

Tables

Table 1.1: List of Reporting Requirements

Authorization Reference	Reporting Requirement	Report Section
NIRB Project Certificate No.004 Condition 4	Take prompt and appropriate action to remedy any noncompliance with environmental laws and regulations and/or regulatory instruments, and shall report any non compliance as required by law immediately and report the same to NIRB annually.	11.3
NIRB Project Certificate No.004 Condition 8	Continue to undertake semi-annual groundwater samples and re-evaluate the groundwater quality after each sample collection; report the results of each re-evaluation to NIRB's Monitoring Officer, INAC and EC	8.6
NIRB Project Certificate No.004 Condition 15	Within two (2) years of commencing operations re-evaluate the characterization of mine waste materials, including the Vault area, for acid generating potential, metal leaching and non-metal constituents to confirm FEIS predictions, and re-evaluate rock disposal practices by conducting systematic sampling of the waste rock and tailings in order to incorporate preventive and control measures into the Waste Management Plan to enhance tailing management during operations and closure; results of the re-evaluations shall be provided to the NWB and NIRB's Monitoring Officer	5.1
NIRB Project Certificate No.004 Condition 19	Report to NIRB's Monitoring Officer for the annual reporting of freezeback effectiveness.	5.3.2
NIRB Project Certificate No.004 Condition 23	Ensure that water quality monitoring performed at locations within receiving waters that allow for an assimilative capacity assessment of concern to regulators, be carried out by an independent contractor and submitted to an independent accredited lab for analysis, on a type and frequency basis as determined by the NWB; results of analysis shall be provided to the NWB and NIRB's Monitoring Officer	8.3.6
NIRB Project Certificate No.004 Condition 28	Cumberland shall become a signatory to the International Cyanide Management Code, communicate this to shippers, and do so prior to Cumberland storing or handling cyanide for the Project.	11.2
NIRB Project Certificate No.004 Condition 29	Report to NIRB if and when [Cumberland] develops plans for an expansion of the Meadowbank Gold Mine, and in particular if those plans affect the selection of Second Portage Lake as the preferred alternative for tailings management	11.7
NIRB Project Certificate No.004 Condition 32e	Prior to opening of the road, and annually thereafter, advertise and hold at least one community meeting in the Hamlet of Baker Lake to explain to the community that the road is a private road with non-mine use of the road limited to approved, safe and controlled use by all-terrain-vehicles for the purpose of carrying out traditional Inuit activities.	11.4.2
NIRB Project Certificate No.004 Condition 32f	Place notices at least quarterly on the radio and television to explain to the community that the road is a private road with non-mine use of road limited to authorized, safe and controlled use by all-terrain-vehicles for the purpose of carrying out traditional Inuit activities.	11.4.2
NIRB Project Certificate No.004 Condition 32g	Record all authorized non-mine use of the road, and require all mine personnel using the road to monitor and report unauthorized non-mine use of the road, and collect and report this data to NIRB one (1) year after the road is opened and annually thereafter.	11.4.1
NIRB Project Certificate No.004 Condition 32h	Report all accidents or other safety incidents on the road, to the GN, KivIA [KIA], and the Hamlet immediately, and to NIRB annually.	11.4.2
NIRB Project Certificate No.004 Condition 33	Cumberland shall update the Access and Air Traffic Management Plan to: 1. include an All-weather Private Access Road Management Plan, including a right-of-way policy developed in consultation with the KivIA, GN, INAC and the Hamlet of Baker Lake, for the safe operation of the all-weather private access road; and 2. to facilitate monitoring of the environmental and socio-economic impacts of the private road and undertake adaptive management practices as required, including responding to any concerns regarding the locked gates.	11.4.1
NIRB Project Certificate No.004 Condition 36	Inuit observation and encounter reports for on-board vessels transporting goods and fuel through Chesterfield Inlet	11.5
NIRB Project Certificate No.004 Condition 39	Annually advertise and hold a community information meeting in Chesterfield Inlet to report on the Project and to hear from Chesterfield Inlet residents and respond to concerns; a consultation report shall be submitted to NIRB's Monitoring Officer within one month of the meeting.	11.6
NIRB Project Certificate No.004 Condition 40	Report to KIA and NIRB's Monitoring Officer annually on the Traditional Knowledge gathered including any operational changes that resulted from concerns shared at the workshop.	11.6
NIRB Project Certificate No.004 Condition 45	[Cumberland] shall carry, and require contracted shippers to carry adequate insurance to fully compensate losses arising from a spill or accident, including but not limited to the loss of resources arising from the spill or accident; any claims are to be reported to proper officials with a copy to NIRB's Monitoring Officer	11.8

Authorization Reference	Reporting Requirement	Report Section
NIRB Project Certificate No.004 Condition 49	Develop, implement and report on the fish-out programs for the dewatering of Second Portage Lake, Third Portage Lake and Vault Lake	8.8
NIRB Project Certificate No.004 Condition 51	Engage the HTOs in the development, implementation and reporting of creel surveys within waterbodies affected by the Project to the GN, DFO and local HTO	8.12
NIRB Project Certificate No.004 Condition 54	a. Updated terrestrial ecosystem baseline data; e. Details of a comprehensive hunter harvest survey to determine the effect on ungulate populations resulting from increased human access caused by the all-weather private access road, including establishing preconstruction baseline harvesting data, to be developed in consultation with local HTOs, the GN-DOE and the Nunavut Wildlife Management Board; f. Details of annual aerial surveys to be conducted to assess waterfowl densities in the regional study area during the construction phase and for at least the first three (3) years of operation, with the data analyzed and compared to baseline data to determine if significant effects are occurring and require mitigation. g. Details of an annual breeding bird plot surveys and transects along the all-weather road to be conducted during the construction phase and for at least the first three (3) years of operation.	8.13.2
NIRB Project Certificate No.004 Condition 55	Annual Wildlife Summary Monitoring Report	8.13.1
NIRB Project Certificate No.004 Condition 56	Information on caribou migration corridors shall be reported to the GN, KIA and NIRB's Monitoring Officer annually.	8.13.3
NIRB Project Certificate No.004 Condition 57	Participate in a caribou collaring program as directed by the GN-DOE.	8.13.4
NIRB Project Certificate No.004 Condition 58	In consultation with Elders and the HTOs and subject to safety requirements, design the lighting and use of lights at the mine site to minimize the disturbance of lights on sensitive wildlife and birds	11.6
NIRB Project Certificate No.004 Condition 59	In consultation with Elders and the HTOs, design and implement means of deterring caribou from the tailing ponds, such as temporary ribbon placement or Inukshuks, with such designs not to include the use of fencing	11.6
NIRB Project Certificate No.004 Condition 62	Develop and implement a noise abatement plan to protect wildlife from significant mine activity noise, including blasting, drilling, equipment, vehicles and aircraft; sound meters are to be set up immediately upon issuance of the Project Certificate for the purpose of obtaining baseline data, and monitoring during and after operations	8.10
NIRB Project Certificate No.004 Condition 63	GN and INAC shall form a Meadowbank Gold Mine Socio-Economic Monitoring Committee ("Meadowbank SEMC") to monitor the socio-economic impacts of the Project and the effectiveness of the Project's mitigation strategies; the monitoring shall supplement, not duplicate, the monitoring required pursuant to the IIBA negotiated for the Project, and on the request of Government or NPC, could assist in the coordination of data collection and tracking data trends in a comparable form to facilitate the analysis of cumulative effects; the terms of reference shall focus on the Project, include a plan for ongoing consultation with KivIA and affected local governments and a funding formula jointly submitted by GN, INAC and [Cumberland]; the terms of reference shall be submitted to NIRB for review and subsequent direction within six (6) months of the issuance of a Project Certificate; [Cumberland] is entitled to be included in the Meadowbank SEMC	11.90
NIRB Project Certificate No.004 Condition 64	[Cumberland] shall work with the GN and INAC to develop the terms of reference for a socio-economic monitoring program for the Meadowbank Project, including the carrying out of monitoring and research activities in a manner which will provide project specific data which will be useful in cumulative effects monitoring (upon request of Government or NPC) and consulting and cooperating with agencies undertaking such programs; [Cumberland] shall submit draft terms of reference for the socio-economic monitoring program to the Meadowbank SEMC for review and comment within six (6) months of the issuance of a Project Certificate, with a copy to NIRB's Monitoring Officer	11.90
NIRB Project Certificate No.004 Condition 65	Cumberland shall include in its socio-economic monitoring program for the Meadowbank Project the collection and reporting of data of community of origin of hired Nunavummiut	11.10
NIRB Project Certificate No.004 Condition 67	Develop and implement a program to monitor contaminant levels in country foods in consultation with HC; a copy of the plan shall be submitted to NIRB's Monitoring Officer	8.14
NIRB Project Certificate No.004 Condition 69	Carry out the Project to minimize the impacts on archeological sites, including conducting proper archeological surveys of the Project area (including the all-weather road and all quarry sites); [Cumberland] shall provide to the GN an updated baseline report for archeological sites in the Project area"	8.15
NIRB Project Certificate No.004 Condition 71	In consultation with EC, install and fund an atmospheric monitoring station to focus on particulates of concern generated at the mine site. The results of air-quality monitoring are to be reported annually to NIRB.	8.11

Authorization Reference	Reporting Requirement	Report Section
NIRB Project Certificate No.004 Condition 72	Conduct annual stack testing to demonstrate that the on-site incinerators are operating in compliance with these standards. The results of stack testing shall be contained in an annual monitoring report submitted to GN, EC and NIRB's Monitoring Officer.	6.3
NIRB Project Certificate No.004 Commitment 74	Provide annual report of the quantity and type of waste generated at the mine site distinguishing landfilled, recycled and incinerated streams.	6.2
NIRB Project Certificate No.004 Condition 75	Provide a complete list of possible accidents and malfunctions for the Project; it must consider the all-weather road, shipping spills, cyanide and other hazardous material spills, and pitwall/dikes /dam failure, and include an assessment of the accident risk and mitigation developed in consultation with Elders and potentially affected communities	7
NIRB Project Certificate No.004 Condition 80	File annually with NIRB's Monitoring Officer an updated report on progressive reclamation and the amount of security posted, as required by KivIA, INAC, and/or the NWB.	9.2.1
NIRB Project Certificate No.004 Condition 82	Monitor the ingress/egress of ship cargo at Baker Lake and report any accidents or spills immediately to the regulatory agencies as required by law and to NIRB's Monitoring Officer annually.	7
NIRB Project Certificate No.004 Condition 85	Develop a detailed blasting program to minimize the effects of blasting on fish and fish habitat, water quality, and wildlife and terrestrial VECs	8.5
NWB 2AM-MEA1525 Schedule B-1	Construction Details for dikes and dams.	3.1.1
NWB 2AM-MEA1525 Schedule B-2	Monthly and annual volume of fresh Water obtained from Third Portage Lake.	4.1
NWB 2AM-MEA1525 Schedule B-3	Monthly and annual volume of fresh Water obtained from Wally Lake.	4.2
NWB 2AM-MEA1525 Schedule B-4	Results of lake level monitoring conducted under the protocol developed as per Part D Item 5.	4.3
NWB 2AM-MEA1525 Schedule B-5	Summary of reporting results for the Water Balance Water Quality model and any calibrations as required in Part E Items 7-9.	4.4
NWB 2AM-MEA1525 Schedule B-6	The bathymetric survey(s) conducted prior to each year of shipping at the Baker Lake Marshalling Facility.	4.5
NWB 2AM-MEA1525 Schedule B-7	Geochemical monitoring results.	5.1
NWB 2AM-MEA1525 Schedule B-8	Volumes of waste rock used in construction and placed in the Rock Storage Facilities.	5.2
NWB 2AM-MEA1525 Schedule B-9	An update on the remaining capacity of the Tailings Storage Facility.	5.3.1
NWB 2AM-MEA1525 Schedule B-10	Summary of quantities and analysis of seepage and runoff monitoring from the Landfills, Waste Rock Storage facility and Central Dike.	6.1
NWB 2AM-MEA1525 Schedule B-11	A summary report of all general waste disposal activities including monthly and annual quantities in cubic metres of waste generated and location of disposal.	6.2
NWB 2AM-MEA1525 Schedule B-12	Report of Incinerator test results including the materials burned and the efficiency of the Incinerator as they relate to water and the deposit of waste into water.	6.3
NWB 2AM-MEA1525 Schedule B-13	A list and description of all unauthorized discharges including volumes, spill report line identification number and summaries of follow-up action taken.	7
NWB 2AM-MEA1525 Schedule B-14	A summary of modifications and/or major maintenance work carried out on all water and waste related structures and facilities.	11.1
NWB 2AM-MEA1525 Schedule B-15	The results and interpretation of the Monitoring Program in accordance with Part I and Schedule I.	8.3
NWB 2AM-MEA1525 Schedule B-16	The results of monitoring under the AEMP including Core Receiving Monitoring Program (CREMP), Metal Mining Effluent Regulation (MMER) Monitoring, Mine Site Water Quality and Flow Monitoring (and evaluation of NP-2), visual AWAR water quality monitoring, Blast Monitoring and Groundwater Monitoring.	8
NWB 2AM-MEA1525 Schedule B-17	A summary of any progressive closure and reclamation work undertaken including photographic records of site conditions before and after completion of operations, and an outline of any work anticipated for the next year, including any changes to implementation and scheduling.	9.1.1
NWB 2AM-MEA1525 Schedule B-18	A summary of on-going field trials to determine effective capping thickness for the Tailings Storage Facility and Waste Rock Storage Facilities for the purpose of long term environmental protection.	5.3.2
NWB 2AM-MEA1525 Schedule B-19	An updated estimate of the current restoration liability based on project development monitoring, results of restoration research and any changes or modifications to the Appurtenant Undertaking.	9.2.1
NWB 2AM-MEA1525 Schedule B-20	A summary of any studies requested by the Board that relate to Water use, Waste disposal or Reclamation, and a brief description of any future studies planned.	10.1
NWB 2AM-MEA1525 Schedule B-21	Where applicable, revisions as Addendums, with an indication of where changes have been made, for Plans, Reports, and Manuals.	10.2
NWB 2AM-MEA1525 Schedule B-22	An executive summary in English, Inuktitut and French of all plans, reports, or studies conducted under this Licence.	10.3
NWB 2AM-MEA1525 Schedule B-23	A summary of actions taken to address concerns or deficiencies listed in the inspection reports and/or compliance reports filed by an Inspector.	11.3
NWB 2AM-MEA1525 Schedule B-24	A summary of public consultation and participation with local organizations and the residents of the nearby communities, including a schedule of upcoming community events and information sessions.	11.6
NWB 2AM-MEA1525 Schedule B-25	Any other details on Water use or Waste Disposal requested by the Board by November 1st of the year being reported.	4.7/6.4
NWB 2AM-MEA1525 Part E Item 9	The Licensee shall, on an annual basis during Operations, compare the predicted water quantity and quality within the pits, to the measured water quantity and quality.	4.6

Authorization Reference	Reporting Requirement	Report Section
NWB 2AM-MEA1525 Part I Item 12	The Licensee shall submit to the Board as part of the Annual Report required under Part B Item 2, all reports and performance evaluations prepared by the Independent Geotechnical Expert Review Panel.	3.1.2
NWB 2AM-MEA1525 Part I Item 14	The Licensee shall submit the results and interpretation of the Seepage Monitoring program required in Part I, Item 13 in the Annual Report required under Part B, Item 2.	8.3.7
DFO S-08/09-1040 NU	The result of monitoring under the AEMP	8.9
DFO NU-03-191.3 Condition 3-6, NU-03-0191.1 Condition 3-6, Nu-03-0190 Condition 5, NU-14-1046 Condition 3-6	Result of fisheries monitoring along AWAR and on mine site	8.3.5
DFO 14-1046 conditon 3.2.2	Results of the fish out program	8.8
DFO NU-03-0190 AWPAP Condition 5.2.4	Creel survey results.	8.12
DFO NU-03-191.3 Condition 3-6, NU-03-0191.1 Condition 3-6, Nu-03-0190 Condition 5, NU-14-1046 Condition 3-6	Submit Written Report and Photographic Record summarizing monitoring program results.	8.7
INAC Land Lease 66A/8-71-2 Condition 19	The lessee shall submit to the Minister every two years after the commencement date of this lease, a report describing any variations from the Abandonment and Restoration Plan and updated cost estimates.	9.2.2
INAC Land Lease 66A/8-71-2 Condition 33	The lessee shall file annually a report for the preceding year, outlining ongoing restoration completed in conformity with the approved Abandonment and Restoration Plan, as well as any variations from the said Plan.	9.1.2
INAC Land Lease 66A/8-72-2 Condition 8	The lessee shall file a report, annually ... i. Quantity of material removed and location of removal, for the immediately preceding calendar year ii. Such other data as are reasonably required by the Minister from time to time.	3.2
INAC Land Lease 66A/8-72-2 Condition 25	The lessee shall file, annually, a report for the preceding year, outlining the ongoing borrow area operations completed in conformity with the approved Borrow Management Plan, as well as any variations from the Plan.	3.2
INAC Quarry Lease 66A/8-72-2 Condition 33	The lessee shall file annually a report for the preceding year, outlining ongoing restoration completed in conformity with C&R Plan, as well as any variations from the said Plan.	9.1.2
INAC Land Lease 66A/8-72-2 Condition 37	The lessee shall submit to the Minister every 2 years after the commencement date of this lease, a report describing cumulative variations from the C&R Plan with updated cost estimates.	9.2.2
KIA ROW KVRW06F04 Condition 14	Submit to KIA every two years on each anniversary of the commencement date, a report describing any variations from the Abandonment and Restoration Plan and updated cost estimates.	9.2.2
KIA ROW KVRW06F04 Condition 26	File annually a progress report for the preceding year, outlining any ongoing restoration completed, in conformity with the Abandonment and Restoration plan.	9.1.2
KIA ROW KVRW06F04 Schedule E - Condition 8	The lessee shall file annually a report for the preceding year, outlining the ongoing borrow area operations completed in conformity with the approved Borrow Management Plan, as well as any variations from the Plan.	3.2
KIA KVPL08D280 Condition 6.01 (9)	Plan detailing the activities taken in the last year and to be undertaken in the next year and planned for the balance of the Term, that includes, but is not limited to the proposed methods and procedures for progressive reclamation.	9.1.1
GN - Department of Cultural and Heritage	Annual Permit Report. Annual Archaeology Site Status Report.	Submitted on February 28 2017 to Department of Culture and Heritage.

Table 1.2: Status of Sampling Stations

NWB Station	Description	Phase	2016 Reporting Status
ST-DC-1 to TBD	Monitoring stations during Dike Construction as defined in Part D Item 5	Construction	Not applicable in 2016
ST-DD-1 to TBD	Monitoring stations during Dike Dewatering as defined in Part D Item 5	Construction	Section 8.3.2
ST-1	Water Intake for camp, mill and re-flooding	Water Intake for camp, mill and re-flooding	Section 4.1
ST-1W	Water Intake for re-flooding	Water Intake for camp, mill and re-flooding	Not applicable in 2016
ST-3	Water Intake for Emulsion Plant	Late operation, closure	Section 4.1
ST-4	Water reclaimed from Tailings Storage Facility	Late operation, closure	Not applicable in 2016
ST-5	Portage Area (east) diversion ditch	Late operation, closure	Section 8.3.3.21
ST-6	Portage Area (west) diversion ditch	Late operation, closure	Section 8.3.3.21
ST-8	East Dike Seepage Discharge	Late operation, closure	Section 8.3.3.5
ST-9	Portage Attenuation Pond prior to discharge through Third Portage Lake Outfall Diffuser	Early operation	Not applicable in 2016
ST-10	Vault Attenuation Pond prior to discharge through Wally Lake Outfall Diffuser	Late operation	Section 8.3.3.4
ST-11	Tailings Storage Facility	Post closure	Not Applicable in 2016
ST-12	Portage/ Goose Pit Lake	Post closure	Not Applicable in 2016
ST-13	Vault Pit Lake	Post closure	Not Applicable in 2016
ST-14	Discharge to the land from Landfarm sump at mine site	Late operation, closure	Section 8.3.3.17
ST-16	Portage Rock Storage Facility	Late operation, closure	Section 8.3.3.11
ST-17**	North Portage Pit Sump	Operations	Section 8.3.3.7
	Portage Pit Lake	Late operation, closure	Not Applicable in 2016
ST-19**	South Portage Pit Sump	Early operations	Section 8.3.3.8
	Portage Pit Lake	Late operations	Not Applicable in 2016
ST-20	Goose Island Pit Sump	Early operations	Section 8.3.3.9
	Goose Island Pit Lake	Late operations, closure	Section 8.3.3.9
ST-21	Tailings Reclaim Pond	Late operations	Section 8.3.3.6
ST-22	Tailings Storage Facility	Closure (drainage run-off)	Not Applicable in 2016

NWB Station	Description	Phase	2016 Reporting Status
ST-23	Vault Pit Sump	Late operations	Section 8.3.3.10
ST-24	Vault Rock Storage Facility	Late operation, closure	Section 8.3.3.13
ST-25	Vault Attenuation Pond	Late operation	Section 8.3.3.3
ST-26	Vault Pit Lake	Closure	Not Applicable in 2016
ST-30	WEP 1	Late operations, closure	Section 8.3.3.12
ST-31	WEP 2	Late operations, closure	Section 8.3.3.12
ST-32	Saddle Dam 3	Late operations, closure	Section 8.3.3.16
ST-S-1 to TBD	Seeps (to be determined)	Late operations, closure	Sections 8.3.3.14/8.3.3.15
ST-GW-1 to TBD	Groundwater wells (to be determined)	Late operations, closure	Section 8.6
ST-AEMP-1 to TBD	Receiving AEMP	Late operations, closure	Section 8.9
ST-MMER-1 to TBD	Vault, East dike and Portage effluent outfall	Late operations	Section 8.2
ST-37	Secondary containment sump at the Bulk Fuel Storage Facility at Meadowbank	Late operation, closure	Sections 8.3.3.20
ST-38	Secondary containment at the Bulk Fuel Storage Facility in Baker Lake - Jet-A containment	Late operation, closure	Sections 8.3.4
ST-40.1 (MEA-4)	Secondary containment sump at the Bulk Fuel Diesel Storage Facility in Baker Lake (Fuel tanks 5&6)	Late operation, closure	Sections 8.3.4
ST-40.2 (MEA-4)	Secondary containment sump at the Bulk Fuel Diesel Storage Facility in Baker Lake (Fuel tanks 1-4)	Late operation, closure	Sections 8.3.4

Table 8.1. Meadowbank GPS Coordinates

Sample Location Description	Sample ID	GPS Coordinates Easting / Northing
<i>MMER and EEM</i>		
Vault effluent water quality monitoring and toxicity testing	ST-10 / ST-MMER-2	15W 0359842 7219555
East Dike Seepage effluent water quality monitoring and toxicity testing	ST-8 / ST-MMER-3	14W 0639336 7213920
Vault water quality monitoring in receiving environment - discharge area	WLE	15W 0360880 7220513
East Dike Seepage water quality monitoring in receiving environment - discharge area	SPLE	14W 0639459 7213913
Water quality monitoring in receiving environment - reference area	TPS	14W 0633840 7208079
<i>Sewage Treatment Plant</i>		
STP discharge to stormwater management pond	STP	14W 0638042 7214140
<i>Incinerator</i>		
Ash sampling; waste oil sampling	Incinerator	14W 0638189 7213412
<i>Meadowbank Bulk Fuel Storage Facilities</i>		
Water quality monitoring of discharge from secondary containment area	ST-37	14W 0638258 7213430
<i>Baker Lake Bulk Fuel Storage Facility</i>		
Water quality monitoring of discharge from secondary containment area for Jet-A tank	ST-38	15W 0357487 7134617
Water quality monitoring of discharge from secondary containment area for new tank 5-6	ST-40.1	15W 0357598 7134539
Water quality monitoring of discharge from secondary containment area for old tank 1-4	ST-40.2	15W 0357543 7134445
<i>Tailings Reclaim Pond</i>		
Water quality monitoring in North Cell	ST-21	14W 0637608 7215745
Water quality monitoring in South Cell	ST-21	14W 0638166 7215045
<i>North Portage Pit Sump</i>		
Water quality monitoring from area of water accumulation	ST-17	14W 0638951 7214783
<i>South Portage Pit Sump</i>		
Water quality monitoring from area of water accumulation	ST-19	14W 0638898 7213939
<i>Bay Goose Pit Sump</i>		
Water quality monitoring from area of water accumulation	ST-20	14W 0638339 7212681
<i>Bay Goose Pit Lake</i>		
Water quality monitoring from area of water accumulation	ST-20	14W 0638692 7212294
<i>Vault Pit Sump</i>		
Water quality monitoring from area of water accumulation	ST-23	14W 0640865 7220103
<i>East Dike Seepage</i>		
Water quality monitoring of seepage from East Dike	ST-S-1	14W 0639316 7213937
<i>Vault Attenuation Pond</i>		
Water quality monitoring	ST-25	15W 0359030 7219607

Sample Location Description	Sample ID	GPS Coordinates Easting / Northing
<i>Portage Rock Storage Facility</i>		
Water quality monitoring of seepage from Waste Rock Storage Facility	ST-16	14W 0638617 7216164
<i>Vault Rock Storage Facility</i>		
Water quality monitoring of seepage from Waste Rock Storage Facility	ST-24	14W 0640919 7220711
<i>Saddle Dam 1 Seepage</i>		
Water quality monitoring of seepage from Saddle Dam 1	ST-S-2	14W 0636977 7216000
<i>Central Dike Seepage</i>		
Water quality monitoring of seepage from Central Dike	ST-S-5	14W 0638743 7214571
<i>Landfarm</i>		
Discharge to the land from landfarm sump	ST-14	14W 0637537 7215195
<i>Diversion Ditch Non-Contact Water</i>		
Portage Area (West) diversion ditch (North Cell Diversion Ditch)	ST-6	14W 0636771 7216026
Portage area (East) diversion ditch around RSF	ST-5	14W 0638732 7216495
<i>West Extension Pool</i>		
Water Quality monitoring of seepage from RSF - WEP1	ST-30	14W 0638419 7216707
Water Quality monitoring of seepage from RSF - WEP2	ST-31	14W 0638625 7216557
<i>Saddle Dam 3 Seepage</i>		
Water Quality monitoring of seepage from Saddle Dam 3	ST-32	14W 0637499 7214966
<i>Phaser Lake Dewatering</i>		
Water Quality monitoring of Phaser Lake Dewatering	ST-DD-6a	14W 0640578 7219158

Table 8.2 - 2016 Vault Discharge MMER Effluent Monitoring (ST-10/ST-MMER-2)

	Units	Maximum monthly average concentration	Maximum grab concentration	January	February	March	April	May	June	18-Jul-16
Date										
Arsenic	mg/L	0.5	1	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	<0.0005
Copper	mg/L	0.3	0.6	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	0.0025
Cyanide	mg/L	1	2	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	<0.005
Total Suspended Solids	mg/L	15	30	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	2
Nickel	mg/L	0.5	1	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	0.0046
Lead	mg/L	0.2	0.4	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	<0.0003
Zinc	mg/L	0.5	1	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	<0.001
Radium 226	Bq/L	0.37	1.11	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	0.01
pH *	units	6-9.5	6-9.5	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	7.63
Daphnia magna	LC50 %			NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NMR
Rainbow trout	LC50 %			NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NMR

	Units	Maximum monthly average concentration	Maximum grab concentration	20-Jul-16	25-Jul-16	1-Aug-16	8-Aug-16	15-Aug-16	22-Aug-16	1-Sep-16
Date										
Arsenic	mg/L	0.5	1	NMR	<0.0005	<0.0005	0.001	<0.005	0.0041	NA
Copper	mg/L	0.3	0.6	NMR	0.002	0.0022	0.0057	0.0029	0.003	NA
Cyanide	mg/L	1	2	NMR	<0.005	<0.005	<0.005	<0.005	0.011	NA
Total Suspended Solids	mg/L	15	30	NMR	6	3	6	<1	5	4
Nickel	mg/L	0.5	1	NMR	0.0035	0.0034	0.0055	0.0048	0.0039	NA
Lead	mg/L	0.2	0.4	NMR	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	NA
Zinc	mg/L	0.5	1	NMR	<0.001	<0.001	<0.001	0.002	0.001	NA
Radium 226	Bq/L	0.37	1.11	NMR	NMR	NMR	NMR	NMR	NMR	NMR
pH *	units	6-9.5	6-9.5	NMR	7.5	7.52	7.35	7.46	7.36	7.55
Daphnia magna	LC50 %			>100	NMR	NMR	NMR	NMR	>100	NMR
Rainbow trout	LC50 %			>100	NMR	NMR	NMR	NMR	>100	NMR

Date	Units	Maximum monthly average concentration	Maximum grab concentration	5-Sep-16	12-Sep-16	20-Sep-16	26-Sep-16	3-Oct-16	10-Oct-16	November
Arsenic	mg/L	0.5	1	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	NDEP
Copper	mg/L	0.3	0.6	0.0018	0.0022	0.0023	0.002	0.0026	0.0029	NDEP
Cyanide	mg/L	1	2	0.039	0.001	0.001	0.001	0.008	0.005	NDEP
Total Suspended Solids	mg/L	15	30	4	3	14	11	10	2	NDEP
Nickel	mg/L	0.5	1	<0.0005	0.0226	0.0037	0.0039	0.0045	0.0041	NDEP
Lead	mg/L	0.2	0.4	<0.0003	0.0058	<0.0003	<0.0003	0.0008	<0.0003	NDEP
Zinc	mg/L	0.5	1	<0.001	<0.001	0.004	0.002	0.002	0.003	NDEP
Radium 226	Bq/L	0.37	1.11	NMR	NMR	0.005	0.01	NMR	0.004	NDEP
pH *	units	6-9.5	6-9.5	7.49	6.99	6.71	6.68	7.71	7.34	NDEP
Daphnia magna	LC50 %			NMR	NMR	NMR	>100	NMR	>100	NDEP
Rainbow trout	LC50 %			NMR	NMR	NMR	>100	NMR	>100	NDEP

Date	Units	Maximum monthly average concentration	Maximum grab concentration	December
Arsenic	mg/L	0.5	1	NDEP
Copper	mg/L	0.3	0.6	NDEP
Cyanide	mg/L	1	2	NDEP
Total Suspended Solids	mg/L	15	30	NDEP
Nickel	mg/L	0.5	1	NDEP
Lead	mg/L	0.2	0.4	NDEP
Zinc	mg/L	0.5	1	NDEP
Radium 226	Bq/L	0.37	1.11	NDEP
pH *	units	6-9.5	6-9.5	NDEP
Daphnia magna	LC50 %			NDEP
Rainbow trout	LC50 %			NDEP

Footnotes:

* Parameter measured in the field by Environmental Technicians

NDEP (No Deposit) = measurement not taken because there was no deposit from the final discharge point

NMR (No Measurement Required) = measurement not taken in accordance with the conditions set out in section 12 or 13 of the MMER

Table 8.3 - 2016 Vault Discharge MMER Effluent Volume (ST-10/ST-MMER-2)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0	0	0	0	0	0	0	12,306	4,393	20,394	0	0
2	0	0	0	0	0	0	0	12,306	14,951	15,228	0	0
3	0	0	0	0	0	0	0	12,306	17,681	8,482	0	0
4	0	0	0	0	0	0	0	12,306	17,510	9,427	0	0
5	0	0	0	0	0	0	0	12,306	17,270	12,211	0	0
6	0	0	0	0	0	0	0	12,306	10,591	14,381	0	0
7	0	0	0	0	0	0	0	12,306	17,094	10,666	0	0
8	0	0	0	0	0	0	0	12,306	18,204	14,646	0	0
9	0	0	0	0	0	0	0	12,306	18,216	13,667	0	0
10	0	0	0	0	0	0	0	12,306	18,210	13,697	0	0
11	0	0	0	0	0	0	0	12,306	16,304	4,586	0	0
12	0	0	0	0	0	0	0	12,306	17,959	0	0	0
13	0	0	0	0	0	0	0	12,306	9,736	0	0	0
14	0	0	0	0	0	0	0	12,306	15,107	0	0	0
15	0	0	0	0	0	0	0	12,306	8,805	0	0	0
16	0	0	0	0	0	0	0	10,777	21,797	0	0	0
17	0	0	0	0	0	0	14,400	15,241	8,903	0	0	0
18	0	0	0	0	0	0	16,077	8,643	22,733	0	0	0
19	0	0	0	0	0	0	14,117	0	11,287	0	0	0
20	0	0	0	0	0	0	13,068	0	16,232	0	0	0
21	0	0	0	0	0	0	14,252	0	17,044	0	0	0
22	0	0	0	0	0	0	13,385	4,270	16,694	0	0	0
23	0	0	0	0	0	0	17,131	0	16,574	0	0	0
24	0	0	0	0	0	0	17,131	0	15,501	0	0	0
25	0	0	0	0	0	0	17,131	0	7,275	0	0	0
26	0	0	0	0	0	0	17,131	0	5,144	0	0	0
27	0	0	0	0	0	0	17,424	0	0	0	0	0
28	0	0	0	0	0	0	17,760	0	0	0	0	0
29	0	0	0	0	0	0	15,768	0	12,687	0	0	0
30	0	0	0	0	0	0	17,088	0	15,061	0	0	0
31	0	0	0	0	0	0	16,728	0	0	0	0	0
Total (m³)	0	0	0	0	0	0	238,588	223,521	408,963	137,385	0	0

Table 8.4: 2016 EEM Monitoring at Vault

Vault Discharge Effluent characterization	Date Units	18-Jul-16	22-Aug-16	26-Sep-16
Alkalinity	mg CaCO ₃ /L	23	28	15
Aluminium	mg/L	0.046	0.161	0.01
Ammonia nitrogen	mg N/L	0.66	1.14	0.01
Cadmium	mg/L	0.00007	<0.00002	<0.00002
Conductivity	µs/cm	170	261	179
Hardness	mg CaCO ₃ /L	67	113	20
Iron	mg/L	0.07	0.45	0.01
Mercury	mg/L	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L	0.0054	0.0142	0.0005
Nitrate	mg N/L	3.36	6.6	0.24
Selenium	mg/L	<0.001	<0.001	<0.001
Temperature	°C	14.1	15.7	12.52

Vault Discharge Sub-lethal toxicity testing	Date Units	18-Jul-16	22-Aug-16
Fathead Minnow IC25	% v/v	58.3	64
Fathead Minnow LC50	% v/v	82	>100
Ceriodaphnia dubia IC25	% v/v	>100	>100
Ceriodaphnia dubia LC50	% v/v	>100	>100
Freshwater Alga IC25	% v/v	>90.91	>90.91
Lemna minor IC25 (dw)	% v/v	>97.09	> 97.09
Lemna minor IC25 (f#)	% v/v	>97.09	> 97.09

Vault Discharge WLE (Exposure Area) Water Quality Monitoring	Date Units	19-Jul-16	22-Aug-16	27-Sep-16
Alkalinity	mg CaCO ₃ /L	14	14	14
Aluminum	mg/L	0.015	0.009	0.024
Ammonia nitrogen	mg N/L	0.01	0.02	0.07
Arsenic	mg/L	<0.0005	0.002	<0.0005
Cadmium	mg/L	<0.00002	<0.00002	0.00002
Conductivity	µs/cm	34	48.7	102
Copper	mg/L	0.0007	0.0013	0.0007
Cyanide	mg/L	<0.001	<0.001	<0.001
Dissolved oxygen *	mg/L	NA	NA	NA1
Hardness	mg CaCO ₃ /L	15	21	21
Iron	mg/L	0.02	0.02	0.02
Lead	mg/L	<0.0003	<0.0003	<0.0003
Mercury	mg/L	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L	<0.0005	<0.0005	0.0006
Nickel	mg/L	<0.0005	0.0005	0.0007
Nitrate	mg N/L	0.12	0.18	0.17
pH *	Units	7.58	7.62	7.42
Radium 226	Bq/L	<0.002	NMR	NMR
Selenium	mg/L	<0.001	<0.001	<0.001
Temperature *	(°C)	13.25	16.1	NA1
Total suspended solids	mg/L	2	6	3
Zinc	mg/L	<0.001	<0.001	0.001

TPS (Reference Area) Water Quality Monitoring		Date	19-Jul-16	22-Aug-16	27-Sep-16
		Units			
Alkalinity	mg CaCO ₃ /L		7	12	7
Aluminum	mg/L		<0.006	<0.006	0.0012
Ammonia nitrogen	mg N/L		0.01	0.01	0.08
Arsenic	mg/L		<0.0005	<0.0005	<0.0005
Cadmium	mg/L		<0.00002	<0.00002	0.00003
Conductivity	µs/cm		20	36.7	102
Copper	mg/L		<0.0005	0.0005	<0.0005
Cyanide	mg/L		<0.001	<0.001	<0.001
Dissolved oxygen *	mg/L		NA	NA	NA1
Hardness	mg CaCO ₃ /L		8	12	8
Iron	mg/L		<0.01	0.01	<0.01
Lead	mg/L		<0.0003	<0.0003	<0.0003
Mercury	mg/L		<0.00001	<0.00001	<0.00001
Molybdenum	mg/L		<0.0005	<0.0005	<0.0005
Nickel	mg/L		<0.0005	<0.0005	<0.0005
Nitrate	mg N/L		0.06	<0.01	0.03
pH *	Units		7.38	7.46	7.42
Radium 226	Bq/L		NMR	NMR	NMR
Selenium	mg/L		<0.001	<0.001	<0.001
Temperature *	(°C)		7.47	15.9	NA1
Total suspended solids	mg/L		<1	4	8
Zinc	mg/L		<0.001	<0.001	<0.001

Footnotes:

NMR: no measurement required

NDEP: No deposit

NA: Probe is broken

NA1: Technician omission

* Parameter measured in the field by Environmental Technicians

Table 8.5 - 2016 East Dike Seepage Discharge MMR Effluent Monitoring (ST-8/ ST-MMER-3)

