148613
Styrene	ug/L	ND	1.0	N/A	6148613
Tetrachloroethylene	ug/t	ND	1.0	N/A	6148613
Toluene	ug/L	ND	1.0	N/A	6148613
Trichloroethylene	ug/L	ND	1.0	N/A	6148613

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		JVR188			
Sampling Date		2019/05/25 18:15			
COC Number		715284-01-01			
	UNITS	CARIBOU SEA WATER CHB 2-1	RDL	MDL	QC Batch
Trichlorofluoromethane (FREON 11)	ug/L	ND	8.0	N/A	6148613
Vinyl Chloride	ug/L	ND	0.50	2.0	6148613
o-Xylene	ug/L	ND	1.0	N/A	6148613
p+m-Xylene	ug/L	ND	2.0	N/A	6148613
Total Xylenes	ug/t	ND	1.0	1.0	6148613
Total Trihalomethanes	ug/L	ND	1.0	N/A	6148613
Surrogate Recovery (%)					
4-Bromofluorobenzene	%	97			6148613
D4-1,2-Dichloroethane	%	117			6148613
D8-Toluene	%	99			6148613

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

ATLANTIC RBCA HYDROCARBONS (WATER)

BV Labs ID		JVR188				
Sampling Date		2019/05/25 18:15				
COC Number		715284-01-01				
	UNITS	CARIBOU SEA WATER CHB 2-1	RDL	MDL	QC Batch	
Petroleum Hydrocarbons						
Benzene	mg/L	ND.	0.0010	N/A	6153412	
Toluene	mg/L	ND	0.0010	N/A	6153412	
Ethylbenzene	mg/L	ND	0.0010	N/A	6153412	
Total Xylenes	mg/L	ND.	0.0020	N/A	6153412	
C6 - C10 (less BTEX)	mg/L	ND	0.010	N/A	6153412	
>C10-C16 Hydrocarbons	mg/L	ND:	0.050	N/A	6156564	
>C16-C21 Hydrocarbons	mg/t	ND	0.050	N/A	6156564	
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>ND</td><td>0.10</td><td>N/A</td><td>6156564</td></c32>	mg/L	ND	0.10	N/A	6156564	
Modified TPH (Tier1)	mg/L	ND	0.10	N/A	6146630	
Reached Baseline at C32	mg/L	NA.	N/A	N/A	6156564	
Hydrocarbon Resemblance	mg/L	NA.	N/A	N/A	6156564	
Surrogate Recovery (%)	-					
Isobutylbenzene - Extractable	%	98			6156564	
n-Dotriacontane - Extractable	%	107			6156564	
Isobutylbenzene - Volatile	%	92			6153412	
RDL = Reportable Detection Lin QC Batch = Quality Control Batch ND = Not detected N/A = Not Applicable						



POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

BV Labs ID		JVR188			
Sampling Date		2019/05/25 18:15			
COC Number		715284-01-01		MDL	
	UNITS	CARIBOU SEA WATER CHB 2-1	RDL		QC Batch
PCBs					
Aroclor 1016	ug/L	ND	0.050	N/A	6156517
Aroclor 1221	ug/L	ND	0.050	N/A	6156517
Arocior 1232	ug/L	ND	0.050	N/A	6156517
Aroclor 1248	ug/L	ND	0.050	N/A	6156517
Aroclor 1242	ug/L	ND	0.050	N/A	6156517
Aroclor 1254	ug/L	ND	0.050	N/A	6156517
Aroclor 1260	ug/L	ND	0.050	N/A	6156517
Calculated Total PCB	ug/L	ND	0.050	N/A	6146342
Surrogate Recovery (%)					
Decachlorobiphenyl	%	89			6156517
RDL = Reportable Detecti QC Batch = Quality Contro ND = Not detected N/A = Not Applicable					

RESIN AND FATTY ACIDS BY GC-MS (WATER)

BV Labs ID		JVR188			
Sampling Date		2019/05/25 18:15			
COC Number		715284-01-01			
	UNITS	CARIBOU SEA WATER CHB 2-1	RDL	MDL	QC Batch
Calculated Parameters			-		
Total Fatty Acids	mg/L	ND:	0.072	N/A	6172547
Total Resin Acids	mg/L	ND	0.060	N/A	6172547
Fatty Acids					
9,10-Dichlorostearic acid	mg/L	ND	0.0060	N/A	6172547
Decanoic Acid (C10)	mg/L	ND	0.0060	N/A	6172547
Docosanoic acid (C22)	mg/L	ND:	0.0060	N/A	6172547
Dodecanoic acid (C12)	mg/L	ND	0.0060	N/A	6172547
Eicosanoic acid (C20)	mg/L	ND:	0.0060	N/A	6172547
Hexadecanoic acid (C16)	mg/L	ND	0.0060	N/A	6172547
Linoleic acid (C18:2)	mg/L	ND	0.0060	N/A	6172547
Linolenic acid (C18:3)	mg/L	ND	0.0060	N/A	6172547
Octadecanoic acid (C18)	mg/L	ND	0.0060	N/A	6172547
Oleic acid (C18:1)	mg/L	ND:	0.0060	N/A	6172547
Tetradecanoic acid (C14)	mg/L	ND	0.0060	N/A	6172547
Undecanoic acid (C11)	mg/L	ND.	0.0060	N/A	6172547
Resin Acids					
12,14-Dichlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6172547
12-Chlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6172547
14-Chlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6172547
Abietic acid	mg/L	ND:	0.0060	N/A	6172547
Dehydroabietic acid	mg/L	ND	0.0060	N/A	6172547
Isopimaric acid	mg/L	ND	0.0060	N/A	6172547
Neoabietic acid	mg/L	ND	0.0060	N/A	6172547
Palustric acid	mg/L	ND	0.0060	N/A	6172547
Pimaric acid	mg/L	ND	0.0060	N/A	5172547
Sandaracopimaric acid	mg/L	ND	0.0060	N/A	6172547
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not detected N/A = Not Applicable					



DIOXINS AND FURANS BY HRMS (WATER)

BV Labs ID		JVR188							
Sampling Date		2019/05/25 18:15							
COC Number		715284-01-01				TOXIC EQUI	VALENCY	# of	
	UNITS	TS CARIBOU SEA WATER CHB 2-1	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL) Isome		QC Batch
Dioxins & Furans				_		2			
2,3,7,8-Tetra CDD *	pg/L	ND	1.00	9.48	N/A	1.00	1.00		6170521
1,2,3,7,8-Penta CDD *	pg/L	ND	1.06	9.48	N/A	1.00	1.06		6170521
1,2,3,4,7,8-Hexa CDD *	pg/L	ND	1.10	9.48	N/A	0.100	0.110		6170521
1,2,3,6,7,8-Hexa CDD *	pg/L	ND	0.952	9.48	N/A	0.100	0.0952		6170521
1,2,3,7,8,9-Hexa CDD *	pg/L	ND.	0.925	9.48	N/A	0.100	0.0925		6170521
1,2,3,4,6,7,8-Hepta CDD *	pg/L	ND	1.02	9.48	N/A	0.0100	0.0102		6170521
Octa CDD *	pg/L	1.44	1.11	94.8	N/A	0.000300	0.000432		6170521
Total Tetra CDD *	pg/L	ND	1.00	9,48	N/A			a	6170521
Total Penta CDD *	pg/L	ND:	1.06	9.48	N/A			0	6170521
Total Hexa CDD.*	pg/L	ND:	0.986	9.48	N/A			0	6170521
Total Hepta CDD *	pg/L	ND	1.02	9.48	N/A			0	6170521
2,3,7,8-Tetra CDF **	pg/L	ND	0.999	9.48	N/A	0.100	0.0999		6170521
1,2,3,7,8-Penta CDF **	pg/L	ND	1.03	9.48	N/A	0.0300	0.0309		6170521
2,3,4,7,8-Penta CDF **	pg/L	ND	1.04	9.48	N/A	0.300	0.312		6170521
1,2,3,4,7,8-Hexa CDF **	pg/L	ND	0.975	9.48	N/A	0.100	0.0975		6170521
1,2,3,5,7,8-Hexa CDF **	pg/L	ND	0.813	9.48	N/A	0.100	0.0813		6170521
2,3,4,6,7,8-Hexa CDF **	pg/L	ND.	0.920	9.48	N/A	0.100	0.0920		6170521
1,2,3,7,8,9-Hexa CDF **	pg/L	ND	1.02	9.48	N/A	0.100	0.102		6170521
1,2,3,4,6,7,8-Hepta CDF **	pg/L	ND:	0.901	9.48	N/A	0.0100	0.00901		6170521
1,2,3,4,7,8,9-Hepta CDF **	pg/L	ND	1.03	9,48	N/A	0.0100	0.0103) [6170521
Octa CDF **	pg/L	ND:	0.954	94.8	N/A	0.000300	0.000286	1	6170521
Total Tetra CDF **	pg/L	ND:	0.999	9.48	N/A			0	6170521
Total Penta CDF **	pg/L	ND	1.04	9.48	N/A			0	6170521
Total Hexa CDF **	pg/L	ND	0.925	9.48	N/A			0	6170521
Total Hepta CDF **	pg/L	ND	0.959	9.48	N/A			0	6170521

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,

The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

* CDD = Chloro Dibenzo-p-Dioxin

ND = Not detected

N/A = Not Applicable

** CDF = Chloro Dibenzo-p-Furan



DIOXINS AND FURANS BY HRMS (WATER)

BV Labs ID		JVR188							
Sampling Date		2019/05/25 18:15							
COC Number		715284-01-01				TOXIC EQUIVALENCY		# of	
	UNITS	CARIBOU SEA WATER CHB 2-1	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg/L			П			3.20		
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	96	118		I I		ļ. I.		1	6170521
C13-1234678 HeptaCDF **	96	108							6170521
C13-123678 HexaCDD *	%	122							6170521
C13-123678 HexaCDF **	%	96						1	6170521
C13-12378 PentaCDD *	%	83							6170521
C13-12378 PentaCDF **	%	68							6170521
C13-2378 TetraCDD *	96	89						1	6170521
C13-2378 TetraCDF **	96	73							6170521
C13-OCDD *	%	114							6170521

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,

The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

* CDD = Chloro Dibenzo-p-Dioxin

** CDF = Chloro Dibenzo-p-Furan



GENERAL COMMENTS

Each temperature is the	average of up to	hree cooler temperatures taken at receipt	
Package 1	7.0°C		
ample received past the	recommended l	olding time for BOD testing.	
ample JVR188 [CARIBO	U SEA WATER CH	2-1] : Elevated reporting limits for trace metals due to sample matrix.	
Results relate only to th	e items tested.		



QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6148613	ASL	Matrix Spike	4-Bromofluorobenzene	2019/05/30		99	- 14	70 - 130
			D4-1,2-Dichloroethane	2019/05/30		120	76	70 - 130
			D8-Toluene	2019/05/30		96	34	70 - 130
			I,1-Dichloroethane	2019/05/30		108	%	70 - 130
			1,1-Dichloroethylene	2019/05/30		110	%	70 - 130
			1,1,1-Trichloroethane	2019/05/30		109	%	70 - 130
			1,1,2-Trichloroethane	2019/05/30		109	%	70 - 130
			1,1,2,2-Tetrachloroethane	2019/05/30		109	%	70 - 130
			Ethylene Dibromide	2019/05/30		112	%	70 - 130
			1,2-Dichlorobenzene	2019/05/30		91	%	70 - 130
			1,2-Dichloroethane	2019/05/30		112	%	70 - 130
			cis-1,2-Dichloroethylene	2019/05/30		102	%	70 - 130
			trans-1,2-Dichloroethylene	2019/05/30		108	%	70 - 130
			1,2-Dichloropropane	2019/05/30		106	%	70 - 130
			1,3-Dichlorobenzene	2019/05/30		87	96	70 - 130
			cis-1,3-Dichloropropene	2019/05/30		111	76	70 - 130
			trans-1,3-Dichloropropene	2019/05/30		121	Y6.	70 - 130
			1,4-Dichlorobenzene	2019/05/30		87	96.	70 - 130
			Benzene	2019/05/30		93	36	70 - 130
			Bromodichloromethane	2019/05/30		102	76	70 - 130
			Bromafarm	2019/05/30		104	76	70 - 130
			Bromomethane	2019/05/30		100	76	60 - 140
			Carbon Tetrachloride	2019/05/30		105	%	70 - 130
			Chlorobenzene	2019/05/30		92	76	70 - 130
			Chloroethane	2019/05/30		90	14	60 - 140
			Chloroform	2019/05/30		102	76	70 - 130
			Chloromethane	2019/05/30		94	96.	60 - 140
			Dibromochloromethane	2019/05/30		108	76	70 - 130
			Methylene Chloride(Dichloromethane)	2019/05/30		106	*	70 - 130
			Ethylbenzene	2019/05/30		94	%	70 - 130
			Methyl t-butyl ether (MTBE)	2019/05/30		103	34	70 - 130
			Styrene	2019/05/30		99	%	70 - 130
			Tetrachloroethylene	2019/05/30		97	%	70 - 130
			Toluene	2019/05/30		97	%	70 - 130
			Trichloroethylene	2019/05/30		98	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2019/05/30		93	96	60 - 140
			Vinyl Chloride	2019/05/30		91	%	60 - 140
			o-Xylene	2019/05/30		94	%	70 - 130
			p+m-Xylene	2019/05/30		92	%	70 - 130
6148613	ASL	Spiked Blank	4-Bromofluorobenzene	2019/05/30		101	%	70 - 130
			D4-1,2-Dichloroethane	2019/05/30		111	%	70 - 130
			D8-Toluene	2019/05/30		97	%	70 - 130
			1,1-Dichloroethane	2019/05/30		108	96	70 - 130
			1,1-Dichlorgethylene	2019/05/30		113	%	70 - 130
			1,1,1-Trichloroethane	2019/05/30		111	74.	70 - 130
			1,1,2-Trichloroethane	2019/05/30		103	96.	70 - 130
			1,1,2,2-Tetrachloroethane	2019/05/30		103	36	70 - 130
			Ethylene Dibromide	2019/05/30		104	76	70 - 130
			1,2-Dichlorobenzene	2019/05/30		93	14.	70 - 130
			1,2-Dichloroethane	2019/05/30		106	%	70 - 130
			cis-1,2-Dichloroethylene	2019/05/30		100	96	70 - 130
			trans-1,2-Dichloroethylene	2019/05/30		109	%	70 - 130
			1,2-Dichloropropane	2019/05/30		105	%	70 - 130
			1.3-Dichlorobenzene	2019/05/30		91	%	70 - 130



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			cis-1,3-Dichloropropene	2019/05/30		104	- %	70 - 130
			trans-1,3-Dichloropropene	2019/05/30		108	%	70 - 130
			1,4-Dichlorobenzene	2019/05/30		90	. 34	70 - 130
			Benzene	2019/05/30		93	%	70 - 13
			Bromodichloromethane	2019/05/30		101	96	70 - 130
			Bromoform	2019/05/30		99	%	70 - 130
			Bromomethane	2019/05/30		95	96	60 - 14
			Carbon Tetrachloride	2019/05/30		108	%	70 - 13
			Chlorobenzene	2019/05/30		94	%	70 - 13
			Chloroethane	2019/05/30		91	96	60 - 14
			Chloroform	2019/05/30		101	96	70 - 13
			Chloromethane	2019/05/30		92	%	60 - 14
			Dibromochloromethane	2019/05/30		104	%	70 - 13
			Methylene Chloride(Dichloromethane)	2019/05/30		101	%	70 - 13
			Ethylbenzene	2019/05/30		99	34	70 - 13
				2019/05/30		101	%	70 - 13
			Methyl t-butyl ether (MTBE)			102		70 - 13
			Styrene	2019/05/30			%	
			Tetrachloroethylene	2019/05/30		101	96.	70 - 13
			Toluene	2019/05/30		99	36	70 - 13
			Trichloroethylene	2019/05/30		101	*	70 - 13
			Trichlorofluoromethane (FREON 11)	2019/05/30		96	N	60 - 14
			Vinyl Chloride	2019/05/30		87	76	60 - 14
			o-Xylene	2019/05/30		98	%	70 - 13
			p+m-Xylene	2019/05/30		96	76	70 - 13
148613	ASL	Method Blank	4-Bromafluorobenzene	2019/05/30		98	14	70 - 13
			D4-1,2-Dichloroethane	2019/05/30		111	76	70 - 13
			D8-Toluene	2019/05/30		100	96.	70 - 13
			1,1-Dichloroethane	2019/05/30	ND, RDL=2.0		ug/L	
			1,1-Dichloroethylene	2019/05/30	ND, RDL=0.50		ug/L	
			1,1,1-Trichloroethane	2019/05/30	ND, RDL=1.0		ug/t	
			1,1,2-Trichloroethane	2019/05/30	ND, RDL=1.0		ug/L	
			1,1,2,2-Tetrachloroethane	2019/05/30	ND, RDL=0.50		ug/L	
			Ethylene Dibromide	2019/05/30	ND, RDL=0.20		ug/L	
			1,2-Dichlorobenzene	2019/05/30	ND, RDL=0.50		ug/L	
			1,2-Dichloroethane	2019/05/30	ND, RDL=1.0		ug/L	
			cis-1,2-Dichloroethylene	2019/05/30	ND, RDL=0.50		ug/L	
			trans-1,2-Dichloroethylene	2019/05/30	ND, RDL=0.50		ug/L	
		1,2-Dichloropropane	2019/05/30	ND, RDL=0.50		ug/t		
			1,3-Dichlorobenzene	2019/05/30	ND, RDL=1.0		ug/L	
			cis-1,3-Dichloropropene	2019/05/30	ND, RDL=0.50		ug/L	
			trans-1,3-Dichloropropene	2019/05/30	ND, RDL=0.50		ug/L	

Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limi
			1,4-Dichlarobenzene	2019/05/30	ND, RDL=1.0		ug/L	
			Benzene	2019/05/30	ND, RDL=1.0		ug/L	
			Bromodichloromethane	2019/05/30	ND, RDL=1.0		ug/L	
			Bromoform	2019/05/30	ND, RDL=1.0		ug/L	
			Bromomethane	2019/05/30	ND, RDL=0.50		ug/L	
			Carbon Tetrachloride	2019/05/30	ND, RDL=0.50		ug/L	
			Chlorobenzene	2019/05/30	ND, RDL=1.0		ug/L	
			Chloroethane	2019/05/30	ND, RDL=8.0		ug/L	
			Chloroform	2019/05/30	ND, RDL=1.0		ug/t	
			Chioromethane	2019/05/30	ND, RDL=8.0		ug/L	
			Dibromochloromethane	2019/05/30	ND, RDL=1.0		ug/L	
			Methylene Chloride(Dichloromethane)	2019/05/30	ND, RDL=3.0		ug/L	
			Ethylbenzene	2019/05/30	ND, RDL=1.0		ug/L	
			Methyl t-butyl ether (MTBE)	2019/05/30	ND, RDL=2.0		ug/L	
			Styrene	2019/05/30	ND, RDL=1.0		ug/L	
			Tetrachloroethylene	2019/05/30	ND, RDL=1.0		ug/L	
			Toluene	2019/05/30	ND, RDL=1.0		ug/L	
			Trichloroethylene	2019/05/30	ND, RDL=1.0		ug/L	
			Trichlorofluoromethane (FREON 11)	2019/05/30	ND, RDL=8.0		ug/t	
			Vinyl Chloride	2019/05/30	ND, RDL=0.50		ug/L	
			o-Xylene	2019/05/30	ND, RDL=1.0		ug/t	
			p+m-Xylene	2019/05/30	ND, RDL=2.0		ug/L	
			Total Xylenes	2019/05/30	NO, RDL=1.0		ug/L	
			Total Trihalomethanes	2019/05/30	ND, RDL=1.0		ug/L	
148613	ASL	RPD	1,1-Dichloroethane	2019/05/30	NC		96	40
			1,1-Dichloroethylene	2019/05/30	NC		%	40
			1.1.1-Trichlorgethane	2019/05/30	NC		%	40
			1,1,2-Trichloroethane	2019/05/30	NC		%	40
			1,1,2,2-Tetrachloroethane		NC			
			Ethylene Dibromide	2019/05/30 2019/05/30	NC		76	40
				2111307(15731)			%	- 40



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
paren	milit:	(MONETABLE	1,2-Dichloroethane	2019/05/30	NC	necovery	%	40
			cis-1,2-Dichlaroethylene	2019/05/30	NC		76	40
			trans-1,2-Dichloroethylene	2019/05/30	NC		94	40
			1,2-Dichloropropane	2019/05/30	NC.		96	40
			1,3-Dichlarobenzene	2019/05/30	NC		95	40
			cis-1,3-Dichloropropene	2019/05/30	NC		%	40
			trans-1,3-Dichloropropene	2019/05/30	NC		96	40
			1,4-Dichlorobenzene	2019/05/30	NC		%	40
			Benzene	2019/05/30	NC		96	40
			Bromodichloromethane	2019/05/30	NC		96	40
			Bromoform	2019/05/30	NC		96	40
			Bromomethane	2019/05/30	NC		%	40
			Carbon Tetrachloride	2019/05/30	NC		%	40
			Chlorobenzene	2019/05/30	NC		56	40
			Chloroethane	2019/05/30	NC		96	40
			Chloroform	2019/05/30	NC		%	40
			Chloromethane	2019/05/30	NC		%.	40
			Dibromochloromethane	2019/05/30	NC		56.	40
			Methylene Chloride(Dichloromethane)	2019/05/30	NC		36	40
			Ethylbenzene	2019/05/30	NC		%	40
			Methyl t-butyl ether (MT8E)	2019/05/30	NC		74	40
			Styrene	2019/05/30	NC		%	40
			Tetrachloroethylene	2019/05/30	NC		%	40
			Toluene	2019/05/30	NC		76	40
			Trichloroethylene	2019/05/30	NC		14	40
			Trichlorofluoromethane (FREON 11)	2019/05/30	NC		16	40
			Vinyl Chloride	2019/05/30	NC		96	40
			o-Xylene	2019/05/30	NC		%	40
			p+m-Xylene	2019/05/30	NC		N	40
			Total Xylenes	2019/05/30	NC		%	40
			Total Trihalomethanes	2019/05/30	NC		56	40
6148620	ZZH	Matrix Spike (JVR188-03)	Total Chemical Oxygen Demand	2019/05/30		81	%	80 - 120
6148620	ZZH	QC Standard	Total Chemical Oxygen Demand	2019/05/30		103	%	80 - 120
6148620	ZZH	Spiked Blank	Total Chemical Oxygen Demand	2019/05/30		105	%	80 - 120
6148620	ZZH	Method Blank	Total Chemical Oxygen Demand	2019/05/30	ND, RDL=20		mg/L	
6148620	ZZH	RPD (JVR188-03)	Total Chemical Oxygen Demand	2019/05/30	12		14.	25
6148701	MLW	QC Standard	Carbonaceous BOD	2019/06/04		111	34	80 - 120
6148701	MLW	Spiked Blank	Carbonaceous BOD	2019/06/04		138(1)	96	80 - 120
6148701	MLW	Method Blank	Carbonaceous BOD	2019/06/04	ND, RDL=2.0		mg/L	
6148701	MLW	RPD	Carbonaceous BOD	2019/06/04	3.5		96	25
6148971	BAN	Matrix Spike	Total Aluminum (Al)	2019/05/31		103	96	80 - 120
			Total Antimony (Sb)	2019/05/31		110	56	80 - 120
			Total Arsenic (As)	2019/05/31		98	%	80 - 120
			Total Barium (Ba)	2019/05/31		102	96	80 - 120
			Total Beryllium (Be)	2019/05/31		100	%	80 - 120
			Total Bismuth (Bi)	2019/05/31		104	%	80 - 120
			Total Boron (B)	2019/05/31		NC	56	80 - 120
			Total Cadmium (Cd)	2019/05/31		98	9%	80 - 120
			Total Calcium (Ca)	2019/05/31		106	%	80 - 120
			Total Chromium (Cr)	2019/05/31		97	%	80 - 120
			Total Cobalt (Co)	2019/05/31		100	96.	80 - 120
			Total Copper (Co)	2019/05/31		98	96	80 - 120