Date Units	Arsenic mg/L	Copper mg/L	Cyanide mg/L	Lead mg/L	Nickel mg/L	Zinc mg/L	TSS mg/L	Radium 226 Bq/L	pH * units	Daphnia magna LC50 %	Rainbow trout LC50 %
Maximum monthly average concentration	0.5	0.3	1	0.2	0.5	0.5	15	0.37	6 - 9.5		
Maximum grab concentration	1	0.6	2	0.4	1	1	30	1.11	6 - 9.5		
05-Jan-16	< 0.0005	0.0005	< 0.005	< 0.0003	0.0005	0.003	1	< 0.002	7.32	>100	>100
14-Jan-16	< 0.0005	0.0032	< 0.005	< 0.0003	0.0198	0.009	9	< 0.002	7.38	NMR	NMR
18-Jan-16	< 0.0005	0.0006	< 0.005	< 0.0003	< 0.0005	0.007	1	< 0.002	7.61	NMR	NMR
25-Jan-16	0.0029	0.0005	< 0.005	< 0.0003	< 0.0005	< 0.001	2	0.002	7.45	NMR	NMR
01-Feb-16	< 0.0005	< 0.0005	< 0.005	< 0.0003	< 0.0005	0.006	10	0.004	6.8	>100	>100
09-Feb-16	< 0.0005	< 0.0005	< 0.005	< 0.0003	0.0006	0.001	11	< 0.002	7.88	NMR	NMR
16-Feb-16	< 0.0005	< 0.0005	< 0.005	< 0.0003	< 0.0005	< 0.001	5	< 0.002	7.72	NMR	NMR
22-Feb-16	< 0.0005	0.0249	< 0.005	< 0.0003	0.0116	0.013	17	< 0.002	7.43	NMR	NMR
01-Mar-16	< 0.0005	0.0006	< 0.005	< 0.0003	0.0006	0.001	1	0.002	7.58	>100	>100
08-Mar-16	< 0.0005	< 0.0005	< 0.005	< 0.0003	< 0.0005	< 0.001	11	< 0.002	7.05	NMR	NMR
14-Mar-16	0.006	0.0008	< 0.005	< 0.0003	0.0007	0.004	6	< 0.002	8.48	NMR	NMR
21-Mar-16	< 0.0005	0.0006	< 0.005	< 0.0003	< 0.0005	0.001	7	< 0.002	7.49	NMR	NMR
29-Mar-16	0.0029	0.0009	< 0.005	0.0012	0.0009	0.004	< 1	< 0.002	7.63	NMR	NMR
05-Apr-16	< 0.0005	0.0022	< 0.005	< 0.0003	< 0.0005	< 0.001	< 1	NMR	8.52	NMR	NMR
11-Apr-16	< 0.0005	0.0005	< 0.005	< 0.0003	0.0005	0.001	5	NMR	8.01	>100	>100
19-Apr-16	0.004	< 0.0005	< 0.005	< 0.0003	0.0006	0.001	2	NMR	7.69	NMR	NMR
26-Apr-16	0.0017	0.0039	< 0.005	< 0.0003	0.0011	0.001	2	< 0.002	7.91	NMR	NMR
03-May-16	0.0008	< 0.0005	< 0.005	< 0.0003	< 0.0005	< 0.001	5	< 0.002	8.93	>100	>100
09-May-16	0.0009	0.001	< 0.005	< 0.0003	< 0.0005	0.001	15	NMR	6.6	NMR	NMR
16-May-16	0.0029	0.0005	< 0.005	0.0009	< 0.0005	< 0.001	< 1	NMR	8.64	NMR	NMR
24-May-16	0.0029	0.0007	< 0.005	< 0.0003	0.001	0.002	< 1	NMR	7.62	NMR	NMR
31-May-16	< 0.0005	0.0024	< 0.005	< 0.0003	0.0013	0.005	17	NMR	7.57	NMR	NMR
06-Jun-16	0.0008	0.0009	< 0.005	< 0.0003	0.0013	< 0.001	< 1	NMR	7.72	>100	>100
13-Jun-16	< 0.0005	0.003	< 0.005	< 0.0003	0.0017	0.004	< 1	< 0.002	7.66	NMR	NMR
21-Jun-16	0.0103	0.0008	< 0.005	< 0.0003	0.0016	< 0.001	< 1	NMR	7.6	NMR	NMR
28-Jun-16	0.0015	0.0054	< 0.005	< 0.0003	0.0013	0.004	< 1	NMR	7.08	NMR	NMR
04-Jul-16	0.0038	< 0.0005	< 0.005	< 0.0003	0.0018	0.001	7	NMR	7.83	NMR	NMR
11-Jul-16	0.0029	0.001	< 0.005	< 0.0003	< 0.0005	< 0.001	9.4	NMR	7.73	NMR	NMR
18-Jul-16	0.0012	0.001	0.006	< 0.0003	0.0026	< 0.001	6	NMR	7.96	>100	>100
25-Jul-16	< 0.0005	0.004	< 0.005	< 0.0003	0.0034	0.005	17	NMR	7.76	NMR	NMR
01-Aug-16	< 0.0005	0.0009	< 0.005	< 0.0003	0.0019	0.001	1	NMR	7.85	NMR	NMR
08-Aug-16	< 0.0005	0.0008	< 0.005	< 0.0003	0.0022	< 0.001	< 1	< 0.002	7.75	NMR	NMR
15-Aug-16	< 0.0005	< 0.0005	< 0.005	< 0.0003	0.0024	< 0.001	3	NMR	7.5	NMR	NMR
22-Aug-16	< 0.0005	0.0009	< 0.005	< 0.0003	0.0021	< 0.001	4	NMR	7.84	>100	>100
29-Aug-16	< 0.0005	0.0008	0.001	0.0038	0.0012	< 0.001	< 1	NMR	7.71	NMR	NMR
05-Sep-16	< 0.0005	0.0009	0.056	< 0.0003	< 0.0005	< 0.001	3	NMR	8.31	NMR	NMR
12-Sep-16	< 0.0005	0.0005	< 0.001	< 0.0003	0.0009	< 0.001	< 1	NMR	7.11	NMR	NMR
20-Sep-16	< 0.0005	0.0009	< 0.001	< 0.0003	< 0.0005	< 0.001	4	NMR	6.61	NMR	NMR
28-Sep-16	< 0.0005	0.0012	0.014	< 0.0003	0.0024	0.002	7	0.004	7.69	>100	>100
03-Oct-16	NMR	NMR	NMR	NMR	NMR	NMR	2	NMR	7.87	NMR	NMR
10-Oct-16	< 0.0005	0.0008	< 0.001	< 0.0003	0.0008	0.001	< 1	0.002	7.41	NMR	NMR
17-Oct-16	NMR	NMR	NMR	NMR	NMR	NMR	4	NMR	6.86	NMR	NMR
24-Oct-16	NMR	NMR	NMR	NMR	NMR	NMR	< 1	NMR	8.65	>100	>100
31-Oct-16	NMR	NMR	NMR	NMR	NMR	NMR	< 1	NMR	7.96	NMR	NMR
07-Nov-16	NMR	NMR	NMR	NMR	NMR	NMR	6	NMR	8.35	NMR	NMR
14-Nov-16	NMR	NMR	NMR	NMR	NMR	NMR	5	NMR	8.58	NMR	NMR
22-Nov-16	NMR	NMR	NMR	NMR	NMR	NMR	2	NMR	8.57	NMR	NMR
28-Nov-16	< 0.0005	0.0008	< 0.001	< 0.0003	0.0006	< 0.001	2	< 0.002	7.92	NMR	NMR
05-Dec-16	< 0.0005	0.0013	< 0.001	< 0.0003	0.001	0.007	1	< 0.002	8.4	NMR	NMR
12-Dec-16	NMR	NMR	NMR	NMR	NMR	NMR	2	NMR	8.23	NMR	NMR
19-Dec-16	NMR	NMR	NMR	NMR	NMR	NMR	< 1	NMR	7.69	NMR	NMR
27-Dec-16	NMR	NMR	NMR	NMR	NMR	NMR	2	NMR	8.36	NMR	NMR

Table 8.6 - 2016 East Dike Seepage Discharge MMER Effluent Volume (ST-8/ST-MMER-3)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	488	485	459	454	447	555	551	580	549	524	452	440
2	488	468	459	456	445	560	566	579	543	524	453	437
3	487	468	458	455	441	589	576	651	542	524	453	439
4	487	467	456	454	443	520	571	785	545	524	453	439
5	485	467	457	454	441	521	570	683	561	524	453	439
6	490	467	524	454	443	534	572	637	540	524	452	438
7	488	463	457	453	443	556	577	622	535	509	452	437
8	484	466	456	448	310	573	572	607	591	497	452	431
9	383	466	456	453	443	587	583	595	543	490	453	437
10	267	465	455	453	441	592	589	589	545	489	452	436
11	482	465	457	452	442	573	596	580	545	486	453	435
12	480	463	455	451	443	592	599	582	541	480	452	434
13	479	456	454	451	442	580	598	579	527	479	443	433
14	479	464	454	446	440	560	384	576	571	475	452	433
15	478	463	456	449	442	551	414	581	517	471	451	428
16	478	463	454	450	441	551	781	584	516	469	447	432
17	476	461	453	449	442	561	783	593	512	466	448	431
18	477	461	328	449	446	576	624	595	510	461	447	427
19	476	461	457	449	438	612	612	576	512	462	446	430
20	476	461	456	450	438	605	607	471	567	462	446	430
21	475	462	454	451	448	577	602	743	530	461	446	429
22	476	461	456	450	551	555	593	578	512	461	445	427
23	475	461	455	451	640	556	612	581	510	461	444	427
24	473	460	187	448	512	568	603	581	515	459	443	425
25	473	461	0	450	459	561	607	577	524	459	443	425
26	472	469	0	446	447	553	598	575	524	455	443	423
27	472	459	285	448	564	547	590	563	524	457	443	423
28	471	456	456	449	710	546	586	568	524	455	441	422
29	463	459	456	448	685	548	581	561	524	454	440	421
30	470		452	448	662	554	584	556	524	454	440	418
31	469		456		507		579	549		450		419
Total (m³)	14,514	13,446	12,720	13,517	14,897	16,914	18,262	18,476	16,020	14,867	13,439	13,344

Table 8.7: 2016 EEM Monitoring

East Dike Discharge Effluent characterization	Date Units	18-Jan-16	14-Mar-16	6-Jun-16	28-Sep-16
Alkalinity	mg CaCO ₃ /L	24	28	25	29
Aluminium	mg/L	0.29	0.028	0.057	0.057
Ammonia nitrogen	mg N/L	0.13	0.4	0.06	0.07
Cadmium	mg/L	<0.00002	0.00004	<0.00002	0.0001
Conductivity	µs/cm	73.6	57.5	70.7	121
Hardness	mg CaCO ₃ /L	30	32	23	48
Iron	mg/L	0.04	0.03	0.11	0.06
Mercury	mg/L	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L	<0.0005	<0.0005	<0.0005	0.0006
Nitrate	mg N/L	0.05	0.08	0.73	0.55
Selenium	mg/L	<0.001	<0.001	<0.001	<0.001
Temperature	°C	12.3	3.6	15.8	10.8

East Dike Discharge - SPLE (Exposure Area) Water Quality Monitoring	Date Units	6-Apr-16	19-Jul-16	22-Aug-16	27-Sep-16
Alkalinity	mg CaCO ₃ /L	13	12	8	11
Aluminium	mg/L	<0.006	0.012	0.021	0.017
Ammonia nitrogen	mg N/L	0.05	0.04	<0.01	0.05
Arsenic	mg/L	0.0009	<0.0005	<0.0005	<0.0005
Cadmium	mg/L	<0.00002	<0.00002	<0.00002	<0.00002
Conductivity	µs/cm	55.1	27	49.9	54
Copper	mg/L	<0.0005	0.0005	<0.0005	0.0007
Cyanide	mg/L	<0.005	<0.001	<0.001	<0.001
Dissolved oxygen *	mg/L	9.4	NA	NA	NA1
Hardness	mg CaCO ₃ /L	13	11	8	13
Iron	mg/L	<0.01	0.02	<0.01	<0.01
Lead	mg/L	<0.0003	<0.0003	<0.0003	<0.0003
Mercury	mg/L	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L	<0.0005	<0.0005	<0.0005	<0.0005
Nickel	mg/L	<0.0005	<0.0005	<0.0005	<0.0005
Nitrate	mg N/L	0.04	0.01	0.04	<0.01
pH *	Units	7.78	7.38	7.71	7.39
Radium 226	Bq/L	NMR	NMR	NMR	NMR
Selenium	mg/L	<0.001	<0.001	<0.001	<0.001
Temperature *	(°C)	3.00	11.97	16.4	NA1
Total suspended solids	mg/L	<1	2	5	2
Zinc	mg/L	<0.001	<0.001	<0.001	<0.001

TPS (Reference Area) Water Quality Monitoring	Date Units	6-Apr-16	19-Jul-16	22-Aug-16	27-Sep-16
Alkalinity	mg CaCO ₃ /L	8	7	12	7
Aluminum	mg/L	<0.006	<0.006	<0.006	0.012
Ammonia nitrogen	mg N/L	0.03	0.01	0.01	0.08
Arsenic	mg/L	0.0006	<0.0005	<0.0005	<0.0005
Cadmium	mg/L	<0.00002	<0.00002	<0.00002	0.00003
Conductivity	µs/cm	41.3	20	36.7	27
Copper	mg/L	<0.0005	<0.0005	0.0005	<0.0005
Cyanide	mg/L	<0.005	<0.001	<0.001	<0.001
Dissolved oxygen *	mg/L	9.1	NA	NA	NA1
Hardness	mg CaCO ₃ /L	8	8	12	8
Iron	mg/L	<0.01	<0.01	0.01	<0.01
Lead	mg/L	<0.0003	<0.0003	<0.0003	<0.0003
Mercury	mg/L	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L	<0.0005	<0.0005	<0.0005	<0.0005
Nickel	mg/L	<0.0005	<0.0005	<0.0005	<0.0005
Nitrate	mg N/L	0.06	0.06	<0.01	0.03
pH *	Units	8.35	7.38	7.46	7.36
Radium 226	Bq/L	NMR	NMR	NMR	NMR
Selenium	mg/L	<0.001	<0.001	<0.001	<0.001
Temperature *	(°C)	2.9	7.47	15.9	NA1
Total suspended solids	mg/L	2	<1	4	8
Zinc	mg/L	<0.001	<0.001	<0.001	<0.001

Footnotes:

NMR: no measurement required

* Parameters measured in the field

NA : Probe broken

NA1: Technician omission

Table 8.10: 2016 Water Transfers around the Mine Site

Water Pumped From	North Portage Pit (ST-17)	South Portage Pit (ST-19)	Stormwater Management Pond	Goose Pit (ST-20)	Portage Rock Storage Facility (ST-16)*	Waste Extention Pool (WEP1) Collection Sytem	Waste Extention Pool (WEP2) Collection Sytem	Vault Pit (ST-23)	North Cell TSF	Saddle Dam 1 (ST-S-2)	Saddle Dam 3 (ST-32)	Central Dike Seepage (ST-S-5)
Water Pumped To	South Cell TSF	South Cell TSF	South Cell TSF	South Cell TSF	North Cell TSF	North Cell TSF	North Cell TSF	Vault Attenuation Pond	South Cell TSF	North Cell TSF	South Cell TSF	South Cell TSF
January	0	0	0	0	0	0	0	0	0	0	0	305,344
February	0	0	0	0	0	0	0	0	0	0	0	277,015
March	16,320	0	0	0	0	0	0	0	0	0	0	306,839
April	0	0	0	0	0	0	0	0	0	0	0	324,633
May	6,715	5,947	0	0	0	0	0	7,705	0	0	5,308	376,728
June	46,378	26,618	43,576	0	14,839	1,428	1,132	19,556	208,007	12,197	11,050	385,003
July	1,558	2,320	0	0	887	99	432	5,660	5,831	1,928	468	441,435
August	0	9,236	2,762	0	2,325	173	1,079	13,245	0	415	3,174	395,629
September	10,908	4,823	0	0	628	102	722	6,823	44,000	1,420	2,095	363,024
October	1,536	0	0	0	2,165	0	329	1,458	84,700	0	0	503,283
November	0	0	0	0	0	0	0	517	0	0	0	453,439
December	0	0	0	0	0	0	0	0	0	0	0	465,316
Total	83,415	48,944	46,338	0	20,844	1,802	3,694	54,964	342,538	15,960	22,095	4,597,688

*Do not include volume of water from WEP system.

Table 8.11: 2016 Vault Attenuation Pond Water Quality Monitoring (ST-25)

Date	Units	7-Jun-2016	18-Jul-2016	8-Aug-2016	5-Sep-2016	10-Oct-2016	30-Oct-2016
Field Parameters							
pH		7.48	7.36	7.45	7.80	7.19	7.7
Conductivity	µS/cm	112	102	182	241	443	596
Turbidity	NTU	46.90	28.9	4.17	1.65	2.71	3.27
Conventional Parameters							
Alkalinity	mg CaCO ₃ /L	25	41	39	32	48	102
Hardness	mg CaCO ₃ /L	39	91	134	108	141	227
TSS	mg/L	36	< 1	4	2	< 1	3
TDS	mg/L	74	171	252	172	247	377
Nutrients and Biological Indicators							
Ammonia (NH ₃)	mg N/L	< 0.01	0.01	0.03	< 0.01	< 0.01	0.03
Ammonia-nitrogen (NH ₃ -NH ₄)	mg N/L	1.28	0.01	2.51	0.29	1.14	1.97
Nitrate	mg N/L	0.63	3.57	6.72	4.46	0.96	0.18
Nitrite	mg N/L	0.05	0.09	0.18	0.03	0.03	0.04
Major Ions							
Chloride	mg/L	4.7	10.8	12	7.3	10.7	12.9
Fluoride	mg/L	0.06	0.11	0.13	0.11	0.17	0.24
Sulphate	mg/L	20.7	53.1	96.5	55.8	16.9	149
Cyanide							
Total Cyanide	mg/L	< 0.005	< 0.005	0.027	0.034	< 0.001	0.003
Total Metals							
Aluminum	mg/L	0.940	0.07	0.101	< 0.006	0.051	< 0.006
Antimony	mg/L						0.0008
Arsenic	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0023	< 0.0005
Boron	mg/L						0.02
Barium	mg/L	0.021	0.022	0.030	0.024	0.0392	0.0286
Beryllium	mg/L						< 0.0005
Cadmium	mg/L	0.00003	0.00003	0.00004	< 0.00002	< 0.00002	0.00007
Chromium	mg/L	< 0.0006	< 0.0006	< 0.0006	< 0.0006	< 0.0006	0.0019
Copper	mg/L	0.0026	0.002	0.0076	0.0017	0.0008	< 0.0005
Iron	mg/L	1.710	0.33	0.44	0.12	0.86	0.16
Lead	mg/L	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Lithium	mg/L						0.021
Manganese	mg/L	0.094	0.037	0.116	0.028	0.3089	0.56112
Mercury	mg/L	< 0.00001	0.01	< 0.0001	< 0.00001	< 0.00001	< 0.0001
Molybdenum	mg/L	0.0044	0.0110	0.0276	0.0106	0.0036	0.0103
Nickel	mg/L	0.0035	0.003	0.0093	< 0.0005	0.0045	0.0128
Selenium	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001
Strontium	mg/L						0.583
Silver	mg/L	< 0.0001	< 0.0001	< 0.0001	0.0004	< 0.0001	< 0.0001
Tin	mg/L						< 0.001
Titanium	mg/L						0.06
Thallium	mg/L	0.002	< 0.0008	< 0.0008	< 0.0008	< 0.0008	< 0.0008
Uranium	mg/L						0.005
Vanadium	mg/L						< 0.0005
Zinc	mg/L	0.003	0.011	0.005	< 0.001	0.007	< 0.001
Dissolved Metals							
Aluminum	mg/L						< 0.006
Arsenic	mg/L						< 0.0005
Barium	mg/L						0.0258
Cadmium	mg/L						0.00009
Copper	mg/L						< 0.0005
Iron	mg/L						0.01
Lead	mg/L						< 0.0003
Manganese	mg/L						0.5129
Mercury	mg/L						< 0.0001
Molybdenum	mg/L						0.0098
Nickel	mg/L						0.0119
Selenium	mg/L						< 0.001
Silver	mg/L						< 0.0001
Thallium	mg/L						< 0.0008
Zinc	mg/L						< 0.001

Table 8.12: 2016 Vault Attenuation Pond Discharge (ST-10)

Parameters	Units	Maximum Average Concentration	Maximum Allowable Grab Sample Concentration	Prior to discharge: 20-Jun-2016	18-Jul-2016	20-Jul-2016	25-Jul-2016	1-Aug-2016	8-Aug-2016	15-Aug-2016	22-Aug-2016	1-Sep-2016	5-Sep-2016	12-Sep-2016	20-Sep-2016	26-Sep-2016	3-Oct-2016	10-Oct-2016
Field Parameters																		
pH	pH Unit	6-9.0	6-9.0	6.91	7.63		7.5	7.85	7.35	7.46	7.36	7.55	7.49	6.99	6.71	6.68	7.71	7.34
Conductivity	µS/cm			198.6	170		173.8	178.2	199.8	194.2	261	244	256	180	201	179	385	232
Turbidity	NTU	15	15	13.73	1.59		2.17	4.08	5.05	5.83	8.79	2.77	3.14	3.41	12.2	8.3	9.95	7.84
Conventional Parameters																		
Total alkalinity	mg CaCO ₃ /L			25	23		23	23	24	23	28		27	27	28	30	33	35
Bicarbonate alkalinity	mg/L			25	23		23	23	24	23	28		27	27	18	30	33	35
Carbonate alkalinity	mg/L			< 2	< 2		< 2	< 2	< 2	< 2	< 2		< 2	< 2	< 2	< 2	33	< 2
Hardness	mg CaCO ₃ /L			68	67		68	77	73	80	114		87	72	72	78	89	66
DOC	mg/L			4.1	3.5		2.4	2.7	2.8	2.4	2.8		2.3	2.5	2.6	2.7	2.8	2.4
TOC	mg/L			4.6	3.5		2.6	3.5	2.8	2.8	3		2.9	3.2	0.2	5.3	3.6	4.3
TDS	mg/L	1400	1400	128	119		120	133	148	155	182		150	122	109	115	127	129
TSS	mg/L	15	30	11	2		6	3	6	1	5	4	4	3	14	11	10	2
Nutrients and Biological Indicators																		
Ammonia-nitrogen	mg N/L	20	40	1.62	0.63		0.69	0.78	0.75	0.76	1.14		0.63	0.42	0.41	0.31	0.8	0.65
Total Kjeldahl nitrogen	mg N/L			1.75	0.94		0.9	0.86	1.1	0.98	1.39		0.82	0.57	0.05	0.64	1.07	1.1
Nitrate	mg N/L	50	100	4.24	3.11		3.54	3.4	3.92	4.15	6.26		3.61	2.5	1.85	1.53	2.09	1.84
Nitrite	mg N/L			0.05	0.05		0.04	0.04	0.05	0.05	0.06		0.05	0.03	0.01	0.02	0.04	0.03
Ortho-phosphate	mg P/L			< 0.01	< 0.01		< 0.01	< 0.01	0.01	< 0.01	0.01		0.01	< 0.01	0.05	< 0.01	< 0.01	0.01
Total phosphorous	mg P/L	1.5	3.0	0.09	0.03		< 0.01	< 0.01	0.03	0.01	< 0.01		0.01	0.02	0.01	0.01	0.02	< 0.01
Reactive silica	mg/L			2.4	1.5		1.4	1.5	1.6	1.4	1.4		0.9	0.9	1	1	1.1	1.4
Major Ions																		
Chloride	mg/L	500	1000	5.6	5		4.9	5.9	5.8	6.5	8.5		6.8	5	6.6	5.3	5.9	5.8
Sulphate	mg/L			37.7	41		43	45	50	53	71		49	41	36	36	43	44
Cyanide																		
Total cyanide	mg/L			< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	0.011		0.039	0.001	0.001	0.001	0.008	0.005
Total Metal																		
Aluminum	mg/L	1.5	3.0	0.356	0.032		< 0.006	0.112	0.077	0.095	0.152		0.028	0.082	0.006	0.23	0.234	0.248
Antimony	mg/L			< 0.0001	0.0006		0.0006	0.0005	0.0007	0.0005	0.0014		0.0008	0.0006	0.0004	0.0043	< 0.0001	0.0019
Arsenic	mg/L	0.10	0.20	0.0009	< 0.0005		< 0.0005	< 0.0005	0.001	< 0.0005	0.0041		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Boron	mg/L			< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Barium	mg/L			0.03	0.02		0.01	0.02	0.02	0.03	0.03		0.03	0.02	0.02	0.02	0.01	0.01
Beryllium	mg/L			< 0.0005	< 0.0005		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cadmium	mg/L	0.002	0.004	< 0.0002	0.0004		< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0008		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Calcium	mg/L			19	19		20	22	22	23	32		25	21	21	22	25	18
Chromium	mg/L			< 0.0006	0.0077		0.0047	< 0.0006	< 0.0006	< 0.0006	< 0.0006		< 0.0006	< 0.0006	0.0017	< 0.0006	< 0.0006	< 0.0006
Copper	mg/L	0.1	0.2	0.0025	0.0025		0.002	0.0022	0.0057	0.0029	0.003		0.0018	0.0022	0.0023	0.002	0.0026	0.0029
Iron	mg/L			0.03	0.14		0.16	0.19	0.25	0.29	0.51		0.2	0.19	0.34	0.37	0.47	0.32
Lead	mg/L	0.1	0.2	< 0.0003	< 0.0003		< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003		< 0.0003	0.0058	< 0.0003	< 0.0003	0.0008	< 0.0003
Lithium	mg/L			< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Magnesium	mg/L			5.0	4.9		4.7	5.2	4.9	5.5	8.5		6.3	5.2	4.8	5.8	6.6	5.4
Manganese	mg/L			0.103	0.0553		0.037	0.034	0.0613	0.078	0.094		0.0525	0.043	0.0039	0.067	0.068	0.0686
Mercury	mg/L	0.004	0.008	< 0.0001	< 0.0001		< 0.0001	0.00041	< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Molybdenum	mg/L			0.0083	0.0056		0.0055	0.0056	0.0076	0.0093	0.0129		0.0093	0.0069	0.0047	0.0065	0.007	0.0065
Nickel	mg/L	0.2	0.4	0.0044	0.0046		0.0035	0.0034	0.0055	0.0048	0.0039		< 0.0005	0.0226	0.0037	0.0039	0.0045	0.0041
Potassium	mg/L			2.4	2.1		1.9	2.4	2.6	2.3	3.2		2.8	2.3	1.9	1.3	2.3	2.5
Selenium	mg/L			< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Sodium	mg/L			2.3	2.0		2.1	2.0	4.3	2.5	3.3		2.6	2.4	1.7	2.5	2.8	2.3
Strontium	mg/L			0.101	0.098		0.144	0.119	0.132	0.133	0.162		0.14	0.107	0.11	0.142	0.119	0.086
Tin	mg/L			< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Titanium	mg/L			0.02	0.01		0.01	0.01	0.02	0.01	0.02		0.02	0.02	0.01	0.02	0.02	0.01
Thallium	mg/L			< 0.008	< 0.008		< 0.008	< 0.008	< 0.008	< 0.008	< 0.008		< 0.008	< 0.008	< 0.008	< 0.008	< 0.008	< 0.008
Uranium	mg/L			0.001	0.001		0.001	0.001	0.001	0.001	0.002		0.002	0.001	0.001	0.002	0.002	0.002
Vanadium	mg/L			< 0.0005	< 0.0005		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0045
Zinc	mg/L	0.2	0.4	0.005	< 0.001		< 0.001	< 0.001	< 0.001	0.002	< 0.001		< 0.001	< 0.001	0.004	0.002	0.002	0.003

Parameters	Units	Maximum Average Concentration	Maximum Allowable Grab Sample Concentration	Prior to discharge: 20-Jun-2016	18-Jul-2016	20-Jul-2016	25-Jul-2016	1-Aug-2016	8-Aug-2016	15-Aug-2016	22-Aug-2016	1-Sep-2016	5-Sep-2016	12-Sep-2016	20-Sep-2016	26-Sep-2016	3-Oct-2016	10-Oct-2016
Dissolved Metals																		
Aluminum	mg/L	1.0	2.0	0.023	< 0.006		< 0.006	0.016	< 0.006	0.009	< 0.006		< 0.006	< 0.006	< 0.006	< 0.006	0.011	< 0.006
Antimony	mg/L			< 0.0001	0.0005		< 0.0005	0.0005	0.0007	0.0003	0.0014		0.0008	0.0006	0.0003	0.0003	< 0.0001	0.0009
Arsenic	mg/L			0.0009	< 0.0005		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Boron	mg/L			< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Barium	mg/L			0.03	0.02		0.007	0.019	0.022	0.0301	0.032		0.0234	0.0155	0.01	0.012	0.014	0.015
Beryllium	mg/L			< 0.0005	< 0.0005		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cadmium	mg/L			< 0.00002	0.00003		< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003		< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Chromium	mg/L			< 0.0006	0.0023		< 0.0006	< 0.0006	< 0.0006	< 0.0006	< 0.0006		< 0.0006	< 0.0006	0.0014	< 0.0006	< 0.0006	< 0.0006
Copper	mg/L			0.0025	0.0017		0.0022	0.0013	0.0014	0.0023	0.0019		0.0011	0.0014	0.0011	0.0015	0.0025	0.0014
Iron	mg/L			0.03	0.02		0.12	0.02	0.01	0.01	0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Lead	mg/L			< 0.0003	< 0.0003		< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003		< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Lithium	mg/L			< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Manganese	mg/L			0.099	0.033		0.0337	0.0275	0.053	0.078	0.080		0.053	0.029	0.034	0.042	0.0571	0.064
Mercury	mg/L			< 0.00001	< 0.00001		< 0.00001	0.00019	< 0.0001	< 0.00001	< 0.00001		< 0.00001	0.00003	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L			0.0083	0.0062		0.0055	0.0055	0.0075	0.0082	0.0123		0.009	0.0068	0.0047	0.005	0.0076	0.0067
Nickel	mg/L			0.0035	0.0039		0.0033	0.0028	0.003	0.0046	0.003		< 0.0005	< 0.0005	0.003	0.0028	0.0038	0.0034
Selenium	mg/L			0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002
Strontium	mg/L			0.107	0.099		0.11	0.11	0.129	0.131	0.156		0.14	0.11	0.096	0.104	0.122	0.061
Tin	mg/L			< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Titanium	mg/L			0.01	0.01		0.02	0.01	0.01	0.01	0.01		0.01	0.01	< 0.01	0.01	< 0.01	0.01
Thallium	mg/L			< 0.0008	< 0.0008		< 0.0008	< 0.0008	< 0.0008	< 0.0008	< 0.0008		< 0.0008	< 0.0008	< 0.0008	< 0.0008	< 0.0008	< 0.0008
Uranium	mg/L			0.001	0.001		0.001	0.001	0.001	0.001	0.002		0.001	0.001	< 0.001	0.001	0.002	0.002
Vanadium	mg/L			< 0.0005	< 0.0005		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Zinc	mg/L			< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	0.002	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.002
Hydrocarbons																		
TPH	mg/L			< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	0.4	< 0.1
Toxicity																		
Daphnia Magna	%v/v			> 100		> 100						> 100					> 100	> 100
Rainbow trout	%v/v			> 100		> 100						> 100					> 100	> 100

Table 8.13: 2016 East Dike Seepage Discharge (ST-8)

Date	Units	Maximum Average Concentration	Maximum Allowable Grab Sample Concentration	5-Jan-2016	1-Feb-2016	1-Mar-2016	5-Apr-2016	26-Apr-2016	3-May-2016	13-Jun-2016	18-Jul-2016	8-Aug-2016	28-Sep-2016	10-Oct-2016	28-Nov-2016	5-Dec-2016
pH*				8.50	6.80	7.58	7.94	7.91	8.93	7.66	7.96	7.75	7.69	7.41	7.95	8.40
Turbidity*	NTU			4.75	0.68	1.21	1.10	0.90	1.16	6.20	4.07	1.35	1.50	1.68	7.92	1.12
Aluminum	mg/L			0.024	0.024	0.088	0.026		0.059	0.060	0.085	0.030	0.059	0.031	0.034	0.038
Arsenic	mg/L			< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0017	0.0008	< 0.0005	0.0012	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Copper	mg/L			0.0005	< 0.0005	0.0006	0.0022	0.0039	< 0.0005	0.0030	0.0010	0.0008	0.0012	0.0008	0.0008	0.0013
Total Cyanide	mg/L			< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	< 0.005	0.014	< 0.001	< 0.001	< 0.001
TSS	mg/L	15	30	1	10	1	< 1	2	5	< 1	6	< 1	7	< 1	2	1
Nickel	mg/L			0.0005	< 0.0005	0.0006	< 0.0005	0.0011	< 0.0005	0.0017	0.0026	0.0022	0.0024	0.0008	0.0006	0.0010
Lead	mg/L			< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Radium 226	mg/L			< 0.002	0.004	0.002	NA**	< 0.002	< 0.002	< 0.002	NA**	< 0.002	0.004	0.002	< 0.002	< 0.002
Sulphate	mg/L			4.4	6.7	3.5	5.3	7.0	7.5	8.1	19.2	15.7	21.1	12.9	0.9	0.6
Zinc	mg/L			0.003	0.006	0.001	< 0.001	0.001	< 0.001	0.004	< 0.001	< 0.001	0.002	0.001	< 0.001	0.007

Footnotes:

*Measured in the field by Environmental Technicians.