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
moreii	mue.	rec i the	Total Iron (Fe)	2019/05/31	value	106	76	80 - 120
			Total Lead (Pb)	2019/05/31		104	%	80 - 120
			Total Magnesium (Mg)	2019/05/31		110	36	80 - 120
			Total Manganese (Mn)	2019/05/31		101	%	80 - 120
			Total Molybdenum (Mo)	2019/05/31		105	%	80 - 120
			Total Nickel (Ni)	2019/05/31		102	%	80 - 120
			Total Phosphorus (P)	2019/05/31		104	96	80 - 120
			Total Potassium (K)	2019/05/31		104	%	80 - 120
			Total Selenium (Se)	2019/05/31		96	96	80 - 120
			Total Silver (Ag)	2019/05/31		101	96	80 - 120
			Total Sodium (Na)	2019/05/31		NC	96	80 - 120
			Total Strontium (Sr)	2019/05/31		103	%	80 - 120
			Total Thallium (TI)	2019/05/31		105	%	80 - 120
			Total Tin (Sn)	2019/05/31		105	%	80 - 120
			Total Titanium (Ti)	2019/05/31		99		80 - 120
			Total Uranium (U)			113	%	
				2019/05/31			76	80 - 120
			Total Vanadium (V)	2019/05/31 2019/05/31		101	%. M	80 - 120
240071	DANE	Sailend Olank	Total Zinc (Zn)			100	96.	80 - 120
5148971	BAN	Spiked Blank	Total Aluminum (AI)	2019/05/31		101	%	80 - 120
			Total Antimony (Sb)	2019/05/31		107	*	80 - 120
			Total Arsenic (As)	2019/05/31		99	76	80 - 120
			Total Barium (Ba)	2019/05/31		100	%	80 - 120
			Total Beryllium (Be)	2019/05/31		99	%	80 - 120
			Total Bismuth (Bi)	2019/05/31		105	76	80 - 120
			Total Boron (B)	2019/05/31		98	14	80 - 120
			Total Cadmium (Cd)	2019/05/31		96	76	80 - 120
			Total Calcium (Ca)	2019/05/31		107	96	80 - 120
			Total Chromium (Cr)	2019/05/31		99	76	80 ~ 120
			Total Cobalt (Co)	2019/05/31		101	%	80 - 120
			Total Copper (Cu)	2019/05/31		99	%	80 - 120
			Total iron (Fe)	2019/05/31		107	36	80 - 120
			Total Lead (Pb)	2019/05/31		103	%	80 - 120
			Total Magnesium (Mg)	2019/05/31		110	76	80 - 120
			Total Manganese (Mn)	2019/05/31		102	%	80 - 120
			Total Molybdenum (Mo)	2019/05/31		102	%	80 - 120
			Total Nickel (Ni)	2019/05/31		99	96	80 - 120
			Total Phosphorus (P)	2019/05/31		105	96	80 - 120
			Total Potassium (K)	2019/05/31		102	%	80 - 120
			Total Selenium (Se)	2019/05/31		97	96	80 - 120
			Total Silver (Ag)	2019/05/31		100	%	80 - 120
			Total Sodium (Na)	2019/05/31		102	%	80 - 120
			Total Strontium (Sr)	2019/05/31		106	96	80 - 120
			Total Thallium (TI)	2019/05/31		107	96	80 - 120
			Total Tin (Sn)	2019/05/31		106	76	80 - 120
			Total Titanium (Ti)	2019/05/31		98	76.	80 - 120
			Total Uranium (U)	2019/05/31		113	96.	80 - 120
			Total Vanadium (V)	2019/05/31		102	36	80 - 120
			Total Zinc (Zn)	2019/05/31		101	76	80 - 120
148971	BAN	Method Blank	Total Aluminum (AI)	2019/05/31	ND, RDL=5.0		ug/L	
			Total Antimony (Sb)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Arsenic (As)	2019/05/31	ND, RDL=1.0		ug/L	

QA/QC Batch Init QC Type	Parameter	Date Analyzed	Value	Recovery UNITS	QC Limit
	Total Barium (Ba)	2019/05/31	ND, RDL=1.0	ug/L	
	Total Beryllium (Be)	2019/05/31	ND, RDL=1.0	ug/L	
	Total Bismuth (Bi)	2019/05/31	ND, RDL=2.0	ug/L	
	Total Boron (B)	2019/05/31	ND, RDL=50	ug/L	
	Total Cadmium (Cd)	2019/05/31	ND, RDL=0.010	ug/t	
	Total Calcium (Ca)	2019/05/31	ND, RDL=100	ug/t	
	Total Chromium (Cr)	2019/05/31	ND, RDL=1.0	ug/L	
	Total Cobalt (Co)	2019/05/31	ND, RDL=0.40	ug/L	
	Total Copper (Cu)	2019/05/31	ND, RDL=0.50	ug/L	
	Total Iron (Fe)	2019/05/31	ND, RDL=50	ug/L	
	Total Lead (Pb)	2019/05/31	ND, RDL=0.50	ug/t	
	Total Magnesium (Mg)	2019/05/31	ND, RDL=100	ug/L	
	Total Manganese (Mn)	2019/05/31	ND. RDL=2.0	ug/L	
	Total Molybdenum (Mo)	2019/05/31	ND, RDL=2.0	ug/L	
	Total Nickel (NI)	2019/05/31	ND, RDL=2.0	ug/t	
	Total Phosphorus (P)	2019/05/31	ND, RDL=100	ug/t	
	Total Potassium (K)	2019/05/31	ND, RDL=100	ug/L	
	Total Selenium (Se)	2019/05/31	ND, RDL=1.0	ug/L	
	Total Silver (Ag)	2019/05/31	ND, RDL=0.10	ug/t	
	Total Sodium (Na)	2019/05/31	ND, RDL=100	ug/L	
	Total Strontium (Sr)	2019/05/31	ND, RDL=2.0	ug/t	
	Total Thallium (TI)	2019/05/31	ND, RDL=0.10	ug/t	
	Total Tin (Sn)	2019/05/31	ND, RDL=2.0	ug/L	
	Total Titanium (Ti)	2019/05/31	ND, RDL=2.0	ug/l	
	Total Uranium (U)	2019/05/31	ND, ROL=0.10	ug/l	
	Total Vanadium (V)	2019/05/31	ND. RDL=2.0	ug/t	
	Total Zinc (Zn)	2019/05/31	ND, RDL=5.0	ug/t	
5148971 BAN RPD	Total Aluminum (AI)	2019/05/31	4.3	796	20



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
6149403	CCR	Matrix Spike	Total Mercury (Hg)	2019/05/31	Aging	102	%	80 - 120
5149403	CCR	Spiked Blank	Total Mercury (Hg)	2019/05/31		102	%	80 - 12
5149403	CCR	Method Blank	Total Mercury (Hg)	2019/05/31	ND,		ug/L	00 10
0240403	661	THE CHOIC DIDITIES	Total mercury (1/8)	2013/03/31	RDL=0.013		o'Br e	
5149403	CCR	RPD	Total Mercury (Hg)	2019/05/31	NC		YL.	20
5151063	AM6	QC Standard	Total Suspended Solids	2019/06/03	1000	100	%	80 - 12
5151063	AM6	Method Blank	Total Suspended Solids	2019/06/03	ND,		mg/L	
V#2450A	730000	CALL STANCES CONTROLLED	(and perfections seller		RDL=1.0			
5151063	AM6	RPD	Total Suspended Solids	2019/06/03	0		%	20
151065	LGE	Matrix Spike	D10-Anthracene	2019/06/01	-	90	34	50 - 13
			D14-Terphenyl	2019/06/01		70 (2)	%	50 - 13
			D8-Acenaphthylene	2019/06/01		85	%	50 - 13
			I-Methylnaphthalene	2019/06/01		81	%	50 - 13
			2-Methylnaphthalene	2019/06/01		84	96	50 - 13
			Acenaphthene	2019/06/01		87	%	50 - 13
			Acenaphthylene	2019/06/01		84	%	50 - 13
			Anthracene	2019/06/01		79	%	50 - 1
			Benzo(a)anthracene	2019/06/01		76	96	50 - 13
			Benzo(a)pyrene	2019/06/01		61	%	50 - 13
			Benzo(b)(luoranthene	2019/06/01		75	%	50 - 13
			Benzo(g,h,l)perylene	2019/06/01		36 (3)	16	50 - 1
			Benzo(j)fluoranthene	2019/06/01		60	34	50 - 13
			Benzo(k)fluoranthene	2019/06/01		69	76	50 - 1
			Chrysene	2019/06/01		96	%	50 - 1
			Dibenz(a,h)anthracene	2019/06/01		40 (3)	16	50 - 1
			Fluoranthene	2019/06/01		88	%	50 - 1
			Fluorene	2019/06/01		95	76	50 - 1
			Indeno(1,2,3-cd)pyrene	2019/06/01		33 (3)	96	50 - 1
			Naphthalene	2019/06/01		84	%	50 - 1
			Perylene	2019/06/01		31 (3)	%	50 - 1
			Phenanthrene	2019/06/01		96	76	50 - 1
			Pyrene	2019/06/01		86	74	50 - 1
151065	LGE	Spiked Blank	D10-Anthracene	2019/06/01		105	76	50 - 1
171003	COL	The state of the s	D14-Terphenyl	2019/06/01		106	36	50 - 1
			D8-Acenaphthylene	2019/06/01		100	%	50 - 13
			1-Methylnaphthalene	2019/06/01		93	×	50 - 1
			2-Methylnaphthalene	2019/06/01		95		50 - 1
			Acenaphthene	2019/06/01		100	36	50 - 1
			Acenaphthylene	2019/06/01		98	%	50 - 1
			Anthracene	2019/06/01		93	35	50 - 1
			Benzo(a)anthracene	2019/06/01		86	%	50 - 1
						94		
			Benzo(a)pyrene	2019/06/01		106	96	50 - 13 50 - 13
			Benzo(b)fluoranthene	2019/06/01		96	% %	50 - 13
			Benzo(g,h,i)perylene Benzo(j)fluoranthene					
				2019/06/01		95	%	50 - 13
			Benzo(k)fluoranthene	2019/06/01		101	76	50 - 13
			Chrysene	2019/06/01		107	%	50 - 13
			Dibenz(a,h)anthracene	2019/06/01		96	%	50 - 13
			Fluoranthene	2019/06/01		99	96	50 - 13
			Fluorene	2019/06/01		109	96	50 - 13
			Indeno(1,2,3-cd)pyrene	2019/06/01		94	76	50 - 1
			Naphthalene	2019/06/01		95	%.	50 - 13
			Perylene	2019/06/01		90	96.	50 - 13
			Phenanthrene	2019/06/01		111	96	50 - 13



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Pyrene	2019/06/01		98	- 14	50 - 130
5151065	LGE	Method Blank	D10-Anthracene	2019/06/01		108	%	50 - 130
			D14-Terphenyl	2019/06/01		106	34	50 - 130
			D8-Acenaphthylene	2019/06/01		99	%	50 - 13
			I-Methylnaphthalene	2019/06/01	ND,		ug/L	
			West Control of the C		RDL*0.050			
			2-Methylnaphthalene	2019/06/01	ND, RDL=0.050		ug/L	
			Acenaphthene	2019/06/01	ND, RDL=0.010		ug/L	
			Acenaphthylene	2019/06/01	ND, RDL=0.010		ug/L	
			Anthracene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(a)anthracene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(a)pyrene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(b)fluoranthene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(g,h,i)perylene	2019/06/01	ND, RDL=0.010		ug/t	
			Benzo(j)fluoranthene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(k)fluoranthene	2019/06/01	ND, RDL=0.010		ug/L	
			Chrysene	2019/06/01	ND, RDL+0.010		ug/L	
			Dibenz(a,h)anthracene	2019/06/01	ND, RDL=0.010		ug/L	
			Fluoranthene	2019/06/01	ND, RDL=0.010		ug/L	
			Fluorene	2019/06/01	ND, RDL=0.010		ug/L	
			Indeno(1,2,3-cd)pyrene	2019/06/01	ND, RDL=0.010		ug/L	
			Naphthalene	2019/06/01	ND, RDL=0.20		ug/t	
			Perylene	2019/06/01	ND, RDL=0.010		ug/L	
			Phenanthrene	2019/06/01	ND, RDL=0.010		ug/L	
			Pyrene	2019/06/01	ND, RDL=0.010		ug/L	
151065	LGE	RPD	1-Methylnaphthalene	2019/06/01	NC		76	40
			2-Methylnaphthalene	2019/06/01	NC		96	40
			Acenaphthene	2019/06/01	NC		76	40
			Acenaphthylene	2019/06/01	NC		16	40
			Anthracene	2019/06/01	NC		%	40
			Benzo(a)anthracene	2019/06/01	NC		36	40
			Benzo(a)pyrene	2019/06/01	NC		%	40
			Benzo(b)fluoranthene	2019/06/01	NC		16	40
			Benzo(g,h,i)perylene	2019/06/01	NC		%	40
			Benzo(j)fluoranthene	2019/06/01	NC		94	40
			Benzo(k)fluoranthene	2019/06/01	NC		36	40



QA/QC		222	2	20 2000	1000	2		
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Chrysene	2019/06/01	NC		76	40
			Dibenz(a,h)anthracene	2019/06/01	NC		76	40
			Fluoranthene	2019/06/01	13		94	40
			Fluorene	2019/06/01	NC		%	40
			Indeno(1,2,3-cd)pyrene	2019/06/01	NC		%	40
			Naphthalene	2019/06/01	NC		%	40
			Perylene	2019/06/01	NC		%	40
			Phenanthrene	2019/06/01	NC		%	40
			Pyrene	2019/06/01	12		96	40
5153412	THL	Matrix Spike [JVR188-12]	Isobutylbenzene - Volatile	2019/06/02		94	%	70 - 130
			Benzene	2019/06/02		106	96	70 - 130
			Toluene	2019/06/02		108	%	70 - 130
			Ethylbenzene	2019/06/02		117	%	70 - 130
			Total Xylenes	2019/06/02		114	56	70 - 130
5153412	THE	Spiked Blank	Isobutylbenzene - Volatile	2019/06/02		107	96	70 - 130
			Benzene	2019/06/02		125	%	70 - 130
			Toluene	2019/06/02		124	%	70 - 130
			Ethylbenzene	2019/06/02		124	96.	70 - 130
			Total Xylenes	2019/06/02		121	96	70 - 130
5153412	THE	Method Blank	Isobutylbenzene - Volatile	2019/06/02		105	%	70 - 130
	3000	TWININGSTRUCTUS	Benzene	2019/06/02	ND,	11889	mg/L	2027/924
			HPANE VICTOR	3 100-540-800	RDL=0.0010			
			Toluene	2019/06/02	ND, RDL=0.0010		mg/L	
			Ethylbenzene	2019/06/02	ND, RDL=0.0010		mg/L	
			Total Xylenes	2019/06/02	ND, RDL=0.0020		mg/L	
			C6 - C10 (less BTEX)	2019/06/02	ND, RDL=0.010		mg/L	
6153412	THIL	RPD	Benzene	2019/06/02	NC		56	40
1000000	1,120	335	Toluene	2019/06/02	NC		96	40
			Ethylbenzene	2019/06/02	NC		96	40
			Total Xylenes	2019/06/02	NC		%	40
			C6 - C10 (less BTEX)	2019/06/02	NC		AL.	40
5153709	SSV	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2019/06/04	180	99	%	80 - 120
5153709	SSV	QC Standard	Total Kjeldahl Nitrogen (TKN)	2019/06/04		102	96	80 - 120
6153709	SSV	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2019/06/04		103	96	80 - 120
5153709	SSV		Total Kjeldahl Nitrogen (TKN)	21 LOST 100 DATE OF CREATE	ND,	103	man (1)	OU - 120
01331/0	22 X	Method Blank	rotal Kjeldani Nitrogen (TKN)	2019/06/04	RDL=0.10		mg/L	
6153709	SSV	RPD	Total Fieldahl Mitsagen (TVM)	2019/06/04	0		94	20
	551		Total Kjeldahl Nitrogen (TKN) Total Organic Carbon (C)		.9.	+05	76	
6154507		Matrix Spike		2019/06/03		105	94	85 - 115
5154507	SSI	Spiked Blank	Total Organic Carbon (C)	2019/06/03	5000m; 1	110	76	80 - 120
6154507	SSI	Method Blank	Total Organic Carbon (C)	2019/06/03	ND, RDL=0.50		mg/L	
5154507	SSI	RPO	Total Organic Carbon (C)	2019/06/03	1.1		%.	15
5154879	GTO	Matrix Spike	Sulphide	2019/06/03		83	16	80 - 120
5154879	GTO	Spiked Blank	Sulphide	2019/06/03		90	96	80 - 120
5154879	GTO	Method Blank	Sulphide	2019/06/03	ND, RDL=0.020		mg/L	
5154879	GTO	RPD	Sulphide	2019/06/03	NC		%	20
5156517	RGE	Matrix Spike	Decachiorobiphenyl	2019/06/05		96	%	30 - 130
	.,	A STATE OF THE STA	Aroclar 1254	2019/06/05		109	16	70 - 130
5156517	RGE	Spiked Blank	Decachlorobiphenyl	2019/06/05		74	%	30 - 130



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
		The state of the s	Aroclor 1254	2019/06/05	(a major and an)	103	- %	70 - 130
6156517	RGE	Method Blank	Decachlorobiphenyl	2019/06/05		65	%	30 - 13
20.588.509	7/525	VIOLETTE STORY (SAME)	Aroclor 1016	2019/06/05	ND, RDL=0.050		ug/L	444.00
			Aroclar 1221	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1232	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1248	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclar 1242	2019/06/05	ND, RDL=0.050		ug/t	
			Aroclor 1254	2019/06/05	ND, RDL=0.050		ug/L	
			Araciar 1260	2019/06/05	ND, RDL=0.050		ug/L	
6156517	RGE	RPD	Arocfor 1016	2019/06/05	NC		%	40
			Aroclar 1221	2019/06/05	NC		YL.	40
			Aroclor 1232	2019/06/05	NC		16	40
			Aroclor 1248	2019/06/05	NC		96	40
			Aroclor 1242	2019/06/05	NC		%	40
			Aroclar 1254	2019/06/05	NC		N	40
			Aroclar 1260	2019/06/05	NC		16	40
6156564	BCD	Matrix Spike	Isobutylbenzene - Extractable	2019/06/04		99	%	70 - 130
			n-Dotriacontane - Extractable	2019/06/04		109	76	70 - 130
			>C10-C16 Hydrocarbons	2019/06/04		89	14	70 - 130
			>C16-C21 Hydrocarbons	2019/06/04		88	76	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2019/06/04</td><td></td><td>101</td><td>96</td><td>70 - 130</td></c32>	2019/06/04		101	96	70 - 130
6156564	BCD	Spiked Blank	isobutylbenzene - Extractable	2019/06/04		98	76	70 - 130
			n-Dotriacontane - Extractable	2019/06/04		111	14	70 - 130
			>C10-C16 Hydrocarbons	2019/06/04		92	%	70 - 13
			>C16-C21 Hydrocarbons	2019/06/04		90	36	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2019/06/04</td><td></td><td>106</td><td>%</td><td>70 - 130</td></c32>	2019/06/04		106	%	70 - 130
6156564	BCD	Method Blank	Isobutylbenzene - Extractable	2019/06/04		98	%	70 - 130
			n-Dotriacontane - Extractable	2019/06/04		105	%	70 - 130
			>C10-C16 Hydrocarbons	2019/06/04	ND, RDL=0.050		mg/L	
			>C16-C21 Hydrocarbons	2019/06/04	ND, RDL=0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2019/06/04</td><td>ND, RDL=0.10</td><td></td><td>mg/L</td><td></td></c32>	2019/06/04	ND, RDL=0.10		mg/L	
6156564	BCD	RPD	>C10-C16 Hydrocarbons	2019/06/04	NC		%.	40
			>C16-C21 Hydrocarbons	2019/06/04	NC		96	40
			>C21- <c32 hydrocarbons<="" td=""><td>2019/06/04</td><td>NC</td><td></td><td>%</td><td>40</td></c32>	2019/06/04	NC		%	40
6157072	AM6	QC Standard	Volatile Suspended Solids	2019/06/04		98	76.	80 - 120
6157072	AM6	Method Blank	Volatile Suspended Solids	2019/06/04	ND, RDL=2.0		mg/L	
6157072	AM6	RPD	Volatile Suspended Solids	2019/06/04	9.5		%	25
6157791	883	Matrix Spike	Total Nitrogen (N)	2019/06/03		101	%	80 - 120
6157791	883	Spiked Blank	Total Nitrogen (N)	2019/06/03		99	94	80 - 12
6157791	883	Method Blank	Total Nitrogen (N)	2019/06/03	ND, RDL=0.020		mg/L	
6157791	883	RPD	Total Nitrogen (N)	2019/06/03	3.0		%	20
6158894	NRG	Matrix Spike	Total Phosphorus	2019/06/06		110	76	80 - 120