** Parameter was not analysed. When Agnico noticed, it was too late to collect another sample for the month.

Table 8.14: 2016 Tailings Reclaim Pond Water Quality Monitoring (ST-21)

Date	Units	5-Jan-2016	1-Feb-2016	8-Mar-2016	5-Apr-2016	3-May-2016	16-Jun-2016	18-Jul-2016	2-Aug-2016	6-Sep-2016	3 oct 016	8-Nov-2016	5-Dec-2016
Field Parameters													
pH		8.50	8.20	7.40	8.60	8.78	8.50	7.14	8.07	8.51	7.93	8.13	7.76
Turbidity	NTU	4.75	16.4	13.65	10.88	13.2	15.1	19.5	2.56	18.13	6.98	7.81	4.51
Conventional Parameters													
Alkalinity	mg CaCO3/L	141	126	132	129	117	93	126	133	132	122	120	127
Hardness	mg CaCO3/L	1303	1567	1497	1561	1237	916	1073	1273	1210	1301	1272	962
TDS	mg/L	2992	3136	3386	3030	3611	2017	2452	2430	2914	2580	2542	2968
TSS	mg/L	16	35	39	23	26	52	18	5	5	8	13	8
Nutrients and Biological Indicators													
Ammonia (NH3)	mg N/L	2.61	4.83	2.60	2.94	2.79	0.01	1.00	0.93	1.36	0.99	1.73	1.71
Ammonia-Nitrogen	mg N/L	41.3	44.1	50.0	49.7	51.4	38.6	32.7	31.3	41.6	38.9	43.4	44.8
Nitrate	mg N/L	10.7	6.3	12.5	10.7	10.5	5.79	5.55	5.0	5.3	4.3	4.9	4.89
Nitrite	mg N/L	0.22	0.23	0.24	0.24	0.22	0.1	0.14	0.12	0.22	0.18	0.19	0.21
Major Ions													
Chloride	mg/L	548	630	599	608	614	348	344	372	364	332	407	417
Fluoride	mg/L	0.34	0.27	0.36	0.4	2.79	0.35	0.45	0.39	0.41	0.39	0.42	0.43
Sulphate	mg SO4/L	2274	2052	2060	2142	2161	1511	1683	1730	1926	1768	1945	2018
Cyanide													
Total cyanide	mg/L	10.600	9.510	10.790	6.820	5.770	0.977	0.080	0.094	0.072	0.161	0.586	1.660
CN Free	mg/L		0.009	0.008	0.022	0.008	0.045	0.018		0.023	0.087	0.069	0.019
Cyanide WAD	mg/L	0.4770	0.4050	0.3920	0.3720	5.4100	0.0560	0.0330	0.0450	0.0410	0.1090	0.0930	0.2120
Total Metals													
Aluminum	mg/L	0.033	0.142	0.247	0.147	0.249	0.006	0.263	0.039	0.110	0.210	0.192	0.096
Arsenic	mg/L	0.0162	0.0149	0.0138	0.0280	0.0338	0.0005	0.0236	0.0140	0.0177	< 0.0005	0.0083	0.0040
Barium	mg/L	0.0908	0.1305	0.1359	0.1237	0.1207	0.0005	0.0846	0.0870	0.0963	0.0741	0.0901	0.0852
Cadmium	mg/L	0.00138	0.00102	< 0.00002	0.00127	0.00080	0.00002	0.00195	0.00141	0.00103	0.00154	0.00267	0.00196
Chromium	mg/L	0.0025	0.0023	< 0.0006	0.0021	0.0027	0.0006	< 0.0006	< 0.0006	0.0011	< 0.0006	0.0015	< 0.0006
Copper	mg/L	0.6098	0.5084	1.8820	1.5010	0.0821	0.2230	0.0856	0.0694	0.1089	0.2631	0.0229	0.2058
Iron	mg/L	0.44	0.89	2.67	2.64	1.46	0.60	0.79	0.16	0.17	0.44	0.89	1.01
Mercury	mg/L	0.00036	0.00027	0.00021	0.00030	0.00056	0.00001	0.00044	0.00042	0.00017	0.00032	0.00065	0.00049
Lead	mg/L	< 0.0003	< 0.0003	< 0.0003	0.0015	< 0.0003	0.0003	< 0.0003	0.0037	< 0.0003	< 0.0003	0.0006	< 0.0003
Manganese	mg/L	0.0802	0.0813	0.1139	0.1951	0.1369	0.0005	0.4181	0.3548	0.3168	0.3681	0.1591	0.2706
Molybdenum	mg/L	0.3369	0.3999	0.4821	0.4636	0.5039	0.0005	0.4537	0.4778	0.5184	0.4646	0.4495	0.5367
Nickel	mg/L	0.1396	0.0659	0.0553	0.0408	0.0210	0.0005	0.0531	0.0491	0.0312	0.0572	0.0588	0.0566
Selenium	mg/L	0.088	0.097	0.118	0.118	0.096	0.001	0.062	0.065	0.055	0.052	0.064	0.060
Silver	mg/L	0.0002	0.0007	0.0003	0.0041	0.0007	0.0017	0.0019	0.0005	< 0.0001	0.0001	< 0.0001	< 0.0001
Thallium	mg/L	< 0.0050	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0020	< 0.0008	< 0.0008	< 0.0008	< 0.0008	< 0.0008	< 0.0008
Zinc	mg/L	0.007	0.002	0.001	0.004	0.007	0.001	0.001	0.005	0.001	< 0.001	0.006	0.006

Table 8.15: 2016 North Portage Pit Sump Water Quality Monitoring (ST-17)

Date	Units	7-Jun-2016	20-Jun-2016	18-Jul-2016	3-Aug-2016	6-Sep-2016	3-Oct-2016	8-Nov-2016
Field Parameters								
pH		8.08	8.13	8.03	7.91		7.34	7.93
Turbidity	NTU	49.2	23.8	18.3	10.5		4.5	212.0
Conventional Parameters								
Alkalinity	mg CaCO ₃ /L	45	79	79	80	84	86	227
Hardness	mg CaCO ₃ /L	127	264	222	259	250	329	690
TDS	mg/L	245	473	436	473	510	528	964
TSS	mg/L	41	23	5	69	< 1	5	228
Nutrients and Biological Indicators								
Ammonia (NH ₃)	mg N/L	0.05	0.09	0.09	0.09	0.07	0.05	0.20
Ammonia nitrogen	mg N/L	2.0	3.9	3.7	3.4	3.0	2.6	7.5
Nitrate	mg N/L	5.57	13.10	12.4	12.80	13.6	14.1	17.2
Nitrite	mg N/L	0.11	0.15	0.05	0.05	0.04	0.03	0.09
Major Ions								
Chloride	mg/L	11.0	19.0	18.6	19.2	19.9	20.3	57.7
Fluoride	mg/L	0.23	0.33	0.36	0.36	0.36	0.37	0.99
Sulphate	mg SO ₄ /L	117	197	193	205	235.0	244	432
Cyanide								
Total cyanide	mg/L	0.016	0.013		0.011	0.018	0.004	0.056
Free cyanide	mg/L	0.007	0.011			< 0.005	0.006	0.005
Total Metals								
Aluminum	mg/L	0.794	0.625	0.148	0.332	0.034	0.064	6.530
Arsenic	mg/L	0.0002	0.0132	0.0102	0.0188	0.0148	0.0077	0.0603
Barium	mg/L	0.009	0.014	0.013	0.015	0.018	0.015	0.056
Cadmium	mg/L	0.00012	0.00039	0.00035	0.00031	0.00024	0.00018	0.00090
Chromium	mg/L	0.001	< 0.006	0.002	0.005	0.001	< 0.0006	0.2155
Copper	mg/L	0.0008	0.0120	0.0010	0.0011	0.0008	0.0007	0.0118
Iron	mg/L	1.71	1.60	0.32	0.92	0.04	0.15	22.50
Lead	mg/L	< 0.0003	< 0.0003	< 0.0003	< 0.0003	0.0038	< 0.0003	0.0082
Manganese	mg/L	0.0760	0.1167	0.0934	0.1311	0.1346	0.1484	0.8373
Mercury	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00010	< 0.00001	< 0.00001	0.00005
Molybdenum	mg/L	0.0383	0.1302	0.1116	0.1280	0.1365	0.11	0.16
Nickel	mg/L	0.01	0.02	0.02	0.03	0.03	0.04	0.13
Selenium	mg/L	< 0.001	< 0.001	< 0.001	< 0.000	0.001	0.001	0.004
Silver	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Thallium	mg/L	< 0.0020	< 0.0020	< 0.0008	< 0.0008	< 0.0008	< 0.0008	< 0.0008
Zinc	mg/L	< 0.001	< 0.001	0.001	< 0.001	0.001	0.001	0.028

Date	Units	7-Jun-2016	20-Jun-2016	18-Jul-2016	3-Aug-2016	6-Sep-2016	3-Oct-2016	8-Nov-2016
Dissolved Metals								
Aluminum	mg/L				< 0.006	< 0.006	0.014	0.011
Arsenic	mg/L				0.017	0.0005	0.0080	0.0310
Barium	mg/L				0.013	0.02	0.02	0.037
Cadmium	mg/L				0.00029	0.00024	0.00006	0.00088
Copper	mg/L				0.0008	0.0007	0.0006	0.0029
Iron	mg/L				< 0.01	< 0.01	< 0.01	0.01
Manganese	mg/L				0.105	0.128	0.142	0.174
Mercury	mg/L				< 0.00010	< 0.00001	< 0.00001	0.00006
Molybdenum	mg/L				0.121	0.130	0.113	0.163
Nickel	mg/L				0.024	0.026	0.033	0.047
Lead	mg/L				< 0.0003	< 0.0003	< 0.0003	0.0003
Selenium	mg/L				0.001	0.001	0.002	0.004
Silver	mg/L				< 0.0001	< 0.0001	< 0.0001	< 0.0001
Thallium	mg/L				< 0.001	< 0.001	< 0.001	< 0.001
Zinc	mg/L				< 0.001	0.001	0.001	0.006

Table 8.16: 2016 South Portage Pit Sump Water Quality Monitoring (ST-19)

Date	Units	13-Jun-2016	17-Jul-2016	3-Aug-2016
Field Parameters				
pH		7.95		7.45
Turbidity	NTU	38.5		14.9
Conventional Parameters				
Alkalinity	mg CaCO ₃ /L	65	84	42
Hardness	mg CaCO ₃ /L	130	267	422
TSS	mg/L	14	4	14
TDS	mg/L	333	607	747
Nutrients and Biological Indicators				
Ammonia (NH ₃)	mg N/L	0.04	0.19	0.02
Ammonia nitrogen (NH ₃ -NH ₄)	mg N/L	4.06	7.19	4.67
Nitrate	mg N/L	9.8	1.28	2.0
Nitrite	mg N/L	0.15	0.02	0.28
Major Ions				
Chloride	mg/L	33	29	29.1
Fluoride	mg/L	0.38	0.69	0.45
Sulphate	mg SO ₄ /L	77	229	429.0
Total Metals				
Arsenic	mg/L	< 0.0005	0.0053	< 0.0005
Aluminium	mg/L	0.2960	0.0840	0.1360
Barium	mg/L	0.0080	0.0078	0.0173
Cadmium	mg/L	< 0.00002	0.00041	0.00030
Chromium	mg/L	0.0064	< 0.0006	0.0013
Copper	mg/L	0.0022	0.0015	0.0019
Iron	mg/L	0.82	0.24	3.55
Lead	mg/L	< 0.0003	< 0.0003	< 0.0003
Manganese	mg/L	0.0474	0.0744	0.6503
Mercury	mg/L	0.00012	0.00007	< 0.00010
Molybdenum	mg/L	0.0121	0.0906	0.0966
Nickel	mg/L	0.0072	0.0179	0.0945
Selenium	mg/L	< 0.0010	0.0020	0.0030
Silver	mg/L	< 0.0001	< 0.0001	< 0.0001
Thallium	mg/L	< 0.0020	< 0.0008	< 0.0008
Zinc	mg/L	0.004	0.001	0.007

Date	Units	13-Jun-2016	17-Jul-2016	3-Aug-2016
Dissolved Metals				
Aluminum	mg/L			< 0.006
Arsenic	mg/L			< 0.0005
Barium	mg/L			0.02
Cadmium	mg/L			0.00024
Copper	mg/L			0.001
Iron	mg/L			0.02
Manganese	mg/L			0.5854
Mercury	mg/L			< 0.00010
Molybdenum	mg/L			0.087
Nickel	mg/L			0.007
Lead	mg/L			< 0.0003
Selenium	mg/L			0.002
Silver	mg/L			< 0.0001
Thallium	mg/L			< 0.001
Zinc	mg/L			0.004

Table 8.17: 2017 Goose Island Pit Lake Water Quality Monitoring (ST-20)

Date	Units	24-Jul-16	9-Aug-16	14-Sep-16	10-Oct-16
Field Parameters					
pH		7.81	8.10	7.23	7.90
Conductivity	µS/cm	77.00	17.05	8.00	10.80
Turbidity	NTU	551	624	776	607
Conventional Parameters					
Alkalinity	mg CaCO ₃ /L	80	80	82	83
Bicarbonate alkalinity	mg CaCO ₃ /L	80	80	82	83
Carbonate alkalinity	mg CaCO ₃ /L	< 2	< 2	< 2	< 2
Hardness	mg CaCO ₃ /L	190	154	165	183
TDS	mg/L	388	394	378	399
TSS	mg/L	29	6	8	6
TOC	mg/L	2	1	2	1
DOC	mg/L	< 0.2	< 0.2	< 0.2	< 0.2
Nutrients and Biological Indicators					
Ammonia nitrogen (NH ₃ -NH ₄)	mg N/L	4.40	3.98	3.17	3.04
Total Kjeldahl Nitrogen	mg N/L	3.87	3.75	3.18	2.97
Nitrate	mg N/L	2.57	3.01	2.61	3.50
Nitrite	mg N/L	0.58	0.36	0.05	0.05
Total Phosphorus	mg P/L	0.03	0.03	0.02	0.01
Ortho-phosphate	mg P/L	0.11	0.03	0.01	0.02
Major Ions					
Calcium	mg/L	48.0	41.2	42.7	47.8
Potassium	mg/L	9.70	8.51	10.90	10.80
Magnesium	mg/L	17.2	12.6	14.4	15.5
Sodium	mg/L	36.6	34.6	38.4	38.6
Chloride	mg/L	25.9	24.9	22.7	24.8
Sulphate	mg SO ₄ /L	151	142	144	147
Reactive Silica	mg/L	5.0	5.3	5.2	5.6
Cyanide					
Total cyanide	mg/L	0.010	< 0.005	< 0.001	0.003
Free cyanide	mg/L	0.006	< 0.005	< 0.005	< 0.005

Date	Units	24-Jul-16	9-Aug-16	14-Sep-16	10-Oct-16
Total Metals					
Aluminum	mg/L	1.110	0.240	0.085	0.164
Antimony	mg/L	0.002	0.002	0.001	0.002
Arsenic	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Barium	mg/L	0.054	0.053	0.043	0.043
Boron	mg/L	0.11	< 0.01	< 0.01	0.10
Beryllium	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	mg/L	0.00005	< 0.00002	< 0.00002	< 0.00002
Chromium	mg/L	0.0049	0.0072	< 0.0006	0.0013
Copper	mg/L	0.0034	0.0018	0.0016	0.0016
Iron	mg/L	2.33	0.63	0.16	0.27
Lead	mg/L	0.0015	< 0.0003	< 0.0003	< 0.0003
Lithium	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese	mg/L	0.176	0.167	0.118	0.121
Mercury	mg/L	0.00051	0.00007	0.00004	< 0.00001
Molybdenum	mg/L	0.023	0.028	0.024	0.022
Nickel	mg/L	0.0121	0.0111	0.0139	0.0113
Selenium	mg/L	0.001	0.001	0.001	< 0.001
Strontium	mg/L	0.29	0.28	0.28	0.25
Tin	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Titanium	mg/L	0.10	0.05	0.03	0.04
Thallium	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Uranium	mg/L	0.008	0.009	0.008	0.010
Vanadium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Zinc	mg/L	0.008	0.001	0.001	0.002

Date	Units	24-Jul-16	9-Aug-16	14-Sep-16	10-Oct-16
Dissolved Metals					
Aluminum	mg/L	< 0.006	< 0.006	< 0.006	< 0.006
Arsenic	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Antimony	mg/L	0.002	0.002	0.001	0.002
Barium	mg/L	0.05	0.05	0.04	0.04
Boron	mg/L	0.09	< 0.01	< 0.01	0.09
Beryllium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cadmium	mg/L	0.00006	0.00003	< 0.00002	< 0.00002
Chromium	mg/L	0.0029	0.0023	< 0.0006	0.0021
Copper	mg/L	0.0007	0.0007	0.0005	< 0.0005
Iron	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Lead	mg/L	0.0011	< 0.0003	< 0.0003	< 0.0003
Lithium	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Manganese	mg/L	0.1336	0.1500	0.1046	0.1105
Mercury	mg/L	0.00036	0.00006	0.00001	< 0.00001
Molybdenum	mg/L	0.0219	0.0237	0.0236	0.0214
Nickel	mg/L	0.0085	0.0096	0.0129	0.0098
Selenium	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Strontium	mg/L	0.299	0.285	0.249	0.293
Thallium	mg/L	< 0.0008	< 0.0008	< 0.0008	< 0.0008
Tin	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Titanium	mg/L	0.03	0.04	0.02	0.03
Uranium	mg/L	0.008	0.009	0.008	0.008
Vanadium	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Zinc	mg/L	0.001	< 0.001	< 0.001	< 0.001

Table 8.18: 2016 Goose Island Pit Sump Water Quality Monitoring (ST-20)

Date	Units	7-Jun-16	18-Jul-16	8-Aug-16	11-Oct-16
Field Parameters					
pH		7.75	8.15	7.28	7.74
Turbidity	NTU	70.8	7.0	9.8	7.4
Conventional Parameters					
Alkalinity	mg CaCO ₃ /L	23	52	53	60
Hardness	mg CaCO ₃ /L	50	145	134	179
TDS	mg/L	83	277	281	312
TSS	mg/L	36	10	6	21
Nutrients and Biological Indicators					
Ammonia	mg N/L	< 0.01	< 0.01	< 0.01	< 0.01
Ammonia nitrogen (NH ₃ -NH ₄)	mg N/L	0.28	0.03	0.06	0.03
Nitrate	mg N/L	0.90	4.43	5.0	4.5
Nitrite	mg N/L	0.02	0.03	0.02	0.02
Major Ions					
Chloride	mg/L	3.8	15.1	15.7	18.8
Fluoride	mg/L	0.12	0.41	0.40	0.44
Sulphate	mg SO ₄ /L	25.0	97.8	100.0	114
Cyanide					
Total cyanide	mg/L	< 0.005	< 0.005	< 0.005	0.001
Total Metals					
Aluminum	mg/L	1.260	0.114	0.084	0.09
Arsenic	mg/L	< 0.0005	0.0010	< 0.0005	< 0.0005
Barium	mg/L	0.012	0.024	0.021	0.025
Cadmium	mg/L	< 0.00002	0.00008	< 0.00002	0.00007
Chromium	mg/L	0.0101	0.0006	< 0.0006	0.0018
Copper	mg/L	0.0025	0.0047	0.0027	0.0021
Iron	mg/L	2.17	0.16	0.18	0.15
Lead	mg/L	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Manganese	mg/L	0.1095	0.0894	0.0502	0.0241
Mercury	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	0.0026	0.0081	0.0080	0.008
Nickel	mg/L	0.0113	0.0424	0.0390	0.0673
Selenium	mg/L	< 0.001	0.001	0.001	< 0.001
Silver	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Thallium	mg/L	0.0020	0.0008	0.0008	0.001
Zinc	mg/L	0.007	< 0.001	< 0.001	0.003

Date	Units	7-Jun-16	18-Jul-16	8-Aug-16	11-Oct-16
Dissolved Metals					
Aluminum	mg/L	< 0.006	< 0.006	< 0.006	< 0.006
Arsenic	mg/L	0.0005	0.001	0.0005	0.0005
Barium	mg/L	0.0012	0.0214	0.0185	0.0235
Cadmium	mg/L	< 0.00002	0.00002	< 0.00002	< 0.00002
Copper	mg/L	0.0005	0.0009	0.0019	< 0.0005
Iron	mg/L	< 0.01	< 0.010	< 0.01	< 0.01
Manganese	mg/L	0.08	0.06	0.03	0.02
Mercury	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	0.0022	0.0085	0.0073	0.0077
Nickel	mg/L	0.0045	0.0405	0.0332	0.0626
Lead	mg/L	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Selenium	mg/L	< 0.001	0.001	0.001	< 0.001
Silver	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Thallium	mg/L	< 0.002	< 0.001	< 0.001	< 0.001
Zinc	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Table 8.19: 2016 Vault Pit Sump Water Quality Monitoring (ST-23)

Date	Units	20-Jun-2016	9-Aug-2016	5-Sep-2016	15-Nov-2016
Field Parameters					
pH		8.28	7.3	7.82	7.64
Conductivity	us/m	645	805	1022	675
Turbidity	NTU	22.8	9.83	9.96	5.7
Conventional Parameters					
Alkalinity	mg CaCO ₃ /L	88	84	91	116
Hardness	mg CaCO ₃ /L	250	315	504	260
TDS	mg/L	425	522	723	446
TSS	mg/L	24	6	6	16
Nutrients and Biological Indicators					
Ammonia (NH ₃)	mg N/L	0.13	0.13	0.14	0.05
Ammonia-nitrogen (NH ₃ -NH ₄)	mg N/L	4.06	6.6	6.94	2.57
Nitrate	mg N/L	12.80	24.10	41.60	0.91
Nitrite	mg N/L	0.24	0.31	0.48	0.05
Major Ions					
Chloride	mg/L	44.8	8.6	19.5	44.4
Fluoride	mg/L		0.18	0.19	0.2
Sulphate	mg SO ₄ /L	98	161	159	158
Cyanide					
Total cyanide	mg/L	0.044	0.137	0.083	0.046
Free cyanide	mg/L			0.019	0.014
Total Metals					
Aluminium	mg/L	0.547	0.038	0.088	0.181
Arsenic	mg/L	0.0056	< 0.0005	< 0.0005	0.0042
Barium	mg/L	0.0201	0.042	0.0472	0.018
Cadmium	mg/L	0.00023	0.00022	0.0002	0.00008
Copper	mg/L	0.0012	0.0124	0.0012	< 0.0005
Chromium	mg/L	0.0008	0.0030	< 0.0006	0.0007
Iron	mg/L	1.30	0.38	0.35	0.57
Manganese	mg/L	0.0489	0.1769	0.1145	0.2430
Mercury	mg/L	< 0.00001	< 0.00010	< 0.00001	< 0.00001
Molybdenum	mg/L	0.0838	0.0635	0.0964	0.0222
Nickel	mg/L	0.0041	0.0093	< 0.0005	0.0135
Lead	mg/L	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Selenium	mg/L	0.003	0.003	0.009	0.001
Thallium	mg/L	< 0.002	< 0.0008	< 0.0008	< 0.0008
Zinc	mg/L	< 0.001	< 0.001	0.001	0.001

Date	Units	20-Jun-2016	9-Aug-2016	5-Sep-2016	15-Nov-2016
Dissolved Metals					
Aluminum	mg/L	0.037	< 0.006	< 0.006	< 0.006
Arsenic	mg/L	0.0058	< 0.0005	< 0.0005	0.0027
Barium	mg/L	0.0198	0.0394	0.0452	0.0178
Cadmium	mg/L	0.00015	0.00022	0.00007	0.00008
Copper	mg/L	0.0010	0.0075	0.0006	< 0.0005
Iron	mg/L	0.01	0.07	0.03	0.03
Lead	mg/L	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Manganese	mg/L	0.037	0.170	0.115	0.237
Mercury	mg/L	< 0.00001	< 0.00010	< 0.00001	0.00001
Molybdenum	mg/L	0.0874	0.0641	0.0911	0.02
Nickel	mg/L	0.0031	0.0093	< 0.0005	0.01
Selenium	mg/L	0.0030	0.0030	0.0090	< 0.001
Silver	mg/L		< 0.0001	0.0003	< 0.0001
Thallium	mg/L	< 0.0020	< 0.0008	< 0.0008	< 0.0008
Zinc	mg/L	< 0.0010	0.001	< 0.001	0.001

Table 8.20: 2016 ST-16 Water Quality Monitoring

Date	Units	17-Jul-16	02-Aug-16	13-Sep-16	04-Oct-16
Field Parameters					
pH		7.64	7.55	7.08	7.56
Conductivity	µmhos/cm	387	422	492	480
Turbidity	NTU	1.97	4.05	2.01	7.02
Dissolved oxygen	mg/L	10	NA	NA	8.9
Temperature	°C	NA	NA	NA	11.02
Conventional Parameters					
TDS	mg/L	292	306	350	397
TSS	mg/L	2	1	3	29
Alkalinity	mg CaCO ₃ /L	63	70	88	74
Hardness	mg CaCO ₃ /L	147	155	204	251
Colour	colour	29	27	24	13
D.O.C	mg/L	7.7	7.1	6.2	4.5
T.O.C	mg/L	9.5	9.6	7.3	6.7
Nutrient and Biological Indicators					
Ammonia (NH ₃)	mg N/L	0.01	<0.01	<0.01	<0.01
Ammonia nitrogen (NH ₃ -NH ₄)	mg N/L	0.60	0.18	0.20	0.13
Nitrate	mg N/L	0.66	6.42	6.98	12.6
Nitrite	mg N/L	0.01	0.08	0.03	0.05
Kjeldahl nitrogen	mg N/L	1.35	1.07	1.1	0.94
Ortho-phosphate (O-PO ₄)	mg P/L	<0.01	0.06	0.01	<0.01
Chlorophyll A	µg / L	<0.13	0.62	0.3	0.59
Major Ions					
Bromides	mg/L	0.08	0.05	0.14	<0.01
Chloride	mg/L	7.4	8.0	9.8	10.2
Fluoride	mg/L	0.22	0.2	0.18	0.2
Calcium	mg/L	NA	NA	47.9	58.7
Sodium	mg/L	NA	NA	23.3	20.8
Sulphate	mg/L	105	123	131	186
Thiosulfates (S ₂ O ₃)	mg/L	<0.02	<0.02	<0.02	<0.02
Thiocyanates (SNC)	mg/L	<0.05	0.54	<0.05	<0.05
Cyanide					
CN total	mg/L	<0.005	<0.005	0.002	0.001
CN Free (SGS)	mg/L	NA	< 0.005	< 0.005	<0.005
CN WAD	mg/L	<0.005	<0.005	<0.001	<0.001

Date	Units	17-Jul-16	02-Aug-16	13-Sep-16	04-Oct-16
Dissolved Metals					
Aluminium	mg/L	<0.006	<0.006	<0.006	<0.006
Antimony	mg/L	0.0004	0.0003	<0.0001	<0.0001
Arsenic	mg/L	0.0057	<0.0005	<0.0005	<0.0005
Boron	mg/L	0.002	<0.01	<0.01	0.02
Barium	mg/L	0.0181	0.0174	0.0163	0.019
Beryllium	mg/L	<0.0005	<0.0005	<0.0005	<0.0005
Cadmium	mg/L	0.00006	<0.00002	<0.00002	<0.00002
Chromium	mg/L	<0.0006	<0.0006	<0.0006	<0.0006
Cobalt	mg/L	0.0027	0.0023	0.0024	0.0025
Copper	mg/L	0.0294	0.0253	0.0179	0.0107
Iron	mg/L	0.34	0.21	0.25	0.05
Lead	mg/L	<0.0003	<0.0003	<0.0003	0.0004
Lithium	mg/L	<0.005	<0.005	<0.005	<0.005
Manganese	mg/L	0.3897	0.3162	0.3611	0.3706
Magnesium	mg/L	14.7	14.6	NA	NA
Mercury	mg/L	<0.00001	<0.0001	<0.00001	<0.00001
Molybdenum	mg/L	0.017	0.0141	0.0077	0.0113
Nickel	mg/L	0.0358	0.0345	0.0362	0.0321
Selenium	mg/L	<0.001	<0.001	<0.001	<0.001
Strontium	mg/L	0.153	0.172	0.195	0.098
Silver	mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Tin	mg/L	<0.001	<0.001	<0.001	<0.001
Thallium	mg/L	<0.0008	<0.0008	<0.0008	<0.0008
Titanium	mg/L	0.02	0.02	0.02	0.02
Uranium	mg/L	0.005	0.004	0.006	0.007
Vanadium	mg/L	<0.0005	<0.0005	<0.0005	<0.0005
Zinc	mg/L	<0.005	<0.001	<0.001	<0.001

Date	Units	17-Jul-16	02-Aug-16	13-Sep-16	04-Oct-16
Total Metals					
Aluminium	mg/L	0.072	0.074	0.025	0.223
Antimony	mg/L	0.0004	0.0004	<0.0001	0.0001
Arsenic	mg/L	0.0057	0.0035	<0.0005	0.0024
Boron	mg/L	0.02	<0.01	<0.01	0.02
Barium	mg/L	0.0187	0.0175	0.0163	0.0198
Beryllium	mg/L	<0.0005	<0.0005	<0.0005	<0.0005
Cadmium	mg/L	0.0001	<0.00002	<0.00002	<0.00002
Copper	mg/L	0.0338	0.0304	0.0237	0.0157
Chromium	mg/L	<0.0006	<0.0006	<0.0006	<0.0006
Cobalt	mg/L	0.003	0.0026	0.0027	0.0032
Iron	mg/L	0.61	0.55	0.66	0.56
Lithium	mg/L	<0.005	<0.005	<0.005	<0.005
Manganese	mg/L	0.3963	0.3248	0.3954	0.4176
Magnesium	mg/L	14.8	14.7	20.7	25.5
Mercury	mg/L	<0.00001	0.00088	<0.00001	<0.00001
Molybdenum	mg/L	0.0166	0.0133	0.0077	0.0114
Nickel	mg/L	0.0373	0.0362	0.0376	0.0364
Lead	mg/L	<0.0003	<0.0003	<0.0003	<0.0003
Phosphorus	mg P/L	0.016	0.014	0.02	0.013
Potassium	mg/L	8.28	9.04	9.44	10.5
Selenium	mg/L	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Silica	mg/l	3.2	2.6	3.9	5.8
Tin	mg/L	<0.01	<0.001	<0.001	<0.001
Strontium	mg/L	0.156	0.178	0.231	0.102
Tellurium	mg/L	NA	NA	<0.0005	<0.0005
Titanium	mg/L	0.03	0.02	0.03	0.03
Thallium	mg/L	<0.0008	<0.0008	<0.0008	<0.0008
Uranium	mg/L	0.005	0.004	0.007	0.007
Vanadium	mg/L	<0.0005	0.0005	<0.0005	<0.0005
Zinc	mg/L	0.001	<0.001	<0.001	0.004

Date	Units	17-Jul-16	14-Aug-16	13-Sep-16	04-Oct-16	17-Jul-16	02-Aug-16	12-Sep-16	04-Oct-16	17-Jul-16	02-Aug-16	12-Sep-16	04-Oct-16	24-Jan-16	11-Feb-16	15-Mar-16	18-Apr-16	09-May-16	11-Dec-16	
Total Metals																				
Aluminium	mg/L	0.011	0.031	0.052	0.035	0.015	0.006	0.049	0.052	0.0019	0.014	<0.006	0.101	0.008	<0.006	0.006	<0.006	<0.006	0.014	
Antimony	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0023	<0.0001	<0.0001	
Arsenic	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	0.0045	0.0027	0.0057
Boron	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium	mg/L	0.0075	0.0081	0.0055	0.0065	0.0073	0.0005	0.0056	0.0068	0.0008	0.0067	0.0061	0.0069	0.0165	0.0172	0.0184	0.0239	0.023	0.0079	
Beryllium	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Cadmium	mg/L	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Copper	mg/L	0.0047	0.0017	0.0095	0.0039	0.0043	0.0005	0.004	0.0034	0.0048	0.0006	0.0036	0.0047	0.0061	0.0071	0.006	0.0068	0.007	0.0042	
Chromium	mg/L	<0.0006	<0.0006	<0.0006	0.0019	<0.0006	0.0006	<0.0006	0.0016	<0.0006	0.0009	<0.0006	<0.0006	<0.0006	0.002	0.0011	0.0017	0.0008	0.0013	
Cobalt	mg/L	0.0005	<0.0005	<0.0005	<0.0005	0.0005	0.0005	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001	0.0011	0.011	0.0013	0.0011	<0.0005
Iron	mg/L	0.13	<0.01	0.07	0.12	0.12	0.01	0.09	0.15	0.12	<0.01	0.07	0.18	0.01	0.02	0.03	0.05	0.06	0.03	
Lithium	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Manganese	mg/L	0.0184	0.0226	0.0117	0.0116	0.0193	0.0005	0.0138	0.0124	0.0288	0.0081	0.0232	0.0136	0.0082	0.0087	0.0348	0.0329	0.0374	0.0064	
Magnesium	mg/L	6.72	6.18	7.08	7.6	6.79	0.02	6.58	6.86	7.03	5.99	7	7.09	9.34	11.1	15.2	13.3	10.6	8.73	
Mercury	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00004	<0.00001	<0.00001	0.00002	
Molybdenum	mg/L	<0.0005	0.0007	0.0005	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	0.0005	0.0006	0.0007	<0.0005	<0.0005	<0.0005	<0.0005	
Nickel	mg/L	0.007	0.0089	0.0079	0.0092	0.0063	0.0005	0.0071	0.0083	0.0074	0.0069	0.0065	0.0088	0.0084	0.01	0.0095	0.0133	0.0128	0.0085	
Lead	mg/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0003	0.0006	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0017	<0.0003	
Phosphorus	mg P/L	0.0078	0.0062	0.01	0.0036	0.0078	0.001	4.7	0.0041	0.0078	<0.0019	0.01	0.0048	0.0037	5.1	5	<1.9	<1.9	4.4	
Potassium	mg/L	2.66	2.81	6.23	2.93	2.66	0.05	2.76	2.54	2.72	2.82	3	2.44	4.24	4.82	5.29	5.24	5.24	2.92	
Selenium	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Silica	mg/L	0.4	0.2	0.2	0.6	0.4	NA	0.2	0.7	0.5	<0.1	0.3	1.1	NA	NA	NA	NA	NA	0.6	
Silver	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Tin	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Strontium	mg/L	0.076	0.071	0.106	0.032	0.076	0.074	0.084	0.07	0.079	0.071	0.11	0.031	0.127	0.129	0.141	0.149	0.149	0.095	
Tellurium	mg/L	NA	NA	<0.0005	<0.0005	NA	NA	<0.0005	<0.0005	NA	NA	<0.0005	<0.0005	NA	NA	NA	NA	NA	<0.0005	
Titanium	mg/L	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.03	0.002	0.03	0.03	0.02	
Thallium	mg/L	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	
Uranium	mg/L	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001	0.001	0.001	0.001	
Vanadium	mg/L	<0.0005	0.0022	<0.0005	<0.0005	<0.0005	0.0012	<0.0005	<0.0005	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Zinc	mg/L	NA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	0.112	<0.001	<0.001	<0.001	0.002	<0.001	0.001	<0.001	0.001	

Table 8.22: 2016 Downstream Lakes Water Quality Monitoring

Date	Units	NP1 West				Dogleg				SPL-RSF			
		17-Jul-16	14-Aug-16	13-Sep-16	04-Oct-16	17-Jul-16	13-Aug-16	13-Sep-16	05-Oct-16	17-Jul-16	14-Aug-16	12-Sep-16	05-Oct-16
Field Parameters													
pH		7.37	8.02	7.08	7.3	7.92	8.16	7.1	7.2	8.15	7.28	7.17	6.88
Conductivity	µmhos/cm	92.6	47	269	127	189.8	201	114	57	55.8	36	102	116
Turbidity	NTU	5.01	0.65	0.47	1	0.71	0.89	0.65	0.82	2.25	0.57	0.34	7.09
Dissolved oxygen	mg/L	NA	9.7	10.6	NA	10	9.7	10.2	10.3	10.1	9.5	NA	10.3
Temperature	°C	16.4	NA	NA	11.13	16.3	NA	NA	NA	15.1	NA	NA	NA
Conventional Parameters													
TDS	mg/L	66	163	76	179	143	69	184	84	32	24	73	77
TSS	mg/L	<1	1	1	<1	2	1	1	<1	<1	2	1	<1
Alkalinity	mg CaCo3/L	23	244	25	53	42	22	53	31	14	12	23	26
Hardness	mg CaCo3/L	34	92	39	109	74	37	103	42	16	14	35	41
Colour	colour	9	9	5	10	6	<1	6	8	1	3	2	8
D.O.C	mg/L	2.8	3.5	2.8	3.6	2.6	2.4	2.5	2.7	1.6	1.2	2.5	2.9
T.O.C	mg/L	3.2	3.8	3.6	5.7	4	3.3	3.5	3.1	2.3	1.8	3.3	4.3
Nutrient and Biological Indicators													
Ammonia (NH3)	mg N/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
Ammonia nitrogen (NH3-NH4)	mg N/L	<0.01	0.03	0.09	0.05	0.06	0.05	<0.01	0.06	0.01	0.02	0.05	0.02
Nitrate	mg N/L	0.03	0.48	0.03	0.59	0.41	0.02	0.58	0.09	0.01	0.01	0.07	0.06
Nitrite	mg N/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Kjeldahl nitrogen	mg N/L	0.28	0.23	0.36	0.46	28	0.08	0.29	0.47	0.18	0.2	0.33	0.23
Ortho-phosphate (O-PO4)	mg P/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NA
Chlorophyll A	µg / L	0.49	0.82	2.3	1.1	0.34	1.1	0.9	2.3	0.68	0.83	0.88	1.1
Major Ions													
Bromides	mg/L	0.2	<0.01	0.04	<0.01	0.07	<0.01	0.16	<0.01	0.01	<0.01	<0.01	<0.01
Chloride	mg/L	4	14.7	4.3	13.7	9.6	4.2	16.5	6.9	1.3	0.6	4.1	5.6
Fluoride	mg/L	0.11	0.17	0.11	0.14	0.14	0.13	0.15	0.11	0.08	0.08	0.12	0.12
Calcium	mg/L	NA	26.3	9.78	29.3	NA	9.42	26.7	11.1	NA	4.11	8.8	10.7
Sodium	mg/L	NA	12.9	3.44	7.88	NA	3.36	8.84	2.8	NA	1.29	2.98	2.71
Sulphate	mg/L	20.6	41.9	22.7	58.9	NA	18.1	50.3	30.8	7.3	4	23.7	30
Thiosulfates (S2O3)	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Thiocyanates (SNC)	mg/L	0.28	<0.05	<0.05	<0.05	90.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cyanide													
CN total	mg/L	<0.005	<0.005	<0.001	<0.001	<0.005	<0.005	<0.001	<0.001	<0.005	<0.005	0.001	<0.001
CN Free (SGS)	mg/L	NA	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005
CN WAD	mg/L	<0.005	<0.005	<0.001	<0.001	<0.005	<0.005	<0.001	<0.001	<0.005	<0.005	0.001	<0.001

Date	Units	17-Jul-16	14-Aug-16	13-Sep-16	04-Oct-16	17-Jul-16	13-Aug-16	13-Sep-16	05-Oct-16	17-Jul-16	14-Aug-16	12-Sep-16	05-Oct-16
Dissolved Metals													
Aluminium	mg/L	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
Antimony	mg/L	<0.0001	0.0002	<0.0001	0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium	mg/L	0.002	0.0072	0.002	0.0078	0.0065	0.0016	0.0074	0.0031	0.0006	0.0005	0.0015	0.0039
Beryllium	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Cadmium	mg/L	<0.00002	<0.00002	<0.00002	0.00007	<0.00002	<0.00002	<0.00002	0.00015	<0.00002	<0.00002	<0.00002	0.00007
Chromium	mg/L	<0.0006	0.0009	<0.0006	0.0022	<0.0006	0.0025	<0.0006	0.0023	<0.0006	0.0014	<0.0006	0.0018
Cobalt	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Copper	mg/L	0.0007	0.0017	<0.0005	<0.0005	0.0021	0.0007	0.0011	<0.0005	0.0007	<0.0005	0.0008	<0.0005
Iron	mg/L	0.01	0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Lead	mg/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0005	<0.0003
Lithium	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Manganese	mg/L	<0.0005	<0.0005	<0.0005	0.0026	0.0025	<0.0005	0.0045	<0.0005	<0.0005	<0.0005	<0.0005	0.0006
Magnesium	mg/L	3.27	NA	NA	NA	6.44	NA	NA	NA	1.62	NA	NA	NA
Mercury	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L	<0.0005	0.0019	<0.0005	0.0013	0.0019	<0.0005	0.0019	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Nickel	mg/L	0.001	0.0027	0.0018	0.0051	0.0033	0.001	0.0042	0.0014	<0.0005	0.0037	0.0009	0.0011
Selenium	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	mg/L	0.037	0.102	0.042	0.05	0.086	0.037	0.123	0.025	0.018	0.015	0.038	0.032
Silver	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Tin	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001
Thallium	mg/L	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
Titanium	mg/L	<0.01	NA	<0.01	<0.01	0.01	NA	0.01	<0.01	<0.01	NA	<0.01	<0.01
Uranium	mg/L	<0.001	0.001	<0.001	0.002	0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	mg/L	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.003
Zinc	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	0.009	<0.001	<0.001