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6158894	NRG	Spiked Blank	Total Phosphorus	2019/06/06	C4 - ref - miles	103	- %	80 - 120
6158894	NRG	Method Blank	Total Phosphorus	2019/06/06	ND,		mg/L	
					RDL=0.020			
6158894	NRG	RPD	Total Phosphorus	2019/06/06	NC		%	25
6158927	SSI	Matrix Spike	Dissolved Organic Carbon (C)	2019/06/05		95	Y6.	85 - 115
6158927	SSI	Spiked Blank	Dissolved Organic Carbon (C)	2019/06/05		98	%	80 - 120
6158927	SSI	Method Blank	Dissolved Organic Carbon (C)	2019/06/05	ND, RDL=0.50		mg/L	
6158927	551	RPD	Dissolved Organic Carbon (C)	2019/06/05	NC		%	15
6159669	LHA	Matrix Spike [JVR188-20]	Total Cyanide (CN)	2019/06/07		78 (4)	36	80 - 120
6159669	LHA	Spiked Blank	Total Cyanide (CN)	2019/06/07		97	%	80 - 120
6159669	LHA	Method Blank	Total Cyanide (CN)	2019/06/07	ND, RDL=0.0050		mg/L	
6159669	LHA	RPD [JVR188-20]	Total Cyanide (CN)	2019/06/07	NC		76	20
6159706	NRG	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2019/06/06		106	%	80 - 120
6159706	NRG	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2019/06/07		100	%	80 - 120
6159706	NRG	Method Blank	Nitrogen (Ammonia Nitrogen)	2019/06/07	ND, RDL=0.050		mg/L	
6159706	NRG	RPD	Nitrogen (Ammonia Nitrogen)	2019/06/06	16		%	20
6165901	KD9	Matrix Spike	Dissolved Chlorate (ClO3-)	2019/05/31		94	%	80 - 120
		AND AND ASSESSMENT	Dissolved Chlorate (ClO3-)	2019/05/31		94	96	80 - 120
			Dissolved Chlorate (ClO3-)	2019/05/31		94	96	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		92	%	80 - 120
			Dissolved Chlarite (CLO2-)	2019/05/31		92	16.	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		92	96	80 - 120
6165901	KD9	Spiked Blank	Dissolved Chlorate (CIO3-)	2019/05/31		88	.96	80 - 120
			Dissolved Chlorate (CIO3-)	2019/05/31		88	%	80 - 120
			Dissolved Chlorate (CIO3-)	2019/05/31		88	16	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		85	%	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		85	76	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		85	94	80 - 120
6165901	KD9	Method Blank	Dissolved Chlorate (CIO3-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorate (ClO3-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorate (CIO3-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorite (CLO2-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorite (CLO2-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorite (CLO2-)	2019/05/31	ND, RDL=0.10		mg/L	
6170521	OBC	Spiked Blank	C13-1234678 HeptaCDD	2019/06/11		123	%	30 - 130
			C13-1234678 HeptaCDF	2019/06/11		99	76.	30 - 130
			C13-123678 HexaCDD	2019/06/11		127	%	30 - 130
			C13-123678 HexaCDF	2019/06/11		88	76	30 - 130
			C13-12378 PentaCDD	2019/06/11		87	%	30 - 130
			C13-12378 PentaCDF	2019/06/11		66	16	30 - 130
			C13-2378 TetraCDD	2019/06/11		92	34	30 - 130
			C13-2378 TetraCDF	2019/06/11		80	76	30 - 130
			C13-OCOD	2019/06/11		116	%	30 - 130
			2,3,7,8-Tetra COD	2019/06/11		90	76	80 - 140
			1,2,3,7,8-Penta CDD	2019/06/11		100	%	80 - 140



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
posen.	naid:	Per His	1,2,3,4,7,8-Héxa CDD	2019/06/11	TARRE	85	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2019/06/11		97	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2019/06/11		93	36	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2019/06/11		85	%	80 - 140
			Octa CDD	2019/06/11		81	%	80 - 140
			2,3,7,8-Tetra CDF	2019/06/11		101	%	80 - 140
			1,2,3,7,8-Penta CDF	2019/06/11		126	96	80 - 140
			2,3,4,7,8-Penta CDF	2019/06/11		119	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2019/06/11		113	96	80 - 140
			1,2,3,6,7,8-Hexa CDF	2019/06/11		120	96	80 - 140
			2,3,4,6,7,8-Hexa CDF	2019/06/11		123	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2019/06/11		122	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2019/06/11		105	%	80 - 140
			1,2,3,4,7,8,9-Hepta COF	2019/06/11		99	%	80 - 140
			Octa CDF	2019/06/11		86		80 - 140
170521	ODC	RPD			9.9	90	96	
5170521	UBC	KPU	2,3,7,8-Tetra COD	2019/06/12	4.3		76	35
			1,2,3,7,8-Penta CDD	2019/06/12	12		%.	35
			1,2,3,4,7,8-Hexa CDD	2019/06/12	9.0		96.	35
			1,2,3,6,7,8-Hexa CDD	2019/06/12	1.0		%	35
			1,2,3,7,8,9-Hexa CDD	2019/06/12	8.2		*	35
			1,2,3,4,6,7,8-Hepta CDD	2019/06/12	28		×	35
			Octa CDD	2019/06/12	0		%	35
			2,3,7,8-Tetra CDF	2019/06/12	16		%	35
			1,2,3,7,8-Penta CDF	2019/06/12	3.1		76	35
			2,3,4,7,8-Penta CDF	2019/06/12	14		74	35
			1,2,3,4,7,8-Hexa CDF	2019/06/12	2.6		36	35.
			1,2,3,6,7,8-Hexa CDF	2019/06/12	0		96.	35
			2,3,4,6,7,8-Hexa CDF	2019/06/12	4.8		76	35
			1,2,3,7,8,9-Hexa CDF	2019/06/12	2.5		*	35
			1,2,3,4,6,7,8-Hepta CDF	2019/06/12	4.7		%	35
			1,2,3,4,7,8,9-Hepta CDF	2019/06/12	1.0		36	35
			Octa CDF	2019/06/12	0		%	35
170521	OBC	Method Blank	C13-1234678 HeptaCDD	2019/06/12		107	%	30 - 130
			C13-1234678 HeptaCDF	2019/06/12		96	%	30 - 130
			C13-123678 HexaCDD	2019/06/12		118	%	30 - 130
			C13-123678 HexaCDF	2019/06/12		82	%	30 - 130
			C13-12378 PentaCDD	2019/06/12		77	%	30 - 130
			C13-12378 PentaCDF	2019/06/12		61	%	30 - 130
			C13-2378 TetraCDD	2019/06/12		85	%	30 - 130
			C13-2378 TetraCDF	2019/06/12		79	%	30 - 130
			C13-OCOD	2019/06/12		113	%	30 - 130
			2,3,7,8-Tetra CDD	2019/06/12	ND, EDL=1.08		pg/L	
			1,2,3,7,8-Penta CDD	2019/06/12	ND, EDL=1.10		pg/t	
			1,2,3,4,7,8-Hexa CDD	2019/06/12	ND, EDL=1.18		pg/L	
			1,2,3,6,7,8-Hexa CDD	2019/06/12	ND, EDL=1.02		pg/L	
			1,2,3,7,8,9-Hexa CDD	2019/06/12	ND, EDL=0.995		pg/L	
			1,2,3,4,6,7,8-Hepta CDD	2019/06/12	ND, EDL=1.13		pg/L	

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
pomponis.		Part No.	Octa CDD	2019/06/12	ND, EDL=1.16 (5)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	pg/L	
			Total Tetra CDD	2019/06/12	ND, EDL=1.08		pg/L	
			Total Penta CDD	2019/06/12	ND, EDL=1.10		pg/L	
			Total Hexa CDD	2019/06/12	ND, EDL=1.13 (5)		pg/L	
			Total Hepta CDD	2019/06/12	ND, EDL=1.13		pg/L	
			2,3,7,8-Tetra CDF	2019/06/12	ND, EDL=1.18		pg/L	
			I,2,3,7,8-Penta CDF	2019/06/12	ND, EDL=1.18		pg/L	
			2,3,4,7,8-Penta CDF	2019/06/12	ND, EDL=1.19		pg/L	
			1,2,3,4,7,8-Hexa CDF	2019/06/12	ND, EDL=1.13		pg/t	
			1,2,3,6,7,8-Hexa CDF	2019/06/12	ND, EDL=0.939		pg/L	
			2,3,4,6,7,8-Hexa CDF	2019/06/12	ND, EDL=1.06		pg/L	
			1,2,3,7,8,9-Hexa CDF	2019/06/12	ND, EDL=1.18		pg/L	
			1,2,3,4,6,7,8-Hepta CDF	2019/06/12	ND, EDL=1.09		pg/L	
			1,2,3,4,7,8,9-Hepta CDF	2019/06/12	ND, EDL=1.24		pg/L	
			Octa CDF	2019/06/12	ND, EDL=1.16		pg/t	
			Total Tetra CDF	2019/06/12	ND, EDL=1.18		pg/L	
			Total Penta CDF	2019/06/12	ND, EDL=1.19		pg/L	
			Total Hexa CDF	2019/06/12	ND, EDL=1.07		pg/L	
			Total Hepta CDF	2019/06/12	ND, EDL=1.16		pg/L	
6172547	123	Matrix Spike	9,10-Dichlorostearic acid	2019/06/01		96	76	50 - 130
			Decanoic Acid (C10)	2019/06/01		90	%	50 - 13
			Docosanoic acid (C22)	2019/06/01		85	14	50 - 130
			Dodecanoic acid (C12)	2019/06/01		92	16.	50 - 13
			Elcosanoic acid (C20)	2019/06/01		98	96	50 - 13
			Hexadecanoic acid (C16)	2019/06/01		85	%	50 - 13
			Linoleic acid (C18:2)	2019/06/01		87	%	50 - 130
			Linolenic acid (C18:3)	2019/06/01		94	%	50 - 13
			Octadecanoic acid (C18)	2019/06/01		94	96	50 - 13
				2019/06/01				50 - 13
			Oleic acid (C18:1)			92	*	
			Tetradecandic acid (C14)	2019/06/01		91	16.	50 - 13
			Undecanoic acid (C11)	2019/06/01		102	96	50 - 13
			12,14-Dichlorodehydroabietic acid	2019/06/01		111	%	50 - 13
			12-Chlorodehydroabietic acid	2019/06/01		106	%	50 - 13
			14-Chlorodehydroabietic acid	2019/06/01		111	16	50 - 13
			Abietic acid	2019/06/01		NC	%	50 - 13
			Dehydroabietic acid	2019/06/01		NC.	36 -	50 - 130



QA/QC	1072	067	0	Date Frederick	Maria	0	TIME	OC.
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Isopimaric acid	2019/06/01		NC	76	50 - 13
			Neoabietic acid	2019/06/01		68	%	50 - 130
			Palustric acid	2019/06/01		67	34	50 - 130
			Pimaric acid	2019/06/01		102	%	50 - 130
er name en val	0.427	ACCOUNTS DESIGNED	Sandaracopimaric acid	2019/06/01		101	%	50 - 130
5172547	123	Spiked Blank	9,10-Dichlorostearic acid	2019/06/01		94	%	50 - 130
			Decanoic Acid (C10)	2019/06/01		94	%	50 - 130
			Docosanoic acid (C22)	2019/06/01		88	%	50 - 130
			Dodecanoic acid (C12)	2019/06/01		94	%	50 - 130
			Eicosanoic acid (C20)	2019/06/01		96	%	50 - 130
			Hexadecanoic acid (C16)	2019/06/01		99	76	50 - 130
			Linoleic acid (C18:2)	2019/06/01		89	%	50 - 130
			Linolenic acid (C18:3)	2019/06/01		86	%	50 - 130
			Octadecanoic acid (C18)	2019/06/01		105	%	50 - 130
			Oleic acid (C18:1)	2019/06/01		99	96	50 - 130
			Tetradecanoic acid (C14)	2019/06/01		94	%	50 - 130
			Undecanoic acid (C11)	2019/06/01		103	Y6.	50 - 130
			12,14-Dichlorodehydroabietic acid	2019/06/01		114	96.	50 - 130
			12-Chlorodehydroabietic acid	2019/06/01		108	%	50 - 130
			14-Chlorodehydroabletic acid	2019/06/01		110	%	50 - 130
			Abietic acid	2019/06/01		94	76	50 - 130
			Dehydroabietic acid	2019/06/01		128	%	50 - 130
			Isopimaric acid	2019/06/01		115	%	50 - 130
			Neoabietic acid	2019/06/01		63	76	50 - 130
			Palustric acid	2019/06/01		74	14	50 - 130
			Pimaric acid	2019/06/01		107	%	50 - 130
			Sandaracopimaric acid	2019/06/01		105	36	50 - 130
6172547	123	Method Blank			ND.	105		30 130
51.V.244	123	MISTUOD DIRINK	Total Fatty Acids	2019/06/01	RDL=0.072		mg/L	
			Total Resin Acids	2019/06/01	ND, RDL=0.060		mg/L	
			9,10-Dichlorostearic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Decanoic Acid (C10)	2019/06/01	ND, RDL=0.0060		mg/L	
			Docosanoic acid (C22)	2019/06/01	ND, RDL=0.0060		mg/L	
			Dodecanoic acid (C12)	2019/06/01	ND, RDL=0.0060		mg/L	
			Eicosanoic acid (C20)	2019/06/01	ND, RDL=0.0060		mg/L	
			Hexadecanoic acid (C16)	2019/06/01	ND, RDL=0.0060		mg/L	
			Linoleic acid (C18:2)	2019/06/01	ND, RDL=0.0060		mg/L	
			Linolenic acid (C18:3)	2019/06/01	ND, RDL=0.0060		mg/L	
			Octadecanoic acid (C18)	2019/06/01	ND, RDL=0.0060		mg/L	
			Oleic acid (C18:1)	2019/06/01	ND, RDL=0.0060		mg/L	
			Tetradecancic acid (C14)	2019/06/01	ND, RDL=0.0060		mg/L	
			Undecanoic acid (C11)	2019/06/01	ND, RDL=0.0060		mg/L	

QA/QC		(200)	9	311 31171 0	1000	31		22.70
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			12,14-Dichlorodehydroabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			12-Chlorodehydroabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			14-Chlorodehydroabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Abietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Dehydroabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Isopimaric acid	2019/06/01	ND, RDL=0.0060		rng/L	
			Neoabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Palustric acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Pimaric acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Sandaracopimaric acid	2019/06/01	ND, RDL=0.0060		mg/L	
6172547	123	RPD	Total Fatty Acids	2019/06/01	NC		%	30
02622066	6.00	112 (2)	Total Resin Acids	2019/06/01	NC		%	30
			9,10-Dichlorostearic acid	2019/06/01	NC		94	30
			Decanoic Acid (C10)	2019/06/01	NC		96	30
			Docosanoic acid (C22)	2019/06/01	NC		96	30
			Dodecanoic acid (C12)	2019/06/01	NC		%	30
					NC		96	30
			Eicosanoic acid (C20) Hexadecanoic acid (C16)	2019/06/01	NC		%	30
					NC		96	30
			Linoleic acid (C18:2)	2019/06/01			%	30
			Linolenic acid (C18:3)	2019/06/01	NC			
			Octadecanoic acid (C18)	2019/06/01	NC		96	30
			Oleic acid (C18:1)	2019/06/01	NC.		36	30
			Tetradecandic acid (C14)	2019/06/01	NC		%	30
			Undecanoic acid (C11)	2019/06/01	NC		%	30
			12,14-Dichlorodehydroabietic acid	2019/06/01	NC		96	30
			12-Chlorodehydroabletic acid	2019/06/01	NC		76	30
			14-Chlorodehydroabietic acid	2019/06/01	NC		%.	30
			Abietic acid	2019/06/01	NC		%.	30
			Dehydroabletic acid	2019/06/01	NC		96	30
			Isopimaric acid	2019/06/01	NC		76	30
			Neoabietic acid	2019/06/01	NC		16.	30
			Palustric acid	2019/06/01	NC		%.	30
			Pimaric acid	2019/06/01	NC		96	30
200 MARKET	LEWIS.	12/2/2017/04/04	Sandaracopimaric acid	2019/06/01	NC	Page 5000	%	30
6181990	BBD	QC Standard	Salinity	2019/06/18	79000	101	%	80 - 120
6181990	BBD	Method Blank	Salinity	2019/06/18	ND, RDL=2.0		N/A	
6181990	BBD	RPD	Salinity	2019/06/18	0		%	25
6182160	SRM	Matrix Spike	Total Alkalinity (Total as CaCO3)	2019/06/18		101	96	80 - 120
6182160	SRM	Spiked Blank	Total Alkalinity (Total as CaCO3)	2019/06/18		107	96	80 - 120
6182160	SRM	Method Blank	Total Alkalinity (Total as CaCO3)	2019/06/18	ND, RDL=5.0		mg/L	
6182160	SRM	RPD	Total Alkalinity (Total as CaCO3)	2019/06/18	0.41		%	25
6182167	SRM	Matrix Spike	Dissolved Chloride (CI-)	2019/06/19		101	76	80 - 120



QA/QC	1070	067		Date Sandard	Mallore	0	TIMETO	OC.
Batch	Init	QC Type Spiked Blank	Parameter Children (Children	Date Analyzed	Value	Recovery	UNITS	QC Limits
5182167	SRM		Dissolved Chloride (CI-)	2019/06/19	794477	100	76	80 - 120
6182167	SRM	Method Blank	Dissolved Chloride (CI-)	2019/06/19	ND, RDL=1.0		mg/L	
6182167	SRM	RPD	Dissolved Chloride (CI-)	2019/06/19	3.0		%	25
6182168	SRM	Matrix Spike	Dissolved Sulphate (SO4)	2019/06/19		100	%	80 - 120
6182168	SRM	Spiked Blank	Dissolved Sulphate (SO4)	2019/06/19		108	96	80 - 120
6182168	SRM	Method Blank	Dissolved Sulphate (SO4)	2019/06/19	ND, RDL=2.0		mg/L	
6182168	SRM	RPD	Dissolved Sulphate (SO4)	2019/06/19	5.3		%	25
6182169	SRM	Matrix Spike	Reactive Silica (SiO2)	2019/06/19		97	34	80 - 120
6182169	SRM	Spiked Blank	Reactive Silica (SiO2)	2019/06/19		101	%	80 - 120
6182169	SRM	Method Blank	Reactive Silica (SiO2)	2019/06/19	ND, RDL=0.50		mg/L	
6182169	SRM	RPD	Reactive Silica (SiOZ)	2019/06/19	1.4		76	25
6182170	SRM	Spiked Blank	Colour	2019/06/18		98	%	80 - 120
6182170	SRM	Method Blank	Colour	2019/06/18	ND, RDL=5.0		TCU	
6182170	SRM	RPD	Colour	2019/06/18	NC-		96	20
6182171	SRM	Matrix Spike	Orthophosphate (P)	2019/06/18		NC	56	80 - 120
6182171	SRM	Spiked Blank	Orthophosphate (P)	2019/06/18		97	%	80 - 120
6182171	SRM	Method Blank	Orthophosphate (P)	2019/06/18	ND, RDL=0.010		mg/L	
6182171	SRM	RPO	Orthophosphate (P)	2019/06/18	0.12		16	25
6182172	SRM	Matrix Spike	Nitrate + Nitrite (N)	2019/06/18		95	%	80 - 120
6182172	SRM	Spiked Blank	Nitrate + Nitrite (N)	2019/06/18		95	96	80 - 120
6182172	SRM	Method Blank	Nitrate + Nitrite (N)	2019/06/18	ND, RDL=0.050		mg/L	
6182172	SRM	RPD	Nitrate + Nitrite (N)	2019/06/18	NC		%	25
6182173	SRM	Matrix Spike	Nitrite (N)	2019/06/18		95	76	80 - 120
5182173	SRM	Spiked Blank	Nitrite (N)	2019/06/18		99	%	80 - 120
6182173	SRM	Method Blank	Nitrite (N)	2019/06/18	ND, RDL=0.010		mg/L	
6182173	SRM	RPD	Nitrite (N)	2019/06/18	NC		%	20
6184783	EMT	QC Standard	pH	2019/06/19		100	96	97 - 103
6184783	EMT	RPD	pH	2019/06/19	0.76		%	N/A
6184788	EMT	Spiked Blank	Conductivity	2019/06/19		103	96	80 - 120
6184788	EMT	Method Blank	Conductivity	2019/06/19	1.4, RDL=1.0		u5/cm	
6184788	EMT	RPD	Conductivity	2019/06/19	0.0059		96	10
6186832	EMT	QC Standard	Turbidity	2019/06/20		107	96	80 - 120
6186832	EMT	Spiked Blank	Turbidity	2019/06/20		101	%	80 - 120
6186832	EMT	Method Blank	Turbidity	2019/06/20	ND, RDL=0.10	2001	NTU	2000



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6186832	EMT	RPD	Turbidity	2019/06/20	12		- %	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference-

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

- (1) BOD Analysis: Second source QC recovery high. Reference Material recovery and all other QC acceptable.
- (2) PAH sample contained sediment.
- (3) Matrix Spike: results are outside acceptance limit. Probable matrix interference.
- (4) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.
- (5) EMPC / NDR Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.



VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Obreenle	
Anastassia Hamanov, Scientific Specialist	
Peny Hang	
Harry (Peng) Liang, Senior Analyst	
1/enicafelk	
Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Orga	inics
- Nicho The Galley	
Mike MacGillivray, Scientific Specialist (Inorganics)	
Slady	
Owen Cosby, BSc.C.Chem, Supervisor, HRMS Services	
ROSMarie MacDonald	
Rosemarie MacDonald, Scientific Specialist (Organics)	
THE T	

Rob Reinert, B.Sc., Scientific Specialist



Your Project #: 89E4476 Your C.O.C. #: N-A

Attention: BEDFORD CUSTOMER SERVICE

Bureau Veritas Laboratories 200 Bluewater road Bedford, NS CANADA B4B 1G9

Report Date: 2019/06/21

Report #: R2449984 Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: 8920966 Received: 2019/05/31, 09:25

Sample Matrix: Water # Samples Received: 1

	Date	Date		
Analyses	Quantity Extracted	Analyzed	Laboratory Method	Primary Reference
Phenols in Pulp & Paper mill effluents	1 2019/06/0	3 2019/06/0	5 STL SOP-00121	MA.400-Phé 1.0 R3 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Note: All parameters included in the present certificate are accredited by the MELCC unless stated otherwise:



Your Project #: 89E4476 Your C.O.C. #: N-A

Attention: BEDFORD CUSTOMER SERVICE

Bureau Veritas Laboratories 200 Bluewater road Bedford, NS CANADA 84B 1G9

Report Date: 2019/06/21

Report #: R2449984

Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: 8920966 Received: 2019/05/31, 09:25

Encryption Key

Sumin detailless Trajent Manager 71 Jun 2014 [ecobity

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Sophie Retailfeau, Project Manager Email: Sophie RETAILLEAU@bvlabs.com Phone# (514)448-9001 Ext:7066232

This report has been generated and distributed using a secure automated process.