Date	Units	17-Jul-16	14-Aug-16	13-Sep-16	04-Oct-16	17-Jul-16	13-Aug-16	13-Sep-16	05-Oct-16	17-Jul-16	14-Aug-16	12-Sep-16	05-Oct-16
Total Metals													
Aluminium	mg/L	<0.006	0.02	<0.006	0.045	<0.006	<0.006	0.007	0.026	0.016	<0.006	<0.006	0.031
Antimony	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0003
Arsenic	mg/L	<0.0005	<0.0005	<0.0005	0.0054	<0.0005	<0.0005	<0.0005	0.0028	<0.0005	<0.0005	<0.0005	<0.0005
Boron	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium	mg/L	0.0019	0.0062	0.002	0.0098	0.0074	0.0017	0.0079	0.005	0.0006	0.0005	0.0017	0.0055
Beryllium	mg/L	<0.0005	<0.0005	<0.0005	0.0007	<0.0005	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	0.0005
Cadmium	mg/L	<0.00002	<0.00002	<0.00002	0.00016	<0.00002	<0.00002	<0.00002	0.00014	<0.00002	<0.00002	<0.00002	0.00009
Copper	mg/L	0.0009	0.0068	0.0012	0.0019	0.002	0.001	0.0013	0.0009	0.0006	0.0022	0.0007	0.001
Chromium	mg/L	<0.0006	<0.0006	<0.0006	0.002	<0.0006	0.0018	<0.0006	0.0023	<0.0006	<0.0006	<0.0006	0.0014
Cobalt	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Iron	mg/L	0.08	0.07	0.05	0.11	0.1	<0.01	0.07	0.04	0.05	0.02	0.01	0.03
Lithium	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Manganese	mg/L	0.013	0.0117	0.0074	0.0064	0.008	<0.0005	0.007	0.0065	0.0017	0.0014	0.0023	3.58
Magnesium	mg/L	3.22	6.61	3.61	8.81	6.56	3.31	9.02	3.53	1.55	0.96	3.21	0.0036
Mercury	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L	<0.0005	<0.0005	<0.0005	0.0014	0.002	<0.0005	0.0018	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Nickel	mg/L	0.0012	0.0098	0.0022	0.0055	0.0033	0.0017	0.0042	0.0016	0.0189	0.0054	0.0008	0.0011
Lead	mg/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0015	0.0028	<0.0003	<0.0003	<0.0003
Phosphorus	mg P/L	0.0056	<0.0019	0.01	0.0025	0.0053	0.0028	0.08	0.002	0.0045	<0.0019	2.3	0.002
Potassium	mg/L	1.08	3.34	1.33	3.13	2.45	1.29	3.34	1.27	0.53	0.47	1.04	1.16
Selenium	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Silica	mg/L	0.7	0.5	0.5	1.4	0.5	0.3	0.9	0.8	0.4	0.3	0.7	1.4
Tin	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	mg/L	0.036	0.074	0.053	0.051	0.09	0.034	0.148	0.02	0.019	0.014	0.038	0.029
Titanium	mg/L	<0.01	0.02	<0.01	0.01	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium	mg/L	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
Tellurium	mg/L	NA	NA	<0.0005	<0.0005	NA	NA	<0.0005	0.0007	NA	NA	<0.0005	<0.0005
Uranium	mg/L	<0.001	<0.001	<0.001	0.002	0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0029	<0.0005	0.0067
Zinc	mg/L	NA	<0.001	<0.001	0.002	<0.001	0.001	<0.001	<0.001	NA	<0.001	<0.001	0.001

Table 8.26: 2016 Waste Extension Pool Collection System WEP 1 (ST-30)

Date	Units	7-Jun-2016	17-Jul-2016	2-Aug-2016	30-Sep-2016	11-Oct-2016
Field Parameters						
pH		7.80	7.71	7.28	6.80	7.20
Turbidity	NTU	15.44	14.21	18.75	21.40	8.90
Conventional Parameters						
Alkalinity	mg CaCO ₃ /L	14	101	118	63	102
Hardness	mg CaCO ₃ /L	16	122	143	118	112
TDS	mg/L	36	316	306	204	242
TSS	mg/L	7	9	8	5	6
Nutrients and Biological Indicators						
Ammonia (NH ₃)	mg N/L	< 0.01	0.06	0.05	< 0.01	
Ammonia-nitrogen	mg N/L	0.16	4.98	4.41	0.43	1.07
Nitrate	mg N/L	0.67	0.80	0.26	2.49	1.13
Nitrite	mg N/L	< 0.01	0.11	0.05	0.03	0.07
Major Ions						
Chloride	mg/L	1.1	12.7	9.6	4.4	5.7
Fluoride	mg/L	0.03	0.25	0.20	0.13	0.15
Sulphate	mg/L	6.00	123.00	19.00	65.60	65.7
Cyanide						
Total cyanide	mg/L	0.007	0.021	0.020	0.011	0.02
WAD cyanide	mg/L	< 0.005	< 0.005	< 0.005	0.003	0.002
Free cyanide	mg/L	< 0.005	0.005	< 0.005		0.005
Total Metals						
Aluminum	mg/L	0.299	0.166	0.372	0.327	0.065
Arsenic	mg/L	< 0.0005	0.0022	< 0.0005	< 0.0005	< 0.0005
Barium	mg/L	0.0030	0.0254	0.0288	0.0122	0.0168
Cadmium	mg/L	< 0.00002	0.00033	< 0.00002	< 0.00002	< 0.00002
Chromium	mg/L	< 0.0006	< 0.0006	< 0.0006	< 0.0006	< 0.0006
Copper	mg/L	0.0099	0.0207	0.0181	0.025	0.0113
Iron	mg/L	0.58	3.51	4.42	0.86	3.33
Lead	mg/L	< 0.0003	0.0017	0.0034	< 0.0003	< 0.0003
Manganese	mg/L	0.0536	0.3228	0.4815	0.1354	0.382
Mercury	mg/L	< 0.0001	< 0.00001	0.00075	< 0.00001	< 0.00001
Molybdenum	mg/L	0.0018	0.0857	0.0021	0.003	0.0009
Nickel	mg/L	0.0022	0.0084	0.0077	0.0058	0.0037
Selenium	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	< 0.0001	< 0.0001	< 0.0001	0.0003	< 0.0001
Thallium	mg/L	< 0.002	< 0.0008	< 0.0008	< 0.0008	< 0.0008
Zinc	mg/L	< 0.001	0.002	0.001	< 0.001	< 0.001

Table 8.27: 2016 Waste Extension Pool Collection System WEP 2 (ST-31)

Date	Units	7-Jun-2016	17-Jul-2016	9-Aug-2016	30-Sep-2016
Field Parameters					
pH		7.76	8.31	7.31	6.86
Turbidity	NTU	31.20	6.52	6.07	25.50
Conventional Parameters					
Alkalinity	mg CaCO ₃ /L	13	349	44	44
Hardness	mg CaCO ₃ /L	14	386	74	64
TDS	mg/L	25	498	109	93
TSS	mg/L	9	5	1	5
Nutrients and Biological Indicators					
Ammonia (NH ₃)	mg N/L	< 0.01	< 0.01	< 0.01	< 0.01
Ammonia-nitrogen	mg N/L	0.1	< 0.01	0.14	0.12
Nitrate	mg N/L	0.22	0.15	1.26	0.55
Nitrite	mg N/L	< 0.01	0.01	< 0.01	0.01
Major Ions					
Chloride	mg/L	0.8	15.7	2.3	3.1
Fluoride	mg/L	0.02	0.91	0.14	0.11
Sulphate	mg/L	1.80	69.40	37.30	20.3
Cyanide					
Total cyanide	mg/L	< 0.005	< 0.005	< 0.005	< 0.001
WAD cyanide	mg/L	< 0.005	< 0.005	< 0.005	< 0.001
Free cyanide	mg/L	< 0.005	< 0.005	< 0.005	0.005
Total Metals					
Aluminum	mg/L	0.426	0.098	0.154	0.43
Arsenic	mg/L	< 0.0005	0.0008	< 0.0005	0.0005
Barium	mg/L	0.0035	0.039	0.0125	0.0076
Cadmium	mg/L	0.00009	0.00002	< 0.00002	< 0.00002
Chromium	mg/L	< 0.0006	< 0.0006	0.0039	0.0008
Copper	mg/L	0.0014	0.0025	0.008	0.0037
Iron	mg/L	0.69	0.28	0.77	1.55
Lead	mg/L	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Manganese	mg/L	0.0354	0.1174	0.1989	0.115
Mercury	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	< 0.0005	0.0029	< 0.0005	0.0005
Nickel	mg/L	0.0025	0.0085	0.0055	0.0054
Selenium	mg/L	< 0.001	0.001	< 0.001	< 0.001
Silver	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Thallium	mg/L	< 0.002	< 0.0008	< 0.0008	< 0.0008
Zinc	mg/L	< 0.001	< 0.001	0.001	0.001

Table 8.28: 2016 Non Contact Water East Diversion Ditch Water Quality Monitoring (ST-5)

Parameters	Units	Maximum Average Concentration	Maximum Allowable Grab Sample Concentration	13-Jun-2016	12-Jul-2016	2-Aug-2016	5-Sep-2016	10-Oct-2016
pH*				7.54	7.87	7.74	7.98	8.04
Turbidity*	NTU			14.23	2.76	1.35	0.66	3.21
TSS	mg/l	15	30	4	1	< 1	4	4
Sulphate	mg/L			2.6	51.8	66.0	63.2	61.7
Aluminum	mg/l			0.248	0.011	0.019	< 0.006	0.060
Arsenic	mg/L			< 0.0005	0.0028	< 0.0005	< 0.0005	< 0.0005
Copper	mg/L			0.0060	0.0047	0.0044	0.0033	0.0032
Lead	mg/L			< 0.0003	0.0036	< 0.0003	< 0.0003	< 0.0003
Nickel	mg/L			0.0030	0.0057	0.0055	< 0.0005	0.0053
Zinc	mg/L			< 0.001	< 0.001	0.001	< 0.001	< 0.001
Cyanide	mg/L			< 0.005	< 0.005	< 0.005	0.019	< 0.001
Radium	Bq/l				< 0.002	< 0.002	< 0.002	< 0.002

Footnotes:

* Parameters measured in the field by Environmental Technicians.

Table 8.29: 2016 Vault Rock Storage Facility Seepage Water Quality Monitoring (ST-24)

Date	Units	7-Jun-2016	19-Jul-2016	5-Sep-2016
Field Parameters				
pH		7.32	7.01	7.5
Turbidity	NTU	110.1	106.2	6.05
Conventional Parameters				
Alkalinity	mg CaCO3/L	25	31	25
Hardness	mg CaCO3/L	43	255	208
TDS	mg/L	69	435	312
TSS	mg/L	54	20	4
Nutrients and Biological Indicators				
Ammonia (NH3)	mg N/L	< 0.01	< 0.01	< 0.01
Ammonia-nitrogen	mg N/L	0.5	4.67	2.38
Nitrate	mg N/L	0.01	0.14	0.04
Nitrite	mg N/L	0.63	3.51	4.52
Major Ions				
Chloride	mg/L	0.8	7.3	5.9
Fluoride	mg/L	0.05	0.07	0.06
Sulphate	mg/L	22.90	293.00	151
Cyanide				
Total cyanide	mg/L	< 0.005	< 0.005	0.026
Total Metals				
Aluminum	mg/L	1.91	0.081	< 0.006
Arsenic	mg/L	< 0.0005	< 0.0005	< 0.0005
Barium	mg/L	0.0168	0.0531	0.0362
Cadmium	mg/L	0.00002	0.00014	< 0.00002
Chromium	mg/L	< 0.0006	< 0.0006	< 0.0006
Copper	mg/L	0.0054	0.0019	0.0021
Iron	mg/L	3.69	21.3	0.64
Lead	mg/L	< 0.0003	0.0013	< 0.0003
Manganese	mg/L	0.0817	2.99	1.185
Mercury	mg/L	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	0.0042	0.0055	0.0072
Nickel	mg/L	0.0068	0.0326	0.0072
Selenium	mg/L	< 0.001	< 0.001	< 0.001
Silver	mg/L	< 0.0001	< 0.0001	0.0002
Thallium	mg/L	< 0.002	< 0.0008	< 0.0008
Zinc	mg/L	0.007	0.018	0.011

Table 8.30: 2016 Saddle Dam 1 Water Quality Monitoring (ST-S-2)

Date	Units	7-Jun-2016	12-Jul-2016	2-Aug-2016	6-Sep-2016
Field Parameters					
pH		8.06	7.33	7.41	7.08
Turbidity	NTU	34.3	40.7	4.3	9.2
Conventional Parameters					
Alkalinity	mg CaCO ₃ /L	26	51	54	120
Hardness	mg CaCO ₃ /L	36	183	212	285
TDS	mg N/L	64	303	360	488
TSS	mg N/L	12	90	1	70
Major Ions					
Chloride	mg/L	2.1	6.0	7.6	11.8
Fluoride	mg/L	0.04	0.29	0.28	0.20
Sulphate	mg SO ₄ /L	15.0	287	138	278
Nutrients and Biological Indicators					
Ammonia nitrogen (NH ₃ -NH ₄)	mg N/L	0.22	0.04	0.02	0.24
Ammonia (NH ₃)	mg N/L	< 0.01	< 0.01	< 0.01	< 0.01
Nitrite	mg N/L	0.01	0.05	0.06	0.05
Nitrate	mg N/L	0.4	10.3	14.7	7.4
Cyanide					
Total cyanide	mg/L	0.016	0.012	< 0.005	0.017
Free cyanide	mg/L		< 0.005	< 0.005	< 0.005
WAD cyanide	mg/L			< 0.005	0.001
Total Metals					
Aluminium	mg/L	0.47	0.66	0.04	0.40
Arsenic	mg/L	0.0047	0.0316	0.0496	0.027
Barium	mg/L	0.004	0.018	0.018	0.030
Cadmium	mg/L	0.00003	0.00013	< 0.00002	0.00002
Chromium	mg/L	< 0.0006	0.0082	0.0021	0.0055
Copper	mg/L	0.004	0.011	0.0050	0.0144
Iron	mg/L	0.91	2.63	0.10	2.12
Lead	mg/L	< 0.0003	0.0336	< 0.0003	0.0026
Manganese	mg/L	0.0603	0.1926	0.1571	0.7149
Mercury	mg/L	< 0.00001	0.00076	0.00076	< 0.00001
Molybdenum	mg/L	0.0018	0.0160	0.0210	0.0099
Nickel	mg/L	0.0066	0.0220	0.0266	0.0690
Selenium	mg/L	< 0.001	0.001	0.001	0.001
Silver	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Thallium	mg/L	< 0.0020	< 0.0008	< 0.0008	< 0.0008
Zinc	mg/L	< 0.001	0.43	0.003	0.57

Table 8.31: 2016 Central Dike Seepage Water Quality Monitoring (ST-S-5)

Date	Units	5-Jan-16	1-Feb-16	8-Mar-16	5-Apr-16	3-May-16	7-Jun-16	18-Jul-16	3-Aug-16	6-Sep-06	3-Oct-16	8-Nov-16	5-Dec-16
Field Parameters													
pH		7.48		7.05	7.65	7.94	7.89	7.96	7.76	7.91	7.27	7.84	8.30
Turbidity	NTU	9.25	22.81	10.96	13.23	11.60	7.24	15.77	4.10	2.33	11.80	7.67	12.50
Conventional Parameters													
Alkalinity	mg CaCO ₃ /L	157	160	160	161	156	148	133	137	137	133	132	129
Hardness	mg CaCO ₃ /L	1108	1123	1309	1316	1358	1368	1074	1104	1106	1217	1140	887
TDS	mg/L	2558	2772	2854	2547	3081	2287	2349	2296	2716	2493	2351	2685
TSS	mg/L	4	7	8	4	3	1	3	6	4	1	7	22
Major Ions													
Chloride	mg/L	500	491	532	520	511	533	392	391	370	359	357	458
Fluoride	mg/L	0.49	0.4	0.52	0.5	1.47	0.07	0.49	0.49	0.47	0.49	0.48	0.48
Sulphate	mg SO ₄ /L	1845	1786	1836	1939	2028	2079	1565		1664	1657	1689	1777
Nutrients and Biological Indicators													
Ammonia (NH ₃)	mg N/L	0.32	0.48	0.44	0.53	0.49	0.43	0.32	0.39	0.32	0.34	0.32	0.27
Ammonia nitrogen (NH ₃ -NH ₄)	mg N/L	25.3	25.9	26.9	30.0	29.0	27.6	25.9	22.1	28.8	27.5	29.3	29.5
Nitrate	mg N/L	0.63	2.06	1.88	1.62	0.75	0.05	0.01	0.04	0.02	0.10	< 0.01	< 0.01
Nitrite	mg N/L	0.05	0.06	0.10	0.12	0.08	0.03	0.05	0.05	0.05	0.05	0.04	0.07
Cyanide													
Total cyanide	mg/L	0.53	0.82	0.57	0.48	0.25	0.28	0.13	0.10	0.10	0.15	0.13	0.13
Cyanide WAD	mg/L	0.45	0.71	0.42	0.37	0.23	0.08	0.06	0.05	0.04	0.04	0.03	0.05
Cyanide Free	mg/L	0.08	0.10	0.01	0.01		0.08	0.03		0.45	0.02	0.02	0.03
Total Metals													
Aluminium	mg/L	0.011	0.046	< 0.006	0.010	< 0.006	0.039	0.011	< 0.006	0.046	0.015	0.008	0.047
Arsenic	mg/L	0.0368	0.0434	0.0457	0.0452	0.0450	0.0407	0.0480	0.0383	0.0072	0.0426	0.0427	0.1082
Barium	mg/L	0.0274	0.0347	0.0360	0.0353	0.0413	0.0409	0.0295	0.0284	0.0324	0.0273	0.0268	0.0274
Cadmium	mg/L	0.00079	0.00057	< 0.00002	0.00070	0.00059	0.00063	0.00135	0.00099	0.00054	0.00065	0.00168	0.00161
Chromium	mg/L	0.0022	< 0.0006	< 0.0006	0.0011	0.0046	0.0059	< 0.0006	< 0.0006	0.0007	< 0.0006	0.0010	< 0.0006
Copper	mg/L	0.057	0.250	0.15	0.08	0.02	0.0171	0.0054	0.0091	0.0061	0.0310	0.011	0.0077
Iron	mg/L	1.3	1.52	1.58	1.85	1.34	1.68	1.85	1.64	2.75	2.20	2.01	5.07
Lead	mg/L	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	0.0066	< 0.0003
Manganese	mg/L	2.44	2.08	2.38	2.19	2.32	2.07	2.00	2.07	2.34	2.16	2.41	1.98
Mercury	mg/L	0.00008	0.00024	0.00004	0.00006	0.00014	0.00004	0.00010	< 0.00010	< 0.00001	< 0.00001	0.00010	0.00010
Molybdenum	mg/L	0.1882	0.2584	0.2846	0.2767	0.3273	0.3268	0.3131	0.3257	0.3347	0.2982	0.3144	0.3586
Nickel	mg/L	0.0991	0.1515	0.0790	0.0478	0.0287	0.0237	0.0299	0.0254	0.0105	0.0187	0.0273	0.0217
Selenium	mg/L	0.048	0.039	0.058	0.056	0.043	0.035	0.034	0.028	0.017	0.012	0.020	0.020
Silver	mg/L	< 0.0001	< 0.0001	< 0.0001	0.0015	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Thallium	mg/L	< 0.005	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.0008	< 0.0008	< 0.0008	< 0.0008	< 0.0008	< 0.0008
Zinc	mg/L	0.009	0.003	< 0.001	0.007	0.003	0.009	< 0.001	0.004	0.001	0.002	0.016	0.019
Dissolved Metals													
Aluminum	mg/L	< 0.006	< 0.006		< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006
Silver	mg/L	< 0.0001	< 0.0001	< 0.0001	0.0013	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.0223	0.0296	0.0225	0.0267	0.0328	0.0136	0.0204	0.0145	0.0072	0.0271	0.0190	0.0237
Cadmium	mg/L	0.00079	0.00054	< 0.00002	0.00062	0.00055	0.00037	0.00135	0.00084	0.00054	0.00065	0.00151	0.00123
Chromium	mg/L	0.0021	0.0062	< 0.0006	< 0.0006	0.0029	0.0027	< 0.0006	< 0.0006	< 0.0006	< 0.0006	< 0.0006	< 0.0006
Copper	mg/L	0.052	0.229	0.144	0.072	0.018	0.013	0.005	0.006	0.006	0.005	0.0103	0.0044
Iron	mg/L	0.10	0.13	0.07	0.06	0.04	0.05	0.05	0.06	0.04	0.04	1.38	0.04
Manganese	mg/L	2.664	2.252	2.303	2.153	2.239	2.121	2.006	1.953	2.339	2.032	2.308	1.785
Mercury	mg/L	< 0.00001	0.00013	< 0.00001	0.00006	0.00014	0.00005	0.00010	< 0.00010	< 0.00001	< 0.00001	0.00010	< 0.00010
Molybdenum	mg/L	0.187	0.253	0.272	0.282	0.326	0.337	0.317	0.299	0.315	0.300	0.3	0.35
Nickel	mg/L	0.1077	0.1246	0.0759	0.0506	0.0313	0.0220	0.0298	0.0280	0.0099	0.0187	0.0244	0.0145
Lead	mg/L	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	0.0052	< 0.0003
Selenium	mg/L	0.052	0.051	0.056	0.063	0.044	0.037	0.036	0.026	0.022	0.014	0.018	0.022
Thallium	mg/L	< 0.005	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.0008	< 0.0008	< 0.0008	< 0.0008	< 0.0008	< 0.0008
Zinc	mg/L	0.003	0.002	< 0.001	< 0.001	< 0.001	0.003	< 0.001	0.001	0.002	0.001	0.011	< 0.001

Table 8.32: 2016 Base of Saddle Dam 3 (ST-32)

Date	Units	17-Jul-2016	8-Aug-2016	30-Sep-2016
Field Parameters				
pH		6.65	6.97	6.91
Turbidity	NTU	44.20	30.40	21.50
Conventional Parameters				
Alkalinity	mg CaCO ₃ /L	20	54	63
Hardness	mg CaCO ₃ /L	197	236	325
TDS	mg/L	325	429	443
TSS	mg/L	14	23	6
Nutrients and Biological Indicators				
Ammonia (NH ₃)	mg N/L	< 0.01	0.01	< 0.01
Ammonia-nitrogen	mg N/L	1	2.58	0.62
Nitrate	mg N/L	4.73	13.10	8.66
Nitrite	mg N/L	0.09	0.08	0.05
Major Ions				
Chloride	mg/L	20.3	19.4	21.1
Fluoride	mg/L	0.36	0.35	0.34
Sulphate	mg/L	184	182	188
Cyanide				
Total cyanide	mg/L	0.011	0.013	0.001
Total Metals				
Aluminum	mg/L	0.269	0.265	0.202
Arsenic	mg/L	< 0.0005	< 0.0005	< 0.0005
Barium	mg/L	0.0553	0.043	0.0246
Cadmium	mg/L	0.00011	< 0.00002	< 0.00002
Chromium	mg/L	< 0.0006	0.0136	< 0.0006
Copper	mg/L	0.0245	0.0131	0.0053
Iron	mg/L	3.74	2.39	0.72
Lead	mg/L	0.0012	< 0.0003	0.0219
Manganese	mg/L	2.031	0.9774	1.230
Mercury	mg/L	< 0.00001	< 0.0001	< 0.00001
Molybdenum	mg/L	0.0005	0.0048	0.0029
Nickel	mg/L	0.4194	0.1339	0.0674
Selenium	mg/L	0.001	0.001	< 0.001
Silver	mg/L	< 0.0001	< 0.0001	< 0.0001
Thallium	mg/L	< 0.0008	< 0.0008	< 0.0008
Zinc	mg/L	0.013	< 0.001	0.002

Table 8.33: 2016 Landfarm Water Quality (ST-14)

Parameters	Units	Maximum Concentration Grab	6-Jun-2016
pH*	units		7.9
Conductivity*	us/cm		125.1
Benzene	ug/L	370	< 0.3
Ethylbenzene	ug/L	90	< 0.3
Toluene	ug/L	2	< 0.3
Total oil and grease	mg/L	5	< 1
Lead	mg/L	0.001	0.0044

Footnotes:

*Measured in the field by Environmental Technicians

Table 8.34: 2016 Sewage Treatment Plant Water Quality Monitoring

Sample Location: STP-SEP

Parameter	Units	4-Jan-2016	2-Feb-2016	8-Mar-2016	6-Apr-2016	2-May-2016	6-Jun-2016	4-Jul-2016	1-Aug-2016	5-Sep-2016	3-Oct-2016	#####	#####
Ammonia (NH ₃)	mg N/L	0.52	0.34	0.54	0.73	0.99	0.02	0.45	0.59	0.07	0.41	0.42	0.3
Ammonia-Nitrogen (NH ₃ -NH)	mg N/L	39.7	51	39.1	44.9	62.3	4.81	37.6	46	7.19	51.3	33.1	38.1
Total Kjeldahl Nitrogen	mg N/L	44	74.1	40.9	44.4	66.2	26.3	40.2	50.6	37.4	50.7	37.9	42.5
BOD-5	mg/L	27	12	18	22	61	6	6	9	10	5	17	14
COD	mg/L	5	55	64	77	82	59	66	57	51	56	64	64
Total Suspended Solids	mg/L	20	16	26	15	20	2	11	14	17	12	30	24
Nitrate (NO ₃)	mg N/L	6.94	8.21	6.79	9.09	4.85	14.5	9	5.86	4.62	4.52	4.42	6.33
Nitrite (NO ₂)	mg N/L	1	1.1	1.05	0.91	1.03	0.49	0.49	1	1.72	1.36	2.05	0.97
Total Phosphorus**	mg P/L												
pH *	units	6.4	6.8	6	6.3	6.3	6.1	6.6	6.8	6.7	7.2	7.4	7.5
Fecal Coliform	UFC/100 mL	600	110	60	30	<6000	40	460	400	55	<10	30	70
Total Coliform	UFC/100 mL	5000	6000	800	5400	470000	130	<10000	12000	2000	1800	1700	7200

Sample Location: LJ-Mix

Parameter	Units	4-Jan-2016	2-Feb-2016	8-Mar-2016	6-Apr-2016	2-May-2016	6-Jun-2016	4-Jul-2016	1-Aug-2016	5-Sep-2016	3-Oct-2016	#####	#####
Ammonia (NH ₃)	mg N/L	<0.01	<0.01	<0.01	0.01	0.16	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ammonia-nitrogen (NH ₃ -NH)	mg N/L	1.62	9.3	1.11	8.29	26	10.4	13.3	14.1	15.3	18.5	0.59	0.6
Total Kjeldahl Nitrogen	mg N/L	5.6	15.8	3.64	10	36.3	10.9	14.8	15.2	15.3	21.8	2.44	3.2
BOD-5	mg/L	11	13	4	5	67	2	3	7	5	4	12	9
COD	mg/L	76	78	56	57	206	45	78	50	48	55	57	51
Total Suspended Solids	mg/L	26	24	16	10	252	6	9	12	12	12	13	13
Nitrate (NO ₃)	mg N/L	18.6	29.3	19.5	20.4	14.3	19.4	17	19.2	19.1	20.4	14.9	18.7
Nitrite (NO ₂)	mg N/L	0.05	0.24	0.14	0.29	1.14	0.12	0.38	0.45	0.3	0.24	0.11	0.08
Total Phosphorus**	mg P/L												
pH *	units	6.1	6.8	6.6	6.7	6.5	5	5.5	5.3	5.1	6.2	6.9	7
Fecal Coliform	UFC/100 mL	6	36	<10	92	600	2	36	66	22	10	18	42
Total Coliform	UFC/100 mL	< 10 000	<10,000	<10000	<1000	10000	40	4000	1000	<1000	1000	120	7000

Sample Location: STP-IN

Parameter	Units	4-Jan-2016	2-Feb-2016	8-Mar-2016	6-Apr-2016	2-May-2016	6-Jun-2016	4-Jul-2016	1-Aug-2016	5-Sep-2016	3-Oct-2016	#####	#####
Ammonia (NH ₃)	mg N/L	0.75	0.79	1.05	1.08	0.94	1.06	1.2	1.03	0.06	0.5	1.43	0.52
Ammonia-nitrogen (NH ₃ -NH)	mg N/L	89.3	96.2	86.6	85.7	98	83.4	88.4	81.1	7.06	83.7	76.8	92.4
Total Kjeldahl Nitrogen	mg N/L	112	115	90.8	97.1	114	96	109	96.1	82	107	100	117
BOD-5	mg/L	157	224	254	223	223	199	147	167	217	230	241	234
COD	mg/L	288	502	418	694	657	477	507	410	447	858	487	763
Total Suspended Solids	mg/L	112	91	154	160	547	74	440	80	138	116	193	222
Nitrate (NO ₃)	mg N/L	0.03	<0.01	0.01	<0.01	<0.01	0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01
Nitrite (NO ₂)	mg N/L	<0.01	0.11	0.03	0.04	0.01	<0.01	0.01	0.04	0.05	0.03	0.04	0.05
Total Phosphorus	mg P/L	9.31	11.3	9.6	10.8	14.1	7.17	12	11.5	9.48	12.5	11.3	16.1
pH *	units	8.3	8	8.3	7.7	7.4	7.1	7	7.4	6.9	7.7	8.4	8
Fecal Coliform	UFC/100 mL	6,000	>60,000	1,400,000	3,100,000	4,100,000	720 000	7,000,000	4,800,000	3,500,000	6,400,000	4,000,000	4,700,000
Total Coliform	UFC/100 mL	360,000	>20,000,000	34,000,000	***	64,000,000	***	63,000,000	47,000,000	***	36,000,000	< 1 000 000	49,000,000

Footnotes:

* Parameter measured in the field by STP operators.

**Sample monitoring for total phosphorus in the treated effluent has been discontinued because the units do not have phosphorus removal capability. Agnico will continue to monitor phosphorus in the influent sewage.

***The great number of bacteria restrain distinction of total coliforms and atypical colony

Table 8.35: 2016 Sewage Treatment Plant Waste Volume

Month	Liquid Sewage Volume (m ³)	Sewage Sludge Volume (m ³)
	Readings from Equalization Tank at STP	STP
January	2564	17
February	2480	34
March	2816	12
April	2659	54
May	2759	68
June	2588	48
July	2787	68
August	2731	48
September	2657	23
October	2693	52
November	2655	90
December	2765	34
Total	32,154	547

Table 8.36: 2016 Secondary Containment Water Quality at ST-37 (Meadowbank Tankfarm)

Parameters	Units	Maximum Average Concentration	Maximum Concentration of any Grab sample	6-Jun-16
pH*	units	6.0-9.5	6.0-9.5	8.11
TSS	mg/L	15	30	1
Ammonia	mg/L	6	6	< 0.001
Benzene	µg/L	370	370	< 0.3
Toluene	µg/L	2	2	< 0.3
Ethylbenzene	µg/L	90	90	< 0.3
Total Xylenes	µg/L			< 0.3
Total oil and grease	mg/L	5	5	< 1
Arsenic	mg/L	0.5	1	0.002
Copper	mg/L	0.3	0.6	0.0041
Lead	mg/L	0.1	0.1	< 0.0003
Nickel	mg/L	0.5	1	0.0032
Zinc	mg/L	0.5	1	0.003

Footnotes:

*Parameter was measured in the field by Environmental Technicians.

Table 8.37: 2016 Non Contact Water West Diversion Ditch Water Quality Monitoring (ST-6)

Parameters	Units	Maximum Average Concentration	Maximum Allowable Grab Sample Concentration	13-Jun-2016	12-Jul-2016	2-Aug-2016	5-Sep-2016	10-Oct-2016
pH*				7.57	7.49	7.10	8.11	8.40
Turbidity*	NTU			18.47	2.07	0.25	1.84	3.14
TSS	mg/l	15	30	3	< 1	< 1	4	2
Sulphate	mg/L			9.6	5.2	2.5	4.6	6.5
Aluminum	mg/l			0.218	0.006	< 0.006	< 0.006	0.007
Arsenic	mg/L			< 0.0005	0.0009	< 0.0005	< 0.0005	< 0.0005
Copper	mg/L			0.0003	0.0024	0.0005	< 0.0005	< 0.0005
Lead	mg/L			0.0014	< 0.0003	0.0004	< 0.0003	0.0283
Nickel	mg/L			0.0034	0.0007	< 0.0005	< 0.0005	< 0.0005
Zinc	mg/L			0.005	< 0.001	< 0.001	0.001	< 0.001
Cyanide	mg/L			< 0.005	< 0.005	< 0.005	0.016	< 0.001
Radium	Bq/l			< 0.002	0.002	< 0.002	< 0.002	0.004

Footnotes:

*Measured in the field by Environmental Technicians

Table 8.38: 2016 Secondary Containment Water Quality at the Baker Lake Bulk Fuel Storage Facility (ST-40)

Parameters	Units	Maximum Average Concentration	Maximum Concentration of any Grab sample	20/06/2016 ST-40.2	25/09/2016 ST-40.2
pH*	units	6.0-9.5	6.0-9.5	7.14	7.23
TSS	mg/L	15	30	4	14
Ammonia	mg/L	6	6	< 0.01	< 0.01
Benzene	µg/L	370	370	< 0.3	< 0.3
Toluene	µg/L	2	2	< 0.3	< 0.3
Ethylbenzene	µg/L	90	90	< 0.3	< 0.3
Total Xylenes	µg/L			< 0.3	< 0.3
Total oil and grease	mg/L	5	5	< 1	< 1
Arsenic	mg/L	0.5	1	< 0.0005	< 0.0005
Copper	mg/L	0.3	0.6	0.0021	0.0043
Lead	mg/L	0.1	0.1	< 0.0003	< 0.0003
Nickel	mg/L	0.5	1	< 0.0005	0.0010
Zinc	mg/L	0.5	1	0.005	0.005

Footnotes:

*Parameter was measured in the field by Environmental Technicians.

Table 8.39: 2016 MMER QAQC

Vault Final Discharge Point																			
Date	Units	July-18-16				August-22-16				September-12-16				October-18-16					
		Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank		
Parameter / QAQC																			
Arsenic	mg/L	0.005	< 0.005	0.005	0	< 0.005	0.0041	< 0.005	157	< 0.005	< 0.005	< 0.005	0	< 0.005	< 0.005	0.0010	67	< 0.005	
Copper	mg/L	0.005	0.0025	0.0021	17	< 0.005	0.0030	0.0028	7	< 0.005	0.0022	< 0.0019	15	< 0.005	0.0029	0.0021	32	< 0.005	
Total Cyanide	mg/L	0.0050	< 0.005	< 0.005	0	< 0.005	0.011	0.010	10	< 0.005	0.001	< 0.001	0	< 0.001	0.005	0.005	0	< 0.001	
TSS	mg/L	1	2	< 1	67	< 1	5	10	67	< 1	3	3	0	< 1	2	5	86	< 1	
Nickel	mg/L	0.005	0.0046	0.0044	4	< 0.005	0.0039	0.0035	11	< 0.005	0.0028	< 0.0005	191	< 0.005	0.0041	0.0037	10	< 0.005	
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	0	< 0.0003	0.0058	< 0.0003	180	< 0.0003	< 0.0003	< 0.0003	0	< 0.0003		
Radium 226	mg/L	0.002	0.01	0.01	0	< 0.002	NMR	NMR	0	< 0.002	NMR	NMR	NMR	0.004	0.005	0	< 0.002		
Zinc	mg Ni/L	0.001	< 0.001	< 0.001	0	< 0.001	0.001	< 0.001	0	< 0.001	< 0.001	< 0.001	0	< 0.001	0.003	0.005	50	0.001	
% Exceedances*					0%				0%				0%				0%		

Vault Final Discharge Point																																				
Date	Units	January-05-16				February-01-16				March-08-16				July-04-16				September-28-16				October-18-16				November-14-16				December-05-16						
		Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank			
Parameter / QAQC																																				
Arsenic	mg/L	0.005	< 0.005	0.0075	18	0.0006	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	0.0038	0.0047	21	0.0020	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	0	< 0.0005			
Copper	mg/L	0.005	0.005	0.0039	57	< 0.005	< 0.005	0	< 0.005	< 0.005	< 0.005	0	< 0.005	< 0.005	0	< 0.005	0.0012	0.0011	8	< 0.005	0.0008	0.0011	32	0.0016									< 0.0013	0.0011	17	< 0.0005
Total Cyanide	mg/L	0.0050	< 0.005	< 0.005	0	< 0.005	< 0.005	0	< 0.005	< 0.005	< 0.005	0	< 0.005	< 0.005	0	< 0.005	0.014	< 0.001	173	< 0.001	< 0.001	< 0.001	0	< 0.001	0	< 0.001	0	< 0.001	0	< 0.001	0	< 0.001	0	< 0.001		
TSS	mg/L	1	1	6	143	3	10	18	57	< 1	11	9	20	< 1	7	8	13	< 1	7	7	0	2	< 1	< 1	0	< 1	5	< 1	133	< 1	1	2	67	< 1		
Nickel	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	0.0018	0.0014	25	< 0.0005	0.0024	0.0017	34	0.0053	0.0008	0.0006	29	< 0.0005							0.0010	0.0010	0	< 0.0005	
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	0	0.0010	< 0.0003	< 0.0003	0	< 0.0003	0	< 0.0003	0	< 0.0003	0	< 0.0003	0	< 0.0003	0	< 0.0003			
Radium 226	mg/L	0.002	0.002	0.002	0	< 0.002	0.004	0.003	0	< 0.002	0.002	0.002	0	< 0.002	NMR	NMR	0	< 0.002	NMR	NMR	0	< 0.002	0.004	0.002	0	< 0.002	0.002	0.002	0	< 0.002	0	< 0.002	0	< 0.002		
Zinc	mg Ni/L	0.001	0.003	0.003	0	< 0.001	0.006	0.004	49	< 0.001	< 0.001	0.021	152	< 0.001	0.001	< 0.001	0	< 0.001	0.002	< 0.001	67	0.001	0.001	0.002	67	< 0.001	0.001	0.001	0.002	67	0.001	0.007	0.006	15	0.004	
% Exceedances*					0%				0%				0%				0%				0%				0%				0%				0%			0%

Footnotes:
 NA: missing data
 RPD = Relative Percent Difference; MDL: Mean Detection Limit
 * Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
 Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
 Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
 Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8.40: 2016 EEM QAQC Data

Effluent characterization Vault Final Discharge Point						
Date	Units	DL	July-18-16			
Parameter / QAQC			Original	Duplicate	RPD	Field Blank
Alkalinity	mg CaCO3/L	2	23	23	0	NA
Aluminium	mg/L	0.006	0.046	0.039	16	0.036
Ammonia nitrogen	mg N/L	0.01	0.66	0.61	8	< 0.01
Cadmium	mg/L	0.00002	0.00007	0.00005	33	< 0.00002
Hardness	mg CaCO3/L	1	67	67	0	< 1
Iron	mg/L	0.01	0.07	0.07	0	< 0.01
Mercury	mg/L	0.00001	< 0.00001	< 0.00001	0	< 0.00001
Molybdenum	mg/L	0.0005	0.0054	0.0054	0	< 0.0005
Nitrate	mg N/L	0.01	3.36	3.31	1	NA
Selenium	mg/L	0.001	< 0.001	< 0.001	0	< 0.001
% Exceedances*					0%	

Effluent characterization East Dike Final Discharge Point						
Date	Units	DL	July-18-16			
Parameter / QAQC			Original	Duplicate	RPD	Field Blank
Alkalinity	mg CaCO3/L	2	24	24	0	2
Aluminium	mg/L	0.006	0.029	0.036	22	< 0.006
Ammonia nitrogen	mg N/L	0.01	0.13	< 0.01	171	< 0.01
Cadmium	mg/L	0.00002	< 0.00002	< 0.00002	0	< 0.00002
Hardness	mg CaCO3/L	1	30	33	10	< 1
Iron	mg/L	0.01	0.04	0.04	0	< 0.01
Mercury	mg/L	0.00001	< 0.00001	0.00001	0	0.00003
Molybdenum	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005
Nitrate	mg N/L	0.01	0.07	0.07	0	0.01
Selenium	mg/L	0.001	< 0.001	< 0.001	0	< 0.001
% Exceedances*					0%	

Water Quality Monitoring Exposure Area Wally Lake (Vault Final Discharge Point)						
Date	Units	DL	July-19-16			
Parameter / QAQC			Original	Duplicate	RPD	Field Blank
Alkalinity	mg CaCO3/L	2	14	13	7	3
Aluminium	mg/L	0.006	0.015	0.014	7	< 0.006
Ammonia nitrogen	mg N/L	0.01	0.01	0.09	160	< 0.01
Arsenic	mg N/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005
Cadmium	mg/L	0.00002	< 0.00002	< 0.00002	0	< 0.00002
Copper	mg/L	0.0005	0.0007	0.0008	13	< 0.0005
Cyanide	mg/L	0.001	< 0.001	< 0.005	133	< 0.005
Hardness	mg CaCO3/L	1	15	15	0	< 1
Iron	mg/L	0.01	0.02	0.03	40	< 0.01
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0	< 0.0003
Mercury	mg/L	0.00001	< 0.00001	< 0.00001	0	< 0.00001
Molybdenum	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005
Nickel	mg N/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005
Nitrate	mg N/L	0.01	0.12	0.19	45	< 0.01
Radium 226	mg/L	0.002	< 0.002	< 0.002	0	NMR
Total suspended solids	mg/L	1	2	2	0	< 1
Selenium	mg/L	0.001	< 0.001	< 0.001	0	< 0.001
Zinc	mg/L	0.001	< 0.001	< 0.001	0	< 0.001
% Exceedances*					6%	

Water Quality Monitoring Exposure Area Second Portage Lake (East Dike Final Discharge Point)						
Date	Units	DL	July-19-16			
Parameter / QAQC			Original	Duplicate	RPD	Field Blank
Alkalinity	mg CaCO3/L	2	12	11	9	3
Aluminium	mg/L	0.006	0.012	0.012	0	< 0.006
Ammonia nitrogen	mg N/L	0.01	0.04	< 0.01	120	< 0.01
Arsenic	mg N/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005
Cadmium	mg/L	0.00002	< 0.00002	< 0.00002	0	< 0.00002
Copper	mg/L	0.0005	0.0005	< 0.0005	0	< 0.0005
Cyanide	mg/L	0.001	< 0.001	< 0.005	133	< 0.005
Hardness	mg CaCO3/L	1	11	10	10	< 1
Iron	mg/L	0.01	0.02	0.01	67	< 0.01
Lead	mg/L	0.0003	< 0.0003	0.0010	108	0.0025
Mercury	mg/L	0.00001	< 0.00001	< 0.00001	0	< 0.00001
Molybdenum	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005
Nickel	mg N/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005
Nitrate	mg N/L	0.01	0.01	0.01	0	< 0.01
Radium 226	mg/L	0.002	NMR	NMR		NMR
Total suspended solids	mg/L	1	2	< 1	67	< 1
Selenium	mg/L	0.001	< 0.001	< 0.001	0	< 0.001
Zinc	mg/L	0.001	< 0.001	< 0.001	0	< 0.001
% Exceedances*					0%	

Water Quality Monitoring Reference Area (Vault and East Dike Final Discharge Point)						
Date	Units	DL	July-19-16			
Parameter / QAQC			Original	Duplicate	RPD	Field Blank
Alkalinity	mg CaCO3/L	2	7	7	0	3
Aluminium	mg/L	0.006	< 0.006	< 0.006	0	< 0.006
Ammonia nitrogen	mg N/L	0.01	0.01	< 0.01	0	< 0.01
Arsenic	mg N/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005
Cadmium	mg/L	0.00002	< 0.00002	< 0.00002	0	< 0.00002
Copper	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005
Cyanide	mg/L	0.001	< 0.001	< 0.005	133	< 0.005
Hardness	mg CaCO3/L	1	8	7	13	< 1
Iron	mg/L	0.01	< 0.01	< 0.01	0	< 0.01
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0	0.0075
Mercury	mg/L	0.00001	< 0.00001	< 0.00001	0	< 0.00001
Molybdenum	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005
Nickel	mg N/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005
Nitrate	mg N/L	0.01	0.06	0.04	40	< 0.01
Radium 226	mg/L	0.002	NMR	NMR		NMR
Total suspended solids	mg/L	1	< 1	1	0	2
Selenium	mg/L	0.001	< 0.001	< 0.001	0	< 0.001
Zinc	mg/L	0.001	< 0.001	< 0.001	0	< 0.001
% Exceedances*					0%	

Footnotes:

NA: missing data

RPD = Relative Percent Difference; MDL: Mean Detection Limit

* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.

Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.

Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.

Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8.41: 2016 STP QAQC

LJ-MIX								
Date	Units	DL	February-02-16			July-04-16		
Parameter / QAQC			Original	Duplicate	RPD	Original	Duplicate	RPD
TSS	mg CaCO ₃ /L	1	25	21	17	9	12	29
BOD-5	mg/L	1	13	12	8	3	5	50
COD	mg N/L	2	78	80	3	78	87	11
Ammonia nitrogen	mg/L	0.01	9.3	8.6	8	13.3	12.7	5
Ammonia (NH ₃)	mg CaCO ₃ /L	0.01	< 0.01	< 0.01	0	< 0.01	< 0.01	0
Nitrate	mg/L	0.01	29.3	28.9	1	17.0	18.0	6
Nitrite	mg/L	0.01	0.24	0.24	0	0.38	0.41	8
TKN	mg/L	0.05	15.8	12.9	20	14.8	14.1	5
% Exceedances*					0%			0%

STP-SEP								
Date	Units	DL	February-02-16			July-04-16		
Parameter / QAQC			Original	Duplicate	RPD	Original	Duplicate	RPD
TSS	mg CaCO ₃ /L	1	16	15	6	11	17	43
BOD-5	mg/L	1	12	14	15	6	6	0
COD	mg N/L	2	55	58	5	66	68	3
Ammonia nitrogen	mg/L	0.01	51.0	51.1	0	37.6	35.5	6
Ammonia (NH ₃)	mg CaCO ₃ /L	0.01	0.34	0.35	3	0.45	0.44	2
Nitrate	mg/L	0.01	8.2	8.0	2	9.0	9.2	2
Nitrite	mg/L	0.01	1.10	1.10	0	0.49	0.49	0
TKN	mg/L	0.05	74.1	65.1	13	40.2	38.2	5
% Exceedances*					0%			13%

STP-IN					
Date	Units	DL	July-04-16		
Parameter / QAQC			Original	Duplicate	RPD
TSS	mg CaCO ₃ /L	1	440	301	38
BOD-5	mg/L	1	147	246	50
COD	mg N/L	2	507	528	4
Ammonia nitrogen	mg/L	0.01	88.4	89.6	1
Ammonia (NH ₃)	mg CaCO ₃ /L	0.01	1.20	1.24	3
Nitrate	mg/L	0.01	< 0.01	< 0.01	0
Nitrite	mg/L	0.01	0.01	0.01	0
TKN	mg/L	0.05	109.0	105.0	4
% Exceedances*					25%

Footnotes:

RPD = Relative Percent Difference; MDL: Mean Detection Limit

* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.

Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.

Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.

Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8.42: 2016 Non-Contact Diversion Ditches QAQC

ST-5								
Date	Units	DL	June-13-16			August-02-16		
Parameter / QAQC			Original	Duplicate	RPD	Original	Duplicate	RPD
Aluminum	mg/l	0.006	0.248	0.218	13	0.019	0.011	53
Arsenic	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0
Copper	mg/l	0.0005	0.006	0.006	9	0.004	0.005	13
Cyanide	mg/L	0.005	< 0.005	< 0.005	0	< 0.005	< 0.005	0
TSS	mg/L	1	4	3	29	< 1	2	67
Nickel	mg/L	0.0005	0.0030	0.0026	14	0.0055	0.0061	10
Lead	mg/L	0.0003	< 0.0003	0.0015	133	< 0.0003	0.0239	195
Radium	mg/L	0.002				< 0.002	< 0.002	0
Sulphate	mg/L	0.6	2.6	2.0	26	66.0	60.5	9
Zinc	Bq/l	0.001	< 0.001	0.001	0	0.001	0.007	150
% Exceedances*					0%	0%		

ST-6					
Date	Units	DL	August-02-16		
Parameter / QAQC			Original	Duplicate	RPD
Aluminum	mg/l	0.006	< 0.006	< 0.006	0
Arsenic	mg/L	0.0005	< 0.0005	< 0.0005	0
Copper	mg/l	0.0005	0.001	0.003	135
Cyanide	mg/L	0.005	< 0.005	< 0.005	0
TSS	mg/L	1	< 1	< 1	0
Nickel	mg/L	0.0005	< 0.0005	< 0.0005	0
Lead	mg/L	0.0003	0.0004	< 0.0003	29
Radium	mg/L	0.002	< 0.002	< 0.002	0
Sulphate	mg/L	0.6	2.5	3.1	21
Zinc	Bq/l	0.001	< 0.001	0.002	67
% Exceedances*					0%

Footnotes:

RPD = Relative Percent Difference; MDL: Mean Detection Limit

* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.

Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.

Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.

Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8.43: 2016 Seeps QAQC

Date	Units	DL	ST-S-2			ST-32		
			2-Aug-2016			17-Jul-2016		
			Original	Duplicate	RDP	Original	Duplicate	RDP
Conventional Parameters								
Alkalinity	mg CaCO ₃ /L	2	54	54	0	20	21	5
Hardness	mg CaCO ₃ /L	1	212	211	0	197	180	9
TDS	mg N/L	1	360	362	1	325	320	2
TSS	mg N/L	1	1	1	0	14	16	13
Major Ions								
Chloride	mg/L	0.5	7.6	7.6	0	20.3	18.5	9
Fluoride	mg/L	0.02	0.28	0.28	0	0.36	0.35	3
Sulphate	mg SO ₄ /L	0.6	138.0	142.0	3	184.0	174.0	6
Nutrients and Biological Indicators								
Ammonia nitrogen (NH ₃ -NH ₄)	mg N/L	0.01	0.02	0.02	0	1.00	1.01	1
Ammonia (NH ₃)	mg N/L	0.01	< 0.01	< 0.01	0	< 0.01	< 0.01	0
Nitrite	mg N/L	0.01	14.70	14.70	0	4.73	4.58	3
Nitrate	mg N/L	0.01	0.06	0.06	0	0.09	0.09	0
Cyanide								
Total cyanide	mg/L	0.005	< 0.005	< 0.005	0	0.011	0.010	10
Free cyanide	mg/L	0.005	< 0.005					
WAD cyanide	mg/L	0.005	< 0.005	< 0.005	0			
Total Metals								
Aluminium	mg/L	0.006	0.04	0.04	12	0.27	0.23	14
Arsenic	mg/L	0.0005	0.0496	0.0458	8	< 0.0005	< 0.0005	0
Barium	mg/L	0.00002	0.018	0.020	12	0.055	0.051	7
Cadmium	mg/L	0.00002	< 0.00002	< 0.00002	0	0.00011	0.00015	31
Chromium	mg/L	0.0006	0.0021	0.0022	5	< 0.0006	< 0.0006	0
Copper	mg/L	0.0005	0.005	0.003	50	0.025	0.022	9
Iron	mg/L	0.01	0.10	0.10	0	3.74	3.45	8
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0	0.0012	0.0022	59
Manganese	mg/L	0.0005	0.1571	0.1572	0	2.0310	1.8630	9
Mercury	mg/L	0.00001	0.00076	0.00066	14	< 0.00001	< 0.00001	0
Molybdenum	mg/L	0.0005	0.0210	0.0214	2	0.0005	0.0005	0
Nickel	mg/L	0.0005	0.0266	0.0264	1	0.4194	0.3771	11
Selenium	mg/L	0.001	0.001	< 0.001	0	0.001	< 0.001	0
Silver	mg/L	0.0001	< 0.0001	< 0.0001	0	< 0.0001	< 0.0001	0
Thallium	mg/L	0.002	< 0.0008	< 0.0008	0	< 0.0008	< 0.0008	0
Zinc	mg/L	0.001	0.003	0.003	0	0.013	0.011	17
% Exceedances*					0%			0%

Footnotes:

RPD = Relative Percent Difference; MDL: Mean Detection Limit

* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.

Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.

Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.

Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8.44: 2016 Pit sumps QAQC

Date	Units	DL	ST-17						ST-19			ST-20 Pit sump			ST-23								
			20-Jun-2016			18-Jul-2016			13-Jun-2016			18-Jul-2016			20-Jun-2016								
			Original	Duplicate	RPD	Original	Duplicate	RPD	Original	Duplicate	RPD	Original	Duplicate	RPD	Original	Duplicate	RPD						
Conventional Parameters																							
Alkalinity	mg CaCO ₃ /L	2	79	78	1	79	78	1	65	64	2	52	52	0	88	88	0						
Hardness	mg CaCO ₃ /L	1	264	252	5	222	219	1	130	133	2	145	144	1	250	257	3						
TDS	mg/L	1	473	470	1	436	438	0	333	334	0	277	276	0	425	426	0						
TSS	mg/L	1	23	19	19	5	7	33	14	11	24	10	6	50	24	24	0						
Nutrients and Biological Indicators																							
Ammonia (NH ₃)	mg N/L	0.01	0.09	0.11	20	0.09	0.15	50	0.04	0.04	0	< 0.01	< 0.01	0	0.13	0.13	0						
Ammonia nitrogen	mg N/L	0.01	3.9	4.15	5	3.7	5.9	46	4.1	3.94	3	0.03	< 0.01	100	4.06	4.04	0						
Nitrate	mg N/L	0.01	13.10	13.1	0	12.40	12	3	9.79	10	2	4.43	4.55	3	12.80	13.5	5						
Nitrite	mg N/L	0.01	0.15	0.17	13	0.05	0.06	18	0.15	0.15	0	0.03	0.03	0	0.24	0.24	0						
Major Ions																							
Chloride	mg/L	0.5	19.0	19	0	18.6	18.4	1	33.1	33.3	1	15.1	14.7	3	44.8	44.3	1						
Fluoride	mg/L	0.02	0.33	0.33	0	0.36	0.35	3	0.38	0.38	0	0.41	0.42	2									
Sulphate	mg SO ₄ /L	0.6	197	206	4	193	194	1	77	78.1	1	98	98.9	1	98	98.7	1						
Cyanide																							
Total cyanide	mg/L	0.005	0.013	0.013	0	NA	NA		NA	NA		< 0.005	< 0.005	0	0.044	0.045	2						
Free cyanide	mg/L	0.005	0.011	0.011	0	NA	NA		NA	NA		NA	NA		NA	NA							
Total Metals																							
Aluminum	mg/L	0.006	0.625	0.639	2	0.148	0.186	23	0.296	0.321	8	0.114	0.068	51	0.547	0.585	7						
Arsenic	mg/L	0.0005	0.0132	0.0132	0	0.0102	0.0107	5	< 0.0005	< 0.0005	0	0.0010	0.001	0	0.0056	0.0061	9						
Barium	mg/L	0.0005	0.014	0.0146	4	0.013	0.0157	19	0.008	0.0079	1	0.024	0.0232	4	0.020	0.0201	0						
Cadmium	mg/L	0.00002	0.00039	0.00041	5	0.00035	0.00032	9	< 0.00002	< 0.00002	0	0.00008	0.00005	46	0.00023	0.00025	8						
Chromium	mg/L	0.0006	< 0.006	0.0062	5	0.002	0.0037	55	0.006	0.0069	8	0.001	0.0007	15	0.0008	0.0014	55						
Copper	mg/L	0.0005	0.0012	0.0012	0	0.0010	0.001	0	0.0022	0.0016	32	0.0047	0.0018	89	0.0012	0.0013	8						
Iron	mg/L	0.01	1.60	1.68	5	0.32	0.38	17	0.82	0.88	7	0.16	0.14	13	1.30	1.31	1						
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	0						
Manganese	mg/L	0.0005	0.1167	0.1171	0	0.0834	0.0923	1	0.0474	0.0475	0	0.0894	0.0897	0	0.04890	0.052	6						
Mercury	mg/L	0.00001	< 0.00001	< 0.00001	0	< 0.00001	< 0.00001	0	0.00012	0.00012	0	< 0.00001	< 0.00001	0	< 0.00001	< 0.00001	0						
Molybdenum	mg/L	0.0005	0.1302	0.1328	2	0.1116	0.1108	1	0.0121	0.0119	2	0.0081	0.0081	0	0.0838	0.0858	2						
Nickel	mg/L	0.0005	0.02	0.0199	2	0.02	0.0184	4	0.01	0.0062	15	0.04	0.0425	0	0.0041	0.0045	9						
Selenium	mg/L	0.001	< 0.001	0.001	0	< 0.001	< 0.001	0	< 0.001	0.002	67	0.001	0.001	0	0.003	0.002	40						
Silver	mg/L	0.0001	< 0.0001	< 0.0001	0	< 0.0001	< 0.0001	0	< 0.0001	< 0.0001	0	< 0.0001	< 0.0001	0									
Thallium	mg/L	0.002	< 0.0020	< 0.002	0	< 0.0008	< 0.0008	0	< 0.0020	< 0.002	0	0.0008	< 0.0008	0	< 0.0020	< 0.002	0						
Zinc	mg/L	0.001	< 0.001	< 0.001	0	0.001	0.015	175	0.004	0.001	120	< 0.001	< 0.001	0	< 0.001	< 0.001	0						
Dissolved Metals																							
Aluminum	mg/L	0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.006	< 0.006	0	0.037	0.037	0						
Arsenic	mg/L	0.0005	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0005	< 0.0005	0	0.0058	0.006	3						
Barium	mg/L	0.0005	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.021	0.0227	6	0.020	0.0205	3						
Cadmium	mg/L	0.00002	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00002	0.00004	67	0.00015	0.0002	29						
Copper	mg/L	0.0006	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.001	0.0017	62	0.001	0.0006	50						
Iron	mg/L	0.0005	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0100	< 0.01	0	0.0100	0.01	0						
Manganese	mg/L	0.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.06	0.0674	6	0.04	0.038	2						
Mercury	mg/L	0.0000	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0000	< 0.00001	0	< 0.0000	< 0.00001	0						
Molybdenum	mg/L	0.0005	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0085	0.0086	1	0.0874	0.0907	4						
Nickel	mg/L	0.00050	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.04050	0.0404	0	0.00310	0.0031	0						
Lead	mg/L	0.0003	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	0						
Selenium	mg/L	0.0010	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.001	0.001	0	0.003	0.003	0						
Silver	mg/L	0.0001	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0001	< 0.0001	0									
Thallium	mg/L	0.0020	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0008	< 0.0008	0	< 0.0020	< 0.002	0						
Zinc	mg/L	0.001	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0010	< 0.001	0	< 0.0010	< 0.001	0						
% Exceedances*																							
					0%						7%				4%				2%				0%

Footnotes:
 RPD = Relative Percent Difference; MDL: Mean Detection Limit
 * Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
 Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
 Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
 Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8.45: 2016 ST-8 QAQC

Date	Units	DL	ST-8																			
			5-Jan-2016				1-Feb-2016				8-Aug-2016				10-Oct-2016				5-Dec-2016			
			Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank
TSS	mg/L	1	1	6	143	3	10	18	57	1	1	0	1	1	0	1	1	1	2	67	1	
Sulphate	mg SO4/L	0.6	4.4	3.3	29	0.6	6.7	8.2	20	0.6	15.7	18.2	15	0.6	12.9	19	0.6	0.6	9.3	178	12.3	
Total cyanide	mg/L	0.005	< 0.005	< 0.005	0	< 0.005	< 0.005	< 0.005	0	< 0.005	< 0.005	< 0.005	0	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Aluminum	mg/L	0.006	0.024	0.025	4	0.006	0.024	0.039	48	0.006	0.03	0.02	40	0.006	0.031	0.042	30	0.006	0.038	0.037	3	
Arsenic	mg/L	0.0005	< 0.0005	0.0015	100	0.0006	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0	
Copper	mg/L	0.0005	0.0005	0.0009	57	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	0.0008	0.0008	0	< 0.0005	0.0008	0.0011	32	0.001	0.0013	0.0011	17	
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	< 0.0003	0	
Nickel	mg/L	0.0005	0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	0.0022	0.002	10	< 0.0005	0.0008	0.0006	29	< 0.0005	0.001	0.001	0	
Zinc	mg/L	0.001	0.003	0.003	0	< 0.001	0.006	0.004	40	< 0.001	< 0.001	< 0.001	0	< 0.001	0.001	0.002	67	< 0.001	0.007	0.006	15	
Radium	Bq/L	0.002	< 0.002	< 0.002	0	< 0.002	0.004	0.003	29	< 0.002	< 0.002	< 0.002	0	< 0.002	< 0.002	< 0.002	0	< 0.002	< 0.002	< 0.002	0	
% Exceedances*					0%				10%				0%								0%	

Footnotes:

RPD = Relative Percent Difference; MDL: Mean Detection Limit

* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.

Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.

Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.

Italic values correspond to a RPD higher than 20% and for which one of the result is within 10x the MDL and the other one exceeds 10x the MDL.

Table 8.46: 2016 ST-21 QAQC

Date	Units	DL	ST-21 South Cell							
			1-Feb-2016				18-Jul-2016			
			Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank
Conventional Parameters										
Alkalinity	mg CaCO3/L	2	126	125	1	3	126	127	1	3
Hardness	mg CaCO3/L	1	1567	1271	21	< 1	1073	1154	7	< 1
TDS	mg/L	1	3136	3203	2	1	2452	2394	2	1
TSS	mg/L	1	35	26	30	< 1	18	18	0	< 1
Nutrients and Biological Indicators										
Ammonia (NH3)	mg N/L	0.01	4.83	4.86	1	< 0.01	1.00	0.95	5	< 0.01
Ammonia nitrogen	mg N/L	0.01	44.1	45.3	3	< 0.01	32.7	30.5	7	< 0.01
Nitrate	mg N/L	0.01	6.34	5.42	16	< 0.01	5.55	5.69	2	< 0.01
Nitrite	mg N/L	0.01	0.23	0.25	8	< 0.01	0.14	0.15	7	< 0.01
Major Ions										
Chloride	mg/L	0.5	630	608	4	0.5	344	354	3	0.5
Fluoride	mg/L	0.02	0.27	0.26	4	< 0.02	0.45	0.45	0	< 0.02
Sulphate	mg SO4/L	0.6	2052	2069	1	< 0.6	1683	1684	0	3.8
Cyanide										
Total cyanide	mg/L	0.005	9.51	9.39	1	< 0.005	0.08	0.082	2	0.006
CN Free	mg/L	0.005	0.009	0.006	40		0.018	0.015	18	
Cyanide WAD	mg/L	0.005	0.405	0.407	0	< 0.005	0.033	0.034	3	< 0.005
Total Metals										
Aluminum	mg/L	0.006	0.142	0.152	7	< 0.006	0.263	0.272	3	< 0.006
Arsenic	mg/L	0.0005	0.0149	0.0183	20	< 0.0005	0.0236	0.0266	12	< 0.0005
Barium	mg/L	0.0005	0.1305	0.1197	9	< 0.0005	0.0846	0.0914	8	< 0.0005
Cadmium	mg/L	0.00002	0.00102	0.00083	21	< 0.00002	0.00195	0.00219	12	< 0.00002
Chromium	mg/L	0.0006	0.0023	0.0008	97	< 0.0006	< 0.0006	< 0.0006	0	< 0.0006
Copper	mg/L	0.0005	0.5084	0.4057	22	< 0.0005	0.0856	0.0928	8	< 0.0005
Iron	mg/L	0.01	0.89	0.9	1	< 0.01	0.79	0.95	18	< 0.01
Mercury	mg/L	0.00001	0.00027	0.0004	39	< 0.00001	0.00044	0.00042	5	< 0.00001
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	< 0.0003	0	< 0.0003
Manganese	mg/L	0.0005	0.0813	0.0688	17	< 0.0005	0.4181	0.4541	8	< 0.0005
Molybdenum	mg/L	0.0005	0.3999	0.3679	8	0.0005	0.4537	0.4697	3	< 0.0005
Nickel	mg/L	0.0005	0.0659	0.0568	15	< 0.0005	0.0531	0.0568	7	< 0.0005
Selenium	mg/L	0.001	0.097	0.088	10	< 0.001	0.062	0.066	6	< 0.001
Silver	mg/L	0.0001	0.0007	0.0006	15	< 0.0001	0.0019	0.0019	0	< 0.0001
Thallium	mg/L	0.005	< 0.002	< 0.002	0	< 0.002	< 0.0008	< 0.0008	0	< 0.0008
Zinc	mg/L	0.001	0.002	0.002	0	< 0.001	0.001	< 0.001	0	< 0.001
% Exceedances*					17%				0%	

Footnotes:

RPD = Relative Percent Difference; MDL: Mean Detection Limit

* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.

Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.

Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.

Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8.47: 2016 ST-14 QAQC

Date	Units	DL	ST-14		
			6-Jun-2016		
			Original	Duplicate	RPD
Benzene	µg/L	< 0.3	< 0.3	< 0.3	0
Toluene	µg/L	< 0.3	< 0.3	< 0.3	0
Ethylbenzene	µg/L	< 0.3	0.4	0.4	0
Total Xylenes	µg/L	< 0.3	2.7	2.7	0
Total oil and grease	mg/L	< 1	1	2	-67
Lead	mg/L	< 0.0003	0.0044	0.0044	0
% Exceedances*					0%

Footnotes:

RPD = Relative Percent Difference; MDL: Mean Detection Limit

* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.

Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.

Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.

Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8.48: 2016 ST-10 QAQC

Date	Units	DL	ST-10															
			8-Jul-2016				22-Aug-2017				12-Sep-2016				10-Oct-2016			
			Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank
Conventional Parameters																		
Alkalinity	mg CaCO3/L	2	23	23	0	3	28	28	0	3	27	27	0	3	35	35	0	4
Bicarbonate alkalinity	mg CaCO3/L	1	23	23	0	3	28	28	0	3	27	27	0	3	35	35	0	4
Carbonate alkalinity	mg CaCO3/L	1	<	<	2	0	<	<	2	<	<	<	2	<	<	<	2	<
Hardness	mg CaCO3/L	1	67	69	3	<	114	113	1	<	72	68	6	<	66	70	6	<
TDS	mg/L	1	119	119	0	<	182	183	1	<	122	122	0	<	129	128	1	<
TSS	mg/L	1	2	<	1	67	<	5	10	67	<	1	3	3	0	<	1	86
DOC	mg/L	0.2	3.5	2.4	37	<	0.2	2.8	2.7	4	<	0.2	2.5	2.3	8	<	0.2	2.4
TOC	mg/L	0.2	3.5	3.4	3	<	0.6	3	3	0	<	0.8	3.2	3.2	0	<	0.3	4.3
Nutrients and Biological Indicators																		
Ammonia nitrogen	mg N/L	0.01	0.63	0.64	2	<	0.01	1.14	1.14	0	0.01	0.42	0.47	11	<	0.01	0.65	0.65
Total Kjeldahl nitrogen	mg N/L	0.05	0.94	1.1	16	<	0.05	1.39	1.45	4	0.27	0.57	0.71	22	<	0.25	1.1	0.93
Nitrate	mg N/L	0.01	3.11	3.1	0	<	0.01	6.26	6.61	5	0.06	2.5	2.49	0	<	0.03	1.84	1.88
Nitrite	mg N/L	0.01	0.05	0.05	0	<	0.01	0.06	0.06	0	<	0.01	0.03	0.03	0	<	0.01	0.03
Orthophosphate	mg P/L	0.01	0.01	<	0.01	<	0.01	0.01	0.01	0	<	0.01	<	0.01	0	<	0.01	0.01
Total Phosphorus	mg P/L	0.01	0.03	0.02	40	<	0.01	<	0.01	0.02	67	<	0.01	0.02	0.01	<	0.01	0.01
Reactive silica	mg P/L	0.01	1.5	1.6	6	<	0.1	1.4	1.4	0	<	0.1	0.9	0.9	0	<	0.1	1.4
Major Ions																		
Calcium	mg/L	0.03	19	19.5	3	<	19.5	32	31.5	2	<	0.03	21	19.5	7	<	0.03	18
Chloride	mg/L	0.5	5	4.8	4	<	4.8	8.5	8.4	1	<	0.5	5	4.9	7	<	0.5	5.8
Magnesium	mg/L	0.02	4.91	5.04	3	<	5.04	8.51	8.38	2	<	0.02	5.17	4.84	7	<	0.02	5.35
Potassium	mg/L	0.05	2.06	2.14	4	<	2.14	3.17	3.14	1	<	0.05	2.28	2.16	5	<	0.05	2.47
Sodium	mg/L	0.05	2	2.08	4	<	2.08	3.26	3.4	4	<	0.05	2.35	2.2	7	<	0.05	2.28
Sulphate	mg SO4/L	0.6	41.2	43.6	6	<	43.6	71	70.1	1	<	0.6	40.6	40	1	<	0.6	43.9
Cyanide																		
Total cyanide	mg/L	0.005	<	<	0.005	0	<	0.005	0.011	0.01	10	<	0.005	0.001	0.001	0	<	0.001
Total Metals																		
Aluminum	mg/L	0.006	0.032	0.033	3	<	0.006	0.152	0.137	10	<	0.006	0.082	0.088	7	<	0.006	0.248
Antimony	mg/L	0.0001	0.0006	0.0006	0	<	0.0001	0.0014	0.0014	0	<	0.0001	0.0006	0.0007	15	<	0.0001	0.0019
Arsenic	mg/L	0.0005	<	0.0005	0.0005	0	<	0.0005	0.0041	<	0.0005	<	0.0005	<	0.0005	<	0.0005	0.0001
Barium	mg/L	0.0005	0.0216	0.0224	4	<	0.0005	0.0323	0.0303	6	<	0.0005	0.0159	0.0176	10	<	0.0005	0.0142
Beryllium	mg/L	0.0005	<	0.0005	0	<	0.0005	<	0.0005	0	<	0.0005	<	0.0005	0	<	0.0005	<
Boron	mg/L	0.01	<	0.01	0	<	0.01	<	0.01	0	<	0.01	<	0.01	0	<	0.01	<
Cadmium	mg/L	0.0002	0.0004	0.0006	40	<	0.0002	0.0008	0.0006	29	<	0.0002	<	0.0002	0	<	0.0002	<
Chromium	mg/L	0.0006	0.0077	<	0.0006	17	<	0.0012	<	0.0006	0	<	0.0006	<	0.0006	0	<	0.0007
Copper	mg/L	0.0005	0.0025	0.0021	17	<	0.0005	0.003	0.0028	7	<	0.0005	0.0022	0.0019	15	<	0.0005	0.0029
Iron	mg/L	0.01	0.14	0.08	55	<	0.01	0.51	0.32	46	<	0.01	0.19	0.18	5	<	0.01	0.32
Lead	mg/L	0.0003	<	0.0003	0	<	0.0003	<	0.0003	0	<	0.0003	0.0058	<	0.0003	160	<	0.0003
Lithium	mg/L	0.0050	<	0.005	0	<	0.005	<	0.005	0	<	0.005	<	0.005	0	<	0.005	<
Manganese	mg/L	0.0005	0.0553	0.0559	1	<	0.0005	0.0937	0.0898	4	<	0.0005	0.043	0.0428	0	<	0.0005	0.0686
Mercury	mg/L	0.00001	<	0.00001	0	<	0.00001	<	0.00001	0	<	0.00001	<	0.00001	0	<	0.00001	<
Molybdenum	mg/L	0.0005	0.0056	0.0055	2	<	0.0005	0.0129	0.0121	6	<	0.0005	0.0069	0.0072	4	<	0.0005	0.0065
Nickel	mg/L	0.0005	0.0046	0.0044	4	<	0.0005	0.0039	0.0035	11	<	0.0005	0.0226	<	0.0005	191	<	0.0005
Selenium	mg/L	0.001	<	0.001	0	<	0.001	<	0.001	0	<	0.001	<	0.001	0	<	0.001	<
Strontium	mg/L	0.005	0.098	0.099	1	<	0.005	0.162	0.162	0	<	0.005	0.107	0.108	1	<	0.005	0.086
Tin	mg/L	0.001	<	0.001	0	<	0.001	<	0.001	0	<	0.001	<	0.001	0	<	0.001	<
Titanium	mg/L	0.01	0.01	<	0.01	<	0.01	0.02	0.02	0	<	0.01	0.02	0.01	67	<	0.01	0.02
Thallium	mg/L	0.005	0.008	0.008	0	<	0.0008	<	0.0008	0	<	0.0008	<	0.0008	0	<	0.0008	<
Uranium	mg/L	0.001	0.001	<	0.001	<	0.001	0.002	0.002	0	<	0.001	0.001	0.001	0	<	0.001	0.002
Vanadium	mg/L	0.0005	<	0.0005	0	<	0.0005	<	0.0005	0	<	0.0005	<	0.0005	0	<	0.0005	0.0045
Zinc	mg/L	0.001	<	0.001	0	<	0.001	<	0.001	0	<	0.001	<	0.001	0	<	0.001	0.003

Date	Units	DL	ST-10															
			8-Jul-2015				22-Aug-2017				12-Sep-2016				10-Oct-2016			
			Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank	Original	Duplicate	RPD	Field Blank
Dissolved Metals																		
Aluminum	mg/L	0.006	< 0.006	< 0.006	0	< 0.006	< 0.006	< 0.006	0	< 0.006	< 0.006	< 0.006	0	< 0.006	< 0.006	0.008	29	< 0.006
Antimony	mg/L	0.0001	0.0005	0.0005	0	< 0.0001	0.0014	0.0014	0	< 0.0001	0.0006	< 0.0004	40	< 0.0001	< 0.0009	< 0.0001	160	< 0.0001
Arsenic	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0.0006	18	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005
Barium	mg/L	0.0005	0.0212	0.0215	1	< 0.0005	0.0323	0.0278	15	< 0.0005	0.0155	0.0168	8	< 0.0005	0.015	0.0161	7	< 0.0005
Beryllium	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005
Boron	mg/L	0.01	< 0.01	< 0.01	0	< 0.01	< 0.01	< 0.01	0	< 0.01	< 0.01	< 0.01	0	< 0.01	< 0.01	< 0.01	0	< 0.01
Cadmium	mg/L	0.0002	0.0003	< 0.0002	40	< 0.0002	0.0003	0.0006	67	< 0.0005	< 0.0002	< 0.0002	0	< 0.0002	< 0.0002	< 0.0003	40	< 0.0002
Chromium	mg/L	0.0006	0.0023	< 0.0006	117	0.0012	< 0.0006	< 0.0006	0	< 0.0006	< 0.0006	< 0.0006	0	< 0.0006	< 0.0006	< 0.0006	0	< 0.0006
Copper	mg/L	0.0005	0.0017	< 0.0016	6	< 0.0005	0.0019	0.0019	0	< 0.0005	0.0014	0.0014	0	< 0.0005	0.0014	0.0015	7	< 0.0005
Iron	mg/L	0.01	0.02	< 0.01	67	< 0.01	0.01	0.01	0	< 0.01	< 0.01	< 0.01	0	< 0.01	0.01	0.01	0	< 0.01
Manganese	mg/L	0.0005	0.0332	0.0326	2	< 0.0005	0.0796	0.079	1	< 0.0005	0.0292	0.0336	14	< 0.0005	0.0635	0.068	7	< 0.0005
Mercury	mg/L	0.00001	< 0.00001	< 0.00001	0	< 0.00001	< 0.00001	< 0.00001	0	< 0.00001	0.00003	0.00002	40	< 0.00002	< 0.00001	< 0.00001	0	< 0.00001
Molybdenum	mg/L	0.0005	0.0062	0.0057	8	< 0.0005	0.0123	0.0117	5	< 0.0005	0.0068	0.0075	10	< 0.0005	0.0067	0.0069	3	< 0.0005
Nickel	mg/L	0.0005	0.0039	0.004	3	< 0.0005	0.003	0.0029	3	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	0.0034	0.0035	3	< 0.0005
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	< 0.0003	0	< 0.0003
Lithium	mg/L	0.0050	< 0.005	< 0.005	0	< 0.005	< 0.005	< 0.005	0	< 0.005	< 0.005	< 0.005	0	< 0.005	< 0.005	< 0.005	0	< 0.005
Selenium	mg/L	0.001	< 0.001	< 0.001	0	< 0.001	0.001	< 0.001	0	< 0.001	< 0.001	< 0.001	0	< 0.001	0.002	0.003	40	< 0.001
Strontium	mg/L	0.005	0.099	0.1	1	< 0.005	0.156	0.157	1	< 0.005	0.107	0.106	1	< 0.005	0.061	0.061	0	< 0.005
Thallium	mg/L	0.005	< 0.0008	< 0.0008	0	< 0.0008	< 0.0008	< 0.0008	0	< 0.0008	< 0.0008	< 0.0008	0	< 0.0008	< 0.0008	< 0.0008	0	< 0.0008
Tin	mg/L	0.001	< 0.001	< 0.001	0	< 0.001	< 0.001	< 0.001	0	< 0.001	< 0.001	< 0.001	0	< 0.001	< 0.001	< 0.001	0	< 0.001
Titanium	mg/L	0.01	0.01	0.01	0	< 0.01	0.01	0.01	0	< 0.01	0.01	0.01	0	< 0.01	0.01	0.01	0	< 0.01
Uranium	mg/L	0.005	0.001	0.001	0	< 0.001	0.002	0.002	0	< 0.001	0.001	0.001	0	< 0.001	0.002	0.002	0	< 0.001
Vanadium	mg/L	0.001	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005
Zinc	mg/L	0.0005	< 0.001	< 0.001	0	< 0.001	< 0.001	< 0.001	0	< 0.001	< 0.001	< 0.001	0	< 0.001	0.002	0.001	67	< 0.001
Hydrocarbons																		
Total polycyclic aromatic hydrocarbons	mg/L	0.1	< 0.1	< 0.1	0	0.5	< 0.1	< 0.1	0	< 0.1	< 0.1	0.1	0	< 0.1	< 0.1	< 0.1	0	NA
% Exceedances*					1%				1%				1%					7%

Footnotes:
 RPD = Relative Percent Difference; MDL = Mean Detection Limit
 * Percentage of parameters exceeding the OADC objectives for one sampling event which corresponds to grey shaded cells.
 Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
 Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
 Italic values correspond to a RPD higher than 20% and for which one of the result is within 10x the MDL and the other one exceeds 10x the MDL.