Lab BV has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025;2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

PHENOLS BY GCMS (WATER)

Lab BV ID		GM5626		
Sampling Date		2019/05/25		
TO THE PERSON NAMED OF THE		18:15		
COC Number		N-A		
	Units	JVR188-13R\CARIBOU SEA WATER CHB 2-W1	RDL	QC Batch
PHENOLS				
Total of Regl. P&P Phenols †	ug/L	<10	10	1994633
Phenol	ug/L	<1.0	1.0	1994633
2-Chlorophenol	ug/L	<1.0	1.0	1994633
3-Chlorophenol	ug/L	<1.0	1.0	1994633
4-Chlorophenol	ug/L	<1.0	1.0	1994633
o-Cresol	ug/L	<1.0	1.0	1994633
m-Cresol	ug/L	<1.0	1.0	1994633
p-Cresol	ug/L	<1.0	1.0	1994633
Guaiacol	ug/L	<1.0	1.0	1994633
Catechol	ug/L	<1.0	1.0	1994633
Eugenol	ug/L	<1.0	1.0	1994633
Isoeugenal	ug/L	<1.0	1.0	1994633
6-Chlorovanillin	ug/L	<1.0	1.0	1994633
5,6-Dichlorovanillin	ug/L	<1.0	1.0	1994633
3,4,5-Trichlorosyringol	ug/L	<1.0	1.0	1994633
2,4-Dimethylphenol	ug/L	<1.0	1.0	1994633
2,6-Dichlorophenal	ug/L	<1.0	1.0	1994633
3,5-Dichlorophenol	ug/L	<1.0	1.0	1994633
2,3-Dichlorophenol	ug/L	<1.0	1.0	1994633
3,4-Dichlorophenol	ug/L	<1.0	1.0	1994633
2,4 + 2,5-Dichlorophenol	ug/L	<1.0	1.0	1994633
2-Nitrophenol	ug/L	<2.0	2.0	1994633
4-Nitrophenol	ug/L	<10	10	1994633
2,4,6-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,3,5-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,3,6-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,4,5-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,3,4-Trichlorophenol	ug/L	<1.0	1.0	1994633
3,4,5-Trichlorophenol	ug/L	<1.0	1.0	1994633
4-Chloroguaiacol	ug/L	<1.0	1.0	1994633
4,5-Dichloroguaiacol	ug/L	<1.0	1.0	1994633
4,6-Dichlorogualacol	ug/L	<1.0	1.0	1994633
2,3,5,6-Tetrachlorophenol	ug/L	<1.0	1.0	1994633



PHENOLS BY GCMS (WATER)

Lab BV ID		GM5626		
Sampling Date		2019/05/25 18:15		
COC Number		N-A		
	Units	JVR188-13R\CARIBOU SEA WATER CHB 2-W1	RDL	QC Batch
2,3,4,6-Tetrachlorophenol	ug/L	<1.0	1.0	1994633
2,3,4,5-Tetrachlorophenol	ug/L	<1.0	1.0	1994633
4-Chlorocatechol	ug/L	<1.0	1.0	1994633
3,5-Dichlorocatechol	ug/L	<1.0	1.0	1994633
4,5-Dichlorocatechol	ug/L	<1.0	1.0	1994633
3,4,5-Trichloroguaiacol	ug/L	<1.0	1.0	1994633
4,5,6-Trichloroguaiacol	ug/L	<1.0	1.0	1994633
Pentachlorophenol	ug/L	<1.0	1.0	1994633
3,4,5-Trichlorocatechol	ug/L	<1.0	1.0	1994633
Tetrachlorocatechol	ug/L	<1.0	1.0	1994633
Tetrachloroguaiacol	ug/L	<1.0	1.0	1994633
4,5-Dichloroveratrol	ug/L	<1.0	1.0	1994633
3,4,5-Trichloroveratrol	ug/L	<1.0	1.0	1994633
3,4,5,6-Tetrachloroveratrol	ug/L	<1.0	1.0	1994633
Surrogate Recovery (%)	-			
D6-Phenol	%	101	N/A	1994633
Tribromophenol-2,4,6	96	76	N/A	1994633
Trifluoro-m-cresol	%	87	N/A	1994633

QC Batch = Quality Control Batch

N/A = Not Applicable



GENERAL COMMENTS

PHENOLS BY GCMS (WATER)

Un-rounded results are used in the total "Total Phenols (RFPP)" calculation. This total result is then rounded to two significant figures.

The total indicated is calculated only for the requested parameters.

Reported detection limits are modified according to the volume of sample received.

Results relate only to the items tested.



Report Date: 2019/06/21

Bureau Veritas Laboratories Client Project #: B9E4476

QUALITY ASSURANCE REPORT

QA/QC	V2342	CHEROLICA	world contact	walking anytheres	Water	#40 CARCIDAD	1000000	CONTRACT OF THE PARTY OF THE PA
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limit
994633	GDL	Spiked Blank	D6-Phenol	2019/06/04		107	76	50 - 13
			Tribromophenol-2,4,6	2019/06/04		95	14	50 - 13
			Trifluoro-m-cresol	2019/06/04		105	%	50 - 13
			Phenol	2019/06/04		100	96	50 - 13
			Z-Chlorophenol	2019/06/04		95	76.	50 - 13
			3-Chlorophenol	2019/06/04		96	16	50 - 13
			4-Chlorophenol	2019/06/04		99	%	50 - 130
			o-Cresol	2019/06/04		104	36	50 - 130
			m-Cresol	2019/06/04		101	%	50 - 13
			p-Cresol	2019/06/04		101	%	50 - 13
			2,4-Dimethylphenol	2019/06/04		95	%	50 - 130
			2,6-Dichlorophenol	2019/06/04		105	96	50 - 130
			3,5-Dichlorophenol	2019/06/04		95	96	50 - 136
			2,3-Dichlorophenol	2019/06/04		100	%	50 - 130
			3,4-Dichlorophenol	2019/06/04		106	%	50 - 130
			2,4 + 2,5-Dichlorophenol	2019/06/04		100	76	50 - 13
			2-Nitrophenol	2019/06/04		94	%	50 - 13
			4-Nitrophenol	2019/06/04		92	94	50 - 13
			2,4,6-Trichlorophenol	2019/06/04		104	%	50 - 13
			2,3,5-Trichlorophenol	2019/06/04		94	96	50 - 13
			2,3,6-Trichlorophenol	2019/06/04		107	%	50 - 13
			2,4,5-Trichlarophenol	2019/06/04		109	26	50 - 13
			2,3,4-Trichlorophenol	2019/06/04		102	%. %	50 - 13
			3,4,5-Trichlorophenol	2019/06/04		108		50 - 13
			2,3,5,6-Tetrachlorophenol	2019/06/04		95	76	50 - 13
			2,3,4,6-Tetrachlorophenol	2019/06/04		107	N	50 - 13
			2,3,4,5-Tetrachlorophenol	2019/06/04		96	16	50 - 13
			Pentachlorophenol	2019/06/04		90	%	50 - 13
994633	GDL	Spiked Blank DUP	D6-Phenol	2019/06/04		105	76	50 - 13
			Tribromophenol-2,4,6	2019/06/04		91	14	50 - 13
			Trifluoro-m-cresol	2019/06/04		101	76	50 - 13
			Phenol	2019/06/04		98	96	50 - 13
			Z-Chiorophenol	2019/06/04		93	76	50 - 130
			3-Chlorophenol	2019/06/04		95	14	50 - 130
			4-Chlorophenol	2019/06/04		93	%	50 - 13
			o-Cresol	2019/06/04		102	36	50 - 13
			m-Cresol	2019/06/04		100	%	50 - 13
			p-Cresol	2019/06/04		98	%	50 - 13
			2,4-Dimethylphenol	2019/06/04		91	%	50 - 130
			2,6-Dichlorophenol	2019/06/04		100	36	50 - 13
			3,5-Dichlorophenoi	2019/06/04		91	96	50 - 13
			2,3-Dichlorophenol	2019/06/04		94	96	50 - 13
			3,4-Dichlorophenol	2019/06/04		100	%	50 - 13
			2,4 + 2,5-Dichlorophenol	2019/06/04		96	% %	50 - 13
			2-Nitrophenol	2019/06/04		87		50 - 130
			4-Nitrophenol	2019/06/04		89	94	50 - 130
			2,4,6-Trichlorophenol	2019/06/04		97	96.	50 - 13
			2,3,5-Trichlorophenol	2019/06/04		87	96	50 - 13
			2,3,6-Trichlorophenol	2019/06/04		98	%	50 - 13
			2,4,5-Trichlorophenol	2019/06/04		104	%	50 - 13
			2,3,4-Trichlorophenol	2019/06/04		95	16	50 - 13
			3,4,5-Trichlorophenol	2019/06/04		95	96	50 - 13
			2,3,5,6-Tetrachlorophenol	2019/06/04		88	%	50 - 13



QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limit
			2,3,4,6-Tetrachlorophenol	2019/06/04		103	16	50 - 13
			2,3,4,5-Tetrachlorophenol	2019/06/04		92	14	50 - 13
			Pentachlorophenol	2019/06/04		87	76	50 - 13
994633	GDL	Method Blank	D6-Phenol	2019/06/04		99	96	50 - 13
			Total of Regi. P&P Phenois	2019/06/04	<5.0		ug/L	
			Tribromophenol-2,4,6	2019/06/04		91	14	50 - 13
			Trifluoro-m-cresol	2019/06/04		101	%	50 - 13
			Phenol	2019/06/04	< 0.50		ug/L	
			2-Chlorophenol	2019/06/04	< 0.50		ug/L	
			3-Chlorophenol	2019/06/04	< 0.50		ug/L	
			4-Chlorophenol	2019/06/04	< 0.50		ug/L	
			o-Cresol	2019/06/04	< 0.50		ug/L	
			m-Cresol	2019/06/04	< 0.50		ug/L	
			p-Cresol	2019/06/04	< 0.50		ug/L	
			Gualacol	2019/06/04	< 0.50		ug/L	
			Catechol	2019/06/04	< 0.50		ug/L	
			Eugenol	2019/06/04	< 0.50		ug/L	
			Isoeugenal	2019/06/04	< 0.50		ug/L	
			6-Chlorovanillin	2019/06/04	< 0.50		ug/L	
			5.6-Dichlorovanillin	2019/06/04	< 0.50		ug/L	
			3,4,5-Trichlorosyringol	2019/06/04	< 0.50		ug/L	
			2,4-Dimethylphenol	2019/06/04	<0.50		ug/L	
			2,6-Dichlorophenol	2019/06/04	<0.50		ug/L	
			3,5-Dichlorophenol	2019/06/04	<0.50		ug/L	
			2,3-Dichlorophenol	2019/06/04	<0.50		ug/t	
			3,4-Dichlorophenol	2019/06/04	<0.50		ug/t	
			2,4 + 2,5-Dichlorophenal	2019/06/04	<0.50		ug/L	
			2-Nitrophenol	2019/06/04	<1.0		ug/L	
			4-Nitrophenol	2019/06/04	<5.0		ug/L	
			2,4,6-Trichlorophenol	2019/06/04	<0.50		ug/L	
			2,3,5-Trichlorophenol	2019/06/04	<0.50		ug/L	
			2,3,6-Trichlorophenol	2019/06/04	<0.50		ug/L	
			2,4,5-Trichlarophenol	2019/06/04	< 0.50			
					<0.50		ug/L	
			2,3,4-Trichlorophenol	2019/06/04			ug/L	
			3,4,5-Trichlorophenol	2019/06/04	<0.50		ug/L	
			4-Chloroguaiacol	2019/06/04	<0.50		ug/L	
			4,5-Dichloroguaiacol	2019/06/04	<0.50		ug/L	
			4,6-Dichlorogualacol	2019/06/04	<0.50		ug/L	
			2,3,5,6-Tetrachlorophenol	2019/06/04	<0.50		ug/L	
			2,3,4,6-Tetrachlorophenol	2019/06/04	<0.50		ug/L	
			2,3,4,5-Tetrachiorophenoi	2019/06/04	<0.50		ug/l	
			4-Chlorocatechol	2019/06/04	<0.50		ug/L	
			3,5-Dichlorocatechol	2019/06/04	<0.50		ug/L	
			4,5-Dichlorocatechol	2019/06/04	<0.50		ug/L	
			3,4,5-Trichlorogualacol	2019/06/04	<0.50		ug/L	
			4,5,6-Trichloroguaiacol	2019/06/04	<0.50		ug/L	
			Pentachlorophenol	2019/06/04	< 0.50		ug/L	
			3,4,5-Trichlorocatechol	2019/06/04	<0.50		ug/L	
			Tetrachlorocatechol	2019/06/04	< 0.50		ug/L	
			Tetrachloroguaiacol	2019/06/04	<0.50		ug/L	
			4,5-Dichloroveratrol	2019/06/04	< 0.50		ug/L	
			3,4,5-Trichloroveratrol	2019/06/04	< 0.50		ug/L	



Lab BV Job #: B920966 Bureau Veritas Laboratories
Report Date: 2019/06/21 Client Project #: B9E4476

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			3,4,5,6-Tetrachioroveratrol	2019/06/04	< 0.50	- C-23-16	ug/L	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

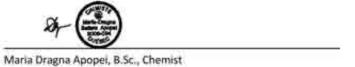
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination,

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Lab BV has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005 (E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

MAXXAM ANALYTICS

200 Bluewater Road Bedford, Nova Scotia, 848 1G9 (902) 420-0203 (902) 420-8612



Northern Pulp N.S. Maxxam PM : Maryann Comeau

SUBCONTRACTING REQUEST FORM

To: Be	Internatio	mat Sample)		ubcontrac	wot Cert., heat treat is	s required poor t		B9E4476
Sample ID			Matrix	Test(s) Required		Container	Date Sampled	Date Required
VA188-13A\(ARIBOU SEA	WATER CHB	2-W	Phenois in Pulp and F	aper Mill Efficients	2-DPHE	2019/05/25 18	15 2019/06/20
-	Temp.1	Temp. 2	Temp. 1			-		
ooler #1	3	1	1	Custody Seal Present Custody Seal Intact Ice Present Upon Receip	VES VES	(B)		
ooler #2				Custody Seal Present Custody Seal Intact	VES VES	NO NO		
Coaler #3				Ice Present Upon Receipt Custody Seal Present Custody Seal Intact	YES	NO NO		
Please at I) Include o	dvise us if yo	our laborate completed	ory cannot p	ease reference Sample I perform the requested a t COC & signed final rep	malysis or must sub-			09:02
Sational: N	equirements 001			21.14	10.00.20	18	李达的全球的影響	9111
Regional:				Sophie Retai	DE REAL PROPERTY.	B9205	66_coc	
Requires 5	idiately (high) lam at. Delivery lip next availa			Ship Cold Ship Room Temp Ship Frozen COC Must be Attached	Shipping Departs Correct Shipping Correct Sample is Yes No Date Shipped Shipper (Print)	location ds (Paperwork vi pecial-Coples/ic		



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant

Your C.O.C. #: 715274-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/06/24

Report #: R5768657 Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89E4405 Received: 2019/05/29, 12:45

Sample Matrix: Water # Samples Received: 1

• • • • • • • • • • • • • • • • • • • •		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Reference
Carbonate, Bicarbonate and Hydroxide	1	N/A	2019/06/20		SM 23 4500-CO2 D
Alkalinity	1	N/A	2019/06/18	ATL SOP 00013	EPA 310.2 R1974 m
Benzo(b/j)fluoranthene Sum (water)	1	N/A	2019/06/03	N/A	Auto Calc.
Carbonaceous BOD	1	2019/05/30	2019/06/04	ATL SQP 00041	SM 23 5210B m
Chloride	1	N/A	2019/06/19	ATL SOP 00014	SM 23 4500-CI- E m
Chemical Oxygen Demand (COD)	1	N/A	2019/05/30	ATL SOP 00042	SM 23 5220D m
Colour	1	N/A	2019/06/18	ATL SOP 00020	SM 23 2120C m
Total Cyanide (1)	1	2019/06/05	2019/06/07	CAM SOP-00457	OMOE E3015 5 m
Dioxins/Furans in Water (EPS 1/RM/23) (1, 6)	1	2019/06/06	2019/06/12	BRL SOP-00406 (mod)	EPS 1/RM/23 m
Organic carbon - Diss (DOC) (7)	1	N/A	2019/06/05	ATL SOP 00203	SM 23 5310B m
Conductance - water	1	N/A	2019/06/19	ATL SOP 00004	SM 23 2510B m
TEH in Water (PIRI)	1	2019/05/30	2019/05/30	ATL SOP 00113	Atl. RBCA v3.1 m
Sulphide as H2S (1)	1	N/A	2019/06/03		
Hardness (calculated as CaCO3)	1	N/A	2019/05/31	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	1	2019/05/31	2019/05/31	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total MS	1	2019/05/30	2019/05/31	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	1	N/A	2019/06/20	N/A	Auto Calc
Anion and Cation Sum	1	N/A	2019/06/20	N/A	Auto Calc.
Chlorate and Chlorite by IC (2)	1	N/A	2019/06/05	CAL SOP-00040	SM 23 4110D m
Nitrogen (Total) (3)	1	N/A	2019/06/03	BBY6SOP-00016	SM 22 4500-N C m
Resin and Fatty Acids (2)	1	2019/05/31	2019/06/01	CAL SOP-00099	AE129.0
Nitrogen Ammonia - water	1	N/A	2019/06/04	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2019/06/18	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	1	N/A	2019/06/18	ATL SOP 00017	SM 23 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2019/06/19	ATL SOP 00018	ASTM D3867-16
PAH in Water by GC/MS (SIM)	1	2019/05/31	2019/06/01	ATL SOP 00103	EPA 8270E R6 m
PCBs in water by GC/ECD	1	2019/06/04	2019/06/05	ATL SOP 00107	EPA 8082A m
PCB Aroclor sum (water)	1	N/A	2019/06/05	N/A	Auto Calc.
Phenols in Pulp and Paper Mill Effluents (4)	1	2019/06/01	2019/06/05	Ç.	
pH (8)	.1	N/A	2019/06/19	ATL SOP 00003	SM 23 4500-H+ B m
Phosphorus - ortho	1	N/A	2019/06/18	ATL SOP 00021	SM 23 4500-P E m



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant

Your C.O.C. #: 715274-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/06/24

Report #: R5768657 Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89E4405 Received: 2019/05/29, 12:45

Sample Matrix: Water # Samples Received: 1

a somples necesses 2		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Reference
VPH in Water (PIRI)	1	N/A	2019/06/02	ATL SOP 00118	Atl. RBCA v3.1 m
Salinity (9)	1	N/A	2019/06/18		SM 22 2520B
Sat. pH and Langelier Index (@ 20C)	1	N/A	2019/06/20	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	1	N/A	2019/06/20	ATL SQP 00049	Auto Calc
Reactive Silica	1	N/A	2019/06/19	ATL SOP 00022	EPA 366.0 m
Sulphate	1	N/A	2019/06/19	ATL SOP 00023	ASTM D516-16 m
Particle Size (Oily W)(Sub from Bedford) (5)	1	2019/06/01	2019/06/17		
Sulphide (1)	1	N/A	2019/06/03	CAM SOP-00455	SM 23 4500-5 G m
Total Dissolved Solids (TDS calc)	1	N/A	2019/06/19	N/A	Auto Calc.
Total Kjeldahl Nitrogen in Water (1)	1	2019/06/01	2019/06/04	CAM SOP-00938	OMOE E3516 m
Organic carbon - Total (TOC) (7)	1	N/A	2019/06/07	ATL SOP 00203	SM 23 5310B m
ModTPH (T1) Calc. for Water	1	N/A	2019/06/03	N/A	Atl. RBCA v3 m
Phosphorus Total Colourimetry	1	2019/06/05	2019/06/06	ATL SOP 00057	EPA 365.1 R2 m
Total Suspended Solids	1	2019/05/31	2019/06/03	ATL SOP 00007	SM 23 2540D m
Turbidity	1	N/A	2019/06/10	ATL SOP 00011	EPA 180.1 R2 m
Volatile Organic Compounds in Water	1	N/A	2019/05/30	ATL SOP 00133	EPA 8260D R4 m
Volatile Suspended Solids	1	N/A	2019/06/04	ATL SOP 00008	EPA 160.4 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.



Your P.O. #: 43013552

Your Project #: Effluent Treatment Plant

Your C.O.C. #: 715274-01-01

Attention: Michael Pidgeon

Northern Pulp N.S. Pictou Landing 340 Simpson Lane Pictou, NS CANADA BOK 1X2

Report Date: 2019/06/24

Report #: R5768657 Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: 89E4405

Received: 2019/05/29, 12:45

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

- * RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
- (1) This test was performed by Bureau Veritas Laboratories Mississauga
- (2) This test was performed by Bedford to Caigary Offsite
- (3) This test was performed by Bedford to Burnaby Offsite
- (4) This test was performed by Bedford to Montreal Subcontrac
- (5) This test was performed by Bedford to Lex Subcontract
- (6) Confirmatory runs for 2,3,7,8-TCDF are performed only if the primary result is greater than the RDL
- (7) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.
- (8) The APHA Standard Method require pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.
- (9) Non-accredited test method

Encryption Key

Steylousta Shanlarvanot Project Sanader Assistant

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Maryann Comeau, Project Manager Email: Maryann COMEAU@bvlabs.com Phone# (902)420-0203 Ext: 298

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of i50/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

RESULTS OF ANALYSES OF WATER

BV Labs ID		JVQ871			
Sampling Date		2019/05/25 18:15			
COC Number		715274-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 2-2	RDL	MDL	QC Batch
Calculated Parameters					
Anion Sum	me/L	507	N/A	N/A	6147444
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	92	1.0	0.20	6147433
Calculated TDS	mg/L	29000	1.0	0.20	6147453
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND	1.0	0.20	6147433
Cation Sum	me/L	477	N/A	N/A	6147444
Hardness (CaCO3)	mg/L	5100	1.0	1.0	6147440
Ion Balance (% Difference)	96	3.06	N/A	N/A	6147442
Langelier Index (@ 20C)	N/A	0.258			6147449
Langelier Index (@ 4C)	N/A	0.0200			6147451
Nitrate (N)	mg/L	ND	0.050	N/A	6147446
Saturation pH (@ 20C)	N/A	7.35			6147449
Saturation pH (@ 4C)	N/A	7.59			6147451
Sulphide (as H2S)	mg/L	ND	0.021	0.011	6147649
Inorganics			-		
Total Alkalinity (Total as CaCO3)	mg/L	92	5.0	N/A	6182160
Carbonaceous BOD	mg/L	ND (1)	10	N/A	6148701
Total Chemical Oxygen Demand	mg/L	910	200	N/A	6148620
Dissolved Chlorate (CIO3-)	mg/L	ND (2)	5.0	N/A	6165901
Dissolved Chloride (Cl-)	mg/L	17000	500	N/A	6182167
Dissolved Chlorite (CLO2-)	mg/L	ND (2)	5.0	N/A	6165901
Colour	TCU	ND	5.0	N/A	6182170
Total Kjeldahl Nitrogen (TKN)	mg/L	0.15	0.10	0.060	6153709
Nitrate + Nitrite (N)	mg/L	ND	0.050	N/A	6182172
Nitrite (N)	mg/L	ND	0.010	N/A	6182173
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	N/A	6156641
Dissolved Organic Carbon (C)	mg/L	1.6	0.50	N/A	6158927
Total Organic Carbon (C)	mg/L	1.9	0.50	N/A	6163938
Orthophosphate (P)	mg/L	ND	0.010	N/A	6182171
рН	pH	7.61	N/A	N/A	6184783

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not detected

- Sample integrity may have been compromised, the sample exceeded it's hold time prior to being analyzed.
- (2) Detection limits raised due to matrix interference.