Table 8.49: 2016 ST-24 QAQC

Date	Units	DL	ST-24			RPD
			5-Sep-2016			
			Original	Duplicate		
Conventional Parameters						
Alkalinity	mg CaCO ₃ /L	2	25	25	0	
Hardness	mg CaCO ₃ /L	1	208	216	4	
TDS	mg/L	1	312	313	0	
TSS	mg/L	1	4	3	29	
Nutrients and Biological Indicators						
Ammonia (NH ₃)	mg N/L	0.01	< 0.01	0.01	0	
Ammonia-nitrogen	mg N/L	0.01	2.38	2.38	0	
Nitrate	mg N/L	0.01	0.04	0.04	0	
Nitrite	mg N/L	0.01	4.52	4.53	0	
Major Ions						
Chloride	mg/L	0.5	5.9	5.9	0	
Fluoride	mg/L	0.02	0.06	0.05	18	
Sulphate	mg/L	0.6	151	152	1	
Cyanide						
Total cyanide	mg/L	0.001	0.026	0.024	8	
Total Metals						
Aluminum	mg/L	0.006	< 0.006	0.062	<i>165</i>	
Arsenic	mg/L	0.0005	< 0.0005	< 0.0005	0	
Barium	mg/L	0.0005	0.0362	0.0368	2	
Cadmium	mg/L	0.00002	< 0.00002	0.00005	86	
Chromium	mg/L	0.0006	< 0.0006	< 0.0006	0	
Copper	mg/L	0.0005	0.0021	0.0021	0	
Iron	mg/L	0.01	0.64	0.64	0	
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0	
Manganese	mg/L	0.0005	1.185	1.24	5	
Mercury	mg/L	0.00001	< 0.00001	< 0.00001	0	
Molybdenum	mg/L	0.0005	0.0072	0.0074	3	
Nickel	mg/L	0.001	0.0072	0.0064	12	
Selenium	mg/L	0.001	< 0.001	< 0.001	0	
Silver	mg/L	0.0001	0.0002	0.0001	67	
Thallium	mg/L	0.0008	< 0.0008	< 0.0008	0	
Zinc	mg/L	0.001	0.011	0.012	9	
% Exceedances*					0%	

Footnotes:

RPD = Relative Percent Difference; MDL: Mean Detection Limit

* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.

Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.

Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.

Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8.50: 2016 ST-25 QAQC

Date	Units	DL	8-Aug-2016			
			Original	Duplicate	RPD	Field Blank
Conventional Parameters						
Alkalinity	mg CaCO3/L	2	39	40	3	3
Hardness	mg CaCO3/L	1	134	128	5	< 1
TSS	mg/L	1	4	2	67	< 1
TDS	mg/L	1	252	251	0	1
Nutrients and Biological Indicators						
Ammonia (NH3)	mg N/L	0.01	0.03	0.03	0	< 0.01
Ammonia-nitrogen (NH3-NH4)	mg N/L	0.01	2.51	2.51	0	< 0.01
Nitrate	mg N/L	0.01	6.72	6.90	3	< 0.01
Nitrite	mg N/L	0.01	0.18	0.17	6	< 0.01
Major Ions						
Chloride	mg/L	0.50	12	13.7	13	< 0.5
Fluoride	mg/L	0.02	0.13	0.13	0	< 0.02
Sulphate	mg/L	0.60	96.5	88.5	9	2.3
Cyanide						
Total Cyanide	mg/L	0.005	0.027	0.027	0	< 0.005
Total Metals						
Aluminum	mg/L	0.006	0.101	0.094	7	< 0.006
Arsenic	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005
Barium	mg/L	0.0005	0.030	0.029	2	< 0.001
Cadmium	mg/L	0.00002	0.00004	0.00006	40	< 0.00002
Chromium	mg/L	0.0006	< 0.0006	< 0.0006	0	0.0009
Copper	mg/L	0.0005	0.0076	0.0061	22	< 0.0005
Iron	mg/L	0.01	0.44	0.32	32	< 0.01
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0	< 0.0003
Manganese	mg/L	0.0005	0.116	0.115	1	< 0.001
Mercury	mg/L	0.00001	< 0.0001	0.0001	0	< 0.0001
Molybdenum	mg/L	0.0005	0.0276	0.0271	2	< 0.0005
Nickel	mg/L	0.0005	0.0093	0.0092	1	< 0.0005
Selenium	mg/L	0.001	< 0.001	< 0.001	0	< 0.001
Silver	mg/L	0.0001	< 0.0001	< 0.0001	0	< 0.0001
Thallium	mg/L	0.005	< 0.0008	< 0.0008	0	< 0.0008
Zinc	mg/L	0.0005	0.005	0.001	133	< 0.001
% Exceedances*					7%	

Footnotes:

RPD = Relative Percent Difference; MDL: Mean Detection Limit

* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.

Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.

Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.

Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8.51 2016 Seeps Central Dike QAQC

Date	Units	DL	ST-S-5								
			1-Feb-2016				18-Jul-2016			3-Oct-2016	
			Original	Duplicate	RPD	FB	Original	Duplicate	RPD	Original	FB
Conventional Parameters											
Alkalinity	mg CaCO3/L	2	160	160	0	3	133	132	1	133	3
Hardness	mg CaCO3/L	1	1123	1078	4	< 1	1074	1072	0	1217	1
TDS	mg N/L	1	2772	2766	0	1	2349	2336	1	2493	4
TSS	mg N/L	1	7	5	33	< 1	3	2	40	1	1
Major Ions											
Chloride	mg/L	0.5	491.0	488.0	1	< 1	392.0	401.0	2	359.0	< 0.5
Fluoride	mg/L	0.02	0.43	0.42	2	< 0	0.49	0.51	4	0.49	< 0.02
Sulphate	mg SO4/L	0.6	1786.0	1778.0	0	< 1	1565.0	1628.0	4	1657.0	< 0.6
Nutrients and Biological Indicators											
Ammonia nitrogen (NH3-NH4)	mg N/L	0.01	0.48	0.49	2	< 0.01	25.90	25.10	3	27.50	0.03
Ammonia (NH3)	mg N/L	0.01	25.90	26.30	2	< 0.01	0.32	0.34	6	0.34	< 0.01
Nitrite	mg N/L	0.01	2.06	2.08	1	< 0.01	0.01	0.02	67	0.10	0.01
Nitrate	mg N/L	0.01	0.06	0.06	0	< 0.01	0.05	0.05	0	0.05	< 0.01
Cyanide											
Total cyanide	mg/L	0.005	0.821	0.832	1	< 0.005	0.134	0.135	1	0.146	0.003
Free cyanide	mg/L	0.005	0.712	0.726	2		0.058	0.024	83	0.039	< 0.005
WAD cyanide	mg/L	0.005	0.096	0.112	15	< 0.005	0.029	0.058	67	0.021	< 0.001
Total Metals											
Aluminium	mg/L	0.006	0.05	0.05	0	< 0.01	0.01	0.04	117	0.02	< 0.01
Arsenic	mg/L	0.0005	0.0434	0.0541	22	< 0.0005	0.0480	0.0436	10	0.0426	< 0.0005
Barium	mg/L	0.00002	0.035	0.034	3	< 0.0005	0.030	0.029	2	0.027	< 0.001
Cadmium	mg/L	0.00002	0.00057	0.00060	5	0.00004	0.00135	0.00137	1	0.00065	< 0.00002
Chromium	mg/L	0.0006	< 0.0006	< 0.0006	0	< 0.0006	< 0.0006	< 0.0006	0	< 0.0006	< 0.0006
Copper	mg/L	0.0005	0.250	0.248	1	< 0.0005	0.005	0.0080	39	0.031	0.0018
Iron	mg/L	0.01	1.52	1.56	3	< 0.01	1.85	1.78	4	2.20	< 0.01
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003
Manganese	mg/L	0.0005	2.0780	1.9790	5	< 0.0005	2.0020	2.0270	1	2.1590	< 0.0005
Mercury	mg/L	0.00001	0.00024	0.00021	13	< 0.00001	0.00010	0.00011	10	< 0.00001	< 0.00001
Molybdenum	mg/L	0.0005	0.2584	0.2575	0	< 0.0005	0.3131	0.3105	1	0.2982	< 0.0005
Nickel	mg/L	0.0005	0.1515	0.1461	4	< 0.0005	0.0299	0.0316	6	0.0187	< 0.0005
Selenium	mg/L	0.001	0.039	0.050	25	< 0.001	0.034	0.031	9	0.012	< 0.001
Silver	mg/L	0.0001	< 0.0001	< 0.0001	0	< 0.0001	< 0.0001	< 0.0001	0	< 0.0001	< 0.0001
Thallium	mg/L	0.002	< 0.0020	< 0.0020	0	< 0.0020	< 0.0008	< 0.0008	0	< 0.0008	< 0.0008
Zinc	mg/L	0.001	0.003	0.002	40	< 0.001	< 0.001	0.018	179	0.002	0.001
Dissolved Metals											
Aluminium	mg/L	0.006	< 0.006	< 0.006	0	< 0.006	< 0.006	< 0.006	0	< 0.006	< 0.006
Silver	mg/L	0.0001	< 0.0001	< 0.0001	0	< 0.0001	< 0.0001	< 0.0001	0	< 0.0001	< 0.0001
Arsenic	mg/L	0.0005	0.0296	0.0311	5	< 0.0005	0.0204	0.0185	10	0.0271	< 0.0005
Cadmium	mg/L	0.00002	0.00054	0.00071	27	0.00002	0.00135	0.00124	8	0.00065	< 0.00002
Chromium	mg/L	0.0006	0.0062	0.0015	122	< 0.0006	< 0.0006	< 0.0006	0	< 0.0006	< 0.0006
Copper	mg/L	0.0005	0.229	0.238	4	< 0.001	0.005	0.005	0	0.005	< 0.001
Iron	mg/L	0.01	0.13	0.12	8	< 0.01	0.05	0.05	0	0.04	< 0.01
Manganese	mg/L	0.0005	2.252	2.253	0	< 0.001	2.006	1.976	2	2.032	< 0.001
Mercury	mg/L	0.00001	0.00013	0.00020	42	< 0.00001	0.00010	0.00010	0	< 0.00001	< 0.00001
Molybdenum	mg/L	0.0005	0.253	0.257	2	< 0.001	0.317	0.304	4	0.300	< 0.0005
Nickel	mg/L	0.0005	0.1246	0.1248	0	< 0.0005	0.0298	0.0288	3	0.0187	< 0.0005
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003
Selenium	mg/L	0.001	0.051	0.052	2	< 0.001	0.036	0.034	6	0.014	< 0.001
Thallium	mg/L	0.002	< 0.002	< 0.002	0	< 0.002	< 0.0008	< 0.001	0	< 0.0008	< 0.001
Zinc	mg/L	0.001	0.002	0.001	67	< 0.001	< 0.001	< 0.001	0	0.001	< 0.001
% Exceedances*					7%				0%		

Footnotes:

RPD = Relative Percent Difference; MDL: Mean Detection Limit

* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.

Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.

Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.

Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8.52: 2016 ST-30 QAQC

Date	Units	DL	ST-30		
			2-Aug-2016		RPD
			Original	Duplicate	
Conventional Parameters					
Alkalinity	mg CaCO ₃ /L	2	118	118	0
Hardness	mg CaCO ₃ /L	1	143	143	0
TDS	mg/L	1	306	307	0
TSS	mg/L	1	8	8	0
Nutrients and Biological Indicators					
Ammonia (NH ₃)	mg N/L	0.01	0.05	0.04	22
Ammonia-nitrogen	mg N/L	0.01	4.41	4.44	1
Nitrate	mg N/L	0.01	0.26	0.27	4
Nitrite	mg N/L	0.01	0.05	0.07	33
Major Ions					
Chloride	mg/L	0.5	9.6	9.0	6
Fluoride	mg/L	0.02	0.2	0.21	5
Sulphate	mg/L	0.6	19	20	6
Cyanide					
Total cyanide	mg/L	0.005	0.02	0.025	22
Total Metals					
Aluminum	mg/L	0.006	0.372	0.342	8
Arsenic	mg/L	0.0005	< 0.0005	< 0.0005	0
Barium	mg/L	0.0005	0.0288	0.0252	13
Cadmium	mg/L	0.00002	< 0.00002	< 0.00002	0
Chromium	mg/L	0.0006	< 0.0006	< 0.0006	0
Copper	mg/L	0.0005	0.0181	0.018	1
Iron	mg/L	0.01	4.42	4.73	7
Lead	mg/L	0.0003	0.0034	< 0.0003	<i>168</i>
Manganese	mg/L	0.0005	0.482	0.4976	3
Mercury	mg/L	0.00001	0.00075	0.00073	3
Molybdenum	mg/L	0.0005	0.0021	0.0024	13
Nickel	mg/L	0.001	0.0077	0.0082	6
Selenium	mg/L	0.001	< 0.001	< 0.001	0
Silver	mg/L	0.0001	< 0.0001	< 0.0001	0
Thallium	mg/L	0.0008	< 0.0008	< 0.0008	0
Zinc	mg/L	0.001	0.001	0.002	67
% Exceedances*					0%

Footnotes:

RPD = Relative Percent Difference; MDL: Mean Detection Limit

* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.

Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.

Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.

Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8.53: 2016 ST-31 QAQC

Date	Units	DL	ST-31			RPD
			9-Aug-2016			
			Original	Duplicate		
Conventional Parameters						
Alkalinity	mg CaCO ₃ /L	2	44	44	0	
Hardness	mg CaCO ₃ /L	1	74	73	1	
TDS	mg/L	1	109	109	0	
TSS	mg/L	1	1	3	100	
Nutrients and Biological Indicators						
Ammonia (NH ₃)	mg N/L	0.01	< 0.01	0.18	<i>179</i>	
Ammonia-nitrogen	mg N/L	0.01	0.14	0.18	<i>25</i>	
Nitrate	mg N/L	0.01	1.26	1.14	10	
Nitrite	mg N/L	0.01	< 0.01	< 0.01	0	
Major Ions						
Chloride	mg/L	0.5	2.3	2.3	0	
Fluoride	mg/L	0.02	0.14	0.13	7	
Sulphate	mg/L	0.6	37.3	38	3	
Cyanide						
Total cyanide	mg/L	0.005	< 0.005	< 0.005	0	
Total Metals						
Aluminum	mg/L	0.006	0.154	0.16	4	
Arsenic	mg/L	0.0005	< 0.0005	< 0.0005	0	
Barium	mg/L	0.0005	0.0125	0.0114	9	
Cadmium	mg/L	0.00002	< 0.00002	< 0.00002	0	
Chromium	mg/L	0.0006	0.0039	< 0.0006	147	
Copper	mg/L	0.0005	0.008	0.0081	1	
Iron	mg/L	0.01	0.77	0.73	5	
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0	
Manganese	mg/L	0.0005	0.199	0.2061	4	
Mercury	mg/L	0.00001	< 0.00001	< 0.00001	0	
Molybdenum	mg/L	0.0005	< 0.0005	< 0.0005	0	
Nickel	mg/L	0.001	0.0055	0.0055	0	
Selenium	mg/L	0.001	< 0.001	< 0.001	0	
Silver	mg/L	0.0001	< 0.0001	< 0.0001	0	
Thallium	mg/L	0.0008	< 0.0008	< 0.0008	0	
Zinc	mg/L	0.001	0.001	< 0.001	0	
% Exceedances*					4%	

Footnotes:

RPD = Relative Percent Difference; MDL: Mean Detection Limit

* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.

Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.

Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.

Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8.54: 2016 ST-20 Pit Lake QAQC

Date	Units	DI	9-Aug-16		
			Original	Duplicate	RPD
Conventional Parameters					
Alkalinity	mg CaCO3/L	2	80	81	1
Bicarbonate alkalinity	mg CaCO3/L	2	80	81	1
Carbonate alkalinity	mg CaCO3/L	2	< 2	< 2	0
Hardness	mg CaCO3/L	1	154	149	3
TDS	mg/L	1	394	392	1
TSS	mg/L	1	6	9	40
TOC	mg/L	0.2	1	0.3	80
DOC	mg/L	0.2	< 0.2	< 0.2	0
Nutrients and Biological Indicators					
Ammonia nitrogen (NH3-NH4)	mg N/L	0.01	3.98	4.02	1
Total Kjeldahl Nitrogen	mg N/L	0.05	3.75	3.87	3
Nitrate	mg N/L	0.01	3.01	3.04	1
Nitrite	mg N/L	0.01	0.36	0.36	0
Total Phosphorus	mg P/L	0.01	0.03	0.02	40
Ortho-phosphate	mg P/L	0.01	0.03	0.05	50
Major Ions					
Calcium	mg/L	0.03	41.20	39.80	3
Potassium	mg/L	0.05	8.51	7.84	8
Magnesium	mg/L	0.02	12.60	12.20	3
Sodium	mg/L	0.05	34.60	34.40	1
Chloride	mg/L	0.5	24.90	24.90	0
Sulphate	mg SO4/L	0.6	142	144	1
Reactive Silica	mg/L	0.01	5.3	5.4	2
Cyanide					
Total cyanide	mg/L	0.005	< 0.005	< 0.005	0
Free cyanide	mg/L	0.005	< 0.005	< 0.005	0
Total Metals					
Aluminum	mg/L	0.006	0.240	0.228	5
Antimony	mg/L	0.0001	0.002	0.001	14
Arsenic	mg/L	0.0005	< 0.0005	< 0.0005	0
Barium	mg/L	0.0005	0.053	0.052	3
Boron	mg/L	0.01	< 0.01	< 0.01	0
Beryllium	mg/L	0.0005	< 0.001	< 0.001	0
Cadmium	mg/L	0.00002	< 0.00002	< 0.00002	0
Chromium	mg/L	0.0006	0.0072	< 0.0006	169
Copper	mg/L	0.0005	0.0018	0.0009	67
Iron	mg/L	0.01	0.63	0.66	5
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0
Lithium	mg/L	0.0050	< 0.005	< 0.005	0
Manganese	mg/L	0.0005	0.167	0.162	3
Mercury	mg/L	0.00001	0.00007	0.00005	33
Molybdenum	mg/L	0.0005	0.028	0.027	2
Nickel	mg/L	0.0005	0.0111	0.0109	2
Selenium	mg/L	0.001	0.001	0.001	0
Strontium	mg/L	0.005	0.28	0.26	8
Tin	mg/L	0.001	< 0.001	< 0.001	0
Titanium	mg/L	0.01	0.05	0.04	22
Thallium	mg/L	0.005	< 0.001	< 0.001	0
Uranium	mg/L	0.001	0.009	0.009	0
Vanadium	mg/L	0.0005	< 0.0005	0.0010	67
Zinc	mg/L	0.001	0.001	0.001	0

Date	Units	DI	Original	Duplicate	RPD
Conventional Parameters					
Alkalinity	mg CaCO ₃ /L	2	80	81	1
Dissolved Metals					
Aluminum	mg/L	0.006	< 0.006	< 0.006	0
Arsenic	mg/L	0.0005	< 0.0005	< 0.0005	0
Antimony	mg/L	0.0001	0.002	0.001	21
Barium	mg/L	0.0005	0.05	0.05	3
Boron	mg/L	0.01	< 0.01	< 0.01	0
Beryllium	mg/L	0.0005	< 0.0005	< 0.0005	0
Cadmium	mg/L	0.00002	0.00003	< 0.00002	40
Chromium	mg/L	0.0006	0.0023	< 0.0006	117
Copper	mg/L	0.0005	0.0007	0.0009	25
Iron	mg/L	0.01	< 0.01	< 0.01	0
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0
Lithium	mg/L	0.0050	< 0.01	< 0.01	0
Manganese	mg/L	0.0005	0.1500	0.1422	5
Mercury	mg/L	0.00001	0.00006	0.00005	18
Molybdenum	mg/L	0.0005	0.0237	0.0224	6
Nickel	mg/L	0.0005	0.0096	0.0099	3
Selenium	mg/L	0.001	< 0.001	< 0.001	0
Strontium	mg/L	0.005	0.285	0.247	14
Thallium	mg/L	0.005	< 0.0008	< 0.0008	0
Tin	mg/L	0.001	< 0.001	< 0.001	0
Titanium	mg/L	0.01	0.04	0.04	0
Uranium	mg/L	0.005	0.009	0.009	0
Vanadium	mg/L	0.001	< 0.0005	< 0.0005	0
Zinc	mg/L	0.0005	< 0.001	< 0.001	0
% Exceedances*					0%

Footnotes:

RPD = Relative Percent Difference; MDL: Mean Detection Limit

* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.

Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.

Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.

Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8.55: 2016 ST-16 Seepage QAQC

Date	Units	DL	02-Aug-16			04-Oct-16		
			Original	Duplicate	RPD	Original	FB	
Conventional Parameters								
TDS	mg/L	1	306	305	0	397	1	
TSS	mg/L	1	1	3	100	29	< 1	
Alkalinity	mg CaCO ₃ /L	2	70	70	0	74	4	
Hardness	mg CaCO ₃ /L	1	155	150	3	251	< 1	
Colour	colour	1	27	28	4	13	2	
D.O.C	mg/L	0.2	7.1	7.4	4	4.5	< 0.2	
T.O.C	mg/L	0.2	9.6	9.1	5	6.7	0.7	
Nutrient and Biological Indicators								
Ammonia (NH ₃)	mg N/L	0.01	< 0.01	NA		< 0.01	< 0.01	
Ammonia nitrogen (NH ₃ -NH ₄)	mg N/L	0.01	0.18	0.23	24	0.13	0.05	
Nitrate	mg N/L	0.01	6.42	6.31	2	12.6	< 0.01	
Nitrite	mg N/L	0.01	0.08	0.41	135	0.05	< 0.01	
Kjeldahl nitrogen	mg N/L	0.01	1.07	< 0.01	196	0.94	0.19	
Ortho-phosphate (O-PO ₄)	mg P/L	0.01	0.06	0.07	15	< 0.01	< 0.01	
Chlorophyll A	µg / L	0.13	0.62	NA		0.59	< 0.13	
Major Ions								
Bromides	mg/L	0.01	0.05	0.05	0	< 0.01	< 0.01	
Chloride	mg/L	0.5	8.0	8.1	1	10.2	< 0.5	
Fluoride	mg/L	0.02	0.2	0.19	5	0.2	< 0.02	
Calcium	mg/L	0.03	NA	NA		58.7	0.3	
Sodium	mg/L	0.05	NA	NA		20.8	< 0.05	
Sulphate	mg/L	0.6	123	119	3	186	3.4	
Thiosulfates (S ₂ O ₃)	mg/L	0.02	< 0.02	< 0.02	0	< 0.02	< 0.02	
Thiocyanates (SNC)	mg/L	0.05	0.54	< 0.05	166	< 0.05	< 0.05	
Cyanide								
CN Total	mg/L	0.005	< 0.005	< 0.005	0	0.001	< 0.001	
CN Free (SGS)	mg/L	0.005	< 0.005	< 0.005	0	< 0.005	NA	
CN WAD	mg/L	0.005	< 0.005	< 0.005	0	< 0.001	< 0.001	
Dissolved Metals								
Aluminium	mg/L	0.006	< 0.006	< 0.006	0	< 0.006	< 0.006	
Antimony	mg/L	0.0001	0.0003	0.0003	0	< 0.0001	< 0.0001	
Arsenic	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	
Boron	mg/L	0.01	< 0.01	< 0.01	0	0.02	< 0.01	
Barium	mg/L	0.0005	0.0174	0.0163	7	0.019	< 0.0005	
Beryllium	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	
Cadmium	mg/L	0.00002	< 0.00002	< 0.00002	0	< 0.00002	< 0.00002	
Chromium	mg/L	0.0006	< 0.0006	< 0.0006	0	< 0.0006	< 0.0006	
Cobalt	mg/L	0.0005	0.0023	0.0023	0	0.0025	< 0.0005	
Copper	mg/L	0.0005	0.0253	0.0283	11	0.0107	< 0.0005	
Iron	mg/L	0.0005	0.21	0.2	5	0.05	< 0.0005	
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0	0.0004	< 0.0003	
Lithium	mg/L	0.005	< 0.005	< 0.005	0	< 0.005	< 0.005	
Manganese	mg/L	0.0005	0.3162	0.3126	1	0.3706	< 0.0005	
Magnesium	mg/L	0.02	14.6	14.7	1	NA		
Mercury	mg/L	0.00001	< 0.00001	< 0.00001	0	< 0.00001	< 0.00001	
Molybdenum	mg/L	0.0005	0.0141	0.0135	4	0.0113	< 0.0005	
Nickel	mg/L	0.0005	0.0345	0.0349	1	0.0321	< 0.0005	
Selenium	mg/L	0.001	< 0.001	< 0.001	0	< 0.001	< 0.001	
Strontium	mg/L	0.005	0.172	0.164	5	0.098	< 0.005	
Silver	mg/L	0.0001	< 0.0001	< 0.0001	0	< 0.0001	< 0.0001	
Tin	mg/L	0.001	< 0.001	< 0.001	0	< 0.001	< 0.001	
Thallium	mg/L	0.0008	< 0.0008	< 0.0008	0	< 0.0008	< 0.0008	
Titanium	mg/L	0.01	0.02	0.02	0	0.02	< 0.01	
Uranium	mg/L	0.001	0.004	0.004	0	0.007	< 0.001	
Vanadium	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005	0.0011	
Zinc	mg/L	0.001	< 0.001	< 0.001	0	< 0.0001	< 0.001	
Total Metals								
Aluminium	mg/L	0.006	0.074	0.075	1	0.223	< 0.006	
Antimony	mg/L	0.0001	0.0004	0.0003	29	0.0001	< 0.0001	
Arsenic	mg/L	0.0005	0.0035	< 0.005	35	0.0024	< 0.0005	
Boron	mg/L	0.01	< 0.01	< 0.01	0	0.02	< 0.01	
Barium	mg/L	0.0005	0.0175	0.018	3	0.0198	0.0007	
Beryllium	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005	0.0009	
Cadmium	mg/L	0.00002	< 0.00002	< 0.00002	0	< 0.00002	0.00006	
Copper	mg/L	0.0005	0.0304	0.0306	1	0.0157	< 0.0005	
Chromium	mg/L	0.0006	< 0.0006	< 0.0006	0	< 0.0006	0.0024	
Cobalt	mg/L	0.0005	0.0026	0.0024	8	0.0032	< 0.0005	
Iron	mg/L	0.0005	0.55	0.53	4	0.56	< 0.0005	
Lithium	mg/L	0.0005	< 0.005	< 0.005	0	< 0.005	< 0.0005	
Manganese	mg/L	0.0005	0.3248	0.3071	6	0.4176	< 0.0005	
Magnesium	mg/L	0.0005	14.7	14.1	4	25.5	< 0.0005	
Mercury	mg/L	0.0005	0.00088	0.00083	6	< 0.00001	< 0.0005	
Molybdenum	mg/L	0.0005	0.0133	0.013	2	0.0114	< 0.0005	
Nickel	mg/L	0.0005	0.0362	0.0352	3	0.0364	< 0.0005	
Lead	mg/L	0.0005	< 0.0003	< 0.0003	0	< 0.0003	< 0.0005	
Phosphorus	mg P/L	0.01	0.014	0.014	0	0.013	0.0019	
Potassium	mg/L	0.05	9.04	8.62	5	10.5	0.09	
Selenium	mg/L	0.001	< 0.001	< 0.001	0	< 0.001	< 0.001	
Silver	mg/L	0.0001	< 0.0001	< 0.0001	0	< 0.0001	< 0.0001	
Silica	mg/l	0.1	2.6	2.5	4	5.8	< 0.1	
Tin	mg/L	0.001	< 0.001	< 0.001	0	< 0.001	< 0.001	
Strontium	mg/L	0.005	0.178	0.175	2	0.102	< 0.005	
Tellurium	mg/L	0.0005	NA	NA		< 0.0005	< 0.0005	
Titanium	mg/L	0.01	0.02	0.02	0	0.03	< 0.01	
Thallium	mg/L	0.0008	< 0.0008	< 0.0008	0	< 0.0008	< 0.0008	
Uranium	mg/L	0.001	0.004	0.004	0	0.007	< 0.001	
Vanadium	mg/L	0.0005	0.0005	< 0.0005	0	< 0.0005	0.0021	
Zinc	mg/L	0.001	< 0.001	NA		0.004	0.005	
% Exceedances*					1%			

Footnotes:

RPD = Relative Percent Difference; MDL: Mean Detection Limit

* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.

Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.

Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.

Italic values correspond to a RPD higher than 20% and for which one of the result is within 10x the MDL and the other one exceeds 10x the MDL.

Table 8.56: 2016 Bulk Fuel Storage Facility QAQC

Date	Units	DL	ST-40.2			
			6-Jun-2016			
			Original	Duplicate	RPD	Field Blank
TSS	mg/L	1	4	3	29	< 1
Ammonia	mg/L	0.01	< 0.01	< 0.01	0	< 0.0
Benzene	µg/L	0.3	< 0.3	< 0.3	0	< 0.3
Toluene	µg/L	0.3	< 0.3	< 0.3	0	< 0.3
Ethylbenzene	µg/L	0.3	< 0.3	< 0.3	0	< 0.3
Total Xylenes	µg/L	0.3	< 0.3	< 0.3	0	< 0.3
Total oil and grease	mg/L	1	< 1	< 1	0	< 1
Arsenic	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005
Copper	mg/L	0.0005	0.0021	0.0028	-29	< 0.0005
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0	< 0.0003
Nickel	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005
Zinc	mg/L	0.005	0.005	0.004	22	0.005
% Exceedances*					0%	

Footnotes:

RPD = Relative Percent Difference; MDL: Mean Detection Limit

* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.

Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.

Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.

Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8.57: 2016 Analite NEP #2 calibration datasheets

Date	Turbidity meter		
	Standard	Initial reading NTU	Final reading NTU
2016-07-25	0.00	0.49	0.03
	10.00	10.24	9.98
	100.00	100.80	100.10
2016-07-26	0.00	0.04	-0.02
	10.00	9.91	10.01
	100.00	100.10	99.90
2016-07-27	0.00	0.10	0.01
	10.00	10.08	10.02
	100.00	100.80	99.98
2016-07-28	0.00	0.04	0.01
	10.00	10.03	10.00
	100.00	99.30	100.00
2016-07-29	0.00	0.10	-0.01
	10.00	10.04	9.98
	100.00	99.90	100.00
2016-07-30	0.00	0.10	0.04
	10.00	10.02	9.99
	100.00	100.20	99.90
2016-07-31	0.00	0.01	-0.01
	10.00	10.02	10.01
	100.00	100.10	99.90
2016-08-01	0.00	-0.01	-0.01
	10.00	10.01	10.00
	100.00	100.00	99.90
2016-08-02	0.00	-0.02	0.01
	10.00	10.00	10.01
	100.00	99.90	100.10
2016-08-03	0.00	0.01	0.02
	10.00	9.99	10.01
	100.00	99.90	100.00
2016-08-04	0.00	0.06	0.00
	10.00	9.98	10.00
	100.00	99.60	100.40
2016-08-06	0.00	0.04	-0.02
	10.00	10.12	9.99
	100.00	101.30	99.80
2016-08-07	0.00	-0.02	-0.01
	10.00	9.95	10.01
	100.00	99.60	100.10
2016-08-08	0.00	-0.02	-0.01
	10.00	10.10	9.98
	100.00	100.20	100.20
2016-08-09	0.00	0.02	0.01
	10.00	9.97	9.99
	100.00	100.00	99.60
2016-08-10	0.00	0.04	0.01
	10.00	10.03	0.03
	100.00	100.50	100.10

Date	Turbidity meter		
	Standard	Initial reading NTU	Final reading NTU
2016-08-11	0.00	-0.02	0.03
	10.00	10.03	10.01
	100.00	99.70	99.90
2016-08-12	0.00	0.01	-0.01
	10.00	10.04	1.00
	100.00	100.70	99.80
2016-08-13	0.00	0.04	0.00
	10.00	10.08	10.00
	100.00	100.60	99.90
2016-08-14	0.00	0.09	0.02
	10.00	10.05	9.98
	100.00	100.40	100.00
2016-08-15	0.00	0.07	0.03
	10.00	10.15	9.99
	100.00	100.40	100.00
2016-08-16	0.00	-0.06	-0.01
	10.00	9.99	10.03
	100.00	84.60	99.90
2016-08-17	0.00	-0.06	-0.01
	10.00	9.97	10.01
	100.00	88.20	100.00
2016-08-18	0.00	-0.04	-0.02
	10.00	9.97	10.00
	100.00	84.30	99.70
2016-08-19	0.00	0.05	-0.01
	10.00	9.70	10.01
	100.00	99.60	100.10
2016-08-20	0.00	-0.02	0.02
	10.00	10.02	9.97
	100.00	99.80	100.10
2016-08-22	0.00	0.93	0.02
	10.00	9.92	10.03
	100.00	79.00	99.90
2016-08-25	0.00	0.08	0.00
	10.00	9.89	10.04
	100.00	78.00	100.10
2016-08-28	0.00	-0.04	0.04
	10.00	9.87	9.95
	100.00	100.60	99.80
2016-08-29	0.00	0.08	0.00
	10.00	9.42	9.97
	100.00	99.60	100.20
2016-08-30	0.00	0.04	-0.04
	10.00	9.99	9.99
	100.00	99.90	99.90
2016-09-01	0.00	0.01	0.00
	10.00	9.96	9.99
	100.00	99.40	100.00
2016-09-02	0.00	0.06	0.00
	10.00	10.00	9.97
	100.00	100.10	100.10

Date	Turbidity meter		
	Standard	Initial reading NTU	Final reading NTU
2016-09-04	0.00	0.04	-0.01
	10.00	10.01	10.00
	100.00	99.70	99.90
2016-09-05	0.00	0.07	0.01
	10.00	9.91	9.97
	100.00	99.70	99.80
2016-09-06	0.00	0.01	0.00
	10.00	10.00	10.00
	100.00	100.60	100.20
2016-09-07	0.00	0.05	0.01
	10.00	10.21	9.99
	100.00	100.10	99.60
2016-09-08	0.00	0.10	-0.01
	10.00	9.99	9.96
	100.00	98.40	100.10
2016-09-09	0.00	0.03	0.01
	10.00	9.97	9.99
	100.00	99.60	100.00
2016-09-11	0.00	0.06	0.01
	10.00	9.93	9.98
	100.00	101.00	100.10
2016-09-12	0.00	0.03	0.01
	10.00	9.97	9.99
	100.00	99.70	100.00
2016-09-13	0.00	0.03	0.01
	10.00	9.97	9.99
	100.00	99.80	100.00
2016-09-14	0.00	0.01	0.01
	10.00	10.05	10.00
	100.00	99.80	99.90
2016-09-15	0.00	-0.01	0.00
	10.00	10.05	10.04
	100.00	100.10	99.90
2016-09-16	0.00	0.01	0.00
	10.00	9.92	10.01
	100.00	99.30	100.10
2016-09-17	0.00	0.04	-0.01
	10.00	9.55	10.01
	100.00	100.10	100.10
2016-09-18	0.00	-0.03	0.01
	10.00	10.06	10.01
	100.00	100.40	100.00
2016-09-19	0.00	-0.10	0.02
	10.00	9.70	9.98
	100.00	156.00	100.00
2016-09-20	0.00	0.18	-0.01
	10.00	10.07	10.02
	100.00	100.60	100.10
2016-09-21	0.00	-0.05	0.01
	10.00	10.02	10.03
	100.00	100.20	100.20

Date	Turbidity meter		
	Standard	Initial reading NTU	Final reading NTU
2016-09-22	0.00	0.00	0.00
	10.00	9.99	10.02
	100.00	100.05	99.90
2016-09-23	0.00	0.00	-0.01
	10.00	10.01	9.98
	100.00	99.70	100.10
2016-09-24	0.00	-0.08	0.01
	10.00	10.03	10.02
	100.00	101.20	100.00
2016-09-25	0.00	0.02	0.01
	10.00	10.06	9.99
	100.00	99.70	100.00
2016-09-26	0.00	-0.07	0.03
	10.00	8.90	10.00
	100.00	86.00	99.90
2016-09-27	0.00	0.57	-0.02
	10.00	9.96	9.96
	100.00	100.90	100.10
2016-09-28	0.00	0.07	0.04
	10.00	10.20	9.99
	100.00	100.20	100.50
2016-09-29	0.00	0.14	-0.01
	10.00	9.99	10.02
	100.00	99.20	100.00
2016-10-01	0.00	0.08	-0.04
	10.00	9.89	9.96
	100.00	99.70	99.80
2016-11-25	0.00	-0.53	0.04
	10.00	13.58	10.56
	100.00	102.50	101.60
2016-11-26	0.00	0.58	-0.15
	10.00	10.71	9.48
	100.00	122.00	100.10
2016-11-27	0.00	-0.53	-0.20
	10.00	13.81	12.51
	100.00	108.00	100.30
2016-11-27	0.00	-0.15	-0.30
	10.00	9.49	10.20
	100.00	90.50	100.00
2016-12-22	0.00	-0.87	-0.47
	10.00	18.02	9.74
	100.00	83.20	99.70
2016-12-24	0.00	-0.32	-0.12
	10.00	7.18	12.09
	100.00	99.70	105.00
2016-12-28	0.00	-0.58	-0.10
	10.00	17.65	6.73
	100.00	99.70	99.90
2016-12-31	0.00	-0.22	0.02
	10.00	4.78	9.78
	100.00	95.40	100.30

Date	Turbidity meter		
	Standard	Initial reading NTU	Final reading NTU
2015-05-11	0.00	0.05	-0.02
	10.00	9.96	9.97
	100.00	99.70	100.20
2015-05-12	0.00	-0.02	-0.02
	10.00	9.91	10.05
	100.00	99.70	100.00
2015-05-13	0.00	-0.01	-0.01
	10.00	10.01	9.99
	100.00	99.50	99.90
2015-05-19	0.00	0.03	0.02
	10.00	9.90	10.01
	100.00	100.10	100.00
2015-05-20	0.00	0.04	-0.01
	10.00	10.03	9.96
	100.00	99.90	100.00
2015-05-22	0.00	0.03	0.01
	10.00	10.04	9.99
	100.00	99.80	100.00
2015-07-13	0.00	0.24	0.04
	10.00	10.13	10.01
	100.00	100.20	100.10
2015-07-16	0.00	1.28	0.01
	10.00	11.67	10.07
	100.00	105.05	100.02
2015-07-18	0.00	1.18	0.03
	10.00	11.67	10.05
	100.00	105.03	100.04
2015-07-19	0.00	1.20	0.03
	10.00	11.58	10.01
	100.00	105.00	100.05
2015-07-20	0.00	1.18	0.02
	10.00	11.64	9.99
	100.00	105.40	99.80
2015-07-22	0.00	1.16	0.02
	10.00	11.71	10.01
	100.00	106.50	100.00
2015-07-23	0.00	0.01	-0.03
	10.00	10.00	10.00
	100.00	100.30	100.00
2015-07-24	0.00	0.29	0.08
	10.00	10.01	9.99
	100.00	80.00	99.90
2015-07-25	0.00	0.36	0.01
	10.00	10.05	10.02
	100.00	80.02	100.02
2015-07-26	0.00	0.29	0.02
	10.00	10.05	9.99
	100.00	78.10	103.00
2015-07-27	0.00	0.28	0.01
	10.00	10.05	9.99
	100.00	80.01	100.03

Date	Turbidity meter		
	Standard	Initial reading NTU	Final reading NTU
2015-07-28	0.00	0.30	0.04
	10.00	10.09	10.02
	100.00	80.00	100.02
2015-07-29	0.00	0.35	-0.02
	10.00	10.33	9.99
	100.00	79.30	97.60
2015-07-31	0.00	-1.19	0.03
	10.00	10.30	10.02
	100.00	105.10	99.50
2015-08-02	0.00	-0.01	0.03
	10.00	10.03	10.02
	100.00	99.50	100.00
2015-08-21	0.00	-0.06	0.00
	10.00	9.83	9.98
	100.00	98.60	100.20
2015-08-24	0.00	0.05	0.00
	10.00	10.07	9.94
	100.00	101.00	100.10
2015-08-25	0.00	0.25	0.00
	10.00	10.16	10.00
	100.00	101.10	100.00
2015-08-28	-0.01	0.03	0.00
	9.39	10.01	10.00
	101.80	100.00	100.00
2015-08-30	-0.04	0.00	0.00
	9.98	9.94	10.00
	101.40	99.80	100.00
2015-08-31	-0.08	-0.03	0.00
	9.83	10.21	10.00
	101.10	99.80	100.00
2015-09-02	0.54	0.02	0.00
	10.00	10.12	10.00
	79.20	100.30	100.00
2015-09-04	0.28	0.00	0.00
	10.07	10.02	10.00
	79.00	100.20	100.00
2015-09-09	0.49	0.03	0.00
	10.21	10.04	10.00
	87.30	99.70	100.00
2015-09-12	-0.10	0.00	0.00
	10.17	10.02	10.00
	100.70	100.10	100.00
2015-09-14	-0.05	0.00	0.00
	10.24	10.00	10.00
	101.10	99.90	100.00
2015-09-15	-0.06	0.00	0.00
	9.87	10.02	10.00
	99.60	100.10	100.00
2015-09-16	0.00	-0.05	-0.08
	10.00	9.97	10.00
	100.00	99.90	99.80

Date	Turbidity meter		
	Standard	Initial reading NTU	Final reading NTU
2015-09-22	0.00	-0.13	0.00
	10.00	10.00	10.00
	100.00	99.60	100.00
2015-09-24	0.00	0.32	0.02
	10.00	9.64	9.98
	100.00	92.30	100.00
2015-09-26	0.00	-0.14	0.01
	10.00	9.88	10.00
	100.00	79.90	100.00
2015-09-28	0.00	-0.01	0.00
	10.00	9.87	9.99
	100.00	106.30	100.20
2015-10-01	0.00	-0.11	0.01
	10.00	10.29	10.01
	100.00	98.20	99.90
2015-10-04	0.00	0.06	0.01
	10.00	10.09	10.03
	100.00	102.10	100.10
2015-10-06	0.00	0.16	-0.02
	10.00	10.06	9.98
	100.00	100.10	99.80
2015-10-10	0.00	-0.07	-0.04
	10.00	9.96	9.98
	100.00	99.60	100.20
2015-10-13	0.00	4.11	0.00
	10.00	10.30	10.00
	100.00	78.10	100.00
2015-10-16	0.00	-6.19	0.00
	10.00	9.26	10.00
	100.00	100.50	99.60
2015-10-20	0.00	1.59	0.00
	10.00	10.63	10.00
	100.00	78.50	100.00
2015-10-22	0.00	0.75	0.00
	10.00	10.13	9.97
	100.00	77.90	99.60
2015-10-26	0.00	0.58	0.06
	10.00	9.94	9.97
	100.00	89.20	96.50
2015-10-29	0.00	0.60	0.02
	10.00	9.98	10.01
	100.00	79.90	100.20
2015-10-30	0.00	0.60	-0.01
	10.00	9.93	10.00
	100.00	77.90	100.50
2015-10-31	0.00	0.55	-0.02
	10.00	9.90	10.03
	100.00	69.70	102.00
2015-11-01	0.00	1.12	0.04
	10.00	9.92	10.02
	100.00	77.20	100.70

Date	Turbidity meter		
	Standard	Initial reading NTU	Final reading NTU
2015-11-02	0.00	0.76	-0.03
	10.00	10.00	10.02
	100.00	78.00	99.80
2015-11-03	0.00	0.92	-0.01
	10.00	10.03	10.00
	100.00	75.80	96.40
2015-11-04	0.00	0.51	0.00
	10.00	10.04	9.98
	100.00	79.10	100.20
2015-11-05	0.00	0.09	0.01
	10.00	10.01	10.00
	100.00	81.10	100.40
2015-11-10	0.00	-0.15	-0.01
	10.00	9.96	10.04
	100.00	79.20	100.10
2015-11-11	0.00	0.05	0.03
	10.00	10.03	10.00
	100.00	100.60	100.10
2015-11-13	0.00	0.05	0.03
	10.00	10.10	10.05
	100.00	99.60	99.90
2015-11-15	0.00	1.40	0.01
	10.00	13.01	9.99
	100.00	77.50	100.00
2015-11-19	0.00	0.08	0.07
	10.00	10.05	10.00
	100.00	84.90	100.40
2015-11-20	0.00	0.20	0.06
	10.00	10.02	9.99
	100.00	84.70	100.10

Table 8.58: 2016 Analite NEP #4 calibration datasheets

Date	Turbidity meter		
	Standard	Initial reading NTU	Final reading NTU
2016-01-02	0	-0.01	0.00
	10	10.06	9.99
	100	101.90	100.30
2016-01-05	0	-0.01	0.00
	10	10.06	9.99
	100	100.50	100.30
2016-01-06	0	0.45	0.00
	10	10.13	10.04
	100	83.90	100.20
2016-01-07	0	0.69	0.02
	10	10.34	10.04
	100	83.40	100.40
2016-01-08	0	0.48	0.04
	10	10.14	10.00
	100	84.80	100.20
2016-01-09	0	0.01	0.01
	10	9.98	10.00
	100	99.40	100.00
2016-01-10	0	0.21	0.03
	10	10.26	9.99
	100	84.30	99.80
2016-01-12	0	0.81	0.04
	10	10.32	9.98
	100	82.60	100.10
2016-01-14	0	0.72	-0.03
	10	10.23	9.99
	100	82.90	100.00
2016-01-15	0	-0.04	0.01
	10	10.05	10.00
	100	101.30	100.20
2016-01-17	0	-0.03	0.00
	10	10.10	10.03
	100	101.00	100.00
2016-01-18	0	-0.04	-0.02
	10	9.98	10.00
	100	99.70	99.90
2016-01-19	0	0.01	0.00
	10	9.95	9.99
	100	99.70	100.10
2016-01-20	0	-0.12	-0.02
	10	10.15	9.96
	100	86.90	99.80
2016-01-21	0	0.58	-0.02
	10	10.13	9.95
	100	84.60	100.10
2016-01-22	0	0.61	-0.03
	10	10.18	10.02
	100	86.10	100.00

2016-01-23	0	0.32	-0.02
	10	10.26	10.00
	100	85.70	99.80
2016-01-24	0	0.40	0.00
	10	10.38	9.98
	100	84.10	99.80
2016-01-25	0	0.56	-0.03
	10	10.24	10.01
	100	82.90	99.90
2016-01-26	0	0.08	-0.02
	10	10.08	10.01
	100	97.60	100.00
2016-01-27	0	0.34	-0.02
	10	10.10	10.00
	100	93.80	100.00
2016-01-28	0	0.23	-0.03
	10	10.01	10.00
	100	92.60	100.00
2016-01-29	0	0.07	0.01
	10	10.01	10.00
	100	98.70	100.00
2016-01-30	0	0.05	-0.01
	10	10.00	10.00
	100	99.30	100.00
2016-01-31	0	0.08	-0.01
	10	10.00	10.00
	100	100.40	99.90
2016-02-01	0	0.06	0.00
	10	10.01	10.00
	100	100.10	100.00
2016-02-02	0	0.02	0.00
	10	10.03	10.00
	100	100.30	100.00
2016-02-03	0	0.22	0.00
	10	11.45	10.00
	100	101.00	100.00
2016-02-04	0	0.04	0.03
	10	9.98	10.05
	100	100.10	100.30
2016-02-05	0	0.00	0.00
	10	9.83	10.00
	100	99.40	100.00
2016-02-06	0	0.19	0.00
	10	10.03	10.00
	100	100.60	100.00
2016-02-07	0	0.02	0.00
	10	9.97	10.00
	100	100.00	100.00
2016-02-08	0	0.01	0.01
	10	9.95	10.00
	100	99.70	100.00
2016-02-09	0	-0.03	0.02
	10	10.01	10.03
	100	100.10	100.00

2016-02-10	0 10 100	0.06 10.03 99.50	0.03 10.01 99.80
2016-02-11	0 10 100	0.02 9.95 99.20	0.00 10.00 100.00
2016-02-12	0 10 100	0.02 10.01 99.90	0.00 9.98 100.10
2016-02-13	0 10 100	0.02 10.05 90.10	0.02 9.98 99.90
2016-02-14	0 10 100	0.02 10.02 99.00	0.01 9.99 100.50
2016-02-15	0 10 100	-0.01 10.08 98.10	-0.01 10.01 100.10
2016-02-16	0 10 100	0.78 10.24 83.40	0.00 10.00 100.00
2016-02-18	0 10 100	0.00 10.09 99.80	0.00 10.00 100.00
2016-02-19	0 10 100	10.07	0.02 10.01 100.00
2016-02-20	0 10 100	0.85 10.26 82.80	0.01 10.02 100.00
2016-02-21	0 10 100	0.89 10.19 82.80	0.02 10.01 100.00
2016-02-22	0 10 100	0.87 10.14 83.30	0.01 10.03 99.80
2016-02-23	0 10 100	0.84 10.31 82.70	0.01 9.98 100.00
2016-02-26	0 10 100	0.13 10.01 100.30	0.00 9.99 100.00
2016-02-27	0 10 100	0.21 10.16 100.80	0.02 10.02 99.90
2016-02-29	0 10 100	0.06 11.53 100.40	0.03 9.99 99.80
2016-03-01	0 10 100	0.10 11.24 100.30	0.03 10.00 99.90
2016-03-02	0 10 100	0.03 10.04 100.80	0.01 10.00 100.10

2016-03-03	0	-0.14	0.00
	10	8.76	10.01
	100	100.30	99.90
2016-03-04	0	0.01	0.00
	10	10.02	10.01
	100	100.70	100.00
2016-03-05	0	-0.01	0.00
	10	9.95	10.00
	100	98.70	100.10
2016-03-06	0	-0.03	0.01
	10	9.93	10.00
	100	100.20	100.10
2016-03-07	0	0.03	0.00
	10	10.07	10.02
	100	103.50	99.90
2016-03-08	0	-0.06	0.00
	10	10.00	9.99
	100	100.00	100.00
2016-03-09	0	0.01	-0.04
	10	9.96	10.06
	100	99.00	100.00
2016-03-10	0	-0.50	0.00
	10	9.92	10.00
	100	96.50	100.20
2016-03-11	0	0.02	0.01
	10	10.00	10.00
	100	101.60	99.90
2016-03-12	0	-0.02	0.00
	10	10.04	10.00
	100	99.90	99.90
2016-03-13	0	-0.01	0.00
	10	9.99	10.00
	100	100.30	100.10
2016-03-14	0	-0.02	-0.01
	10	9.99	9.99
	100	99.80	100.00
2016-03-15	0	-0.02	0.00
	10	10.04	10.00
	100	100.60	100.10
2016-03-16	0	0.60	0.00
	10	9.98	9.98
	100	99.80	100.00
2016-03-17	0	0.23	0.00
	10	10.05	9.98
	100	100.90	100.10
2016-03-18	0	-0.03	-0.01
	10	10.08	10.00
	100	99.70	99.90
2016-03-19	0	-0.02	-0.01
	10	10.11	10.02
	100	99.90	100.00
2016-03-20	0	-0.03	-0.01
	10	10.18	9.99
	100	99.80	100.10

2016-03-21	0 10 100	0.13 10.03 100.20	-0.01 99.90 100.40
2016-03-22	0 10 100	1.36 10.05 99.70	-0.03 9.98 100.30
2016-03-23	0 10 100	-0.04 9.99 103.20	-0.02 10.00 101.20
2016-03-24	0 10 100	-0.03 10.01 103.40	-0.01 10.00 99.80
2016-03-25	0 10 100	0.15 9.99 99.90	-0.01 9.98 100.00
2016-03-26	0 10 100	-0.03 9.99 99.60	-0.02 10.01 100.00
2016-03-27	0 10 100	-0.01 9.86 103.30	-0.01 10.20 99.80
2016-03-28	0 10 100	-0.03 10.11 97.90	-0.01 10.02 100.00
2016-03-29	0 10 100	-0.03 9.89 100.10	0.00 9.97 100.00
2016-03-30	0 10 100	-0.01 9.93 99.90	0.01 9.99 100.00
2016-03-31	0 10 100	0.04 10.01 100.08	0.02 10.00 99.90
2016-04-01	0 10 100	0.03 10.05 100.40	0.00 10.01 100.10
2016-04-02	0 10 100	-0.03 10.03 100.10	0.00 10.01 100.10
2016-04-03	0 10 100	0.01 9.99 100.00	0.00 10.00 100.10
2016-04-04	0 10 100	0.00 10.00 99.60	0.00 10.00 99.90
2016-04-05	0 10 100	0.02 10.00 100.10	-0.01 10.01 100.00
2016-04-06	0 10 100	-0.01 10.04 100.10	0.03 10.00 100.00
2016-04-07	0 10 100	0.02 10.02 100.20	0.00 10.01 99.90

2016-04-08	0	0.01	0.00
	10	10.12	10.00
	100	100.90	100.20
2016-04-09	0	-0.01	0.00
	10	10.29	9.99
	100	99.10	100.10
2016-04-10	0	0.00	0.00
	10	9.72	10.02
	100	101.00	100.00
2016-04-11	0	-0.06	-0.01
	10	10.01	10.03
	100	100.10	100.00
2016-04-12	0	-0.02	0.00
	10	10.02	10.01
	100	100.50	99.50
2016-04-13	0	0.00	0.00
	10	10.01	10.01
	100	99.30	99.90
2016-04-14	0	0.00	0.00
	10	10.50	10.10
	100	99.20	100.00
2016-04-15	0	0.02	0.02
	10	10.15	10.02
	100	101.60	100.10
2016-04-16	0	0.01	0.00
	10	9.98	10.09
	100	96.70	100.00
2016-04-17	0	0.00	0.01
	10	9.97	10.01
	100	99.30	100.01
2016-04-18	0	0.02	0.01
	10	10.04	10.00
	100	99.80	100.60
2016-04-19	0	0.04	0.02
	10	9.99	10.12
	100	99.50	99.90
2016-04-20	0	0.03	0.02
	10	9.98	9.99
	100	99.04	99.90
2016-04-21	0	0.16	0.07
	10	10.04	10.02
	100	99.80	99.90
2016-04-22	0	0.07	0.00
	10	10.06	10.50
	100	100.20	97.70
2016-04-23	0	0.06	-0.02
	10	10.05	9.95
	100	97.80	100.10
2016-04-24	0	-0.03	-0.01
	10	10.04	10.01
	100	97.50	100.00
2016-04-25	0	-0.01	0.00
	10	9.91	9.98
	100	100.30	100.10

2016-04-26	0 10 100	0.13 9.97 100.60	0.00 10.00 100.10
2016-04-27	0 10 100	0.03 9.92 98.50	0.01 10.00 99.80
2016-04-28	0 10 100	-0.05 10.03 99.80	0.00 10.00 99.90
2016-04-29	0 10 100	-0.02 10.10 101.10	-0.02 10.02 100.00
2016-04-30	0 10 100	-0.03 9.94 100.80	0.00 10.00 100.10
2016-05-01	0 10 100	0.05 10.01 99.90	-0.01 9.98 99.90
2016-05-02	0 10 100	0.05 10.02 100.30	0.00 10.02 100.00
2016-05-03	0 10 100	0.04 10.06 100.00	-0.04 10.01 100.00
2016-05-04	0 10 100	-0.06 10.02 99.90	0.01 10.04 100.10
2016-05-05	0 10 100	0.07 10.02 100.40	0.03 9.97 100.10
2016-05-06	0 10 100	0.13 10.20 100.10	0.02 10.02 100.00
2016-05-07	0 10 100	0.01 9.97 99.60	-0.01 9.96 99.90
2016-05-08	0 10 100	0.01 10.01 99.70	-0.02 10.00 99.80
2016-05-09	0 10 100	0.01 9.95 99.20	0.02 10.02 100.10
2016-05-10	0 10 100	0.05 10.06 100.00	-0.02 10.01 100.00
2016-05-11	0 10 100	0.00 9.98 100.00	0.00 9.98 100.00
2016-05-12	0 10 100	-0.02 10.02 100.01	0.02 10.00 100.00
2016-05-13	0 10 100	0.01 10.03 99.90	-0.01 10.02 99.90

2016-05-14	0 10 100	0.01 10.03 100.10	0.00 9.99 99.90
2016-05-15	0 10 100	-0.01 9.97 99.80	0.01 9.99 99.90
2016-05-16	0 10 100	0.03 10.05 99.90	-0.04 10.05 100.10
2016-05-17	0 10 100	-0.03 10.03 100.40	0.00 10.04 100.20
2016-05-18	0 10 100	0.04 10.03 99.90	0.00 10.00 100.10
2016-05-19	0 10 100	-0.03 9.96 100.20	0.03 9.97 100.10
2016-05-20	0 10 100	0.01 9.94 99.60	0.00 10.00 100.10
2016-05-21	0 10 100	-0.03 10.02 100.40	0.02 9.97 100.00
2016-05-22	0 10 100	4.89 10.72 100.00	0.04 10.04 100.00
2016-05-23	0 10 100	4.61 10.56 100.00	-0.01 9.97 100.00
2016-05-24	0 10 100	0.04 9.95 100.70	-0.01 9.97 99.98
2016-05-25	0 10 100	0.03 9.93 99.80	0.00 10.00 100.00
2016-05-26	0 10 100	0.06 9.95 99.80	0.02 10.00 100.00
2016-05-28	0 10 100	-0.01 9.98 98.20	0.00 10.00 99.90
2016-06-01	0 10 100	0.54 10.20 76.50	-0.01 99.90 100.40
2016-06-02	0 10 100	0.51 10.15 99.70	0.04 10.00 100.00
2016-06-03	0 10 100	0.04 10.01 100.20	0.02 10.03 100.10
2016-06-04	0 10 100	0.00 9.97 99.70	-0.03 10.01 100.10

2016-06-05	0	0.02	-0.02
	10	10.01	10.01
	100	99.90	99.90
2016-06-06	0	-0.01	0.03
	10	10.03	9.98
	100	100.10	99.90
2016-06-07	0	0.03	0.02
	10	10.03	10.02
	100	99.70	100.10
2016-06-08	0	0.04	-0.01
	10	10.02	9.99
	100	100.30	99.70
2016-06-09	0	-0.05	0.02
	10	10.01	10.01
	100	99.90	99.70
2016-06-10	0	-0.03	0.01
	10	9.96	10.00
	100	99.80	100.00
2016-06-11	0	-0.03	-0.01
	10	10.01	9.99
	100	100.00	100.10
2016-06-12	0	-0.03	-0.01
	10	10.02	10.00
	100	99.90	100.10
2016-06-13	0	0.03	-0.02
	10	10.02	10.01
	100	100.20	99.9
2016-06-14	0	-0.03	0.02
	10	10.05	10.01
	100	100.50	100.00
2016-06-15	0	0.00	0.01
	10	10.05	9.99
	100	100.50	100.00
2016-06-16	0	-0.10	-0.04
	10	9.99	10.01
	100	99.50	99.90
2016-06-17	0	0.54	-0.02
	10	10.20	10.01
	100	76.50	100.03
2016-06-18	0	-0.03	-0.01
	10	9.94	9.99
	100	100.80	99.98
2016-06-19	0	-0.14	0
	10	9.12	10
	100	101.12	100
2016-06-20	0	-0.01	0.00
	10	9.97	10.02
	100	99.80	100.04
2016-06-21	0	-0.02	0.01
	10	9.96	9.97
	100	100.10	99.80
2016-06-22	0	0.06	0.00
	10	10.06	9.92
	100	99.70	99.90

2016-06-23	0 10 100	0.07 10.05 100.60	0.04 10.00 99.90
2016-06-24	0 10 100	-0.03 9.97 100.10	0.00 10.02 100.10
2016-06-25	0 10 100	0.02 10.04 100.10	0.01 9.92 100.30
2016-06-26	0 10 100	0.02 10.13 100.80	0.00 10.06 100.10
2016-06-27	0 10 100	0.01 10.09 100.80	0.07 9.75 100.00
2016-06-28	0 10 100	0.02 9.92 100.10	0.05 10.02 100.00
2016-06-29	0 10 100	0.05 9.99 99.90	0.03 10.00 99.80
2016-06-30	0 10 100	0.05 10.60 100.10	0.00 10.03 100.01
2016-07-01	0 10 100	0.01 10.04 100.10	0.00 9.99 100.00
2016-07-02	0 10 100	-1.05 -38.00 72.30	-0.03 9.96 99.60
2016-07-03	0 10 100	-0.15 9.78 97.80	0.01 9.97 99.50
2016-07-04	0 10 100	-0.15 9.85 99.30	-0.01 10.03 100.00
2016-07-05	0 10 100	-0.03 10.02 99.80	0.01 10.04 101.00
2016-07-06	0 10 100	0.02 10.07 100.30	0.03 10.02 100.10
2016-07-07	0 10 100	0.24 9.94 99.60	0.01 9.95 100.00
2016-07-08	0 10 100	0.06 9.95 100.20	100.10 10.13 100.10
2016-07-09	0 10 100	0.04 10.10 100.10	0.01 10.05 100.20
2016-07-11	0 10 100	-0.02 10.05 100.50	0.01 10.00 99.80

2016-07-12	0	0.02	0.06
	10	10.11	99.91
	100	100.70	100.00
2016-07-13	0	0.00	0.04
	10	9.97	9.99
	100	100.40	100.10
2016-07-14	0	0.12	0.08
	10	9.94	9.93
	100	99.60	100.10
2016-07-15	0	0.04	0.06
	10	10.03	10.02
	100	100.60	100.10
2016-07-16	0	0.10	-0.03
	10	10.03	10.02
	100	100.40	99.60
2016-07-17	0	0.01	0
	10	10.07	9.95
	100	100.20	99.8
2016-07-18	0	0.06	0.00
	10	9.95	10.00
	100	99.50	100.00
2016-07-19	0	0.07	0.10
	10	9.94	9.94
	100	99.60	100.20
2016-07-20	0	0.25	0.01
	10	10.10	9.96
	100	105.20	100.04
2016-07-23	0	-0.15	0.01
	10	10.03	10.00
	100	100.90	100.40

Table 8.59: 2016 Hatch Meter calibration datasheets

Date	Turbidity meter		
	Standard	Initial reading NTU	Final reading NTU
2016-10-01	20	24.30	19.90
	100	121.00	99.60
	800	812.00	796.00
2016-10-02	20	21.20	20.30
	100	96.80	99.80
	800	804.00	801.00
2016-10-03	20	12.10	19.90
	100	104.00	99.70
	800	803.00	803.00
2016-10-04	20	17.30	20.00
	100	109.00	99.80
	800	811.00	796.00
2016-10-05	20	17.30	20.00
	100	109.00	99.80
	800	811.00	796.00
2016-10-06	20	23.20	20.00
	100	108.00	95.00
	800	803.00	801.00
2016-10-07	20	19.10	19.90
	100	74.70	105.00
	800	812.00	803.00
2016-10-08	20	24.50	19.70
	100	132.00	99.40
	800	800.00	800.00
2016-10-09	20	21.40	19.70
	100	129.00	99.90
	800	779.00	801.00
2016-10-10	20	19.40	19.80
	100	102.00	99.70
	800	834.00	804.00
2016-10-12	20	21.60	19.60
	100	99.50	100.00
	800	820.00	820.00
2016-10-13	20	19.70	19.90
	100	97.00	99.20
	800		794.00
2016-10-14	20	12.20	19.90
	100	100.00	99.50
	800	796.00	799.00
2016-10-15	20	20.00	20.00
	100	99.50	100.00
	800	795.00	800.00
2016-10-16	20	19.70	20.10
	100	99.50	99.60
	800	805.00	796.00

2016-10-17	20	20.00	19.90
	100	99.90	99.60
	800	800.00	804.00
2016-10-18	20	20.20	19.80
	100	100.00	99.80
	800	798.00	789.00
2016-10-19	20	20.30	20.00
	100	100.00	100.00
	800	805.00	797.00
2016-10-21	20	19.60	20.00
	100	97.10	99.50
	800	782.00	796.00
2016-10-22	20	20.10	20.00
	100	99.50	100.00
	800	791.00	790.00
2016-10-23	20	20.40	20.00
	100	101.00	100.00
	800	785.00	799.00
2016-10-24	20	22.20	20.50
	100	99.50	99.90
	800	798.00	793.00
2016-10-26	20	20.80	20.40
	100	99.80	100.00
	800	799.00	797.00
2016-10-27	20	15.80	17.80
	100	87.00	105.00
	800	742.00	795.00
2016-10-29	20	25.00	18.00
	100	109.00	101.00
	800	856.00	800.00
2016-10-30	20	18.20	23.00
	100	105.00	101.00
	800	798.00	801.00
2016-10-31	20	20.70	19.80
	100	100.00	100.00
	800	783.00	804.00
2016-11-01	20	22.80	19.60
	100	102.00	99.70
	800	813.00	795.00
2016-11-02	20	13.30	20.50
	100	97.60	100.00
	800	798.00	797.00
2016-11-03	20	27.10	19.80
	100	100.00	100.00
	800	806.00	799.00
2016-11-04	20	21.60	20.50
	100	101.00	99.90
	800	802.00	801.00
2016-11-05	20	19.30	19.80
	100	95.60	100.00
	800	788.00	798.00

2016-11-06	20	19.30	20.50
	100	107.00	99.60
	800	772.00	801.00
2016-11-07	20	20.40	19.70
	100	97.60	99.50
	800	829.00	798.00
2016-11-08	20	20.00	20.00
	100	101.00	99.50
	800	822.00	802.00
2016-11-09	20	20.10	19.90
	100	97.70	99.50
	800	776.00	781.00
2016-11-10	20	19.60	19.70
	100	100.00	99.60
	800	794.00	798.00
2016-11-11	20	20.00	20.00
	100	101.00	99.80
	800	804.00	796.00
2016-11-12	20	20.20	20.01
	100	100.00	100.00
	800	804.00	801.00
2016-11-13	20	20.90	20.00
	100	99.00	99.50
	800	782.00	785.00
2016-11-14	20	20.00	20.00
	100	100.00	99.60
	800	800.00	801.00
2016-11-15	20	20.10	20.00
	100	99.40	99.60
	800	788.00	786.00
2016-11-16	20	20.10	20.50
	100	100.00	102.00
	800	786.00	793.00
2016-11-17	20	19.90	19.90
	100	98.10	99.60
	800	788.00	794.00
2016-11-18	20	20.50	20.40
	100	100.00	100.00
	800	799.00	798.00
2016-11-19	20	20.30	20.10
	100	105.00	99.70
	800	795.00	788.00
2016-11-20	20	19.30	20.10
	100	97.90	99.40
	800	787.00	791.00
2016-11-21	20	19.90	20.00
	100	99.80	100.00
	800	798.00	799.00
2016-11-22	20	20.00	20.00
	100	99.40	99.70
	800	791.00	819.00
2016-11-23	20	22.70	19.80
	100	97.60	101.00
	800	791.00	799.00

2016-11-24	20 100 800	24.10 104.00 793.00	20.30 99.80 799.00
2016-11-25	20 100 800	22.70 101.00 806.00	19.60 100.00 801.00
2016-11-26	20 100 800	22.10 95.50 802.00	20.30 99.60 801.00
2016-11-27	20 100 800	18.80 105.00 793.00	19.80 100.00 799.00
2016-11-28	20 100 800	21.20 111.00 787.00	19.90 99.70 801.00
2016-11-29	20 100 800	20.80 99.20 798.00	19.70 99.90 796.00
2016-12-02	20 100 800	21.30 102.00 79.80	19.90 99.60 795.00
2016-12-05	20 100 800	18 102 806	20.00 100.00 800.00
2016-12-06	20 100 800	19.80 100 798	20.00 999.00 800.00
2016-12-08	20 100 800	19.20 100 792	20.10 99.60 787.00
2016-12-09	20 100 800	20.40 99.90 792.00	20.00 100.00 799.00
2016-12-10	20 100 800	20.70 99.40 792.00	19.40 99.60 798.00
2016-12-11	20 100 800	20.80 99.20 786.00	20.00 99.60 782.00
2016-12-12	20 100 800	20.00 99.30 799.00	20.00 99.50 789.00
2016-12-13	20 100 800	20.00 100.00 793.00	20.00 99.90 798.00
2016-12-14	20 100 800	20.00 99.00 782.00	19.90 99.70 785.00
2016-12-16	20 100 800	19.90 101.00 792.00	19.90 100.00 804.00
2016-12-17	20 100 800	20.30 99.30 781.00	20.30 99.80 799.00

2016-12-18	20	20.40	20.00
	100	99.70	99.70
	800	799.00	799.00
2016-12-19	20	20.50	19.70
	100	99.90	100.00
	800	808.00	803.00
2016-12-20	20	19.60	20.00
	100	98.60	99.20
	800	789.00	794.00
2016-12-21	20	21.60	19.60
	100	99.50	99.60
	800	792.00	795.00
2016-12-22	20	22.50	19.60
	100	100.00	101.00
	800	802.00	802.00
2016-12-24	20	19.10	19.60
	100	101.00	99.50
	800	804.00	795.00
2016-12-25	20	20.40	19.80
	100	99.30	100.00
	800	795.00	803.00
2016-12-26	20	20.30	19.70
	100	101.00	100.00
	800	805.00	802.00
2016-12-27	20	18.50	19.50
	100	99.30	99.70
	800	800.00	798.00
2016-12-28	20	20.70	20.10
	100	101.00	99.80
	800	798.00	800.00
2016-12-29	20	19.30	19.90
	100	98.90	99.60
	800	783.00	797.00
2016-12-30	20	20.70	20.10
	100	101.00	99.80
	800	822.00	797.00
2016-12-31	20	19.10	19.80
	100	92.30	99.50
	800	786.00	799.00

Table 8.60: 2016 Oakton PCS35 calibration datasheets

Date	pH			Conductivity		
	Standard	Initial reading	Final reading	Standard	Initial reading (µS/cm)	Final reading (µS/cm)
5-Jan-16	4.00 7.00	4.03 6.93	3.98 6.98	1413	1450	1410
9-Jan-16				1413	1409	1412
10-Jan-16	4.00 7.00	4.31 7.08	4.01 6.99			
12-Jan-16	4.00 7.00	4.48 6.89	3.97 7.02	1413	1316	1414
18-Jan-16	4.00 7.00	4.05 7.02	3.99 6.99	1413	1422	1420
20-Jan-16	4.00 7.00	4.31 6.70	3.99 7.00	1413	1391	1415
25-Jan-16	4.00 7.00	4.58 6.50	3.97 7.03	1413	1308	1410
28-Jan-16	4.00 7.00	4.06 6.96	4.00 7.01	1413	1392	1414
1-Feb-16	4.00 7.00	3.98 7.02	4.01 7.01	1413	1391	1414
9-Feb-16	4.00 7.00	4.03 7.01	3.99 7.00			
10-Feb-16	4.00 7.00	4.06 7.11	4.00 7.04			
16-Feb-16	4.00 7.00	4.08 7.11	4.00 7.00			
20-Feb-16	4.00 7.00	4.63 7.55	3.98 7.03			
22-Feb-16	4.00 7.00	4.58 7.63	3.99 7.00	1413	1434	1410
23-Feb-16	4.00 7.00	4.55 7.51	4.00 7.01			
1-Mar-16	4.00 7.00	4.12 7.09	3.99 7.00	1413	1619	1416
12-Mar-16	4.00 7.00	3.97 6.98	3.99 6.98			
14-Mar-16	4.00 7.00	4.10 7.09	4.00 7.00	1413	1739	1412
17-Mar-16	4.00 7.00	4.49 7.14	3.99 6.98			
21-Mar-16	4.00 7.00	4.32 7.08	4.04 6.97			
22-Mar-16	4.00 7.00	4.07 6.95	4.01 7.03	1413		
24-Mar-16				1413	1458	1416
25-Mar-16	4.00 7.00	4.08 6.96	4.01 7.02			
29-Mar-16	4.00 7.00	4.06 6.95	4.00 7.03	1413	1429	1412
1-Apr-16	4.00 7.00	4.01 6.99	4.00 7.01	1413	1038	1416
5-Apr-16	4.00 7.00	4.10 6.95	4.01 7.02	1413	1411	1413
6-Apr-16	4.00 7.00	4.59 7.07	4.00 6.99	1413	1412	1413
8-Apr-16	4.00 7.00	3.98 6.95	3.99 6.99	1413	1429	1413
11-Apr-16	4.00 7.00	4.03 6.94	7.00 7.03	1413	1409	1413

14-Apr-16	4.00 7.00	3.99 6.98	4.00 7.01	1413	1410	1414
15-Apr-16	4.00 7.00	4.01 7.07	4.00 7.01	1413	1419	1413
16-Apr-16	4.00 7.00	4.06 7.09	4.00 7.01	1413	1415	1413
18-Apr-16	4.00 7.00	3.96 6.98	3.99 6.99	1413	1404	1413
20-Apr-16	4.00 7.00	3.96 6.98	4.00 6.99	1413	1408	1413
21-Apr-16	4.00 7.00	3.99 7.09	3.99 6.98	1413	1461	1412
22-Apr-16	4.00 7.00	3.97 7.00	4.01 7.02	1413	1397	1412
29-Apr-16	4.00 7.00	4.05 7.04	4.00 7.02	1413	1409	1413
3-May-16	4.00 7.00 10.00	3.98 6.93 10.00	4.00 7.00 10.05	1413	1419	1413
13-May-16	4.00 7.00 10.00	4.07 6.86 9.91	4.00 7.00 10.04	1413	1410	1413
20-May-16	4.00 7.00	4.13 7.01	4.01 7.01	1413	1407	1413
24-May-16	4.00 7.00	4.51 7.22	3.99 6.98	1413	1409	1415
31-May-16	4.00 7.00	4.01 6.84	3.99 6.99			
2-Jun-16	4.00 7.00 10.00	3.95 7.13 9.48	4.00 6.99 10.05	1413	1416	1413
6-Jun-16	4.00 7.00 10.00	3.96 7.08 10.08	4.01 7.00 10.06	1413	1417	1414
7-Jun-16	4.00 7.00 10.00	4.08 7.07 10.08	4.00 7.03 10.05	1413	1416	1412
10-Jun-16	4.00 7.00	4.00 7.02	4.01 7.02	1413	1388	1413
13-Jun-16	4.00 7.00	4.06 7.00	4.00 7.00	1413	1423	1415
16-Jun-16	4.00 7.00	4.18 7.05	4.00 6.99	1413	1439	1412
20-Jun-16	4.00 7.00	4.08 7.45	3.99 6.95	1413	1497	1412
24-Jun-16	4.00 7.00	4.15 7.02	4.09 7.00	1413	1407	1411
28-Jun-16	4.00 7.00	3.76 7.03	4.05 6.99	1413	1415	1413
1-Jul-16	4.00 7.00	4.06 6.97	4.03 7.04	1413	1391	1411
5-Jul-16	4.00 7.00	4.04 7.04	4.04 7.04	1413	1425	1411
6-Jul-16	4.00 7.00	4.04 7.01	4.01 7.00	1413	1413	1415
8-Jul-16	4.00 7.00	4.06 7.03	4.01 7.00	1413	1419	1412
9-Jul-16	4.00 7.00	4.14 7.06	4.09 6.99	1413	1552	1411
10-Jul-16	4.00 7.00	4.11 7.01	4.00 6.99			
11-Jul-16	4.00 7.00	3.97 7.05	3.93 6.99	1413	1402	1413