RESULTS OF ANALYSES OF WATER

BV Labs ID		JVQ871			
Sampling Date		2019/05/25 18:15			
COC Number		715274-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 2-2	RDL	MDL	QC Batch
Total Phosphorus	mg/L	ND	0.020	N/A	6158894
Salinity	N/A	30	2.0	N/A	6181990
Reactive Silica (SiO2)	mg/L	ND	0.50	N/A	6182169
Total Suspended Solids	mg/L	2.2	1.0	N/A	6151063
Dissolved Sulphate (SO4)	mg/L	1900	40	N/A	6182168
Sulphide	mg/L	ND:	0.020	0.010	6154726
Total Cyanide (CN)	mg/L	ND	0.0050	0.00010	6159669
Turbidity	NTU	0.83	0.10	0.10	6167153
Volatile Suspended Solids	mg/L	2.0	2.0	N/A	6157072
Conductivity	uS/cm	44000	1.0	N/A	6184788
Nutritional Parameters					
Total Nitrogen (N)	mg/L	0.133	0.020	N/A	6157791
Subcontracted Analysis			•		
Subcontract Parameter	N/A	ATTACHED.	N/A	N/A	6153387
RDL = Reportable Detection Li QC Batch = Quality Control Bat ND = Not detected	mit				

N/A = Not Applicable



MERCURY BY COLD VAPOUR AA (WATER)

BV Labs ID		JVQ871			
Sampling Date		2019/05/25 18:15			
COC Number		715274-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 2-2	RDL	MDL	QC Batch
Metals					
Total Mercury (Hg)	ug/L	ND	0.013	N/A	6149403
RDL = Reportable Detect	tion Limit		· Control of the control of		
QC Batch = Quality Cont	rol Batch				
ND = Not detected					
N/A = Not Applicable					

ELEMENTS BY ICP/MS (WATER)

BV Labs ID		JVQ871			
Sampling Date		2019/05/25 18:15			
COC Number		715274-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 2-2	RDL	MDL	QC Batci
Metals					
Total Aluminum (AI)	ug/L	ND	50	N/A	6148971
Total Antimony (Sb)	ug/L	ND	10	N/A	614897
Total Arsenic (As)	ug/L	ND	10	N/A	614897
Total Barium (Ba)	ug/L	11	10	N/A	614897
Total Beryllium (Be)	ug/L	ND	10	N/A	614897
Total Bismuth (Bi)	ug/L	ND	20	N/A	614897
Total Boron (B)	ug/L	3600	500	N/A	614897
Total Cadmium (Cd)	ug/L	ND	0.10	N/A	614897
Total Calcium (Ca)	ug/L	330000	1000	N/A	614897
Total Chromium (Cr)	ug/L	ND	10	N/A	614897
Total Cobalt (Co)	ug/L	ND	4.0	N/A	614897
Total Copper (Cu)	ug/L	ND	5.0	N/A	614897
Total Iron (Fe)	ug/L	ND	500	N/A	614897
Total Lead (Pb)	ug/L	ND	5.0	N/A	614897
Total Magnesium (Mg)	ug/L	1000000	1000	N/A	614897
Total Manganese (Mn)	ug/L	ND	20	N/A	614897
Total Molybdenum (Mo)	ug/L	ND	20	N/A	614897
Total Nickel (NI)	ug/L	ND	20	N/A	614897
Total Phosphorus (P)	ug/L	ND	1000	N/A	614897
Total Potassium (K)	ug/L	320000	1000	N/A	614897
Total Selenium (Se)	ug/L	ND:	10	N/A	614897
Total Silver (Ag)	ug/L	ND	1.0	N/A	614897
Total Sodium (Na)	ug/L	8400000	1000	N/A	614897
Total Strontium (Sr)	ug/L	6100	20	N/A	614897
Total Thallium (TI)	ug/L	ND	1.0	N/A	614897
Total Tin (Sn)	ug/L	ND	20	N/A	614897
Total Titanium (Ti)	ug/L	ND	20	N/A	614897
Total Uranium (U)	ug/L	2.9	1.0	N/A	614897
Total Vanadium (V)	ug/L	ND	20	N/A	614897
Total Zinc (Zn)	ug/L	ND	50	N/A	614897
RDL = Reportable Detection QC Batch = Quality Control ND = Not detected N/A = Not Applicable					

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		JVQ871			
Sampling Date		2019/05/25 18:15			
COC Number		715274-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 2-2	RDL	MDL	QC Batch
Polyaromatic Hydrocarbor	ns				
1-Methylnaphthalene	ug/L	ND	0.050	N/A	6151065
2-Methylnaphthalene	ug/L	ND	0.050	N/A	6151065
Acenaphthene	ug/L	ND	0.010	N/A	6151065
Acenaphthylene	ug/L	ND	0.010	N/A	6151065
Anthracene	ug/L	ND	0.010	N/A	6151065
Benzo(a)anthracene	ug/L	ND	0.010	N/A	6151065
Benzo(a)pyrene	ug/t	ND	0.010	N/A	6151065
Benzo(b)fluoranthene	ug/L	ND	0.010	N/A	6151065
Benzo(b/j)fluoranthene	ug/L	ND	0.020	N/A	6146340
Benzo(g,h,i)perylene	ug/L	ND	0.010	N/A	6151065
Benzo(j)fluoranthene	ug/L	ND	0.010	N/A	6151065
Benzo(k)fluoranthene	ug/L	ND	0.010	N/A	6151065
Chrysene	ug/L	ND	0.010	N/A	6151065
Dibenz(a,h)anthracene	ug/L	ND	0.010	N/A	6151065
Fluoranthene	ug/L	ND	0.010	N/A	6151065
Fluorene	ug/L	ND	0.010	N/A	6151065
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.010	N/A	6151065
Naphthalene	ug/L	ND	0.20	N/A	6151065
Perylene	ug/t	ND:	0.010	N/A	6151065
Phenanthrene	ug/L	ND	0.010	N/A	6151065
Pyrene	ug/L	ND	0.010	N/A	6151065
Surrogate Recovery (%)				-	
D10-Anthracene	96	85		ŊŒ.	6151065
D14-Terphenyl	%	93			6151065
D8-Acenaphthylene	%	81			6151065
RDL = Reportable Detection QC Batch = Quality Control ND = Not detected N/A = Not Applicable					

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		JVQ871			
Sampling Date		2019/05/25 18:15			
COC Number		715274-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 2-2	RDL	MDL	QC Batch
Volatile Organics					
1,1-Dichloroethane	ug/L	ND:	2.0	N/A	6148613
1,1-Dichloroethylene	ug/L	ND:	0.50	1.0	6148613
1,1,1-Trichloroethane	ug/L	ND	1.0	N/A	6148613
1,1,2-Trichloroethane	ug/L	ND	1.0	N/A	6148613
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	N/A	6148613
Ethylene Dibromide	ug/L	ND:	0.20	0.50	6148613
1,2-Dichlorobenzene	ug/L	ND:	0.50	N/A	6148613
1,2-Dichloroethane	ug/L	ND:	1.0	N/A	6148613
cis-1,2-Dichloroethylene	ug/L	ND	0.50	N/A	6148613
trans-1,2-Dichloroethylene	ug/L	ND	0.50	N/A	6148613
1,2-Dichloropropane	ug/L	ND	0.50	N/A	6148613
1,3-Dichlorobenzene	ug/L	ND	1.0	N/A	6148613
cis-1,3-Dichloropropene	ug/L	ND	0.50	N/A	6148613
trans-1,3-Dichloropropene	ug/L	ND	0.50	N/A	6148613
1,4-Dichlorobenzene	ug/L	ND	1.0	N/A	6148613
Benzene	ug/L	ND	1.0	N/A	6148613
Bromodichloromethane	ug/L	ND	1.0	0.20	6148613
Bromoform	ug/L	ND	1.0	0.20	6148613
Bromomethane	ug/L	ND	0.50	N/A	6148613
Carbon Tetrachloride	ug/L	ND	0.50	N/A	6148613
Chlorobenzene	ug/L	ND	1.0	N/A	6148613
Chloroethane	ug/L	ND	8.0	N/A	6148613
Chloroform	ug/L	ND	1.0	0.20	6148613
Chloromethane	ug/L	ND	8.0	N/A	6148613
Dibromochloromethane	ug/L	ND:	1.0	0.20	6148613
Methylene Chloride(Dichloromethane)	ug/L	ND	3.0	N/A	6148613
Ethylbenzene	ug/L	ND	1.0	N/A	6148613
Methyl t-butyl ether (MTBE)	ug/L	ND	2.0	N/A	6148613
Styrene	ug/L	ND	1.0	N/A	6148613
Tetrachloroethylene	ug/t.	ND	1.0	N/A	6148613
Toluene	ug/L	ND	1.0	N/A	6148613
Trichloroethylene	ug/L	ND	1.0	N/A	6148613

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		JVQ871			
Sampling Date		2019/05/25 18:15			
COC Number		715274-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 2-2	RDL.	MDL	QC Batch
Trichlorofluoromethane (FREON 11)	ug/L	ND	8.0	N/A	6148613
Vinyl Chloride	ug/L	ND	0.50	2.0	6148613
o-Xylene	ug/L	ND	1.0	N/A	6148613
p+m-Xylene	ug/L	ND	2.0	N/A	6148613
Total Xylenes	ug/t.	ND	1.0	1.0	6148613
Total Trihalomethanes	ug/L	ND:	1.0	N/A	6148613
Surrogate Recovery (%)					
4-Bromofluorobenzene	96	98			6148613
D4-1,2-Dichloroethane	%	117			6148613
D8-Toluene	96	99			6148613

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

N/A = Not Applicable

ATLANTIC RBCA HYDROCARBONS (WATER)

BV Labs ID		JVQ871			
Sampling Date		2019/05/25 18:15			
COC Number		715274-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 2-2	RDL	MDL	QC Batch
Petroleum Hydrocarbons					
Benzene	mg/L	ND	0.0010	N/A	6153411
Toluene	mg/L	ND	0.0010	N/A	6153411
Ethylbenzene	mg/L	ND	0.0010	N/A	6153411
Total Xylenes	mg/L	ND.	0.0020	N/A	6153411
C6 - C10 (less BTEX)	mg/L	ND	0.010	N/A	6153411
>C10-C16 Hydrocarbons	mg/L	ND	0.050	N/A	6148915
>C16-C21 Hydrocarbons	mg/L	ND	0.050	N/A	6148915
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>ND</td><td>0.10</td><td>N/A</td><td>6148915</td></c32>	mg/L	ND	0.10	N/A	6148915
Modified TPH (Tier1)	mg/L	ND	0.10	N/A	6146630
Reached Baseline at C32	mg/L	NA.	N/A	N/A	6148915
Hydrocarbon Resemblance	mg/L	NA:	N/A	N/A	6148915
Surrogate Recovery (%)	1				
Isobutylbenzene - Extractable	%	85			6148915
n-Dotriacontane - Extractable	%	101			6148915
Isobutylbenzene - Volatile	%	93			6153411
RDL = Reportable Detection Lin QC Batch = Quality Control Bate ND = Not detected N/A = Not Applicable					



POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

BV Labs ID		JVQ871			
Sampling Date		2019/05/25 18:15			
COC Number		715274-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 2-2	RDL	MDL	QC Batch
PCBs					
Aroclor 1016	ug/L	ND	0.050	N/A	6156517
Aroclor 1221	ug/L	ND	0.050	N/A	6156517
Arocior 1232	ug/L	ND	0.050	N/A	6156517
Aroclor 1248	ug/L	ND	0.050	N/A	6156517
Aroclor 1242	ug/L	ND	0.050	N/A	6156517
Aroclor 1254	ug/L	ND	0.050	N/A	6156517
Aroclor 1260	ug/L	ND	0.050	N/A	6156517
Calculated Total PCB	ug/L	ND	0.050	N/A	6146342
Surrogate Recovery (%)			-		
Decachlorobiphenyl	%	93			6156517
RDL = Reportable Detecti	on Limit				
QC Batch = Quality Contr	ol Batch				
ND = Not detected					
N/A = Not Applicable					

RESIN AND FATTY ACIDS BY GC-MS (WATER)

BV Labs ID		JVQ871			
Sampling Date		2019/05/25 18:15			
COC Number		715274-01-01			
	UNITS	CARIBOU SEA WATER CH-BOF 2-2	RDL	MDL	QC Batch
Calculated Parameters					
Total Fatty Acids	mg/L	ND:	0.072	N/A	6172548
Total Resin Acids	mg/L	ND	0.060	N/A	6172548
Fatty Acids					
9,10-Dichlorostearic acid	mg/L	ND	0.0060	N/A	6172548
Decanoic Acid (C10)	mg/L	ND	0.0060	N/A	6172548
Docosanoic acid (C22)	mg/L	ND	0.0060	N/A	6172548
Dodecanoic acid (C12)	mg/L	ND	0.0060	N/A	6172548
Eicosanoic acid (C20)	mg/L	ND:	0.0060	N/A	6172548
Hexadecanoic acid (C16)	mg/L	ND	0.0060	N/A	6172548
Linoleic acid (C18:2)	mg/L	ND	0.0060	N/A	6172548
Linolenic acid (C18:3)	mg/L	ND	0.0060	N/A	6172548
Octadecanoic acid (C18)	mg/L	ND	0.0060	N/A	6172548
Oleic acid (C18:1)	mg/L	ND:	0.0060	N/A	6172548
Tetradecanoic acid (C14)	mg/L	ND	0.0060	N/A	6172548
Undecanoic acid (C11)	mg/L	ND	0.0060	N/A	6172548
Resin Acids					
12,14-Dichlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6172548
12-Chlorodehydroabietic acid	mg/L	ND	0.0060	N/A	6172548
14-Chlorodehydroabietic acid	mg/L	ND.	0.0060	N/A	6172548
Abietic acid	mg/L	ND:	0.0060	N/A	6172548
Dehydroabietic acid	mg/L	ND	0.0060	N/A	6172548
Isopimaric acid	mg/L	ND	0.0060	N/A	6172548
Neoabietic acid	mg/L	ND	0.0060	N/A	6172548
Palustric acid	mg/L	ND	0.0060	N/A	6172548
Pimaric acid	mg/L	ND	0.0060	N/A	5172548
Sandaracopimaric acid	mg/L	ND	0.0060	N/A	6172548
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not detected N/A = Not Applicable					



DIOXINS AND FURANS BY HRMS (WATER)

BV Labs ID		JVQ871		ļ,					
Sampling Date		2019/05/25 18:15							
COC Number		715274-01-01				TOXIC EQUI	VALENCY	# of	
	UNITS	CARIBOU SEA WATER CH-BOF 2-2	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Dioxins & Furans				_					
2,3,7,8-Tetra CDD *	pg/L	ND	1.11	9.48	N/A	1.00	1.11		6170521
1,2,3,7,8-Penta CDD *	pg/L	ND	0.960	9.48	N/A	1.00	0.960		6170521
1,2,3,4,7,8-Hexa CDD *	pg/L	ND	1.24	9.48	N/A	0.100	0.124		6170521
1,2,3,6,7,8-Hexa CDD *	pg/L	ND	1.08	9.48	N/A	0.100	0.108	1	6170521
1,2,3,7,8,9-Hexa CDD *	pg/L	ND.	1.05	9.48	N/A	0.100	0.105		6170521
1,2,3,4,6,7,8-Hepta CDD *	pg/L	ND	1.05	9.48	N/A	0.0100	0.0105		6170521
Octa CDD *	pg/L	1.38	1.03	94.8	N/A	0.000300	0.000414		6170521
Total Tetra CDD *	pg/L	ND	1.11	9,48	N/A			0	6170521
Total Penta CDD *	pg/L	ND:	0.960	9.48	N/A			0	6170521
Total Hexa CDD.*	pg/L	ND:	1.11	9.48	N/A			0	6170521
Total Hepta CDD *	pg/L	ND	1.05	9.48	N/A			0	6170521
2,3,7,8-Tetra CDF **	pg/L	ND	1.08	9.48	N/A	0.100	0.108		6170521
1,2,3,7,8-Penta CDF **	pg/L	ND	1.09	9.48	N/A	0.0300	0.0327		6170521
2,3,4,7,8-Penta CDF **	pg/L	ND	1.09	9.48	N/A	0.300	0.327		6170521
1,2,3,4,7,8-Hexa CDF **	pg/L	ND	1.12	9.48	N/A	0.100	0.112		6170521
1,2,3,6,7,8-Hexa CDF **	pg/L	ND.	0.929	9.48	N/A	0.100	0.0929		6170521
2,3,4,6,7,8-Hexa CDF **	pg/L	ND	1.05	9.48	N/A	0.100	0.105		6170521
1,2,3,7,8,9-Hexa CDF **	pg/L	ND	1.17	9.48	N/A	0.100	0.117		6170521
1,2,3,4,6,7,8-Hepta CDF **	pg/L	ND	0.878	9.48	N/A	0.0100	0.00878		6170521
1,2,3,4,7,8,9-Hepta CDF **	pg/L	ND	0.999	9,48	N/A	0.0100	0.00999)	6170521
Octa CDF **	pg/L	ND:	1.13	94.8	N/A	0.000300	0.000339	1	6170521
Total Tetra CDF **	pg/L	ND:	1.08	9.48	N/A			0	6170521
Total Penta CDF **	pg/L	ND	1.09	9.48	N/A			0	6170521
Total Hexa CDF **	pg/L	ND:	1.06	9.48	N/A			0	6170521
Total Hepta CDF **	pg/L	ND	0.935	9.48	N/A			0	6170521

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,

The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

* CDD = Chloro Dibenzo-p-Dioxin

ND = Not detected

N/A = Not Applicable

** CDF = Chloro Dibenzo-p-Furan



DIOXINS AND FURANS BY HRMS (WATER)

BV Labs ID		JVQ871							
Sampling Date		2019/05/25 18:15							
COC Number		715274-01-01				TOXIC EQUIV	/ALENCY	# of	
	UNITS	CARIBOU SEA WATER CH-BOF 2-2	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg/L			П			3.33		
Surrogate Recovery (%)	-						interior		
C13-1234678 HeptaCDD *	26	90		I .				1	6170521
C13-1234678 HeptaCDF **	96	89							6170521
C13-123678 HexaCDD *	%	109							6170521
C13-123678 HexaCDF **	%	72							6170521
C13-12378 PentaCDD *	%	68							6170521
C13-12378 PentaCDF **	%	51							6170521
C13-2378 TetraCDD *	%	69							6170521
C13-2378 TetraCDF **	96	57							6170521
C13-OCDD *	%	92							6170521

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,

The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

* CDD = Chloro Dibenzo-p-Dioxin

** CDF = Chloro Dibenzo-p-Furan



GENERAL COMMENTS

Each t	emperature is the	average o	of up to thre	coole	er te	empe	eratu	ures	s ta	ke	n a	at r	rece	ipt														
	Package 1	9.0	c																									
	received past the			-71				Stanti	20. 50	or ti	lim	dec	for		***	mat	ale	du	n to		nnle		***					
Sample	: 14de/1 [CARIBO	NO SEA W	ALEK CH-BOI	4-4)	cie	evatet	u ie	por	thirt	R II	1111	012	(O)	LT art	cei	inec	Latin	au	e to	adt	rithie	2 111	din	en.				
Result	s relate only to th	e items t	ested.																									



QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6148613	ASL	Matrix Spike	4-Bromofluorobenzene	2019/05/30		99	- 14	70 - 130
			D4-1,2-Dichloroethane	2019/05/30		120	76	70 - 130
			D8-Toluene	2019/05/30		96	34	70 - 130
			I,1-Dichloroethane	2019/05/30		108	%	70 - 130
			1,1-Dichloroethylene	2019/05/30		110	%	70 - 130
			1,1,1-Trichloroethane	2019/05/30		109	%	70 - 130
			1,1,2-Trichloroethane	2019/05/30		109	%	70 - 130
			1,1,2,2-Tetrachloroethane	2019/05/30		109	%	70 - 130
			Ethylene Dibromide	2019/05/30		112	%	70 - 130
			1,2-Dichlorobenzene	2019/05/30		91	%	70 - 130
			1,2-Dichloroethane	2019/05/30		112	%	70 - 130
			cis-1,2-Dichloroethylene	2019/05/30		102	%	70 - 130
			trans-1,2-Dichloroethylene	2019/05/30		108	%	70 - 130
			1,2-Dichloropropane	2019/05/30		106	%	70 - 130
			1,3-Dichlorobenzene	2019/05/30		87	96	70 - 130
			cis-1,3-Dichloropropene	2019/05/30		111	76	70 - 130
			trans-1,3-Dichloropropene	2019/05/30		121	Y6.	70 - 130
			1,4-Dichlorobenzene	2019/05/30		87	96.	70 - 130
			Benzene	2019/05/30		93	36	70 - 130
			Bromodichloromethane	2019/05/30		102	76	70 - 130
			Bromafarm	2019/05/30		104	76	70 - 130
			Bromomethane	2019/05/30		100	76	60 - 140
			Carbon Tetrachloride	2019/05/30		105	%	70 - 130
			Chlorobenzene	2019/05/30		92	76	70 - 130
			Chloroethane	2019/05/30		90	14	60 - 140
			Chloroform	2019/05/30		102	76	70 - 130
			Chloromethane	2019/05/30		94	96.	60 - 140
			Dibromochloromethane	2019/05/30		108	76	70 - 130
			Methylene Chloride(Dichloromethane)	2019/05/30		106	*	70 - 130
			Ethylbenzene	2019/05/30		94	%	70 - 130
			Methyl t-butyl ether (MTBE)	2019/05/30		103	34	70 - 130
			Styrene	2019/05/30		99	%	70 - 130
			Tetrachloroethylene	2019/05/30		97	%	70 - 130
			Toluene	2019/05/30		97	%	70 - 130
			Trichloroethylene	2019/05/30		98	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2019/05/30		93	96	60 - 140
			Vinyl Chloride	2019/05/30		91	%	60 - 140
			o-Xylene	2019/05/30		94	%	70 - 130
			p+m-Xylene	2019/05/30		92	%	70 - 130
6148613	ASL	Spiked Blank	4-Bromofluorobenzene	2019/05/30		101	%	70 - 130
			D4-1,2-Dichloroethane	2019/05/30		111	%	70 - 130
			D8-Toluene	2019/05/30		97	%	70 - 130
			1,1-Dichloroethane	2019/05/30		108	96	70 - 130
			1,1-Dichlorgethylene	2019/05/30		113	%	70 - 130
			1,1,1-Trichloroethane	2019/05/30		111	74.	70 - 130
			1,1,2-Trichloroethane	2019/05/30		103	96.	70 - 130
			1,1,2,2-Tetrachloroethane	2019/05/30		103	36	70 - 130
			Ethylene Dibromide	2019/05/30		104	76	70 - 130
			1,2-Dichlorobenzene	2019/05/30		93	14.	70 - 130
			1,2-Dichloroethane	2019/05/30		106	%	70 - 130
			cis-1,2-Dichloroethylene	2019/05/30		100	96	70 - 130
			trans-1,2-Dichloroethylene	2019/05/30		109	%	70 - 130
			1,2-Dichloropropane	2019/05/30		105	%	70 - 130
			1.3-Dichlorobenzene	2019/05/30		91	%	70 - 130



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			cis-1,3-Dichloropropene	2019/05/30		104	- %	70 - 130
			trans-1,3-Dichloropropene	2019/05/30		108	%	70 - 130
			1,4-Dichlorobenzene	2019/05/30		90	. 34	70 - 130
			Benzene	2019/05/30		93	%	70 - 13
			Bromodichloromethane	2019/05/30		101	96	70 - 130
			Bromoform	2019/05/30		99	%	70 - 130
			Bromomethane	2019/05/30		95	96	60 - 14
			Carbon Tetrachloride	2019/05/30		108	%	70 - 13
			Chlorobenzene	2019/05/30		94	%	70 - 13
			Chloroethane	2019/05/30		91	96	60 - 14
			Chloroform	2019/05/30		101	96	70 - 13
			Chloromethane	2019/05/30		92	%	60 - 14
			Dibromochloromethane	2019/05/30		104	%	70 - 13
			Methylene Chloride(Dichloromethane)	2019/05/30		101	%	70 - 13
			Ethylbenzene	2019/05/30		99	34	70 - 13
				2019/05/30		101	%	70 - 13
			Methyl t-butyl ether (MTBE)			102		70 - 13
			Styrene	2019/05/30			%	
			Tetrachloroethylene	2019/05/30		101	96.	70 - 13
			Toluene	2019/05/30		99	36	70 - 13
			Trichloroethylene	2019/05/30		101	*	70 - 13
			Trichlorofluoromethane (FREON 11)	2019/05/30		96	N	60 - 14
			Vinyl Chloride	2019/05/30		87	76	60 - 14
			o-Xylene	2019/05/30		98	%	70 - 13
			p+m-Xylene	2019/05/30		96	76	70 - 13
148613	ASL	Method Blank	4-Bromafluorobenzene	2019/05/30		98	14	70 - 13
			D4-1,2-Dichloroethane	2019/05/30		111	76	70 - 13
			D8-Toluene	2019/05/30		100	96.	70 - 13
			1,1-Dichloroethane	2019/05/30	ND, RDL=2.0		ug/L	
			1,1-Dichloroethylene	2019/05/30	ND, RDL=0.50		ug/L	
			1,1,1-Trichloroethane	2019/05/30	ND, RDL=1.0		ug/t	
			1,1,2-Trichloroethane	2019/05/30	ND, RDL=1.0		ug/L	
			1,1,2,2-Tetrachloroethane	2019/05/30	ND, RDL=0.50		ug/L	
			Ethylene Dibromide	2019/05/30	ND, RDL=0.20		ug/L	
			1,2-Dichlorobenzene	2019/05/30	ND, RDL=0.50		ug/L	
			1,2-Dichloroethane	2019/05/30	ND, RDL=1.0		ug/L	
			cis-1,2-Dichloroethylene	2019/05/30	ND, RDL=0.50		ug/L	
			trans-1,2-Dichloroethylene	2019/05/30	ND, RDL=0.50		ug/L	
			1,2-Dichloropropane	2019/05/30	ND, RDL=0.50		ug/t	
			1,3-Dichlorobenzene	2019/05/30	ND, RDL=1.0		ug/L	
			cis-1,3-Dichloropropene	2019/05/30	ND, RDL=0.50		ug/L	
			trans-1,3-Dichloropropene	2019/05/30	ND, RDL=0.50		ug/L	

Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limi
			1,4-Dichlarobenzene	2019/05/30	ND, RDL=1.0		ug/L	
			Benzene	2019/05/30	ND, RDL=1.0		ug/L	
			Bromodichloromethane	2019/05/30	ND, RDL=1.0		ug/L	
			Bromoform	2019/05/30	ND, RDL=1.0		ug/L	
			Bromomethane	2019/05/30	ND, RDL=0.50		ug/L	
			Carbon Tetrachloride	2019/05/30	ND, RDL=0.50		ug/L	
			Chlorobenzene	2019/05/30	ND, RDL=1.0		ug/L	
			Chloroethane	2019/05/30	ND, RDL=8.0		ug/L	
			Chloroform	2019/05/30	ND, RDL=1.0		ug/t	
			Chioromethane	2019/05/30	ND, RDL=8.0		ug/L	
			Dibromochloromethane	2019/05/30	ND, RDL=1.0		ug/L	
			Methylene Chloride(Dichloromethane)	2019/05/30	ND, RDL=3.0		ug/L	
			Ethylbenzene	2019/05/30	ND, RDL=1.0		ug/L	
			Methyl t-butyl ether (MTBE)	2019/05/30	ND, RDL=2.0		ug/L	
			Styrene	2019/05/30	ND, RDL=1.0		ug/L	
			Tetrachloroethylene	2019/05/30	ND, RDL=1.0		ug/L	
			Toluene	2019/05/30	ND, RDL=1.0		ug/L	
			Trichloroethylene	2019/05/30	ND, RDL=1.0		ug/L	
			Trichlorofluoromethane (FREON 11)	2019/05/30	ND, RDL=8.0		ug/t	
			Vinyl Chloride	2019/05/30	ND, RDL=0.50		ug/L	
			o-Xylene	2019/05/30	ND, RDL=1.0		ug/t	
			p+m-Xylene	2019/05/30	ND, RDL=2.0		ug/L	
			Total Xylenes	2019/05/30	NO, RDL=1.0		ug/L	
			Total Trihalomethanes	2019/05/30	ND, RDL=1.0		ug/L	
148613	ASL	RPD	1,1-Dichloroethane	2019/05/30	NC		96	40
			1,1-Dichloroethylene	2019/05/30	NC		%	40
			1.1.1-Trichlorgethane	2019/05/30	NC		%	40
			1,1,2-Trichloroethane	2019/05/30	NC		36	40
			1,1,2,2-Tetrachloroethane		NC			
			Ethylene Dibromide	2019/05/30 2019/05/30	NC		76	40
				2111307(1573)			%	- 40



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,2-Dichloroethane	2019/05/30	NC		- %	40
			cis-1,2-Dichloroethylene	2019/05/30	NC		%	40
			trans-1,2-Dichloroethylene	2019/05/30	NC		34	40
			1,2-Dichloropropane	2019/05/30	NC		%	40
			1,3-Dichlorobenzene	2019/05/30	NC		%	40
			cis-1,3-Dichloropropene	2019/05/30	NC		%	40
			trans-1,3-Dichloropropene	2019/05/30	NC		96	40
			1,4-Dichlorobenzene	2019/05/30	NC		%	40
			Benzene	2019/05/30	NC		96	40
			Bromodichloromethane	2019/05/30	NC		96	40
			Bromoform	2019/05/30	NC		96	40
			Bromomethane	2019/05/30	NC		%	40
			Carbon Tetrachloride	2019/05/30	NC		%	40
			Chlorobenzene	2019/05/30	NC		%	40
			Chloroethane	2019/05/30	NC		36	40
			Chloroform	2019/05/30	NC		%	40
			Chloromethane	2019/05/30	NC		%.	40
			Dibromochloromethane	2019/05/30	NC		96.	40
			Methylene Chloride(Dichloromethane)	2019/05/30	NC		%	40
					NC		%	40
			Ethylbenzene	2019/05/30 2019/05/30	NC			40
			Methyl t-butyl ether (MTBE)				76	
			Styrene	2019/05/30	NC		76	40
			Tetrachloroethylene	2019/05/30	NC		%	40
			Toluene	2019/05/30	NC		76	40
			Trichloroethylene	2019/05/30	NC		76	40
			Trichlorofluoromethane (FREON 11)	2019/05/30	NC		16	40
			Vinyl Chloride	2019/05/30	NC		96	40
			o-Xylene	2019/05/30	NC		76	40
			p+m-Xylene	2019/05/30	NC		*	40
			Total Xylenes	2019/05/30	NC		76	40
			Total Trihalomethanes	2019/05/30	NC		34	40
6148620	ZZH	Matrix Spike	Total Chemical Oxygen Demand	2019/05/30		81	%	80 - 120
6148620	ZZH	QC Standard	Total Chemical Oxygen Demand	2019/05/30		103	%	80 - 120
6148620	ZZH	Spiked Blank	Total Chemical Oxygen Demand	2019/05/30		105	%	80 - 120
6148620	ZZH	Method Blank	Total Chemical Oxygen Demand	2019/05/30	ND, RDL=20		mg/L	
6148620	ZZH	RPD	Total Chemical Oxygen Demand	2019/05/30	12		14.	25
6148701	MLW	QC Standard	Carbonaceous BOD	2019/06/04		111	36	80 - 120
6148701	MLW	Spiked Blank	Carbonaceous BOD	2019/06/04		138 (1)	96	80 - 120
6148701	MLW	Method Blank	Carbonaceous BOD	2019/06/04	ND, RDL=2.0		mg/L	
6148701	MLW	RPD	Carbonaceous BOD	2019/06/04	3.5		%	25
6148915	BCD	Matrix Spike	Isobutylbenzene - Extractable	2019/05/30		92	%	70 - 130
			n-Dotriacontane - Extractable	2019/05/30		117	96	70 - 130
			>C10-C16 Hydrocarbons	2019/05/30		96	%	70 - 130
			>C16-C21 Hydrocarbons	2019/05/30		87	96	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/30</td><td></td><td>98</td><td>%</td><td>70 - 130</td></c32>	2019/05/30		98	%	70 - 130
6148915	BCD	Spiked Blank	Isobutylbenzene - Extractable	2019/05/30		92	%	70 - 130
	2.70		n-Dotriacontane - Extractable	2019/05/30		115	%	70 - 130
			>C10-C16 Hydrocarbons	2019/05/30		111	36	70 - 130
			>C16-C21 Hydrocarbons	2019/05/30		101	%	70 - 130
			>C21-C32 Hydrocarbons	2019/05/30		115	N-	70 - 130
6148915	BCD.	Method Blank					16.	
0140312	BCD	WIELDOG DERNIK	Isobutylbenzene - Extractable	2019/05/30		.90	300	70 - 130



QA/QC		262	2	3	1000		view@d	nevi-a
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			>C10-C16 Hydrocarbons	2019/05/30	ND, RDL=0.050		mg/L	
			>C16-C21 Hydrocarbons	2019/05/30	ND, RDL=0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/30</td><td>ND, RDL=0.10</td><td></td><td>mg/L</td><td></td></c32>	2019/05/30	ND, RDL=0.10		mg/L	
6148915	BCD	RPD	>C10-C16 Hydrocarbons	2019/05/30	NC		%	40
*****	8.50	39536	>C16-C21 Hydrocarbons	2019/05/30	11		16.	40
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/30</td><td>NC</td><td></td><td>%</td><td>40</td></c32>	2019/05/30	NC		%	40
5148971	BAN	Matrix Spike	Total Aluminum (Al)	2019/05/31	110	103	36	80 - 12
VA-45222.4	3000.4	Visitaria altino	Total Antimony (Sb)	2019/05/31		110	%	80 - 12
			Total Arsenic (As)	2019/05/31		98	16	80 - 12
			Total Barium (Ba)	2019/05/31		102	%	80 - 12
			Total Beryllium (Be)	2019/05/31		100	76	80 - 12
			Total Bismuth (Bi)	2019/05/31		104	%	80 - 12
			Total Boron (8)	2019/05/31		NC	76	80 - 12
			Total Cadmium (Cd)	2019/05/31		98	34	80 - 12
			Total Calcium (Ca)	2019/05/31		106	76	80 - 12
			Total Chromium (Cr)	2019/05/31		97	96	80 - 12
			Total Cobait (Co)	2019/05/31		100	%	80 - 12
			Total Copper (Cu)	2019/05/31		98	%	80 - 12
			Total Iron (Fe)	2019/05/31		106	36	80 - 12
			Total Lead (Pb)	2019/05/31		104	96	80 - 12
			Total Magnesium (Mg)	2019/05/31		110	16	80 - 12
			Total Manganese (Mn)	2019/05/31		101	%	80 - 12
			Total Molybdenum (Mo)	2019/05/31		105		80 - 12
							36	
			Total Nickel (Ni)	2019/05/31		102	%	80 - 12
			Total Phosphorus (P)	2019/05/31			74	80 - 12
			Total Potassium (K)	2019/05/31		104	96.	80 - 12
			Total Selenium (Se)	2019/05/31		96	96	80 - 12
			Total Silver (Ag)	2019/05/31		101	%	80 - 12
			Total Sodium (Na)	2019/05/31		NC	%.	80 - 12
			Total Strontium (Sr)	2019/05/31		103	16	80 - 12
			Total Thallium (TI)	2019/05/31		105	96	80 - 12
			Total Tin (Sn)	2019/05/31		105	*	80 - 12
			Total Titanium (Ti)	2019/05/31		99	76.	80 - 12
			Total Uranium (U)	2019/05/31		113	%.	80 - 12
			Total Vanadium (V)	2019/05/31		101	96	80 - 12
	67.0	-45 W.O.W. 440.000	Total Zinc (Zn)	2019/05/31		100	%	80 - 12
6148971	BAN	Spiked Blank	Total Aluminum (AI)	2019/05/31		101	76.	80 - 12
			Total Antimony (5b)	2019/05/31		107	96.	80 - 12
			Total Arsenic (As)	2019/05/31		99	76	80 - 12
			Total Barrum (8a)	2019/05/31		100	%	80 - 12
			Total Beryllium (Be)	2019/05/31		99	76.	80 - 12
			Total Bismuth (BI)	2019/05/31		105	36	80 - 12
			Total Boron (B)	2019/05/31		98	76	80 - 12
			Total Cadmium (Cd)	2019/05/31		96	%	80 - 12
			Total Calcium (Ca)	2019/05/31		107	76	80 - 12
			Total Chromium (Cr)	2019/05/31		99	%	80 - 12
			Total Cobalt (Co)	2019/05/31		101	76	80 - 12
			Total Copper (Cu)	2019/05/31		99	N	80 - 12
			Total Iron (Fe)	2019/05/31		107	76	80 - 12
			Total Lead (Pb)	2019/05/31		103	96	80 - 12
			Total Magnesium (Mg)	2019/05/31		110	96	80 - 12



QA/QC		733	9	2011/10/19	1100	25		22.7
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Total Manganese (Mn)	2019/05/31		102	76	80 - 12
			Total Molybdenum (Mo)	2019/05/31		102	76	80 - 12
			Total Nickel (Ni)	2019/05/31		99	94	80 - 12
			Total Phosphorus (P)	2019/05/31		105	96	80 - 12
			Total Potassium (K)	2019/05/31		102	%	80 - 12
			Total Selenium (Se)	2019/05/31		97	%	80 - 12
			Total Silver (Ag)	2019/05/31		100	96	80 - 12
			Total Sodium (Na)	2019/05/31		102	96	80 - 12
			Total Strontium (Sr)	2019/05/31		106	96	80 - 12
			Total Thallium (TI)	2019/05/31		107	96.	80 - 12
			Total Tin (Sn)	2019/05/31		106	96	80 - 12
			Total Titanium (Ti)	2019/05/31		98	%	80 - 12
			Total Uranium (U)	2019/05/31		113	96	80 - 12
			Total Vanadium (V)	2019/05/31		102	96	80 - 120
		2204 222 7	Total Zinc (Zn)	2019/05/31	(Acces)	101	96	80 - 12
148971	BAN	Method Blank	Total Aluminum (Al)	2019/05/31	ND, RDL=5.0		ug/L	
			Total Antimony (Sb)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Arsenic (As)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Barium (Ba)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Beryllium (Be)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Bismuth (Bi)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Boron (B)	2019/05/31	ND, RDL=50		ug/L	
			Total Cadmium (Cd)	2019/05/31	ND, RDL=0.010		ug/L	
			Total Calcium (Ca)	2019/05/31	ND, RDL=100		ug/L	
			Total Chromium (Cr)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Cobalt (Co)	2019/05/31	ND, RDL=0.40		ug/L	
			Total Copper (Cu)	2019/05/31	ND, RDL=0.50		ug/L	
			Total Iron (Fe)	2019/05/31	ND, RDL=50		ug/L	
			Total Lead (Pb)	2019/05/31	NO, RDL=0.50		ug/t	
			Total Magnesium (Mg)	2019/05/31	ND, RDL=100		ug/L	
			Total Manganese (Mn)	2019/05/31	ND, RDL=2.0		ug/L	
	9	Total Molybdenum (Mo)	2019/05/31	ND, RDL=2.0		ug/L		
			Total Nickel (NI)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Phosphorus (P)	2019/05/31	ND, RDL=100		ug/L	
			Total Potassium (K)	2019/05/31	ND, RDL=100		ug/L	



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Total Selenium (Se)	2019/05/31	ND, RDL=1.0		ug/L	
			Total Silver (Ag)	2019/05/31	ND, RDL=0.10		ug/L	
			Total Sodium (Na)	2019/05/31	ND, RDL=100		ug/L	
			Total Strontium (Sr)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Thallium (TI)	2019/05/31	ND, RDL=0.10		ug/L	
			Total Tin (5n)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Titanium (Ti)	2019/05/31	ND, RDL=2.0		ug/L	
			Total Uranium (U)	2019/05/31	ND, RDL=0.10		ug/L	
			Total Vanadium (V)	2019/05/31	ND, RDL=2.0		ug/t	
			Total Zinc (Zn)	2019/05/31	ND, RDL=5.0		ug/L	
6148971	BAN	RPD	Total Aluminum (Al)	2019/05/31	4.3		%	20
6149403	CCR	Matrix Spike	Total Mercury (Hg)	2019/05/31		102	%	80 - 120
6149403	CCR	Spiked Blank	Total Mercury (Hg)	2019/05/31		102	36	80 - 120
6149403	CCR	Method Blank	Total Mercury (Hg)	2019/05/31	NO, RDL=0.013		ug/L	
6149403	CCR	RPD	Total Mercury (Hg)	2019/05/31	NC		%	20
6151063	AM6	QC Standard	Total Suspended Solids	2019/06/03		100	76	80 - 120
6151063	AM6	Method Blank	Total Suspended Solids	2019/06/03	ND, RDL=1.0	,,440.,	mg/L	
6151063	AM6	RPD	Total Suspended Solids	2019/06/03	0		34	20
6151065	LGE	Matrix Spike	D10-Anthracene	2019/06/01		90	%	50 - 130
			D14-Terphenyl	2019/06/01		70 (2)	96	50 - 130
			D8-Acenaphthylene	2019/06/01		85	%	50 - 130
			1-Methylnaphthalene	2019/06/01		81	96	50 - 130
			2-Methylnaphthalene	2019/06/01		84	%	50 - 130
			Acenaphthene	2019/06/01		87	96	50 - 130
			Acenaphthylene	2019/06/01		84	%	50 - 130
			Anthracene	2019/06/01		79	76	50 - 130
			Benzo(a)anthracene	2019/06/01		76	%	50 - 130
			Benzo(a)pyrene	2019/06/01		61	%	50 - 130
			Benzo(b)fluoranthene	2019/06/01		75	%	50 - 130
			Benzo(g,h,i)perylene	2019/06/01		36 (3)	36	50 - 130
			Benzo(j)fluoranthene	2019/06/01		60	%	50 - 130
			Benzo(k)fluoranthene	2019/06/01		69	Ye.	50 - 130
			Chrysene	2019/06/01		96	96.	50 - 130
			Dibenz(a,h)anthracene	2019/06/01		40 (3)	96	50 - 130
			Fluoranthene	2019/06/01		88	76	50 - 130
			Fluorene	2019/06/01		95	76.	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/06/01		33 (3)	%.	50 - 130
			Naphthalene	2019/06/01		84	96	50 - 130
			Perylena	2019/06/01		31 (3)	%	50 - 130
			Phenanthrene	2019/06/01		96	16	50 - 130
			Pyrene	2019/06/01		86	%	50 - 130
6151065	LGE	Spiked Blank	D10-Anthracene	2019/06/01		105	76	50 - 130



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			D14-Terphenyl	2019/06/01		106	- %	50 - 130
			D8-Acenaphthylene	2019/06/01		100	%	50 - 130
			1-Methylnaphthalene	2019/06/01		93	36	50 - 130
			2-Methylnaphthalene	2019/06/01		95	%	50 - 130
			Acenaphthene	2019/06/01		100	%	50 - 130
			Acenaphthylene	2019/06/01		98	%	50 - 130
			Anthracene	2019/06/01		93	96	50 - 130
			Benzo(a)anthracene	2019/06/01		86	96	50 - 130
			Benzo(a)pyrene	2019/06/01		94	%	50 - 130
			Benzo(b)fluoranthene	2019/06/01		106	%	50 - 130
			Benzo(g,h,i)perylene	2019/06/01		96	96	50 - 130
			Benzo(j)fluoranthene	2019/06/01		95	%	50 - 130
			Benzo(k)fluoranthene	2019/06/01		101	%	50 - 130
			Chrysene	2019/06/01		107	%	50 - 130
			Dibenz(a,h)anthracene	2019/06/01		96	94	50 - 130
			Fluoranthene	2019/06/01		99	%	50 - 130
			Fluorene	2019/06/01		109	Y-	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/06/01		94	16.	50 - 130
			Naphthalene	2019/06/01		95	%	50 - 130
			Perylene	2019/06/01		90	%	50 - 130
			Phenanthrene	2019/06/01		111	N	50 - 130
			Pyrene	2019/06/01		98	%	50 - 130
151065	LGE	Method Blank	D10-Anthracene	2019/06/01		108	%	50 - 130
151005	LUC	Wethou brank	D14-Terphenyl	2019/06/01		106	76.	50 - 130
			D8-Acenaphthylene	2019/06/01		99	76	50 - 130
			로 하실 없는 경험 (100 전 10		CALLED T	33		30 - 130
			1-Methylnaphthalene	2019/06/01	ND, RDL=0.050		ug/L	
			Z-Methylnaphthalene	2019/06/01	ND, RDL=0.050		ug/L	
			Acenaphthene	2019/06/01	ND, RDL=0.010		ug/L	
			Acenaphthylene	2019/06/01	ND, RDL=0.010		ug/t	
			Anthracene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(a)anthracene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(a)pyrene	2019/06/01	ND, RDL=0.010		ug/t	
			Benzo(b)fluoranthene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(g,h,i)perylene	2019/06/01	ND, RDL=0.010		ug/L	
			Benzo(j)fluoranthene	2019/06/01	ND, RDL=0.010		ug/L	
		Benzo(k)fluoranthene Chrysene		2019/06/01	ND, RDL=0.010		ug/L	
			Chrysene	2019/06/01	ND, RDL=0.010		ug/L	
		Dibenz(a,h)anthracene	2019/06/01	ND, RDL=0.010		ug/L		
			Fluoranthene	2019/06/01	ND. RDL=0.010		ug/L	
			Fluorene	2019/06/01	ND, RDL=0.010		ug/t	



QA/QC		0.02	2	3. 3. 3. 2	10.00		NAME OF TAXABLE PARTY.	0011
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Indeno(1,2,3-cd)pyrene	2019/06/01	ND, RDL=0.010		ug/L	
			Naphthalene	2019/06/01	ND, RDL=0.20		ug/L	
			Perylane	2019/06/01	ND, RDL=0.010		ug/L	
			Phenanthrene	2019/06/01	ND, RDL=0.010		ug/L	
			Pyrene	2019/06/01	ND, RDL=0.010		ug/L	
5151065	LGE	RPO	1-Methylnaphthalene	2019/06/01	NC		%	40
	5.55		2-Methylnaphthalene	2019/06/01	NC		16	40
			Acenaphthene	2019/06/01	NC		96	40
			Acenaphthylene	2019/06/01	NC		%	40
			Anthracene	2019/06/01	NC		16.	40
			Benzo(a)anthracene	2019/06/01	NC		%	40
			Benzo(a)pyrene	2019/06/01	NC		96	40
			Benzo(b)fluoranthene	2019/06/01	NC		%	40
			Benzo(g.h,i)perylene	2019/06/01	NC		16	40
			Benzo(j)fluoranthene	2019/06/01	NC		96.	40
			Benzo(k)fluoranthene	2019/06/01	NC		96	40
			Chrysene	2019/06/01	NC		%	40
			Dibenz(a,h)anthracene	2019/06/01	NC		16	40
			Fluoranthene	2019/06/01	13		76	40
			Fluorene	2019/06/01	NC		36	40
			Indeno(1,2,3-cd)pyrene	2019/06/01	NC		%	40
			Naphthalene	2019/06/01	NC		16	40
			Perylene	2019/06/01	NC		*	40
			Phenanthrene	2019/06/01	NC		94	40
			Pyrene	2019/06/01	12		96	40
5153411	THL	Matrix Spike [/VQ871-12]	isobutylbenzene - Volatile	2019/06/02	4.6	90	16	70 - 130
4133411	1110	Manny Shire Dados 1, 111	Benzene	2019/06/02		106	96.	70 - 130
			Toluene	2019/06/02		108	96	70 - 130
			Ethylbenzene	2019/06/02		112	%	70 - 130
			Total Xylenes	2019/06/02		109	16	70 - 130
5153411	THE	Spiked Blank	Isobutylbenzene - Volatile	2019/06/02		103	%	70 - 130
1133411	inc	Spikeo biank,	Benzene	2019/06/02		117	96	70 - 130
			Toluene	2019/06/02		118	36	70 - 130
			Ethylbenzene	2019/06/02		118	4250	70 - 130
						117	%. AC	70 - 130
5153411	THE	Method Blank	Total Xylenes Isobutylbenzene - Volatile	2019/06/02 2019/06/02		102	% %	70 - 130
0103411	Inc	Wethou blank	Benzene	2019/06/02	ND, RDL=0.0010	102	mg/L	70 - 130
			Toluene	2019/06/02	ND, RDL=0.0010		mg/L	
			Ethylbenzene	2019/06/02	ND, RDL=0.0010		mg/L	
			Total Xylenes	2019/06/02	ND, RDL=0.0020		mg/L	
			C6 - C10 (less 8TEX)	2019/06/02	ND, RDL=0.010		mg/L	
6153411	THL	RPD	Benzene	2019/06/02	NC		%	40
	11,100	17.15. 1 5	Toluene	2019/06/02	NC		16	40
			Ethylbenzene	2019/06/02	NC		96	40



QA/QC		263	0	President	NO.		VINUE TO	OCT IN
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			Total Xylenes	2019/06/02	NC		76	40
	cerr	National or Parities	C6 - C10 (less BTEX)	2019/06/02	NC		%	40
5153709	SSV	Matrix Spike QC Standard	Total Kjeldahl Nitrogen (TKN)	2019/06/04		99	36	80 - 120
6153709 6153709	SSV	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2019/06/04		102	% %	80 - 120
	SSV		Total Kjeldahl Nitrogen (TKN)	2019/06/04	ND,	103		80 - 120
5153709	22V	Method Blank	Total Kjeldahl Nitrogen (TKN)	2019/06/04	RDL=0.10		mg/L	550
5153709	SSV	RPD	Total Kjeldahl Nitrogen (TKN)	2019/06/04	0		%	20
5154726	GTO	Matrix Spike	Sulphide	2019/06/03		90	74	80 - 120
154726	GTO	Spiked Blank	Sulphide	2019/06/03		101	26	80 - 120
5154726	GTO	Method Blank	Sulphide	2019/06/03	ND, RDL=0.020		mg/L	
5154726	GTO	RPD	Sulphide	2019/06/03	NC		%	20
6156517	RGE	Matrix Spike	Decachlorobiphenyl	2019/06/05		96	96	30 - 130
		100	Arocior 1254	2019/06/05		109	%	70 - 130
156517	RGE	Spiked Blank	Decachlorobiphenyl	2019/06/05		74	%	30 - 130
10/35/101		ANT TO SERVING I	Aroclor 1254	2019/06/05		103	%	70 - 130
5156517	RGE	Method Blank	Decachlorobiphenyl	2019/06/05		65	96	30 - 130
			Arocior 1016	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1221	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1232	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1248	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1242	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1254	2019/06/05	ND, RDL=0.050		ug/L	
			Aroclor 1260	2019/06/05	ND, RDL=0.050		ug/L	
6156517	RGE	RPO [JVQ871-09]	Aroclor 1016	2019/06/05	NC		44	40
22022	The same	nre predera est	Arecipr 1221	2019/06/05	NC		14	40
			Aroclor 1232	2019/06/05	NC		96	40
			Aroclor 1248	2019/06/05	NC		76	40
			Aroclor 1242	2019/06/05	NC		16	40
			Arocior 1254	2019/06/05	NC		%	40
			Aroclor 1260	2019/06/05	NC		36	40
6156641	NRG	Matrix Spike [JVQ871-15]	Nitrogen (Ammonia Nitrogen)	2019/06/04		110	%	80 - 120
5156641	NRG	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2019/06/04		115	16	80 - 120
6156641	NRG	Method Blank	Nitrogen (Ammonia Nitrogen)	2019/06/05	ND, RDL=0.050		mg/L	200.020
5156641	NRG	RPD (JVQ871-15)	Nitrogen (Ammonia Nitrogen)	2019/06/04	NC NC		%	20
5157072	AM6	QC Standard	Volatile Suspended Solids	2019/06/04		98	76	80 - 120
5157072	AM6	Method Blank	Volatile Suspended Solids	2019/06/04	ND, RDL=2.0		mg/L	
6157072	AM6	RPD	Volatile Suspended Sollds	2019/06/04	9.5		96	25
5157791	883	Matrix Spike	Total Nitrogen (N)	2019/06/03		101	96	80 - 120
157791	883	Spiked Blank	Total Nitrogen (N)	2019/06/03		99	94	80 - 120
5157791	883	Method Blank	Total Nitrogen (N)	2019/06/03	ND, RDL=0.020		mg/L	
6157791	883	RPD	Total Nitrogen (N)	2019/06/03	3.0		%	20
5158894	NRG	Matrix Spike	Total Phosphorus	2019/06/06		110	76	80 - 120



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6158894	NRG	Spiked Blank	Total Phosphorus	2019/06/06	value	103	%	80 - 120
6158894	NRG	Method Blank	Total Phosphorus	2019/06/06	ND,	+02	mg/L	007
0130034	341.52	Acceptance Control	Tarent Filosophian as	2013/20100	RDL=0.020		info c	
6158894	NRG	RPD	Total Phosphorus	2019/06/06	NC		%	25
6158927	SSI	Matrix Spike	Dissolved Organic Carbon (C)	2019/06/05		95	%	85 - 115
6158927	SSI	Spiked Blank	Dissolved Organic Carbon (C)	2019/06/05		98	96	80 - 120
6158927	SSI	Method Blank	Dissolved Organic Carbon (C)	2019/06/05	ND,	30	mg/L	00-120
0130351	330	Wichion Digitik	Dissolved Organic Cardon (C)	2019/06/03	RDL=0.50		HIGH	
6158927	551	RPD	Dissolved Organic Carbon (C)	2019/06/05	NC		%	15
6159669	LHA	Matrix Spike	Total Cyanide (CN)	2019/06/07		78 (4)	34	80 - 120
6159669	LHA	Spiked Blank	Total Cyanide (CN)	2019/06/07		97	96	80 - 120
6159669	LHA	Method Blank	Total Cyanide (CN)	2019/06/07	ND, RDL=0.0050		mg/L	
6159669	LHA	RPD	Total Cyanide (CN)	2019/06/07	NC		76	20
6163938	KMC	Matrix Spike	Total Organic Carbon (C)	2019/06/07		98	%	85 - 115
6163938	KMC	Spiked Blank	Total Organic Carbon (C)	2019/06/07		99	%	80 - 120
6163938	KMC	Method Blank	Total Organic Carbon (C)	2019/06/07	ND,	-	mg/L	
		The state of the s		2017/100/01	RDL=0.50			
6163938	KMC	RPD	Total Organic Carbon (C)	2019/06/07	3.7		55	15
6165901	KD9	Matrix Spike	Dissolved Chlorate (ClO3-)	2019/05/31		94	%	80 - 120
			Dissolved Chlorate (ClO3-)	2019/05/31		94	16	80 - 120
			Dissolved Chlorate (ClO3-)	2019/05/31		94	.96	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		92	%	80 - 120
			Dissolved Chlarite (CLO2-)	2019/05/31		92	14.	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		92	96	80 - 120
6165901	KD9	Spiked Blank	Dissolved Chlorate (CIO3-)	2019/05/31		88	.96	80 - 120
			Dissolved Chlorate (CIO3-)	2019/05/31		88	%	80 - 120
			Dissolved Chlorate (CIO3-)	2019/05/31		88	16.	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		85	54	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		85	76	80 - 120
			Dissolved Chlorite (CLO2-)	2019/05/31		85	%	80 - 120
6165901	KD9	Method Blank	Dissolved Chlorate (CIO3-)	2019/05/31	ND, RDL=0.10		mg/L	2000000
			Dissolved Chlorate (CIO3-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorate (CIO3-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorite (CLO2-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorite (CLO2-)	2019/05/31	ND, RDL=0.10		mg/L	
			Dissolved Chlorite (CLO2-)	2019/05/31	ND. RDL=0.10		mg/L	
6167153	EM7	QC Standard	Turbidity	2019/06/10		114	%	80 - 120
6167153	EMT	Spiked Blank	Turbidity	2019/06/10		98	16	80 - 120
6167153	EMT	Method Blank	Turbidity	2019/06/10	ND, BDL=0.10		NTU	
6167153	EMT	RPD	Turbidity	2019/06/10	0		96	20
6170521	OBC	Spiked Blank	C13-1234678 HeptaCDD	2019/06/11		123	96	30 - 130
			C13-1234678 HeptaCDF	2019/06/11		99	94	30 - 130
			C13-123678 HexaCDD	2019/06/11		127	%	30 - 130
			C13-123678 HexaCDF	2019/06/11		88	%	30 - 130
			C13-12378 PentaCDD	2019/06/11		87	56	30 - 130
			C13-12378 PentaCDF	2019/06/11		66	96	30 - 130



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			C13-2378 TetraCDD	2019/06/11		92	76	30 - 130
			C13-2378 TetraCDF	2019/06/11		80	%	30 - 130
			C13-OCDD	2019/06/11		116	36	30 - 130
			2,3,7,8-Tetra COD	2019/06/11		90	%	80 - 140
			1,2,3,7,8-Penta COD	2019/06/11		100	%	80 - 140
			1,2,3,4,7,8-Hexa CDD	2019/06/11		85	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2019/06/11		97	96	80 - 140
			1,2,3,7,8,9-Hexa CDD	2019/06/11		93	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2019/06/11		85	96	80 - 140
			Octa CDD	2019/06/11		81	%	80 - 140
			2,3,7,8-Tetra CDF	2019/06/11		101	96	80 - 140
			1,2,3,7,8-Penta CDF	2019/06/11		126	%	80 - 140
			2,3,4,7,8-Penta CDF	2019/06/11		119	%	80 - 140
			1.2.3.4,7,8-Hexa CDF	2019/06/11		113	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2019/06/11		120	36	80 - 140
			2,3,4,6,7,8-Hexa CDF	2019/06/11		123	%	80 - 140
								80 - 140
			1,2,3,7,8,9-Hexa CDF 1,2,3,4,6,7,8-Hepta CDF	2019/06/11		105	%.	80 - 140
			1,2,3,4,6,7,8-Hepta CDF 1,2,3,4,7,8,9-Hepta CDF	2019/06/11		99	96.	80 - 140
							36	
******	One	DDD	Octa CDF	2019/06/11	481	86	*	80 - 140
5170521	OBC	RPD	2,3,7,8-Tetra CDD	2019/06/12	4.3		×	35
			1,2,3,7,8-Penta CDD	2019/06/12	12		%	35
			1,2,3,4,7,8-Hexa CDD	2019/06/12	9.0		%	35
			1,2,3,6,7,8-Hexa CDD	2019/06/12	1.0		76	35
			1,2,3,7,8,9-Hexa CDD	2019/06/12	8.2		74	35
			1,2,3,4,6,7,8-Hepta CDD	2019/06/12	28		36	35
			Octa CDD	2019/06/12	0		96	35
			2,3,7,8-Tetra CDF	2019/06/12	1.6		%	35
			1,2,3,7,8-Penta CDF	2019/06/12	3.1		76	35
			2,3,4,7,8-Penta CDF	2019/06/12	14		%	35
			1,2,3,4,7,8-Hexa CDF	2019/06/12	2.6		36	35
			1,2,3,6,7,8-Hexa CDF	2019/06/12	0		%	35
			2,3,4,6,7,8-Hexa CDF	2019/06/12	4.8		%	35
			1,2,3,7,8,9-Hexa CDF	2019/06/12	2.5		%	35
			1,2,3,4,6,7,8-Hepta CDF	2019/06/12	4.7		%	35
			1,2,3,4,7,8,9-Hepta CDF	2019/06/12	1.0		%	35
			Octa CDF	2019/06/12	0		%	35
5170521	OBC	Method Blank	C13-1234678 HeptaCDD	2019/06/12		107	%	30 - 130
			C13-1234678 HeptaCDF	2019/06/12		96	96	30 - 130
			C13-123678 HexaCDD	2019/06/12		118	%	30 - 130
			C13-123678 HexaCDF	2019/06/12		82	%	30 - 130
			C13-12378 PentaCDD	2019/06/12		77	%	30 - 130
			C13-12378 PentaCDF	2019/06/12		61	96	30 - 130
			C13-2378 TetraCDD	2019/06/12		85	%	30 - 130
			C13-2378 TetraCDF	2019/06/12		79	%.	30 - 130
			C13-OCD0	2019/06/12		113	96	30 - 130
			2,3,7,8-Tetra CDD	2019/06/12	ND, EDL=1.08		pg/L	
			1,2,3,7,8-Penta CDD	2019/06/12	ND, EDL=1.10		pg/L	
			1,2,3,4,7,8-Hexa CDD	2019/06/12	ND, EDL=1.18		pg/L	
			1,2,3,6,7,8-Hexa CDD	2019/06/12	ND, EDL=1.02		pg/L	

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			1,2,3,7,8,9-Hexa CDO	2019/06/12	ND, EDL=0.995		pg/L	
			1,2,3,4,6,7,8-Hepta CDD	2019/06/12	ND, EDL=1.13		pg/L	
			Octa CDO	2019/06/12	ND, EDL=1.16 (5)		pg/L	
			Total Tetra COD	2019/06/12	ND, EDL=1.08		pg/L	
			Total Penta CDD	2019/06/12	ND, EDL=1.10		pg/L	
			Total Hexa CDD	2019/06/12	ND, EDL=1.13 (5)		pg/L	
			Total Hepta CDD	2019/06/12	ND, EDL=1.13		pg/L	
			2,3,7,8-Tetra COF	2019/06/12	ND, EDL=1.18		pg/L	
			1,2,3,7,8-Penta CDF	2019/06/12	ND, EDL=1.18		pg/L	
			2.3.4,7,8-Penta CDF	2019/06/12	ND, EDL=1.19		pg/L	
			1,2,3,4,7,8-Hexa CDF	2019/06/12	ND, EDL=1.13		pg/L	
			1,2,3,6,7,8-Hexa CDF	2019/06/12	ND, EDL=0.939		pg/L	
			2,3,4,6,7,8-Hexa CDF	2019/06/12	ND, EDL=1.06		pg/L	
			1,2,3,7,8,9-Hexa CDF	2019/06/12	ND, EDL=1.18		pg/L	
			1,2,3,4,6,7,8-Hepta COF	2019/06/12	ND, EDL=1.09		pg/L	
			1,2,3,4,7,8,9-Hepta CDF	2019/06/12	ND, EDL=1.24		pg/L	
			Octa CDF	2019/06/12	ND, EDL=1.16		pg/L	
			Total Tetra CDF	2019/06/12	ND, EDL=1.18		pg/L	
			Total Penta CDF	2019/06/12	ND, EDL=1.19		pg/L	
			Total Hexa CDF	2019/06/12	ND, EDL=1.07		pg/L	
			Total Hepta CDF	2019/06/12	ND, EDL=1.16		pg/L	
5172548	123	Matrix Spike	9,10-Dichlorostearic acid	2019/06/01		96	%	50 - 130
CALCUMATERS.	-	4.459.000.000.000.000	Decanoic Acid (C10)	2019/06/01		90	96	50 - 130
			Docosanoic acid (C22)	2019/06/01		85	96	50 - 130
			Dodecanoic acid (C12)	2019/06/01		92	76	50 - 13
			Eicosanoic acid (C20)	2019/06/01		98	%	50 - 13
			Hexadecanoic acid (C16)	2019/06/01		85	14	50 - 130
						87	16.	
			Linoletic acid (C18:2)	2019/06/01				50 - 13
			Linolenic acid (C18:3)	2019/06/01		94	96	50 - 13
			Octadecanoic acid (C18)	2019/06/01		94	76	50 - 13
			Oleic acid (C18:1)	2019/06/01		92	%.	50 - 13
			Tetradecandic acid (C14)	2019/06/01		91	%	50 - 13
			Undecanoic acid (C11)	2019/06/01		102	96	50 - 13
			12,14-Dichlorodehydroabietic acid	2019/06/01		111	%	50 - 13



QA/QC		222	2	3 3 3 3 0	10.00	2		
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limit
			12-Chlorodehydroabietic acid	2019/06/01		106	*	50 - 130
			14-Chlorodehydroabietic acid	2019/06/01		111	%	50 - 130
			Abietic acid	2019/06/01		NC	34	50 - 130
			Dehydroabletic acid	2019/06/01		NC	%	50 - 130
			tsopimaric acid	2019/06/01		NC	%	50 - 130
			Neoabietic acid	2019/06/01		68	%	50 - 130
			Palustric acid	2019/06/01		67	96	50 - 130
			Pimaric acid	2019/06/01		102	%	50 - 130
			Sandaracopimaric acid	2019/06/01		101	%	50 - 130
5172548	123	Spiked Blank	9,10-Dichlorostearic acid	2019/06/01		94	%	50 - 130
			Decanoic Acid (C10)	2019/06/01		94	%	50 - 130
			Docosanoic acid (C22)	2019/06/01		88	%	50 - 130
			Dodecanoic acid (C12)	2019/06/01		94	%	50 - 130
			Eicosanoic acid (C20)	2019/06/01		96	%	50 - 130
			Hexadecanoic acid (C16)	2019/06/01		99	96	50 - 130
			Linoleic acid (C18:2)	2019/06/01		89	%	50 - 130
			Linolenic acid (C18:3)	2019/06/01		86	Ye.	50 - 130
			Octadecanoic acid (C18)	2019/06/01		105	16.	50 - 130
			Oleic acid (C18:1)	2019/06/01		99	36	50 - 130
			Tetradecanoic acid (C14)	2019/06/01		94	%	50 - 130
			Undecanoic acid (C11)	2019/06/01		103	N	50 - 130
			12,14-Dichlorodehydroabletic acid	2019/06/01		114	%	50 - 130
			12-Chlorodehydroabletic acid	2019/06/01		108	%	50 - 130
			14-Chlorodehydroabietic acid	2019/06/01		110	76.	50 - 130
			Abietic acid	2019/06/01		94	14	50 - 130
			Dehydroabletic acid	2019/06/01		128	%	50 - 130
			(sopimaric ácid	2019/06/01		115	96.	50 - 130
			Neoabletic acid	2019/06/01		63	%	50 - 130
			Palustric acid	2019/06/01		74	×	50 - 130
			Pimaric acid	2019/06/01		107	%	50 - 130
			Sandaracopimaric acid	2019/06/01		105	36	50 - 130
6172548	123	Method Blank	Total Fatty Acids	2019/06/01	NO.	103		30:-130
0115340	123	method blank			RDL=0.072		mg/L	
			Total Resin Acids	2019/06/01	ND, RDL=0.060		mg/L	
			9,10-Dichlorostearic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Decanoic Acid (C10)	2019/06/01	ND, RDL=0.0060		mg/L	
			Docosanoic acid (C22)	2019/06/01	ND, RDL=0.0060		mg/L	
			Dodecanoic acid (C12)	2019/06/01	ND, RDL=0.0060		mg/L	
			Elcosanoic acid (C20)	2019/06/01	ND, RDL=0.0060		mg/L	
			Hexadecanoic acid (C16)	2019/06/01	ND, RDL=0.0060		mg/L	
			Linoleic acid (C18:2)	2019/06/01	ND, RDL=0.0060		mg/L	
			Linolenic acid (C18:3)	2019/06/01	ND, RDL=0.0060		mg/L	
			Octadecanoic acid (C18)	2019/06/01	ND, RDL=0.0060		mg/L	