12-Jul-16	4.00 7.00	4.01 6.97	3.97	1413	1407	1412
14-Jul-16	4.00 7.00	4.00 6.98	3.95 7.00	1413	1405	1413
15-Jul-16	4.00 7.00	3.98 6.98	3.95 7.00	1415	1415	1412
16-Jul-16	4.00 7.00	4.11 7.07	3.99 7.02			
18-Jul-16	4.00 7.00	4.13 7.00	4.07 7.00	1413	1460	1414
19-Jul-16	4.00 7.00	4.09 6.99	4.06 7.00	1413	1354	1412
25-Jul-16	4.00 7.00	4.01 7.07	4.00 7.02	1413	1412	1412
26-Jul-16	4.00 7.00	3.98 6.95	4.02 7.03	1413	1391	1415
1-Aug-16	4.00 7.00	3.98 4.04	3.99 4.01	1413	1398	1413
2-Aug-16	4.00 7.00	4.04 7.05	4.01 7.02	1413	1402	1415
3-Aug-16	4.00 7.00	4.05 7.06	4.00 6.96	1413	1450	1412
8-Aug-16	4.00 7.00	4.03 7.04	4.00 7.03	1413	1400	1416
9-Aug-16	4.00 7.00	4.04 7.03	3.99 7.02	1413	1389	1410
14-Aug-16	4.00 7.00	4.02 6.95	3.97 7.00	1413	1538	1410
15-Aug-16	4.00 7.00	4.06 6.98	3.99 7.01	1413	1512	1411
18-Aug-16	4.00 7.00	3.67 6.94	3.99 7.02	1413	1459	1415
22-Aug-16	4.00 7.00	4.10 7.12	4.03 6.98	1413	1374	1415
24-Aug-16	4.00 7.00	4.06 6.96	4.01 7.02	1413	1451	1418
30-Aug-16	4.00 7.00	4.10 7.15	3.99 7.05			
31-Aug-16	4.00 7.00	3.99 7.06	4.00 7.07			
1-Sep-16	4.00 7.00	3.96 7.06	4.01 7.01	1413	1412	1413
2-Sep-16	4.00 7.00	3.98 7.00	4.00 6.96	1413	1418	1412
4-Sep-16	4.00 7.00	3.68 6.42	4.01 7.03	1413	1409	1411
5-Sep-16	4.00 7.00	4.11 7.08	4.02 7.04			
7-Sep-16	4.00 7.00	3.73 7.08	4.01 7.04			
8-Sep-16	4.00 7.00	4.04 7.14	4.02 7.04			
9-Sep-16	4.00 7.00	4.12 7.08	3.99 7.02			
10-Sep-16	4.00 7.00	4.06 7.04	3.99 7.01			
11-Sep-16	4.00 7.00	4.01 6.98	4.00 7.01			
12-Sep-16	4.00 7.00	4.06 6.97	3.98 7.03			
13-Sep-16	4.00 7.00	4.02 6.99	4.01 7.01			

Table 8.61: 2016 Oakton PCS35 #2 calibration datasheets

Date	pH			Conductivity		
	Standard	Initial reading	Final reading	Standard	Initial reading (µS/cm)	Final reading (µS/cm)
21-Oct-16	4.00	4.37	4.00	1413	1280	1412
	7.00	7.10	7.02			
24-Oct-16	4.00	3.57	3.99	1413	1487	1412
	7.00	6.94	7.04			
29-Oct-16				1413	1431	1413
30-Oct-16	4.00	3.77	4.00	1413	1413	1415
	7.00	6.90	7.03			
31-Oct-16	4.00	3.77	4.03	1413		
	7.00	7.13	7.01			
4-Nov-16	4.00	4.18	3.99	1413	1389	1414
	7.00	7.28	7.00			
7-Nov-16	4.00	4.08	4.00	1413	1433	1412
	7.00	7.32	7.03			
8-Nov-16	4.00	4.17	4.00	1413	1408	1414
	7.00	7.34	7.03			
9-Nov-16	4.00	4.04	4.02	1413	1410	1413
	7.00	7.01	7.01			
10-Nov-16	4.00	4.45	4.00	1413	1411	1412
	7.00	6.84	7.00			
11-Nov-16	4.00	4.00	4.01	1413	1424	1414
	7.00	6.88	7.00			
12-Nov-16	4.00	4.40	4.00	1413	1372	1415
	7.00	6.82	7.01			
13-Nov-16	4.00	4.02	4.00	1413	1397	1415
	7.00	7.05	7.04			
14-Nov-16	4.00	4.00	4.02	1413	1399	1416
	7.00	7.01	7.01			
15-Nov-16	4.00	4.02	4.00	1413	1474	1414
	7.00	7.02	7.02			
22-Nov-16	4.00	4.04	4.01			
	7.00	6.91	7.01			
23-Nov-16	4.00	4.18	3.96			
	7.00	6.94	7.03			
25-Nov-16	4.00	3.86	4.01	1413	1182	1416
	7.00	7.05	7.03			
26-Nov-16	4.00	3.90	4.03			
	7.00	7.10	7.04			
27-Nov-16	4.00	3.89	4.01			
	7.00	7.02	6.99			
28-Nov-16	4.00	4.08	4.02			
	7.00	6.96	7.04			
29-Nov-16	4.00	4.14	4.04			
	7.00	7.05	7.01			
5-Dec-16	4.00	4.40	4.03			
	7.00	7.18	7.01			
9-Dec-16	4.00	4.07	4.01	1413	1392	1416
	7.00	7.05	6.99			
11-Dec-16	4.00	4.06	3.99	1413	1291	1416
	7.00	7.09	7.03			
12-Dec-16	4.00	3.98	4.02			
	7.00	7.05	7.04			

13-Dec-16	4.00 7.00	3.98 7.00	4.02 7.02	1413	1472	1412
16-Dec-16	4.00 7.00	4.06 7.00	4.01 6.96	1413	1357	1416
17-Dec-16	4.00 7.00	4.03 6.97	4.00 7.02	1413	1437	1413
19-Dec-16	4.00 7.00	4.09 7.04	4.01 7.03	1413	1394	1413
22-Dec-16	4.00 7.00	3.94 7.15	4.02 6.96			
24-Dec-16	4.00 7.00	4.21 7.11	4.01 7.02			
28-Dec-16	4.00 7.00	4.18 7.30	4.01 7.05			
29-Dec-16	4.00 7.00	4.02 7.05	4.00 7.02			
30-Dec-16	4.00 7.00	4.14 7.04	4.02 7.00	1413	1398	1414
31-Dec-16	4.00 7.00	4.08 7.20	4.00 7.05			

Table 8.62: 2016 Hoskin Scientific calibration datasheets

Date	pH			Conductivity		
	Standard	Initial reading	Final reading	Standard	Initial reading (µS/cm)	Final reading (µS/cm)
6-May-16	4.00	4.12	4.10	1413	1423	1413
	7.00	6.97	7.02			
7-May-16	4.00	3.88	3.98	1413	1420	1413
	7.00	6.96	7.00			
8-May-16	4.00	4.20	3.99	1413	1431	1413
	7.00	7.01	6.98			
9-May-16	4.00	4.01	4.01	1413	1405	1413
	7.00	7.02	7.02			
10-May-16	4.00	4.02	3.99	1413	1418	1413
	7.00	7.02	7.00			
14-May-16	4.00	3.99	4.01	1413	1440	1413
	7.00	6.96	7.02			
15-May-16	4.00	4.02	4.00	1413	1430	1412
	7.00	6.97	7.00			
16-May-16	4.00	4.05	4.02	1413	1414	1413
	7.00	7.02	7.03			
16-Sep-16	4.00	4.07	4.00			
	7.00	6.92	7.01			
18-Sep-16	4.00	4.02	4.00			
	7.00	7.03	7.01			
19-Sep-16	4.00	4.06	4.00			
	7.00	6.93	7.00			
20-Sep-16	4.00	4.10	3.99			
	7.00	6.88	7.01			
23-Sep-16	4.00	4.09	3.99			
	7.00	6.92	7.01			
26-Sep-16	4.00	4.12	4.00			
	7.00	6.90	7.01			
30-Sep-16	4.00	4.26	4.05			
	7.00	6.58	6.95			
1-Oct-16	4.00	4.20	4.01			
	7.00	6.98	7.00			
2-Oct-16	4.00	4.04	4.01			
	7.00	6.89	7.00			
3-Oct-16	4.00	4.29	3.98			
	7.00	6.97	7.04			
5-Oct-16	4.00	4.59	4.02			
	7.00	7.52	7.03			
10-Oct-16	4.00	4.65	4.04			
	7.00	7.25	7.01			

Table 8.63: 2016 Hanna #1 calibration datasheets

Date	pH			DO %			Conductivity		
	Standard	Initial reading	Final reading	Standard	Initial reading	Final reading	Standard	Initial reading	Final reading
12-Mar-16							1413	1817	1411
17-Mar-16							1413	1521	1416
22-Mar-16							1413	1425	1412
7-Sep-16							1413	1431	1411
8-Sep-16							1413	1396	1410
11-Sep-16							1413	1403	1412
12-Sep-16							1413	1398	1411
13-Sep-16							1413	1397	1413
14-Sep-16							1413		1414
15-Sep-16	4.00 7.00	3.95 7.00	6.88				1413	1475	1410
16-Sep-16	4.00 7.00	4.07 6.92	4.00 7.01				1413	1248	1413
18-Sep-16	4.00 7.00	4.02 7.03	4.00 7.01				1413	1588	1411
19-Sep-16	4.00 7.00	4.06 6.93	4.00 7.00				1413	1393	1412
20-Sep-16	4.00 7.00	4.10 6.88	3.99 7.01				1413	1314	1412
23-Sep-16	4.00 7.00	4.09 6.92	3.99 7.01				1413	1850	1412
26-Sep-16	4.00 7.00	4.12 6.90	4.00 7.01				1413	1334	1413
28-Sep-16	4.00 7.00	4.92 7.53	4.01 7.08						
03-Oct-16							1413	1350	1414
05-Oct-16							1413	1543	1414
07/10/2016							1413	1381	1415
10/10/2016							1413	1348	1413
26/11/2016							1413	1568	1412
27/11/2016							1413	1418	1411
29/11/2016							1413	1306	1409
17/12/2016							1413	1680	1415
22/12/2016							1413	12.93	1411
23/12/2016							1413	1411	1411
27/12/2016							1413	1430	1414
28/12/2016							1413	1433	1411
31/12/2016							1413	1430	1412
01/01/2017							1413	1450	1409

Table 8.64: 2016 Hanna #2 calibration datasheets

Date	DO %			Conductivity		
	Standard	Initial reading	Final reading	Standard	Initial reading	Final reading
9-Jan-16				1413	1396	1415
10-Jan-16	0 100	0.0% 115.0%	0.0% 100.0%	1413	1251	1416
10-Jan-16				1413	1305	1412
23-Feb-16				1413	1417	1413
6-May-16				1413	1513	1413
9-May-16				1413	1417	1413
13-May-16				1413	1455	1416
14-May-16				1413	1433	1413
15-May-16				1413	1422	1412
12-Jul-16				1413	1383	1412
16-Jul-16				1413	1435	1412

Table 8.65: 2016 DO Probe calibration datasheets

Date	DO %	
	Initial reading	Final reading
16/02/2016	89	100
23/02/2016	97%	100
12/03/2016	99	100
14/03/2016	102	100
17/03/2016	102.0%	100
22/03/2016	104%	100
13/05/2016	114%	100
14/05/2016	90	100
15/05/2016	117	100
06/07/2016	131	100
09/07/2016	118	100
12/07/2016	103	100
16/07/2016	106	100
04/09/2016	86.8	100
07/09/2016	110	100
08/09/2016	98	100
25/11/2016	96	99
26/11/2016	107	100
27/11/2016	114	100
29/11/2016	96	99
22/12/2016	98	100
24/12/2016	104	100
28/12/2016	97	100
29/12/2016	97	100
31/12/2016	97	100

Table 8.67: 2016 Mill Seepage Regulatory Guidelines

Regulatory Guidelines			
Parameters	Water License	MMER	CCME
CN t (mg/L)	1	1	NA
CN WAD (mg/L)	NA	NA	NA
Free CN (mg/L)	NA	NA	0.005
Cu (mg/L)	0.2	0.6	0.002
Fe (mg/L)	NA	NA	0.3

Table 8.68: 2016 Mill Seepage Water Quality Monitoring

Date	Mill Trench				MW-203			MW-05				MW-07				MW-08			
	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)
2014																			
26/05/2014	0.087		0.01	1															
17/06/2014	0.44	0.061	0.057	1.6												0.024	<0.005	0.11	0.41
21/07/2014	0.38	0.02	0.031	1.6				<0.005	<0.01	0.031	2.2	0.046	<0.01	0.1	9.4	<0.005	<0.01	0.014	0.43
19/08/2014	0.17	0.028	0.012	1.5												<0.005	<0.01	0.055	6.4
29/09/2014	0.03		0.008	0.77															
18/11/2014	Frozen																		
2015																			
29/07/2015	0.024		0.005	0.72				<0.005		0.13	1.49					<0.005		0.27	2.92
04/08/2015	0.038	<0.005	0.008	0.6	<0.005	0.016	0.52									<0.005	<0.005	0.17	17.2
17/09/2015	0.03		0.005	0.2								0.008	<0.005	0.047	4.53	<0.005	<0.005	0.016	8.1
2016																			
16/05/2016					<0.005	0.0156	7.57												
08/08/2016	0.022	0.016	0.0254	0.3								<0.005	<0.005	0.2948	39.8	<0.005	<0.005	0.3709	62.8
16/08/2016												0.007		0.1811	27.8	<0.005		0.1142	19.8
06/09/2016		0.007			<0.005								<0.005						
14/10/2016					<0.005								0.005						

Table 8.69: Water Quality Monitoring at Third Portage Lake as per Freshet Action Plan (Mill Seepage Action Plan) and KIA's request.

Date	Units	17-Jul-16	16-Aug-16	6-Sep-16	4-Oct-16
Field Parameters					
pH (Env. Dept.)		7.45	7.53	7.68	7.01
Conductivity (Env. Dept.)	µmhos/cm	82.9	99	97	97
Turbidity (Env. Dept.)	NTU	0.33	1.03	0.43	0.7
Temperature	°C	15.5			
Dissolved oxygen	mg/L		9.1	10.3	10.4
Conventional Parameters					
Hardness	mg CaCo3/L	33	36	38	39
Alkalinity	mg CaCo3/L	24	26	28	28
TDS	mg/L	60	66	64	64
TSS	mg/L	<1	<1	<1	<1
Colour	colour	1	4	2	5
D.O.C	mg/L	1	1.6	2.1	1.8
T.O.C	mg/L	2.7	3.1	2.6	2.8
Nutrients and Biological Indicators					
Ammonia (NH3)	mg N/L	<0.01	<0.01	<0.01	<0.01
Ammonia nitrogen (NH3-NH4)	mg N/L	<0.01	0.02	0.03	0.06
Kjeldahl nitrogen	mg N/L	0.18	0.26	0.05	0.37
Nitrate	mg/L	0.02	0.01	0.01	0.03
Nitrite	mg/L	<0.01	<0.01	<0.01	<0.01
Ortho-phosphate (O-PO4)	mg P/L	<0.01	<0.01	<0.01	<0.01
Chlorophyll A	µg/L	1.2	0.95	1.2	0.83
Major Ions					
Bromides	mg/L	0.05	<0.01	<0.01	<0.01
Chloride	mg/L	3.6	3.9	4	4.4
Fluoride	mg/L	0.11	0.11	0.1	0.09
Sulphate	mg/L	14.9	14.7	19.5	15.6
Thiosulfates (S2O3)	S2O3/L	<0.02	<0.02	<0.02	<0.02
Cyanide					
Cyanide Total	mg/L	<0.005	<0.005	0.005	<0.001
Cyanide Free (SGS)	mg/L	<0.005		<0.005	
Cyanide WAD	mg/L	<0.005	<0.005	<0.001	<0.001
Thiocyanates (SNC)	SCN/L	0.16	<0.05	<0.05	<0.05

Date	Units	17-Jul-16	16-Aug-16	6-Sep-16	4-Oct-16
Dissolved metals					
Aluminium	mg/L	<0.006		<0.006	<0.006
Antimony	mg/L	<0.0001		<0.0001	<0.0001
Arsenic	mg/L	<0.0005		<0.0005	<0.0005
Boron	mg/L	0.01		<0.01	<0.01
Barium	mg/L	0.0025		0.0025	0.0024
Beryllium	mg/L	<0.0005		<0.0005	<0.0005
Cadmium	mg/L	<0.00002		<0.00002	<0.00002
Chromium	mg/L	<0.0006		0.0008	<0.0006
Cobalt	mg/L	<0.0005		<0.0005	<0.0005
Copper	mg/L	0.0006		0.0007	<0.0005
Iron	mg/L	<0.01		<0.01	<0.01
Lead	mg/L	<0.0003		<0.0003	<0.0003
Lithium	mg/L	<0.005		<0.005	<0.005
Manganese	mg/L	<0.0005		<0.0005	0.0031
Magnesium	mg/L	2.68			
Mercury	mg/L	<0.00001		0.00005	<0.00001
Molybdenum	mg/L	<0.0005		<0.0005	<0.0005
Nickel	mg/L	0.0008		<0.0005	0.0007
Phosphorus	mg P/L		0.02		
Selenium	mg/L	<0.001		<0.001	<0.001
Strontium	mg/L	0.04		0.047	0.021
Silver	mg/L	<0.0001		<0.0001	<0.0001
Tin	mg/L	<0.001		<0.001	<0.001
Thallium	mg/L	<0.0008		<0.0008	<0.0008
Titanium	mg/L	<0.01		<0.01	<0.01
Uranium	mg/L	<0.001		<0.001	<0.001
Vanadium	mg/L	<0.0005		<0.0005	<0.0005
Zinc	mg/L	<0.001		0.001	<0.001

Date	Units	17-Jul-16	16-Aug-16	6-Sep-16	4-Oct-16
Total metals					
Aluminium	mg/L	<0.006	0.038	<0.006	0.021
Antimony	mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	<0.0005	<0.0005	<0.0005	<0.0005
Boron	mg/L	<0.01	<0.01	<0.01	<0.01
Barium	mg/L	0.0027	0.0028	0.0027	0.0031
Beryllium	mg/L	<0.0005	<0.0005	<0.0005	<0.0005
Cadmium	mg/L	<0.00002	<0.00002	<0.00002	<0.00002
Copper	mg/L	0.0006	0.0008	0.0007	0.0007
Chromium	mg/L	<0.0006	0.0009	0.0019	0.0017
Cobalt	mg/L	<0.0005	<0.0005	<0.0005	<0.0005
Iron	mg/L	0.04	0.03	0.06	0.1
Lithium	mg/L	<0.005	0.109	<0.005	<0.005
Manganese	mg/L	0.009	0.0063	0.007	0.0094
Magnesium	mg/L	2.75	2.9	3.37	2.85
Mercury	mg/L	<0.00001	<0.00001	0.00003	<0.00001
Molybdenum	mg/L	<0.0005	<0.0005	<0.0005	<0.0005
Nickel	mg/L	0.0009	<0.0005	<0.0005	0.001
Lead	mg/L	0.0018	<0.0003	<0.0003	<0.0003
Phosphorus	mg P/L	0.0049	<0.0019	<0.0019	0.0023
Potassium	mg/L	1.15	0.94	0.98	1.40
Selenium	mg/L	<0.001	<0.001	<0.001	<0.001
Silica	mg/L	0.4		0.4	0.4
Silver	mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Tin	mg/L	<0.001	<0.001	<0.001	<0.001
Strontium	mg/L	0.043	0.16	0.045	0.025
Titanium	mg/L	<0.01	<0.01	<0.01	<0.01
Thallium	mg/L	<0.0008	<0.0008	<0.0008	<0.0008
Tellurium	mg/L			<0.0005	<0.0005
Uranium	mg/L	<0.001	<0.001	<0.001	<0.001
Vanadium	mg/L	<0.0005	<0.0005	<0.0005	0.0009
Zinc	mg/L		<0.001	<0.001	<0.001

Table 8.76: 2008-2016 Climate Data

Date	Temperature Average	Temperature Max	Temperature Min	Wind Speed Average	Wind Speed Max	Total Precipitation	Daily average Precipitation	Max Precipitation
	°C	°C	°C	m/s	m/s	mm	mm	mm
Feb-09	-30.88	-19.38	-42.62	3.38	14.19			
Mar-09	-31.06	-14.13	-42.08	4.81	17.72			
Apr-09	-16.11	-2.64	-28.85	4.52	17.52			
May-09	-10.39	-0.15	-19.21	5.14	15.44			
Jun-09	3.84	18.38	-6.20	4.22	14.46			
Jul-09	11.67	21.70	1.23	3.96	14.25			
Aug-09	9.83	21.14	1.40	4.27	15.60			
Sep-09	4.62	16.07	-4.99	5.71	25.28			
Oct-09	-7.85	2.48	-22.50	5.28	19.48			
Nov-09	-17.75	-5.20	-26.93	4.26	16.31			
Dec-09	-24.54	-7.02	-33.39	4.73	22.05			
Jan-10	-26.80	-9.38	-36.63	4.84	20.50			
Feb-10	-26.31	-12.52	-42.83	3.35	15.52			
Mar-10	-21.02	-7.91	-34.07	4.23	17.27			
Apr-10	-8.70	2.88	-21.58	4.80	19.95			
May-10	-8.09	0.41	-17.88	5.04	19.82			
Jun-10	3.95	18.79	-6.57	4.14	14.07			
Jul-10	12.94	24.02	3.73	3.65	16.42			
Aug-10	10.26	22.01	1.23	4.86	18.54			
Sep-10	4.68	15.42	-4.24	4.16	17.78			
Oct-10	-2.83	5.29	-16.24	4.87	19.60			
Nov-10	-13.84	0.24	-30.86	5.48	22.29			
Dec-10	-25.28	-12.40	-35.27	4.49	14.99			
Jan-11	-20.76	-4.22	-37.39	4.42	17.05			
Feb-11	-29.78	-19.47	-42.99	5.86	20.01			
Mar-11	-29.55	-25.09	-33.85	3.83	8.65			
Apr-11	-19.84	-5.09	-30.76	4.93	18.25			
May-11	-8.21	2.54	-23.39	-3.84	-11.64			
Jun-11	3.54	17.13	-4.94	4.67	20.64			
Jul-11	13.44	25.46	2.49	4.07	17.21			
Aug-11	10.99	20.95	1.72	4.44	17.37			
Sep-11	4.27	13.27	-3.85	5.33	18.33			
Oct-11	-5.56	3.75	-16.89	5.36	20.91			
Nov-11	-13.59	0.21	-29.33	5.56	24.42			
Dec-11	-24.43	-11.86	-31.82	4.50	21.27			
Jan-12	-30.44	-18.91	-38.18	5.37	14.50			
Feb-12	-25.80	-4.79	-38.61	5.19	21.13			
Mar-12	-27.96	-8.44	-39.96	4.70	21.96			
Apr-12	-16.47	0.84	-28.67	4.41	15.52			
May-12	-4.41	4.85	-19.18	4.73	17.69			
Jun-12	4.41	13.92	-4.63	5.40	16.22			
Jul-12	12.36	21.81	3.18	4.99	20.37			
Aug-12	10.87	22.46	2.31	4.57	15.20			
Sep-12	4.79	15.66	-2.67	5.06	19.47			
Oct-12	-6.21	4.52	-17.37	5.01	18.13			
Nov-12	-18.26	-2.34	-31.05	5.11	23.94			
Dec-12	-25.17	-11.96	-39.25	4.98	20.18			
Jan-13	-33.86	-22.49	-44.33	5.07	19.92			
Feb-13	-32.01	-15.38	-40.59	5.53	17.11			
Mar-13	-24.81	-8.78	-38.03	5.29	18.77			
Apr-13	-17.57	-4.22	-30.41	6.80	27.45			
May-13	-7.44	3.85	-25.35	5.66	24.83			
Jun-13	7.60	21.36	-4.11	5.39	18.32	18.00	0.60	6.00
Jul-13	11.57	28.00	1.26	5.65	22.15	24.50	0.79	8.00
Aug-13	11.03	25.83	1.21	5.38	18.78	26.50	0.85	10.00
Sep-13	2.31	16.50	-4.56	5.64	21.52	66.25	2.21	23.00
Oct-13	-5.09	4.41	-18.15	5.68	17.86	13.00	0.42	4.00
Nov-13	-20.97	-4.27	-34.32	4.14	14.35	9.50	0.32	4.00
Dec-13	-29.84	-15.90	-40.15	4.80	18.50	NA	NA	NA

Jan-14	-32.40	-19.46	-41.93	5.81	20.38	7.50	0.24	3.00
Feb-14	-30.70	-15.96	-41.39	6.05	20.09	3.05	0.11	1.95
Mar-14	-28.67	-17.56	-38.31	5.61	20.78	3.40	0.11	1.05
Apr-14	-19.15	0.63	-33.90	5.86	20.34	5.95	0.20	3.35
May-14	-1.82	15.88	-12.74	5.07	18.01	21.90	0.71	11.50
Jun-14	7.52	26.79	-5.29	5.18	18.17	5.40	0.18	2.00
Jul-14	13.57	25.96	5.29	4.64	19.48	43.60	1.41	13.40
Aug-14	9.68	25.70	1.96	5.57	22.25	29.02	0.94	9.70
Sep-14	1.34	14.42	-9.75	5.78	24.03	19.42	0.65	6.00
Oct-14	-6.36	2.16	-22.12	5.07	16.35	4.30	0.14	1.11
Nov-14	-21.48	-2.04	-33.70	5.73	18.84	2.38	0.08	0.82
Dec-14	-25.63	-11.75	-37.59	5.05	19.01	3.95	0.13	0.81
Jan-15	-32.54	-12.61	-41.45	5.58	25.70	28.25	0.97	20.30
Feb-15	-34.43	-15.08	-40.23	5.00	16.60	17.55	0.63	12.50
Mar-15	-28.10	-11.70	-39.69	6.21	27.85	30.85	1.10	16.85
Apr-15	-18.25	-2.67	-36.10	5.58	17.30	11.50	0.38	4.45
May-15	-7.04	4.66	-20.94	6.91	29.22	17.10	0.55	9.80
Jun-15	3.54	15.95	-2.75	4.84	18.17	32.15	1.56	9.20
Jul-15	11.45	20.18	4.05	4.00	14.80	49.70	1.91	12.80
Aug-15	11.19	23.26	3.38	5.03	17.76	7.50	0.24	5.50
Sep-15	4.28	13.79	-3.89	6.63	24.93	67.20	2.24	18.40
Oct-15	-8.14	10.90	-22.23	6.55	21.64	25.20	0.81	16.15
Nov-15	-18.18	-1.59	-34.55	5.15	25.19	13.50	0.54	8.80
Dec-15	-26.74	-6.50	-39.42	4.89	17.6	2.50	0.08	1.00
Jan-16	-27.33	-10.69	-40.63	4.12	19.42	13.90	0.45	6.00
Feb-16	-32.75	-24.45	-39.57	4.96	21.56	5.30	0.18	3.00
Mar-16	-26.24	-12.82	-35.40	4.29	18.35	7.05	0.23	2.30
Apr-16	-21.04	-1.99	-33.70	5.97	18.68	19.05	0.64	8.40
May-16	-5.34	3.09	-3.47	5.52	17.52	7.30	0.24	7.30
Jun-16	5.73	22.75	-5.94	5.20	17.88	20.15	0.67	6.95
Jul-16	13.73	25.83	3.52	4.70	16.35	20.10	0.65	9.00
Aug-16	11.07	22.79	1.31	5.43	17.39	62.80	2.03	35.50
Sep-16	4.26	15.90	-1.82	5.67	22.03	61.90	2.06	16.60
Oct-16	-6.26	2.57	-24.79	5.78	21.95	31.40	1.01	4.20
Nov-16	-13.79	-2.47	-24.17	5.62	17.89	41.05	1.37	7.05
Dec-16	-26.40	-2.91	-38.80	3.83	15.64	9.45	0.30	2.00

Table 8.77: 2016 RSP Seepage downstream lake QAQC

Date	Units	DL	NP2 South 14-Aug-16			NP2 East 14-Aug-16			NP2 West 14-Aug-16			NP1 West 14-Aug-16			NP2 Winter 15-Mar-16			Doggie 17-Jul-16		13-Aug-16		SPL-RSF 14-Aug-16					
			Original	Duplicate	RDP	Original	Duplicate	RDP	Original	Duplicate	RDP	Original	Duplicate	RDP	Original	Duplicate	RDP	Original	Duplicate	RDP	Original	Duplicate	RDP				
Conventional Parameters																											
TPS	mg/L	1	162	164	1	161	161	0	161	161	0	163	162	1	281	278	1	143	1	69	9.1	193	24	24	0		
TS	mg/L	1	6	9	40	4	7	6	15	4	5	22	1	1	0	3	3	0	2	1	1	2	67	2	1	67	
Activity	mg CaCO3/L	2	46	45	2	45	46	2	44	44	0	246	47	1386	67	66	2	44	2	22	2	22	12	11	9		
Hardness	mg CaCO3/L	1	7	7	4	8	96	11	73	78	7	92	79	15	172	183	6	74	1	37	12	14	14	13	7		
Colour	colour	1	11	13	17	10	5	5	0	16	23	36	9	7	25	5	5	0	6	1	1	6	143	3	5	50	
D.O.C.	mg/L	0.2	4.1	4.6	11	4.2	3.8	4.8	2.8	3.5	29	3.3	3.1	13	5.7	6.6	2	2.6	0.3	2.4	3	29	1.2	1.2	0		
T.O.C	mg/L	0.2	4.5	5.6	22	0.3	4.6	4.6	0	4	3.8	5	3.8	3.1	20	6.1	6.1	0	4	0.4	1.3	3	10	1.8	1.7	0	
Nutrient and Biological Indicators																											
Ammonia (NH3)																											
Ammonia nitrogen (NH3-NH4)	mg N/L	0.01	< 0.01	< 0.01	0	< 0.01	NA	< 0.01	0	< 0.01	< 0.01	0	< 0.01	< 0.01	0	< 0.01	< 0.01	0	< 0.01	< 0.01	< 0.01	0	< 0.01	< 0.01	0		
Nitrate	mg N/L	0.01	0.22	0.21	5	< 0.01	0.28	0.26	7	0.25	0.28	13	0.48	0.47	2	1.33	1.34	1	0.41	< 0.01	0.02	0.04	67	0.01	0.02	67	
Nitrite	mg N/L	0.01	< 0.01	< 0.01	0	< 0.01	< 0.01	< 0.01	0	< 0.01	< 0.01	0	< 0.01	< 0.01	0	0.02	0.02	0	0.01	< 0.01	< 0.01	0	< 0.01	< 0.01	0		
Kjeldahl nitrogen	mg N/L	0.01	< 0.05	0.34	95	< 0.08	3.32	0.68	50	0.34	0.31	28	0.23	0.30	19	0.44	0.54	30	28	< 0.05	0.08	0.26	113	0.2	< 0.01	120	
Ortho-phosphate (O-P04)	mg P/L	0.01	< 0.01	< 0.01	0	0.02	< 0.01	< 0.01	0	0.01	< 0.01	0	< 0.01	< 0.01	0	< 0.01	< 0.01	0	< 0.01	< 0.01	< 0.01	0	< 0.01	< 0.01	0		
Chlorophyll A	ug/L	0.13	0.89	1.4	45	< 0.13	2.8	2.4	15	1.1	2	58	0.82	1.2	38	NA	NA	NA	0.34	NA	1.1	0.47	80	0.83	0.53	44	
Major ions																											
Bromides	mg/L	0.01	< 0.01	< 0.01	0	< 0.01	0.03	0.01	100	< 0.01	< 0.01	0	< 0.01	0.06	120	0.15	0.14	7	0.07	< 0.01	< 0.01	< 0.01	0	< 0.01	< 0.01	0	
Chloride	mg/L	0.1	5.4	5.4	0	< 0.5	5.2	5.3	2	5.1	5.2	2	14.7	14.6	1	11.5	11.5	0	9.6	0.5	4.2	4.2	0	0.6	0.8	29	
Fluoride	mg/L	0.02	0.18	0.31	82	< 0.02	0.13	0.13	0	0.13	0.13	0	0.17	0.17	0	0.16	0.16	0	0.14	< 0.02	0.13	0.14	7	0.08	0.08	0	
Calcium	mg/L	0.03	19.1	20.6	7	< 0.03	NA	27.2	7	19.7	20.8	5	26.3	20.6	24	NA	NA	NA	NA	NA	NA	8.11	13	4.11	1.84	7	
Sodium	mg/L	0.05	11.6	12.2	5	< 0.05	NA	15.7	7	11.5	12.2	6	12.9	7.38	54	NA	NA	NA	NA	NA	NA	3.36	2.87	16	1.29	1.13	15
Sulfate	mg/L	0.6	56.5	58.7	3	< 0.6	58.7	59.7	2	0.5	51.2	4	41.9	41.2	3	119	121	2	NA	< 0.6	28.1	27.1	6	4	5.8	27	
Thiosulfates (S2O3)	mg/L	0.02	< 0.02	< 0.02	0	< 0.02	< 0.02	< 0.02	0	< 0.02	< 0.02	0	< 0.02	< 0.02	0	1.3	1.3	0	< 0.02	< 0.02	< 0.02	< 0.02	0	< 0.02	< 0.02	0	
Thiocyanates (SNC)	mg/L	0.05	< 0.05	< 0.05	0	< 0.05	< 0.05	< 0.05	0	< 0.05	< 0.05	0	< 0.05	< 0.05	0	1.7	1.7	0	90.1	30.6	< 0.05	< 0.05	0	< 0.05	< 0.05	0	
Ck Total																											
Ck Total (SS)	mg/L	0.005	< 0.005	NA	< 0.005	< 0.005	< 0.005	< 0.005	0	< 0.005	< 0.005	0	< 0.005	< 0.005	0	< 0.005	< 0.005	0	< 0.005	< 0.005	< 0.005	< 0.005	0	< 0.005	< 0.005	0	
Ck WAD	mg/L	0.005	< 0.005	< 0.005	0	< 0.005	< 0.005	< 0.005	0	< 0.005	< 0.005	0	< 0.005	< 0.005	0	< 0.005	< 0.005	0	< 0.005	< 0.005	< 0.005	< 0.005	0	< 0.005	< 0.005	0	
Dissolved Metals																											
Aluminum	mg/L	0.006	< 0.006	< 0.006	0	< 0.006	< 0.006	< 0.006	0	< 0.006	< 0.006	0	< 0.006	< 0.006	0	< 0.006	< 0.006	0	< 0.006	< 0.006	< 0.006	< 0.006	0	< 0.006	< 0.006	0	
Antimony	mg/L	0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	0	
Arsenic	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	
Boron	mg/L	0.01	< 0.01	< 0.01	0	< 0.01	< 0.01	< 0.01	0	< 0.01	< 0.01	0	< 0.01	< 0.01	0	< 0.01	< 0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	0	< 0.01	< 0.01	0	
Barium	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	
Beryllium	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	
Cadmium	mg/L	0.00002	< 0.00002	< 0.00002	0	< 0.00002	< 0.00002	< 0.00002	0	< 0.00002	< 0.00002	0	< 0.00002	< 0.00002	0	< 0.00002	< 0.00002	0	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0	< 0.00002	< 0.00002	0	
Chromium	mg/L	0.0006	0.0017	0.0021	21	0.0023	0.0027	0.0015	73	0.0023	0.0023	19	0.0029	0.0018	43	0.0026	0.0026	2	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	80
Cobalt	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	
Copper	mg/L	0.0005	0.0031	0.0041	2	< 0.0005	0.0033	0.0033	0	0.0033	0.0036	9	0.0017	0.0016	6	0.0054	0.0054	0	0.0021	< 0.0005	0.0021	0.0011	44	< 0.0005	0.0006	18	
Iron	mg/L	0.01	< 0.01	< 0.01	0	< 0.01	< 0.01	< 0.01	0	< 0.01	< 0.01	0	< 0.01	< 0.01	0	< 0.01	< 0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	0	< 0.01	< 0.01	0	
Lead	mg/L	0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	< 0.0003	< 0.0003	0	< 0.0003	< 0.0003	0	
Lithium	mg/L	0.005	< 0.005	< 0.005	0	< 0.005	< 0.005	< 0.005	0	< 0.005	< 0.005	0	< 0.005	< 0.005	0	< 0.005	< 0.005	0	< 0.005	< 0.005	< 0.005	< 0.005	0	< 0.005	< 0.005	0	
Manganese	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	
Mercury	mg/L	0.02	NA	NA	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.2	11.2	16	6.44	< 0.02	NA	NA	NA	NA	NA	NA	NA	
Mercury	mg/L	0.00001	< 0.00001	< 0.00001	0	< 0.00001	< 0.00001	< 0.00001	0	< 0.00001	< 0.00001	0	< 0.00001	< 0.00001	0	< 0.00001	< 0.00001	0	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0	< 0.00001	< 0.00001	0	
Molybdenum	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	
Nickel	mg/L	0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0	