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
Z-10415		The second secon	Oleic acid (C18:1)	2019/06/01	ND, RDL=0.0060		mg/L	- 347 - 1011 / 40
			Tetradecanoic acid (C14)	2019/06/01	ND, RDL=0.0060		mg/L	
			Undecanoic acid (C11)	2019/06/01	ND, RDL=0.0060		mg/L	
			12,14-Dichlorodehydroabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			12-Chlorodehydroabletic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			14-Chlorodehydroabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Abretic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Dehydroabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			tsopimaric acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Neoabietic acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Palustric acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Pimaric acid	2019/06/01	ND, RDL=0.0060		mg/L	
			Sandaracopimaric acid	2019/06/01	ND. RDL=0.0060		mg/L	
6181990	880	QC Standard	Salinity	2019/06/18		101	%	80 - 120
6181990	BBD	Method Blank	Salinity	2019/06/18	ND, RDL=2.0		N/A	
6181990	BBD	RPD [JVQ871-06]	Salinity	2019/06/18	0		%	25
6182160	SRM	Matrix Spike	Total Alkalinity (Total as CaCO3)	2019/06/18		101	14	80 - 120
6182160	SRM	Spiked Blank	Total Alkalinity (Total as CaCO3)	2019/06/18		107	%	80 - 120
6182160	SRM	Method Blank	Total Alkalinity (Total as CaCO3)	2019/06/18	ND, RDL=5.0		mg/L	
6182160	SRM	RPO	Total Alkalinity (Total as CaCO3)	2019/06/18	0.41		14.	25
5182167	SRM	Matrix Spike	Dissolved Chlaride (CI-)	2019/06/19		101	%.	80 - 120
5182167	SRM	Spiked Blank	Dissolved Chloride (CI-)	2019/06/19		100	96	80 - 120
6182167	SRM	Method Blank	Dissolved Chloride (CI-)	2019/06/19	ND, RDL=1.0		mg/L	
6182167	SRM	RPD	Dissolved Chloride (CI-)	2019/06/19	3.0		36	25
6182168	SRM	Matrix Spike	Dissolved Sulphate (SO4)	2019/06/19		100	96	80 - 120
6182168 6182168	SRM	Spiked Blank Method Blank	Dissolved Sulphate (SO4) Dissolved Sulphate (SO4)	2019/06/19 2019/06/19	ND,	108	% mg/L	80 - 120
6182168	SRM	RPD	Dissolved Sulphate (SO4)	2019/06/19	RDL=2.0 5.3		%	25
6182169	SRM	Matrix Spike	Reactive Silica (SiO2)	2019/06/19	-	97	16	80 - 120
6182169	SRM	Spiked Blank	Reactive Silica (SiO2)	2019/06/19		101	26	80 - 120
6182169	SRM	Method Blank	Reactive Silica (SiO2)	2019/06/19	ND, RDL=0.50		mg/L	
6182169	SRM	RPD	Reactive Silica (SiO2)	2019/06/19	1.4		%	25
6182170	SRM	Spiked Blank	Colour	2019/06/18	3.5554	98	94	80 - 120
6182170	SRM	Method Blank	Colour	2019/06/18	ND, RDL=5.0		TCU	
6182170	SRM	RPD	Colour	2019/06/18	NC		%	20
6182171	SRM	Matrix Spike	Orthophosphate (P)	2019/06/18		NC	36 -	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6182171	SRM	Spiked Blank	Orthophosphate (P)	2019/06/18	CA college and an	97	76	80 - 120
6182171	SRM	Method Blank	Orthophosphate (P)	2019/06/18	ND, RDL=0,010		mg/L	
6182171	SRM	RPD	Orthophosphate (P)	2019/06/18	0.12		%	25
5182172	SRM	Matrix Spike	Nitrate + Nitrite (N)	2019/06/18		95	%	80 - 120
6182172	SRM	Spiked Blank	Nitrate + Nitrite (N)	2019/06/18		95	%	80 - 120
6182172	SRM	Method Blank	Nitrate + Nitrite (N)	2019/06/18	ND, RDL=0.050		mg/L	
6182172	SRM	RPD	Nitrate + Nitrite (N)	2019/06/18	NC		76	25
6182173	SRM	Matrix Spike	Nitrite (N)	2019/06/18		95	36	80 - 120
6182173	SRM	Spiked Blank	Nitrite (N)	2019/06/18		99	%	80 - 120
6182173	SRM	Method Blank	Nitrite (N)	2019/06/18	ND, RDL=0.010	mg/L		
6182173	SRM	RPD	Nitrite (N)	2019/06/18	NC		76	20
6184783	EMT	QC Standard	pH	2019/06/19		100	%	97 - 103
6184783	EMT	RPD	pH	2019/06/19	0.76		16	N/A
6184788	EMT	Spiked Blank	Conductivity	2019/06/19		103	34	80 - 120
6184788	EMT	Method Blank	Conductivity	2019/06/19	1.4, RDL=1.0		uS/cm	
6184788	EMT	RPD	Conductivity	2019/06/19	0.0059		%	10

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

- (1) BOD Analysis: Second source QC recovery high. Reference Material recovery and all other QC acceptable.
- (2) PAH sample contained sediment.
- (3) Matrix Spike: results are outside acceptance limit. Probable matrix interference.
- (4) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.
- (5) EMPC / NDR Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.



VALIDATION SIGNATURE PAGE

d and validated by the following individual(s).

The analytical data and all QC contained in this report were reviewe
-5 M
Brad Newman, Scientific Service Specialist
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Teny Wany
Harry (Peng) Liang, Senior Analyst
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11: - 114
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Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics
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and the same
Eric Dearman, Scientific Specialist
Miles Muc Sulley
2
Mike MacGillivray, Scientific Specialist (Inorganics)
Sledy
June
Owen Cosby, BSc.C.Chem, Supervisor, HRMS Services
Rotimarie MacDonald
nusimare modernesses

Rosemarie MacDonald, Scientific Specialist (Organics)



VALIDATION SIGNATURE PAGE(CONT'D)

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Rob Reinert, B.Sc., Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of iSO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Your Project #: 89E4405 Your C.O.C. #: N-A

Attention: BEDFORD CUSTOMER SERVICE

Bureau Veritas Laboratories 200 Bluewater road Bedford, NS CANADA B4B 1G9

Report Date: 2019/06/21

Report #: R2449982 Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: 8920962 Received: 2019/05/31, 09:00

Sample Matrix: Water # Samples Received: 1

	Date	Date		
Analyses	Quantity Extracte	d Analyzed	Laboratory Method	Primary Reference
Phenols in Pulp & Paper mill effluents	1 2019/06	/03 2019/06/0	5 STL SOP-00121	MA.400-Phé 1.0 R3 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Note: RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Note: All parameters included in the present certificate are accredited by the MELCC unless stated otherwise:



Your Project #: 89E4405 Your C.O.C. #: N-A

Attention: BEDFORD CUSTOMER SERVICE

Bureau Veritas Laboratories 200 Bluewater road Bedford, NS CANADA 84B 1G9

Report Date: 2019/06/21

Report #: R2449982

Version: 1 - Final

CERTIFICATE OF ANALYSIS

LAB BV JOB #: 8920962 Received: 2019/05/31, 09:00

Encryption Key

Sumin detailless Trajent Manager 71 Jun 2014 [e:05:24

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Sophie Retailfeau, Project Manager Email: Sophie RETAILLEAU@bvlabs.com Phone# (514)448-9001 Ext:7066232

This report has been generated and distributed using a secure automated process.

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signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

PHENOLS BY GCMS (WATER)

Lab BV ID		GM5615	-	
Sampling Date		2019/05/25		
TO COMPANY TO SERVE STATE OF THE		18:15		
COC Number		N-A		
	Units	JVQ871-13R\CARIBOU SEA WATER CH-BOF 2-2	RDL	QC Batch
PHENOLS	-			
Total of Regl. P&P Phenols †	ug/L	<10	10	1994633
Phenol	ug/L	<1.0	1.0	1994633
2-Chlorophenol	ug/L	<1.0	1.0	1994633
3-Chlorophenol	ug/L	<1.0	1.0	1994633
4-Chlorophenol	ug/L	<1.0	1.0	1994633
o-Cresol	ug/L	<1.0	1.0	1994633
m-Cresol	ug/L	<1.0	1.0	1994633
p-Cresol	ug/L	<1.0	1.0	1994633
Guaiacol	ug/L	<1.0	1.0	1994633
Catechol	ug/L	<1.0	1.0	1994633
Eugenol	ug/L	<1.0	1.0	1994633
Isoeugenal	ug/L	<1.0	1.0	1994633
6-Chlorovanillin	ug/L	<1.0	1.0	1994633
5,6-Dichlorovanillin	ug/L	<1.0	1.0	1994633
3,4,5-Trichlorosyringol	ug/L	<1.0	1.0	1994633
2,4-Dimethylphenol	ug/L	<1.0	1.0	1994633
2,6-Dichlorophenal	ug/L	<1.0	1.0	1994633
3,5-Dichlorophenol	ug/L	<1.0	1.0	1994633
2,3-Dichlorophenol	ug/L	<1.0	1.0	1994633
3,4-Dichlorophenol	ug/L	<1.0	1.0	1994633
2,4 + 2,5-Dichlorophenol	ug/L	<1.0	1.0	1994633
2-Nitrophenol	ug/L	<2.0	2.0	1994633
4-Nitrophenol	ug/L	<10	10	1994633
2,4,6-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,3,5-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,3,6-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,4,5-Trichlorophenol	ug/L	<1.0	1.0	1994633
2,3,4-Trichlorophenol	ug/L	<1.0	1.0	1994633
3,4,5-Trichlorophenol	ug/L	<1.0	1.0	1994633
4-Chloroguaiacol	ug/L	<1.0	1.0	1994633
4,5-Dichloroguaiacol	ug/L	<1.0	1.0	1994633
4,6-Dichloroguaiacol	ug/L	<1.0	1.0	1994633
2,3,5,6-Tetrachlorophenol	ug/L	<1.0	1.0	1994633



PHENOLS BY GCMS (WATER)

Lab BV ID		GM5615		
Sampling Date		2019/05/25 18:15		
COC Number		N-A		
	Units	JVQ871-13R\CARIBOU SEA WATER CH-BOF 2-2	RDL	QC Batch
2,3,4,6-Tetrachlorophenol	ug/L	<1.0	1.0	1994633
2,3,4,5-Tetrachlorophenol	ug/L	<1.0	1.0	1994633
4-Chlorocatechol	ug/L	<1.0	1.0	1994633
3,5-Dichlorocatechol	ug/L	<1.0	1.0	1994633
4,5-Dichlorocatechol	ug/L	<1.0	1.0	1994633
3,4,5-Trichloroguaiacol	ug/L	<1.0	1.0	1994633
4,5,6-Trichloroguaiacol	ug/L	<1.0	1.0	1994633
Pentachlorophenol	ug/L	<1.0	1.0	1994633
3,4,5-Trichlorocatechol	ug/L	<1.0	1.0	1994633
Tetrachlorocatechol	ug/L	<1.0	1.0	1994633
Tetrachloroguaiacol	ug/L	<1.0	1.0	1994633
4,5-Dichloroveratrol	ug/L	<1.0	1.0	1994633
3,4,5-Trichloroveratrol	ug/L	<1.0	1.0	1994633
3,4,5,6-Tetrachloroveratrol	ug/L	<1.0	1.0	1994633
Surrogate Recovery (%)	-			
D6-Phenol	%	130	N/A	1994633
Tribromophenol-2,4,6	96	83	N/A	1994633
Trifluoro-m-cresol	%	101	N/A	1994633

QC Batch = Quality Control Batch

N/A = Not Applicable



GENERAL COMMENTS

PHENOLS BY GCMS (WATER)

Un-rounded results are used in the total "Total Phenols (RFPP)" calculation. This total result is then rounded to two significant figures.

The total indicated is calculated only for the requested parameters.

Reported detection limits are modified according to the volume of sample received.

Results relate only to the items tested.



Report Date: 2019/06/21

Bureau Veritas Laboratories Client Project #: B9E4405

QUALITY ASSURANCE REPORT

QA/QC	1000	Ceremon	#001.0014.CF	WILLIAM STRATEGIC	Water	#40 CARCESTO	100000	CONTINUE.
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limit
1994633	GDL	Spiked Blank	D6-Phenol	2019/06/04		107	76.	50 - 13
			Tribromophenol-2,4,6 Trifluoro-m-cresol	2019/06/04		95 105	14	50 - 13 50 - 13
			Phenal	2019/06/04		100	% %	50 - 13
						95		
			Z-Chlorophenol	2019/06/04		96	% %	50 - 13 50 - 13
			3-Chlorophenol 4-Chlorophenol	2019/06/04		99		
			The state of the s	2019/06/04		104	% %	50 - 13 50 - 13
			o-Cresol					
			m-Cresol	2019/06/04		101	%	50 - 13
			p-Cresol	2019/06/04		101	16	50 - 13
			2.4-Dimethylphenol	2019/06/04		95	%	50 - 13
			2,6-Dichlorophenol	2019/06/04		105	94	50 - 13
			3,5-Dichlorophenol	2019/06/04		95	96	50 - 13
			2,3-Dichlorophenol	2019/06/04		100	%	50 - 13
			3,4-Dichlorophenol	2019/06/04		106	96.	50 - 13
			2,4 + 2,5-Dichlorophenol	2019/06/04		100	76	50 - 13
			2-Nitrophenol	2019/06/04		94	%	50 - 13
			4-Nitrophenol	2019/06/04		92	94	50 - 13
			2,4,6-Trichlorophenol	2019/06/04		104	96.	50 - 13
			2,3,5-Trichlorophenol	2019/06/04		94	96	50 - 13
			2,3,6-Trichlorophenol	2019/06/04		107	%	50 - 13
			2,4,5-Trichlarophenol	2019/06/04		109	56	50 - 13
			2,3,4-Trichlaraphenol	2019/06/04		102	%	50 - 13
			3,4,5-Trichlorophenol	2019/06/04		108	%	50 - 13
			2,3,5,6-Tetrachlorophenol	2019/06/04		95	76	50 - 13
			2,3,4,6-Tetrachlorophenol	2019/06/04		107	N.	50 - 13
			2,3,4,5-Tetrachlorophenol	2019/06/04		96	16	50 - 13
			Pentachlorophenol	2019/06/04		90	%	50 - 13
1994633	GDL	Spiked Blank DUP	D6-Phenol	2019/06/04		105	76	50 - 13
			Tribromophenol-2,4,6	2019/06/04		91	14	50 - 13
			Triffuoro-m-cresol	2019/06/04		101	%	50 - 13
			Phenol	2019/06/04		98	96	50 - 13
			Z-Chlorophenol	2019/06/04		93	76	50 - 13
			3-Chlorophenol	2019/06/04		95	16	50 - 13
			4-Chlorophenol	2019/06/04		93	%	50 - 13
			o-Cresol	2019/06/04		102	96	50 - 13
			m-Cresol	2019/06/04		100	%	50 - 13
			p-Cresol	2019/06/04		98	96	50 - 13
			2,4-Dimethylphenol	2019/06/04		91	%	50 - 13
			2,6-Dichlorophenol	2019/06/04		100	96	50 - 13
			3,5-Dichlorophenoi	2019/06/04		91	96	50 - 13
			2,3-Dichlorophenol	2019/06/04		94	%	50 - 13
			3,4-Dichlorophenol	2019/06/04		100	%	50 - 13
			2,4 + 2,5-Dichlorophenol	2019/06/04		96	96	50 - 13
			2-Nitrophenol	2019/06/04		87	%	50 - 13
			4-Nitrophenol	2019/06/04		89	76	50 - 13
			2,4,6-Trichlorophenol	2019/06/04		97	96.	50 - 13
			2,3,5-Trichlorophenol	2019/06/04		87	96	50 - 13
			2.3,6-Trichlorophenol	2019/06/04		98	%	50 - 13
			2,4,5-Trichlorophenol	2019/06/04		104	%	50 - 13
			2,3,4-Trichlorophenol	2019/06/04		95	16	50 - 13
			3,4,5-Trichlorophenol	2019/06/04		95	96	50 - 13
			ar ar ar a second of the second	*OT3/OD/U4		0.0	- P. W.	20 43



QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limit
			2,3,4,6-Tetrachlorophenol	2019/06/04	2,541	103	76	50 - 13
			2,3,4,5-Tetrachlorophenol	2019/06/04		92	14	50 - 13
			Pentachlorophenol	2019/06/04		87	16	50 - 13
994633	GDL	Method Blank	D6-Phenol	2019/06/04		99	96	50 - 13
			Total of Regi. P&P Phenois	2019/06/04	<5.0		ug/L	
			Tribromophenol-2,4,6	2019/06/04		91	14	50 - 13
			Trifluoro-m-cresol	2019/06/04		101	%	50 - 13
			Phenol	2019/06/04	< 0.50		ug/L	
			2-Chlorophenol	2019/06/04	< 0.50		ug/L	
			3-Chlorophenol	2019/06/04	< 0.50		ug/L	
			4-Chlorophenol	2019/06/04	< 0.50		ug/L	
			p-Cresol	2019/06/04	< 0.50		ug/L	
			m-Cresol	2019/06/04	< 0.50		ug/L	
			p-Cresol	2019/06/04	< 0.50		ug/L	
			Gualacol	2019/06/04	< 0.50		ug/L	
			Catechol	2019/06/04	<0.50		ug/L	
			Eugenol	2019/06/04	< 0.50		ug/L	
			Isoeugenal	2019/06/04	< 0.50		ug/L	
			6-Chlorovanillin	2019/06/04	< 0.50		ug/L	
			5.6-Dichlorovanillin	2019/06/04	< 0.50		ug/L	
			3,4,5-Trichlorosyringol	2019/06/04	< 0.50		ug/L	
			2,4-Dimethylphenol	2019/06/04	<0.50		ug/L	
			2,6-Dichlorophenol	2019/06/04	< 0.50		ug/L	
			3,5-Dichlorophenol	2019/06/04	< 0.50		ug/L	
			2,3-Dichlorophenol	2019/06/04	< 0.50		ug/t	
			3,4-Dichlorophenol	2019/06/04	<0.50		ug/L	
			2,4 + 2,5-Dichlorophenal	2019/06/04	< 0.50		ug/L	
			2-Nitrophenol	2019/06/04	<1.0		ug/L	
			4-Nitrophenol	2019/06/04	<5.0		ug/L	
			2,4,6-Trichlorophenol	2019/06/04	<0.50		ug/L	
			2,3,5-Trichlarophenol	2019/06/04	<0.50		ug/L	
			2,3,6-Trichlarophenol	2019/06/04	<0.50		ug/L	
			2,4,5-Trichlorophenol	2019/06/04	< 0.50		ug/L	
			2,3,4-Trichlorophenol	2019/06/04	<0.50		ug/L	
			3,4,5-Trichlorophenol	2019/06/04	<0.50		ug/L	
			4-Chloroguaiacol	2019/06/04	<0.50		ug/L	
			4,5-Dichloroguaiscol	2019/06/04	< 0.50		ug/L	
			4,6-Dichlorogualacol	2019/06/04	<0.50		ug/L	
			2,3,5,6-Tetrachlorophenol	2019/06/04	<0.50		ug/L	
			2,3,4,6-Tetrachlorophenol	2019/06/04	<0.50		ug/L	
			2,3,4,5-Tetrachiorophenoi	2019/06/04	<0.50		ug/L	
			4-Chiorocatechol	2019/06/04	<0.50		ug/L	
			3.5-Dichlorocatechol	2019/06/04	<0.50		ug/L	
			4,5-Dichlorocatechol	2019/06/04	<0.50		ug/L	
			3,4,5-Trichlorogualacol	2019/06/04	<0.50		ug/L	
			4,5,6-Trichlorogualacol	2019/06/04	<0.50		ug/L	
			Pentachlorophenol	2019/06/04	<0.50		ug/L	
			3,4,5-Trichlorocatechol		<0.50		ug/L	
			Tetrachlorocatechol	2019/06/04				
				2019/06/04	<0.50		ug/L	
			Tetrachlorogualacol 4,5-Dichloroveratrol	2019/06/04 2019/06/04	<0.50 <0.50		ug/L	
				24 1 1 1 2 4 7 1 1 1 2 7 7 1 7 7				



Report Date: 2019/06/21

Bureau Veritas Laboratories Client Project #: B9E4405

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			3,4,5,6-Tetrachioroveratrol	2019/06/04	< 0.50	_ + F	ug/L	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

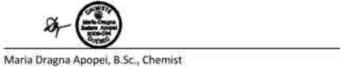
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination,

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Lab BV has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005 (E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

MAXXAM ANALYTICS

\$200 Bluewater Road Bedford, Nova Scotia, 848 1G9 (902) 420-0203 (902) 420-8612



Northern Pulp N.S. Maxxam PM : Maryann Comeau

SUBCONTRACTING REQUEST FORM

Sample ID VQB71-188\C IOF 2-2	ARIBOU SEA	WATER CH	Matrix W	Test(s) Required Phenois in Pulp and Pap	er SAIS Effluents	Container 2-DPHS	Date Sampled 2019/05/25 18	Date Required 15 2019/06/20
	Nemp. 1	Hemp. 2	Semp. 1					
Cooler #1	3	3	1	Custody Seal Present Custody Seal Intact	VES VES			
coler #2				Custody Seal Present	YES	NO NO		
				Custody Seal Intact ice Present Upon Receipt	VES	NO NO		
poler #3				Custody Seal Present Custody Seal Intact Ice Present Upon Receipt	YES YES	NO NO		
				lease reference Sample ID o		contract to a liv	t narty lab	
I) Include o		completed	And Table 12 Table 19	perform the requested and at COC & signed final repor				
Reporting Re								enti.
National: N001 Regional:		31-May-19 09:00 Sophie Retailleau 1 1 1 1 1 1 1 1		8920	962_COC			